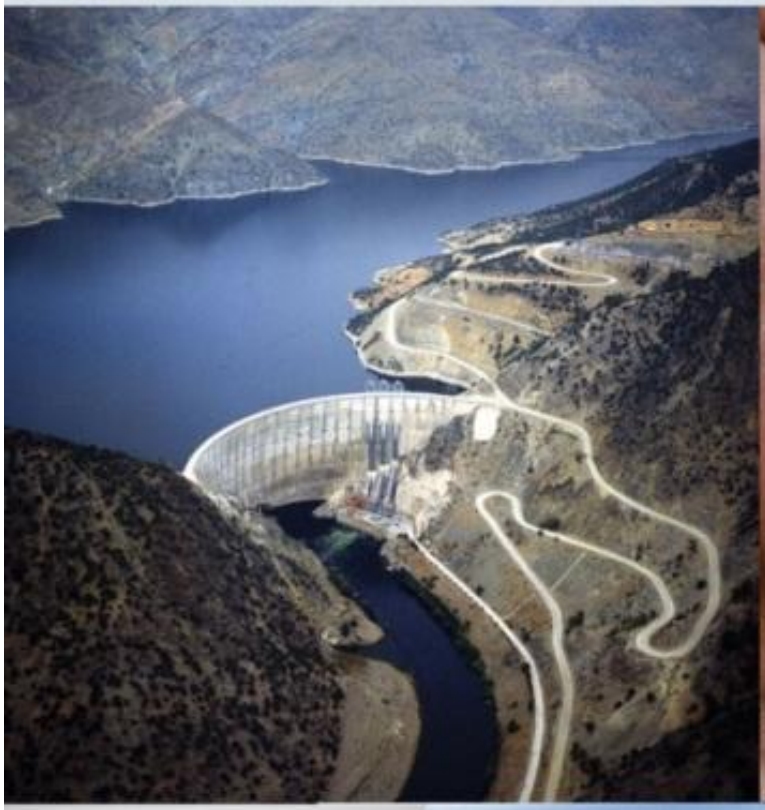


ORSAM WATER BULLETIN

Weekly Bulletin by ORSAM Water Research Programme

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





Issue 129

ORSAM WATER BULLETIN

20 May 2013 – 26 May 2013

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❖ Turkish institution to analyze water exported to UAE

The Turkish Standards Institution will analyze the water which is exported from Turkey to the United Arab Emirates.

An agreement has been signed between Emirates Authority for Standardization and Metrology (ESMA) of UAE and Turkish Standards Institution (TSE) for analyzing the water that is exported to UAE.

TSE stated that with a new regulation, UAE would not allow transfer of water --which is not certified by ESMA-- in the country starting from September 2013.

It was said that the authorized analyzing organization would be TSE within the framework of the signed agreement.

Reminding that UAE exported 40 percent of its water from Turkey, the statement said the new agreement would increase the market share of Turkish producers.

"Turkish institution to analyze water exported to UAE", 24/05/2013, online at: http://www.worldbulletin.net/?aType=haber&ArticleID=109770

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❖ Syria's War Triggered by ... Water?

NEWSER) – Tucked into a piece on the drastically dropping water levels in the Middle East's Tigris-Euphrates Basin comes this theory: The drop helped spur the Syrian civil war. As Joshua Hammer explains for *Smithsonian*, a pair of satellites tasked with measuring groundwater found that the basin lost the equivalent of all the water in the Dead Sea (117 million acre-feet) between 2003 and 2009. Decreased rainfall and inadequate water management are behind the record drop (only northern India is losing it faster), which has big implications for the Basin's countries: Turkey, Syria, Iraq, and western Iran.

In Syria's case, drought struck hard in 2006, pushing many farmers to lay down their hoes and move into the cities. "There's some evidence that the migration fueled the civil war there," writes Hammer, and an expert backs that up: "You had a lot of angry, unemployed men helping to trigger a revolution." And the tension isn't limited to Syria: Irrigation department officials have been assassinated in Iraq, and both Syria and Iraq have lobbed claims of water hoarding at Turkey. Hydrologists think the answer partly lies in wastewater recycling or a desalination effort. Observes a hydrologist, "Water doesn't know political boundaries. People have to get together and work.

"Syria's War Triggered by ... Water?", 23/05/2013, online at: http://www.newser.com/story/168384/syrias-war-triggered-by-water.html

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❖ Is a Lack of Water to Blame for the Conflict in Syria?

A 2006 drought pushed Syrian farmers to migrate to urban centers, setting the stage for massive uprisings

The world's earliest documented water war happened 4,500 years ago, when the armies of Lagash and Umma, city-states near the junction of the Tigris and Euphrates rivers, battled with spears and chariots after Umma's king drained an irrigation canal leading from the Tigris. "Enannatum, ruler of Lagash, went into battle," reads an account carved into an ancient stone cylinder, and "left behind 60 soldiers [dead] on the bank of the canal."

Water loss documented by the Gravity Recovery and Climate Experiment (GRACE), a pair of satellites operated by NASA and Germany's aerospace center, suggests water-related conflict could be brewing on the riverbank again. GRACE measured groundwater usage between 2003 and 2009 and found that the Tigris-Euphrates Basin—comprising Turkey, Syria, Iraq and western Iran—is losing water faster than any other place in the world except northern India . During those six years, 117 million acre-feet of stored freshwater vanished from the region as a result of dwindling rainfall and poor water management policies. That's equal to all the water in the Dead Sea. GRACE's director, Jay Famiglietti, a hydrologist at the University of California, Irvine, calls the data "alarming."

While the scientists captured dropping water levels, political experts have observed rising tensions. In Iraq, the absence of a strong government since 2003, drought and shrinking aquifers have led to a recent spate of assassinations of irrigation department officials and clashes between rural clans. Some experts say that these local feuds could escalate into full-scale armed conflicts .

In Syria, a devastating drought beginning in 2006 forced many farmers to abandon their fields and migrate to urban centers. There's some evidence that the migration fueled the civil war there, in which 80,000 people have died. "You had a lot of angry, unemployed men helping to trigger a revolution," says Aaron Wolf, a water management expert at Oregon State University, who frequently visits the Middle East.

Tensions between nations are also high. Since 1975, Turkey's dam and hydropower construction has cut water flow to Iraq by 80 percent and to Syria by 40 percent. Syria and Iraq have accused Turkey of hoarding water.

Hydrologists say that the countries need to find alternatives to sucking the aquifers dry—perhaps recycling wastewater or introducing desalination—and develop equitable ways of sharing their rivers. "Water doesn't know political boundaries. People have to get together and work," Famiglietti says. One example lies nearby, in an area not known for cross-border cooperation. Israeli and Jordanian officials met last year for the first time in two decades to discuss rehabilitating the nearly dry Jordan River, and Israel has agreed to release freshwater down the river.

"It could be a model" for the Tigris-Euphrates region, says Gidon Bromberg, a co-director of Friends of the Earth Middle East, who helped get the countries together. Wolf, too, remains optimistic, noting that stress can encourage compromise.

History might suggest a way: The world's first international water treaty, a cuneiform tablet now hanging in the Louvre, ended the war between Lagash and Umma.

"Is a Lack of Water to Blame for the Conflict in Syria?", *Smithsonian* magazine, June 2013, online at: http://www.smithsonianmag.com/science-nature/Is-a-Lack-of-Water-to-Blame-for-the-Conflict-in-Syria-208345431.html

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❖ Nespak gets irrigation project in Iraq

LAHORE: The Ministry of Water Resources (Iraq) has awarded an irrigation project known as East Gharaf to National Engineering Services Pakistan (Pvt) Limited (Nespak), said a Nespak spokesperson.

The spokesperson said that Dr Mansoor Ahmad Hashmi, vice president of Water Resources Division at Nespak, will proceed to Iraq by the end of this month to sign the agreement with the Ministry of Water Resources (Iraq).

The project aims to strengthen the war-torn economy of Iraq by providing sustainable irrigation and drainage facilities to about 390,000 acres of land in Nassiriya and Kut Governorates. Moreover, Nespak still retains its registration with the Ministry of Water Resources in Iraq.

"Nespak will render engineering consultancy services, including updation of topographic survey and detailed design of irrigation and drainage networks of the project area," he said.

He added that Nespak has worked on a number of irrigation projects in the early 80s, such as Euphrates East Drain Project, Saddam Dam Project, North Jazira Irrigation and Drainage Project and Rumaitha Irrigation and Drainage Project. Recently, the company was also awarded the $500 million Bakhshabad Dam Project in Afghanistan. "Nespak is one of the largest consultancy firms in Asia. The company's revenues have more than doubled with almost 30 percent contribution from overseas projects in Saudi Arabia, Oman, Afghanistan, Iran, Qatar, Yemen, Bangladesh and Ethiopia," he said.

"Nespak gets irrigation project in Iraq", 21/05/2013, online at: http://www.thenews.com.pk/Todays-News-3-178615-Nespak-gets-irrigation-project-in-Iraq

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❖ India and Iraq to Cooperate in Water Management Area

A high expert level meeting was held today between the Iraq Delegation led by Mr. Mohanad Salman Al-Sady, Minister of Water Resources of Govt of Republic of Iraq and Senior Officers in The Ministry of Water Resources to workout for finalizing the nitty-gritty's of a future Memorandum of Understanding In The Area Of Water Management to be signed between the Two countries.

The very purpose of the meeting was to finalize the draft of an MoU outlining future cooperation between the two countries; explore possibilities of exchange of visits to develop cooperation in specific areas, find avenue's for Training of Iraqi engineers and experts in India, facilitate exchange of data and relevant information relating to water management, irrigation, land reclamation and dams etc and to gather suggestions from Indian side for expanding cooperation between the two countries. The meeting was held in two parts. The preliminary round was held between the Iraq delegation led by Mr. Ali Hashem Kataa A-Kafaje, Director General, National Centre for Management of Water Resources, Govt of Iraq while the Indian side was led by Dr. S.K.Sarkar, Secretary in the M/o Water Resources.

Later a meeting was held between the Indian Delegation led by Union Water Resources Minister Shri Harish Rawat and his Iraqi counterpart Mr. Mohanad Salman Al-Sady, Minister of Water Resources of Govt of Republic of Iraq. It was decided that both the countries will have further discussions before finalizing the MoU.

"India and Iraq to Cooperate in Water Management Area", 23/05/2013, online at: http://www.dredgingtoday.com/2013/05/23/india-and-iraq-to-cooperate-in-water-management-area/

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❖ Ahmadinejad Inaugurates Construction Phase of Reservoir Dam in Western Iran

TEHRAN (FNA)- Iranian President Mahmoud Ahmadinejad inaugurated the construction phase of a reservoir dam in the Western Lorestan province on Saturday

President Ahmadinejad inaugurated the construction phase of Ma'shoureh Kouhdasht reservoir dam to be built on Kashkan river in Kouhdasht of Lorestan by Iranian experts and engineers.

Construction operations are estimated to accomplish in five years. The reservoir of the dam will have the capacity of 250 million cubic meters of water.

President Ahmadinejad arrived in Khoramabad, Lorestan, earlier today in a bid to inaugurate several development projects.

The other projects to be inaugurated in the Lorestan province by the Iranian president include a hospital and Boroujerd-Khoramabad highway.

Earlier this month, President Ahmadinejad inaugurated several development projects in the Southern Iranian city of Bandar Abbas.

President Ahmadinejad opened the construction project of a desalination plant in Bandar Abbas in Southern Iranian Hormuzgan province.

After being operational, the plant will change the Persian Gulf's water into fresh waters for drinking, industrial and agricultural purposes to be used by local residents.

Iran is a leading country in dam construction and many countries, including Sri Lanka, Syria, and Tajikistan as well as several African states, have entered either dam construction or consultation projects with Tehran.

"Ahmadinejad Inaugurates Construction Phase of Reservoir Dam in Western Iran", 25/05/2013, online at: http://english.farsnews.com/newstext.php?nn=9202243862

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❖ Damning new report on EU's inaction over Israel

The European Union had failed to hold the Israeli government to account over its continuing human rights violations against Palestinians, including the demolition of houses, water systems and critical infrastructure, a damning new report has found.

In a harsh assessment, a coalition of more than 80 aid and development organisations represented by the Association of International Development Agencies (AIDA) found that despite its tough talk, the EU had not effectively addressed the Israeli policies that create ‘‘unbearable conditions’’ for many Palestinians living in the West Bank.

A year ago, all 27 EU member countries committed to challenging the expansion of Israeli settlements and the increasing pace of the demolition of Palestinian property in an area of the West Bank known as ‘‘Area C’’.

Since then, the situation on the ground has only deteriorated, says Charles Silva, the chairman of AIDA and the country director of Action Against Hunger.

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Covering more than 60 per cent of the West Bank, Area C falls under full Israeli municipal and military control and is home to around 150,000 Palestinians, as well as approximately 325,000 Israelis who live in settlements that are considered illegal under international law.

In the last year, Israeli authorities destroyed 535 Palestinian-owned structures (including homes, emergency tents, essential infrastructure, water cisterns, and roads), displacing 784 people, more than half of them children, the report found.

In stark contrast, 613 housing have been built in Israeli settlements and tenders have been approved for at least 1,967 new settlement units — a four-fold increase since 2011, the report found.

Even the EU’s investment in the development of village plans to increase the pace of development in the area — seen as vital to improving the lives of Palestinians who live without the most basic of infrastructure such as running water and electricity — had been stymied by Israel, the AIDA report found.

Not one of the 32 European-funded village plans had been fully approved.

The harsh policies were designed to ‘‘force the displacement’’ of Palestinians living in the area, Mr Silva told Fairfax Media.

‘‘What concerns us the most is demolitions of homes, shelters and sensitive infrastructure like water and sanitation, as well as the forced transfer of populations,’’ he said.

‘‘We have seen what happens when communities are forcibly transferred ... they are removed and a few years later there is a settlement built there.’’

Israel’s settlement construction was high on the agenda during a visit to Jerusalem and Ramallah from the US Secretary of State, John Kerry, this week, along with his British counterpart, Foreign Secretary William Hague.

‘‘Our position on settlements and outposts ... is that we are opposed to it. We believe that it is not ... constructive in the context of our efforts to move forward,’’ Mr Kerry said on Friday after his fourth visit to the Holy Land to try to reinvigorate peace talks.

After visiting Khan Al-Ahmar, a Bedouin community in the sensitive ‘‘E1’’ area where Israel plans to construct a new settlement that would effectively isolate East Jerusalem from the West Bank, Mr Hague said ‘‘the situation on the ground continues to deteriorate’’.

‘‘The expansion of settlements, which are illegal under international law, continues to be a grave concern,’’ he said.

Indeed when the village Mr Hague visited needed to construct a school, parents, children and international donors were forced to build classrooms from car tires and mud in order to get around Israel’s harsh building restrictions, the AIDA report noted.

Even then, Israel issued demolition orders against Khan Al-Ahmar’s school — a familiar experience for villages in Area C, where there is a critical shortage of schools and young children are forced to walk long distances to attend class, facing settler and Israeli military violence, the report found.

After the release of the May 2012 EU Foreign Affairs Council Conclusions, there were hopes that ‘‘positive advances in EU policy could change an increasingly untenable situation’’, the report found.

Instead around 30 European-funded structures have been demolished and dozens more — such as tents, water cisterns and animal pens — are under threat of demolition.

‘‘The EU can take political action to ensure that structures do not get demolished,’’ Mr Silva said.

‘‘We have seen that when donors take decisive diplomatic action they can stop demolitions from happening ... and that Israel takes notice of unified and robust opposition..’’

Israel believes it has the right to build in the West Bank, which it calls Judea and Samaria, and does not accept that the settlements are illegal.

The human toll of these demolitions is enormous, disrupting children's education, separating family members, and causing the declining economic, physical and mental health, Mr Silva said.

Fairfax Media understands there is at least one Australian-funded structure that is under threat of demolition — a tent that provides shelter for a regular medical clinic in the village of Susiya in the south Hebron Hills.

The Australian government's overseas aid program, AusAID, did not respond to questions before publication deadline.

"Damning new report on EU's inaction over Israel", 25/05/2013, online at: http://www.smh.com.au/world/damning-new-report-on-eus-inaction-over-israel-20130525-2n3fq.html

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❖ Israeli expert says Syria hackers tried to access Haifa's water system in failed cyberattack

JERUSALEM — An Israeli security expert says Syrian hackers tried to break into the computers of the water system of the city of Haifa.

Speaking at a lecture on Saturday in the southern city of Beersheba, Yitzhak Ben Yisrael, Israel's former cyber security adviser, said that a group calling itself "The Syrian Electronic Army" had launched the failed attack two weeks ago.

In April, an assault in the name of the hacking group Anonymous mostly failed.

The attack took place just after Israel bombed a military complex near Damascus. Israel refuses to comment on the strike but officials at the time said Iranian missiles set for Hezbollah were hit. Syria has said that it would keep all options on the table for its response.

"Israeli expert says Syria hackers tried to access Haifa's water system in failed cyberattack", 25/05/2013, online at: http://www.washingtonpost.com/world/middle_east/israeli-official-says-syria-hackers-tried-to-access-haifas-water-system-in-failed-cyberattack/2013/05/25/8e67e1da-c549-11e2-9642-a56177f1cdf7_story.html

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❖ Better water management needed, says Phil-Israeli business group

The Philippines is reportedly wasting much water and if Israel could have 10 per cent of the wasted water, then that would bolster to a large extent Israel's food production.

This was aired by Israeli members of the Philippines-Israel Business Association of which inventor-agriculturist Gonzalo Catan Jr., executive vice president of Mapecon Green Charcoal Philippines Inc., and his wife, the former Nancy Russel, are members.

Catan said he finds it appalling that the country has so much water brought by strong rains but cannot have enough of it when the dry season comes resulting in heavy losses on agricultural products worth billions of pesos.

The country gets too much water during the rainy season but none enough for irrigation come summer, he claimed, adding the rain is intended for the farms, not for the sea.

This would not be the scenario if we had an effective water management program, he said, adding that with government assistance, farmers can put water impounding mini dams like what they have in some parts of the Cordillera region where small impounding dams mitigate the effects of drought on crops.

During the dry season, Cordillera has minimal damage on crops because of availability of water from impounding projects at strategic portions of river systems and small dams constructed with the help of government agencies.

This ensures continuing supply of irrigation water during drought.

Water Management, Catan said, is practiced in various countries.

When he visited Taiwan, for instance, on a 4-H Club sponsorship, he observed many water impounding dams. Every day he saw water tankers delivering water to different farms.

"Better water management needed, says Phil-Israeli business group", 24/05/2013, online at: http://www.eco-business.com/news/better-water-management-needed-says-phil-israeli-business-group/

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❖ State likely to ink pact with Israel for saline water crops

JAIPUR: Agriculture sector in the state is likely witness a boost as the government is set to sign an agreement with an Israeli company for transfer of technology that would help produce crops in salinated-soil irrigated with saline water. Some estimates suggest about 31% of the area in Rajasthan comes under saline groundwater and proven Israeli expertise in this field can spell boon for agriculture in the desert state.

As an outcome of chief minister's visit to Israel, the state will get technical expertise in several areas of modern agriculture including cultivation of crops with the use of saline water.

"We have seen production of several crops in the soil where salt content is high. In some areas even saline water is being used for the agriculture purposes. Since Rajasthan too faces similar situations, it is likely that same methods can be adopted here too," said senior official.

A visit of Israeli delegation is scheduled to reach the state soon where the modalities of the agreement will be finalised. The officials claimed that main focus is to increase agriculture productivity without putting pressure on fresh water.

There are other areas, where agreements can be signed, include horticulture. "There are practices like use of shade net, poly net and green house where there can be some collaborations," said another official.

The experts also showed interest in producing biomass energy from grass. Nearly 800 hectares of land would be required for the project for which state government has a request from FSCI at Anupgarh. If the project is implemented, it will be for the first time in the country where energy is produced through such a technology.

The state is already having an engagement with Israel for setting up a Centre of Excellence (CoE) for pomegranate in Bassi. In addition to Bassi, a centre dedicated for citrus is in the works at Kota, and in Jaislamer Israeli experts are working on prototypes of palm trees, with an aim to develop date growing in the state.

"State likely to ink pact with Israel for saline water crops", 20/05/2013, online at:

http://articles.timesofindia.indiatimes.com/2013-05-20/jaipur/39392149_1_saline-crops-agriculture-productivity

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❖ IBM Analytics Help Arad Group Manage Big Data for Water Meter Solutions

Analytics technology from IBM Research helps reduce water loss, cut costs, and gain insight into water consumption

HAIFA, Israel, May 20, 2013 /PRNewswire/ -- As water increasingly becomes one of the world's most precious resources, IBM (NYSE: IBM) scientists are working with Arad Group, a world leader in reliable water meter systems, to help water companies and utilities around the globe provide more effective and efficient management of drinking water through the use of Big Data and advanced analytics technology.

(Logo: http://photos.prnewswire.com/prnh/20090416/IBMLOGO)

Water use has increased at more than twice the rate of population growth in the last century.[1] This means cities, water companies and utilities are facing new challenges in providing a high quality supply of drinking water while keeping costs and energy use to a minimum. Many areas have already implemented automated meter infrastructures (AMI) to measure water consumption, providing highly accurate readings. However, employing advanced analytics on the collected data can provide an additional layer of insight, helping both customers and water utilities gain control of the water network and manage valuable water resources more effectively.

Big Data and analytics technology helps clients harness the explosion of data coming from a growing number of resources -- including data collected from utility meter readings and sensors. Arad Group is working with IBM to integrate the latest analytics algorithms into Arad's Dailog3G and City-Mind software.

This means utilities and water companies can benefit from early indications of abnormal consumption, reliable fault detection to determine when there is a leak or water waste, and optimized customer interactions. The IBM algorithms are based on machine learning, data mining, and statistical analysis techniques. For example, these advanced features allow Arad's City-Mind software to learn whether the usage is a pattern that occurred before, if it is appropriate for the current seasonal demand, and whether it coincides with what neighboring families are consuming.

Established more than 70 years ago, Arad Group processes water consumption data for hundreds of millions of records each day, based on tens of millions of meters in over 50 countries across the globe. That is an estimated 5 billion gallons of water measured each day – enough to fill more than

50,000 swimming pools. The Big Data solutions available from IBM were an ideal fit to boost the data management capabilities in the company's field-proven automated meter systems.

"Highly specialized analytics from IBM provide an additional layer of insight into our technology, allowing us to provide utilities and water companies worldwide with the most advanced solutions and services to reduce water costs, improve customer service, and provide higher efficiency of water usage," said Gabi Yankovitz, CEO of Arad Group.

Developed by IBM scientists in Israel, Big Data analytics identify problems and patterns and differentiate between issues such as leaks and excessive use of water that could result in the waste of millions of gallons of water. It also provides water utilities with insight and helps identify when low or no water use signals a problem.

Reducing the number of false alerts helps technicians know when meters need replacement or repair. For example, when a utility company observes water consumption that is zero or almost zero over a long period of time, a technician is often sent to examine the situation. While this could indicate a broken or faulty meter, it could also be the result of something as common as a family vacation—in which case sending a technician is a waste of time and money.

The IBM analytics tool increases the confidence of differentiating between meters that are truly faulty and false alarms. Field tests have already shown a potential reduction of 50 percent in the number of technician visits, saving valuable time and human resources to address conservation and water management.

"These insights have the potential to revolutionize data management for utilities and help them develop transform their business," said Oded Cohn, director of IBM Research in Haifa, Israel, where the smart water analytics were developed. "Analyzing customer data that is collected for billing purposes can serve as a crucial factor in saving valuable resources and improving service in many industries."

In the future, IBM expects predictive algorithms to help utilities better plan for demand and as a result better manage resources, such as tank levels, pressure, and pump scheduling.

Arad has embedded IBM analytics into their Dailog3G and CityMind Meter Data Management software to give their customers the benefits of higher quality water analysis services.

- Operational benefits – By reducing the number of false alerts, utilities will dramatically cut down the amount of unnecessary technician visits.

- Financial benefits – New reductions in non-revenue water and water loss will help water companies save money and yield proven return on investment.
- Customer care benefits – The advanced features can be extended to provide customers with email or SMS alerts when a leak is detected, and enable consumers to immediately view their consumption via mobile devices. With access to knowledge and useful metrics, consumers are better informed and require fewer calls to customer service.
- Environmental benefits – Faster detection of leaks means better conservation of water and reduced waste.

IBM has established the world's deepest portfolio of Big Data technologies and solutions, spanning services, software, research and hardware. IBM has committed more than $100 million in R&D on new Big Data technologies and garnered more than 500 analytics-related patents.

"IBM Analytics Help Arad Group Manage Big Data for Water Meter Solutions", 20/05/2013, online at: http://www.stockhouse.com/news/usreleasesdetail.aspx?n=8858156

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❖ 'Red-Dead project stakeholders to decide on next move in June'

AMMAN — Final drafts of the meta-study on the Red Sea-Dead Sea Water Conveyance Study Programme will be ready by the end of this month, a source at the Ministry of Water and Irrigation said on Sunday.

"Once the final drafts are ready, the three stakeholders will meet in June to review their results and decide on how to move forward with the project," the source, who requested anonymity because he is not authorised to speak to the press, told The Jordan Times.

The drafts, which are being prepared by the World Bank, will incorporate notes and reservations of experts and the public, following open sessions held in February at the three stakeholder countries — Jordan, Palestine and Israel.

The World Bank and the Ministry of Water and Irrigation organised in February two public consultation meetings in Amman and Aqaba, during which its experts announced the initial findings of the study programme.

The sessions gathered government officials and representatives of the World Bank and the companies that carried out the studies, along with activists and people interested in the project.

The $10 billion Red-Dead project, which the study programme refers to as the "identified option", is part of international efforts to save the Dead Sea that has been shrinking at the rate of one metre per year, largely due to the diversion of water from the Jordan River for agricultural and industrial use.

Launched in 2008, the study programme involved the preparation of five interrelated studies: a feasibility study, an environmental and social assessment, a study of alternatives, a Red Sea modelling study and a Dead Sea modelling study.

The reports concluded that the Red-Dead project is environmentally and economically feasible, but left two major concerns unanswered, including securing funding for the mega-multibillion-dollar scheme and identifying the impact of mixing brine rejected from the desalination of the Red Sea water with the unique mixture of the Dead Sea.

World Bank experts said reports indicate that the Red-Dead project is feasible economically and environmentally if it is "implemented properly", stressing that more studies need to be carried out in the future to measure the impact of mixing more than 400 million cubic metres of Red Sea water per year with the Dead Sea.

"'Red-Dead project stakeholders to decide on next move in June' – Jordan Times", 24/05/2013, online at: http://mideastenvironment.apps01.yorku.ca/?p=7260

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❖ Political Currents of Water Management: Challenges in Israel, Palestine, and Jordan

Posted by Kate Voss, UCCHM Water Policy Fellow. This is the fourth in a series of posts on our Water Diplomacy trip to Israel, Jordan, and Palestine inspired by our paper on 'Groundwater Depletion in the Middle East.' Other posts in the series: 1) Middle East Lost a Dead Sea Amount of Water in 7 Years, by Jay Famiglietti, 2) Parallel Worlds: Water Management in Israel and California, by UCCHM Policy Fellow Kate Voss, and 3)Desalinating Holy Waters with the Red Sea-Dead Sea Conveyance by UCCHM Graduate Fellow Sasha Richey.

The geopolitics of water management in the Middle East are primarily governed by the basic distribution of freshwater resources: there are vast differences between the naturally available water resources in the region. Layer to this the additional complexity of political stability, financial assets, and other socioeconomic factors, and the potential for improved transboundary water management in the Middle East becomes vastly complicated.

Simply, some nations have few water resources and a lack of capabilities to effectively manage their limited resources – their water security is at risk. Other nations, those with more technological and economic capacity to maximize their limited resources, have less at stake. Our recent trip to the Middle East in February underscored the well-known perspective that while Israel is making great advances in water management in the region, Palestine and Jordan are simply further behind.

The actions, decisions, and processes that led to this imbalance are complex. While Israel is currently a regional (and global) leader in water management strategies, the nation has faced many challenges with competing user-groups, made trade-offs between short-term economic investment versus long-term sustainability, and leveraged its economic and political clout to ensure that the financial assets were in hand to prioritize water management solutions.

Israel's path to achieve water management success was not simple or easy. At the same time, while Jordan and Palestine have historically encountered many struggles to manage their incredibly scarce water resources, which for Palestine includes the challenge of being land-locked (save its Dead Sea access), making autonomous desalination impossible. Water managers in Palestine and Jordan are

actively striving to improve the technological capacity and policy portfolio to optimize water use in the future.

Israel's Geopolitical Advantages

As described in our previous post in Water Currents, Israel is a regional and global leader in water management strategies. Israel has a diverse portfolio of water sources that includes an extensive supply of desalinated water and recycled wastewater and, consequently, puts less pressure on its limited, natural freshwater sources from surface water and groundwater. Israeli water managers have detailed knowledge and data about how much water they have, the precise source of that water, how much water is being used at any given moment, and specifically who is using that water and for what purpose. Every last drop of water is accounted for. There is a direct line of communication between the Water Authority and Mekorot, the national water utility company, which allows for the supply and demand as well as the pricing of water in Israel to be meticulously monitored and regulated. Israel's water management system is a well-oiled, robust machine.

Israel's detailed understanding of its water resources has allowed the nation to strategically invest in new technology and solutions that allow for more stable and sustainable water planning. Furthermore, the economic and political clout that Israel can leverage to finance such solutions is significant. Without investment, political commitment, and long-term planning, Israel's water success would not exist. In addition, Israel's geographic assets – mainly it's shoreline on the Mediterranean Sea – are essential to its success. The Mediterranean provides Israel an unlimited supply of water as long as the investment for infrastructure and energy costs for desalination are met. With new natural gas reserves discovered off the coast, once prohibitive energy expenses will now be obsolete. Armed with detailed knowledge about its water resources, new energy sources, and a strong sociopolitical backing, Israel's water future looks bright.

Tapping the Root of Jordan and Palestine's Struggle

Yet while Israel is leading the world in innovative water strategies, its neighbors, Palestine and Jordan, are clearly struggling. The core differences in the naturally available water resources as well as the social, economic, and political capability to address water resource management challenges was staggering. Before meeting with water management officials in Jordan, we had the opportunity to drive beyond the sprawl of Amman and into the surrounding desert.

The land outside the city boundaries is vast, dry, and desolate – there are no water resources to speak of. Communities that dot the highway are dependent on either dwindling groundwater reserves or weekly water tankers. The situation is dire. Without proactive efforts to find and transport new sources of water, many of these communities will probably cease to exist, leaving only the shadow of a civilization, akin to the ancient ruins of Petra.

Jordan's water managers are trying their best to develop innovative, long-term solutions to its water crisis. The pioneering solutions from Israel, such as desalination or wastewater recycling, may have a place in Jordan's water strategy, but even those options are difficult to acquire. Wastewater recycling necessitates steep financial investment, as does desalination, and these solutions often force Jordan to place its water security in the hands of another nation. Neither option is perfect. Consequently, long-distance conveyance alternatives from friendly neighbors, such as pumping groundwater from Saudi Arabia or tanking water from Turkey, do not seem obscure when forced to cope with a physical water scarcity emergency.

Jordan's dire water situation is not for lack of effort or vision, but mainly a lack of resources. Few natural water assets combined with a weak socioeconomic foundation makes investment in long-term water strategies incredibly difficult. In Palestine, the situation is similar. According to a World Bank report from 2009, "economic disparities between West Bank Gaza (WBG) and Israel are large – in 2005, Israel's Gross National Income (GNI) per capita was almost eighteen times the Palestinian GNI per capita. Water resources availability in the two neighbors is likewise far apart, with fresh water per capita in Israel is about four times that of WBG. Whereas Israel is known for efficient water infrastructure and management, Palestinians are struggling to attain the most basic level of infrastructure and services of a low income country." Add to the weak economy the fact that water rights in Palestine are directly linked to the broader conflict between Palestine and Israel, particularly in the West Bank, and water management in Palestine becomes more convoluted and challenging. Palestine's situation is analogous to Jordan's crisis, but with the added complexity of unclear sovereign rights to access and improve water resources.

Knowledge for a Sustainable Water Future

While visiting with water management officials in Israel, Palestine, and Jordan, we discussed the shared need for better monitoring — a need that the U.S. has in common with the Middle East — in order to have essential, baseline data for characterizing regional water availability. Based on this

information, water managers can develop short- and long-term strategies that are rooted in the reality of actual water availability and use. Without this information, any decisions or solutions are based on speculation, at best, and politics at worst.

As previously mentioned, Israel has a stronger foundation in data and monitoring than either of Palestine and Jordan. That said, water managers in Palestine and Jordan are actively making substantial efforts to lay the framework for an improved water monitoring system and are beginning to collect core data on their native resources. With clear evidence about their changing water availability, water managers will hold more power to leverage for the political and economic support they need to create actual change. In the future, our hope is that we atUCCHM will be able to support these efforts by providing training workshops based on our research, to provide the capacity for water managers in Israel, Palestine, and Jordan to utilize new advances in satellite data to monitor and manage their water.

With these fundamental data and information in hand, water managers in Palestine and Jordan can begin to close the gap on their investment needs and to implement their own innovative solutions to tackle their water challenges. For Israel, there are clear economic and political benefits for improved water management in Palestine and Jordan. With any luck, water management will come forward as an issue of mutual interest for regional cooperation. This will, of course, necessitate strong political, economic, and social backing from national, regional, and international leaders.

Throughout the Middle East we heard that "water cannot be removed from politics" in this region. Consequently, the broader political and socioeconomic intricacies must be incorporated into water management and vice versa. With this complexity in mind we can only hope that the political currents of the region lead to improved water management and that, collectively, Israel, Palestine, and Jordan can see the benefit of sustainable solutions for their shared water future.

"Political Currents of Water Management: Challenges in Israel, Palestine, and Jordan", 13/05/2013, online at: http://newswatch.nationalgeographic.com/2013/05/13/political-currents-of-water-management-challenges-in-israel-palestine-and-jordan/

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❖ Water Resources Management: Sector Results Profile - Managing Water Resources in a Changing Climate

The World Bank is one of the key external financiers in water resources management. Its funding has responded to the need to address both development and management issues by promoting integrated water resources planning and by tackling institutional reforms along with infrastructure upgrades in various sectors. These sectors include contributions to flood management, hydropower, agriculture water management, pollution control, transboundary water management, climate change adaptation and mitigation activities.

Water is one of the most basic human needs. With impacts on agriculture, education, energy, health, gender equity, and livelihood, water management underlies the most basic development challenges. Water is under unprecedented pressures as growing populations and economies demand more of it. Groundwater is being depleted faster than it is being replenished and worsening water quality degrades the environment and adds to costs. Access to safe sanitation and water is still out of reach for 2.5 billion and 780 million people, respectively, leading to thousands of lives lost daily and billions of dollars in economic losses annually, up to 7 percent of gross domestic product (GDP) in some countries. These statistics are expected to worsen because of climate change.

There is ample evidence that climate change will increase hydrologic variability, resulting in extreme weather events such as droughts floods, and major storms. It will continue to have a profound impact on economies, health, lives, and livelihoods. The poorest people will suffer most and are the least prepared.

Within this changing physical and socio-economic landscape, water practices of the past are no longer adequate. Countries cannot grow, nor can the world meet longer-term sustainability goals, or strengthen resilience to climate change without smart water management that takes into account decreasing water availability, quality and allocation.

Global water challenges include:

Food is by far the largest user of water, accounting for almost 70 percent of global withdrawals, 90 percent of global consumptive water use, and up to 95 percent of the withdrawals in developing

countries. By 2050, feeding a planet of 9 billion people will require a doubling of current water inputs to agriculture.

Over the next 20 years, cities in developing countries will double and so will their demand for water-intensive energy, such as for fuel extraction, cooling water, and hydropower.

In the past 30 years, economic losses from natural disasters have nearly tripled. Low-income and middle-income countries alone mourned 2.3 million people and suffered a loss of US$1.2 trillion due to damage.

Extreme weather due to the Earth's changing climate will worsen the situation by increasing water stress. Experts estimate that by 2080, 43 to 50 percent of the global population will be living in water-scarce countries, compared to 28 percent today. A new World Bank report suggests that in a 4°Celsius warmer world, water stress will increase in areas around the world. The roughly 1 billion people living in monsoonal basins and the 500 million people living in deltas are especially vulnerable.

At least 2.5 billion and 780 million people remain without access to sanitation and safe water, respectively. With projections of potential decreases in water availability, these statistics could worsen.

Solution

The World Bank is uniquely positioned to play a key role by working across sectors, countries and with institutions and diverse stakeholders to help countries build resilience to climate change through water resources management. The Bank is one of the key providers of knowledge and technical assistance on water. It is the largest multilateral donor for water development with a water portfolio accounting for 15 percent of its overall portfolio. Currently, it is defining a strategic vision for water that builds on the directions outlined in the World Bank 2003 Water Strategy and its 2010 mid-cycle review.

Results

On-the-ground results related to activities financed through the International Development Association (IDA) and International Bank for Reconstruction and Development (IBRD) include the following critical areas:

Policy and legal framework: A large proportion of World Bank-funded water resources management projects include institutional and/or policy components. In Tanzania, for example, IDA funding supported the development of a National Water Policy, which was adopted by the Cabinet in 2002 and which subsequently formed the basis for a National Water Sector Development Strategy. A follow up project helped the country prepare integrated river and lake basin management and development plans, including the sustainable exploitation of a recently discovered deep aquifer with potential to supply Dar es Salaam. In Morocco, the IBRD-financed Water Sector Development Policy Loan (US$100 million) in 2007 supported comprehensive water reform to address legislative, financing and planning gaps in the water sector. This work led to a reform program in which water-demand management, conservation and resource management became new thrusts in Morocco's water strategy.

Institutions and capacity building: Institutions in water resources management span the range of local, basin, national and international levels. With the support of IBRD, Colombia (US$800 million total) introduced a number of reforms for improved environmental management, including water resources. The government approved a national policy for water, and created a Water Resources Group in the Ministry of Environment, Housing, and Territorial Development. This is the first centralized group responsible for planning and budgeting activities related to water resources management in the country. At least 25 municipalities adopted watershed management plans in areas of water scarcity in order to manage and monitor valuable national resources better. In Yemen, the IDA-financed Sana'a Basin Water Management Project (2003-2010, US$24 million) was the first initiative in the country to address the crisis in groundwater depletion by reducing agricultural groundwater use of about 4,000 hectares (ha) of irrigated area and increasing groundwater recharge, which saved more than 15 million cubic meters of water annually extracted from the local aquifer.

Hydropower: Hydropower is currently the world's largest source of affordable renewable low-carbon energy and offers a hedge against energy price fluctuations. The IBRD-funded Vietnam Trung Son Hydropower Project (US$330 million) approved in FY11 aims to supply least-cost electric power in

a safe and environmentally sustainable way. At completion, the project is expected to produce an average of 1,019 gigawatt hour (GWh) of electricity a year, help control annual flooding in the river valley downstream, and supplement water supplies for agricultural use during the dry season. In FY10, IDA contributed US$85 million in additional financing for the Felou Hydroelectric Project (WAPP) in Senegal, Mauritania, Guinea and Mali as a means of increasing access to stable, reliable, and affordable electricity to the citizens of the Economic Community of West African States. The project will augment the supply of low cost hydroelectricity by generating an additional 60 megawatt and make available 95 percent of the power generated.

Agriculture and Food Security: In many low-income countries, agriculture employs the largest share of people and is therefore a critical sector for achieving targets for global poverty reduction. The On-Farm Irrigation Project in the Kyrgyz Republic (2000-2013, US$20 million) was designed to increase crop production through reliable and sustainable water distribution in formerly state and collective farms across seven administrative regions. A core activity has been strengthening services to about 450 water users associations, including training and support. Over 50,000 people were trained, and approximately 450 user associations, with 166,000 members, were formally registered to manage irrigation areas covering 710,000 hectares, or about 70 percent of the country's irrigated land. The IBRD-funded Peru Irrigation Subsector Project (FY97, US$85 million) raised agricultural production and productivity by enhancing the sustainability and efficiency of existing public irrigation systems. As a result of the project, water conveyance efficiency increased on average about 55-68 percent in improved irrigation systems and about 190,000 new water rights were formalized. The project benefitted 135,000 farm families over a total irrigated area of 435,000 hectares, created 6,400 new jobs, and generally increased agricultural productivity. Yields per hectare (ha) were raised by 20-50 percent in on-farm improvement areas.

Flood Protection and Environmental and Social Benefits: The Bank follows an integrated flood management agenda which includes well-functioning early warning systems, infrastructure, and institutional arrangements for coordinated action to address increased variability and changes to runoff and flooding patterns. In Yemen, IDA financing (US$80 million total) provided vital flood control structures in and around the city of Taiz. By the project's closing in 2008, major parts of Taiz had been transformed into livable and flash flood-secure neighborhoods. The project contributed to an increase in land values of more than 100 percent and a reduction in damages to residential

properties and businesses from 160 and 660 per year to zero. Flood structure and complementary wastewater connections helped to improve health and sanitary conditions by reducing the flow of wastewater into wadis (riverbeds), which had become breeding grounds for malaria-carrying mosquitoes. In Morocco, as a result of safeguard diagnostic reviews and environmental and social assessments conducted under the Oum Er Rbia Sanitation Project, there is now increased transparency and better public participation and consultation in addressing environmental and social safeguards around water sector projects in the country. In China, the Hai Basin Integrated Water and Environment Management Project, completed in 2011, promoted an integrated approach to water resource management and pollution control and contributed to the restoration and protection of marine environments, ecosystems, and biodiversity in the Bohai Sea. It was implemented in 16 counties in northern China, benefitting over 20 million people. Better water use and pollution control in the Basin has improved resident health and living standards. Farmers also benefited from more efficient consumption-based irrigation management, which increased water productivity, crop yields, and incomes.

Trans-boundary River Management: With 263 international rivers in the world, supporting their cooperative management is an important contribution for fostering gains from water resources use and thus contributing to poverty alleviation. The Bank supports the joint management of transboundary watercourses in various ways, especially in Africa. In the Senegal River Basin, IDA-financed projects have contributed to more effective management of the resources of the Senegal River and to the inclusion of Guinea into the organization responsible for this management, allowing integrated water resources management in the entire basin. In the Mekong River Basin, the Bank is supporting riparian states such as Cambodia and the Lao People's Democratic Republic in strengthening their integrated water resource management and disaster risk management capacities, cooperating closely with the Mekong River Commission that cooperatively manages the basin.

Management Across Sectors: Frequently, water resources management projects involve more than one sector and combine investment initiatives entailing both institutional development and capacity-building. To integrate water management into country programs and development plans, the World Bank has prepared Country Water Resource Assistance Strategies (CWRAS). The India and Pakistan CRWASs laid the groundwork for major increases in water lending. In Ethiopia, the CWRAS helped to show the links among sectors using water and the economic impacts of hydrological variability.

This finding led to some realignment of the Bank's portfolio, and the identification of investment priorities, including multipurpose hydraulic infrastructure development, water supply and sanitation, and watershed management.

Strengthening the Quality and Impact of Investment Lending: The World Bank strengthens the quality of its water projects for more results through additional support from Global Partnership Programs. The Bank'sWater Partnership Program (WPP), a multi-donor trust fund, contributes to the Bank's efforts to reduce poverty by promoting improvements in the management of water resources and the delivery of water services to boost the results of Bank-financed projects and by mainstreaming of water services and management in climate-resilient, green growth. The program supports more than 40 percent of all analytical work in water across all regions and water sub-sectors and it is maximizing and influencing almost US$11.5 billion in Bank financing. To respond to the complex water challenges of the 21st century and address issues such as climate change and the food-energy-water nexus, more than half of WPP financing supports water resources management work. A market-scoping study funded by the WPP is having a direct impact on the Bank-funded Karnataka Municipal Energy Project in India. The study identified energy efficiency improvements in India's low-efficiency urban water sector. The Karnataka Municipal Water Energy Project rolled out pilot projects in six municipalities to replace old pumps with more energy efficient models. The cost of the program was about US$800,000 and is expected to lower operating costs by between 20 and 25 percent and save 16 million kilowatt hour per year. Over 10 years, the pilot will offset CO2 emissions by about 135,000 tons.

Bank Group Contribution

The World Bank funding for water resources management amounted to about US$8.0 billion across projects approved during fiscal years 2002-2012. In FY11 as well as FY12, World Bank funding for water resources management amounted to US$1.2 billion.

Partners

The Bank collaborates with partners to support innovation in integrated water resources management. Given the broad reach of water resources management needs and initiatives, this type of collaboration has been significant.

The Water Partnership Program (WPP) is a multi-donor trust fund supported by the United Kingdom, the Netherlands and Denmark. The fund aims to enhance the World Bank's efforts to reduce poverty through improved water resources management and water service delivery. It finances about 40 percent of all Bank analytical work on water and it is currently supporting activities in 55 countries. The WPP's funding has particular emphasis on Africa, gender equality, poverty reduction, as well as the quality of lending operations. The program has entered its second phase, which is largest in size and scope.

The South Asia Water Initiative (SAWI) is a multi-donor trust fund launched in 2008 with the goal to strengthen water resources management within and between the countries of South Asia, with an emphasis on regional cooperation and adaptation to climate change. Donors have to date committed a total of US$9.5 million of which US$5.5 million has already been transferred to the World Bank.

In March 2011, the World Bank signed a Memorandum of Understanding with the United States government to expand and enhance collaboration in the water sector. The Bank is working in close cooperation with 16 U.S. agencies to support developing countries in managing global water crises, such as the lack of safe drinking water and sanitation, diminishing aquifers, drought, flooding, and climate change impacts.

Moving Forward

Continuous Bank leadership and strengthened support will be critical to secure the above achievements and increase the benefits to poverty alleviation and sustainable development. The World Bank is currently developing a new vision for water that strengthens the water practice to deliver on the bold leadership aspirations and meet changing client need. The vision places water at the center of helping people, economies and ecosystems thrive and thus contributing to a world free of poverty. Moving forward the Bank will:

Strengthen efforts to address climate variability in Bank-financed projects through improved storage, flood control, and emergency response preparedness.

Devote more resources to exploring and strengthening the linkages between water and other sectors such as energy, agriculture and the environment and to ensuring that water considerations are included in country sectoral planning.

Increase support for hydropower and seek more opportunities to improve efficiency of water supply systems.

Ensure that the food security agenda considers irrigation and work with clients to improve water efficiency of existing irrigation schemes.

Strengthen the use and supply of data for decision making and dialogue between countries, and facilitate the integration of technologies for more reliable information.

Continue its strong support to institutional reform and capacity building of relevant organizations, and strengthen global water partnerships for lasting impact.

Beneficiaries

It is something Arwa Mohamed remembers well. When it rained, the floodwaters in the streets in her Taiz neighborhood in Yemen were so high people were stuck for days. "When it would rain and the kids were in school, we were afraid, because the floods would come and cut off the streets, and whoever was home – the mothers – would wait by the windows to see their children coming, and scream out 'don't try to cross, it is dangerous.' The flood once even swept away an old woman and her grandchild." Now, Arwa ways, her neighborhood is safe. The rain water still comes, but now travel underneath her neighborhood, instead of through it, by way of a covered channel. "Now we have these nicely paved streets, and we can cross even during floods, but before, we were completely cut from life when it rained."

For Amin Jibari, a grocer, the project has finally brought security to his basement home. "After they built the channel and a protection wall, the floods don't come here. We are relaxed. No flooding!" Amin says that since the construction of a covered channel nearby, he and his family of five are no longer in danger.

"Water Resources Management: Sector Results Profile -Managing Water Resources in a Changing Climate", 15/05/2013, online at: http://www.worldbank.org/en/results/2013/04/15/water-resources-management-results-profile

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❖ 'Save rivers'

The Northeast Dialogue Forum, a conclave of human rights and indigenous people's organisations based in India's north-east, has sought intervention of India, China and Bangladesh to prevent adverse impact of development projects on the region's water sources.

The forum demanded setting up of an independent international commission on water and developing a mechanism to share water among China/Tibet, India/North Eastern states and Bangladesh by respecting the right of the Indigenous people in the North East region.

After a two-day long deliberation on water sharing between the three countries and dam construction by India, China and Bangladesh on major rivers, at Dimpaur in Northeast India's state of Nagaland, the forum on Monday dispatched three separate letters to the prime ministers of these countries.

In a letter to the prime minister of Bangladesh Sheikh Hasina, the forum called for a proactive role by her country for a "collective and consensual decision making processes" for all stakeholders on all trans-boundary rivers.

It also drew her attention to the impacts of arbitrary interventions in rivers in upper riparian countries and urged her to desist from compromises for political or economic gains.

India's decision to go for Rs 80 billion mega dam on Barak River at Tipaimukh in Manipur raised environment and ecological concern both in Bangladesh and north eastern region.

But Prime Minister Hasina says she has been assured by her Indian counterpart Manmohan Singh that India "would not do anything harmful to Bangladesh and that future steps would be taken on the basis of an understanding between the two countries."

One of the participants in the conclave told bdnews24.com over phone that the impact of Tipaimukh dam on Bangladesh would be severe. "A parallel can be drawn with India's building of the Farakka Barrage on the Ganges River shared by the two countries," he said.

In 1975, after years of objections from people in Bangladesh, the Bangladesh government agreed to a trial run of the Farakka Barrage. Once the water began flowing, India extended the trial and the power plant is still operating.

Critics in Bangladesh say their country now receives less water from the Ganges and that farming, fishing and logging have suffered.

Secretary, Centre for Research and Advocacy, Manipur, Jiten Yumnam in a statement, made available to bdnews24.com, stated that they were concerned with the aggressive development interventions on water bodies in the region, such as the construction of series of mega dams over Brahmaputra River by the Governments of India and China, with "minimal consideration" of the rights and relation of indigenous peoples to these rivers and without their participation and free, prior and informed consent.

"We, the representatives of the indigenous people's organizations of India's North East concerned over the issue of water and adverse impacts of mega development processes, such as mega dam constructions, mining in the region, affirm that water is life and inherent source of our physical, spiritual, cultural, economic and political survival."

"We further affirm our right to use, manage and control all water bodies and its sources like rivers, wetlands, groundwater, glaciers, forests etc in India's northeast, which is crucial for sustaining our agriculture, food, rich biodiversity, cultures and identity as peoples," the forum said in a statement, christened the 'Dimapur declaration'.

Prime Minister Manmohan Singh during a meeting with his Chinese counterpart Li Keqiang voiced India's concern over construction of mega dams by China on Brahmaputra River. Assam chief minister Tarun Gogoi in a statement on Monday welcomed Singh's initiative and said it would allay the apprehension of people of Northeast over the Chinese dam-construction spree.

Representatives of the dialogue forum, however, said unless the three countries make a coordinated effort it would be difficult to protect the water sources.

"The increasing intrusion of international financial institutions in directing policies and projects on the use and management of waters in our region, only led to increasing privatization and corporatisation of our water bodies," the Dimapur Declaration stated.

The forum urged India and China to take no decision on intervention on Water bodies, especially trans-boundary rivers passing through India's NE such as Brahmaputra and Barak without giving 'due recognition of the rights, rightful participation and free, prior and informed consent of all indigenous peoples in the region'.

"Implement the recommendations of the World Commission on Dams, 2000 in all decision making processes on mega dams' construction over Brahmaputra (Tsangpo) River," it further demanded of India and China.

'Save rivers', 20/05/2013, online at: http://bdnews24.com/bangladesh/2013/05/20/save-rivers

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❖ China approves construction of world's tallest dam despite environmental impacts

China has granted a green light to the world's tallest hydroelectric dam despite acknowledging that the project would have significant environmental implications.

According to state news agency Xinhua, the Ministry of Environmental Protection has approved construction plans of the 2-gigawatt Shuangjiangkou hydropower plant, which will have an annual power generation of as much as 7.93 billion kilowatt-hours upon completion.

Standing 314 meters (1,030 feet) tall, the dam will be located on the Dadu River in southwestern Sichuan province.

The Ministry noted in an official statement that the project will affect the spawning and movement of rare fish species, as well as endangered plants, including the Chinese yew, which is under priority state protection.

It then suggested countermeasures to help mitigate these impacts, including the protection of fish habitats in tributaries, making of fish ladders and increased fish breeding and releasing, as well as the construction of seed banks for rare plants and their artificial cultivation.

Additionally, waste treatment facilities will be built to protect the environment while local residents are relocated

The 24.68 billion Yuan ($4.02 billion) dam is expected to edge out the 185 meter-high Three Gorges Dam, which is by far the largest operating hydroelectric plant in the country and the "world's most powerful hydroelectric project" with a 22 GW installed capacity.

It will also surpass today's titleholder as the world's tallest hydroelectric dam, the 300 meter-high Nurek dam in Tajikistan. The world's second-tallest dam, the 292 meter-high Xiaowan dam on the Lancang (Mekong) river, is also found in China.

To be constructed over 10 years by a subsidiary of state power firm Guodian Group, a Reuters report stated the Chinese government committed to speed up construction of dams in the 2011 to 2015 period after slowing it down following the completion of the Three Gorges project in 2005. –
EcoSeed Staff

"China approves construction of world's tallest dam despite environmental impacts", 24/05/2013, online at: http://www.ecoseed.org/business/asia/16505-china-approves-construction-of-world-s-tallest-dam-despite-environmental-impacts

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❖ Energy in China: Construction of Biggest Hydropower Dam Yet to Come

Reuters reports that China's environmental ministry has okayed the construction of a new hydroelectric dam on the Dadu River in the Sichuan province, which when completed will be the country's largest.

China's energy mix was 9.4 percent renewable as of 2011, and the Sichuan project is part of the country's effort to boost itself to 15 percent by 2020. Hydroelectric power is anticipated to make up most of that increase.

The environmental ministry acknowledged that the project is massive enough to damage the local ecology, negatively effecting certain rare fish species and plant life. The dam's developers have promised to try and offset those effects with "counter-measures," and the project still requires the approval of China's ruling cabinet.

To be built over 10 years by a subsidiary of state power firm Guodian Group, it is expected to cost 24.68 billion yuan ($4.02 billion) in investment.

The ministry, in a statement issued late on Tuesday, said an environmental impact assessment had acknowledged that the project would have a negative impact on rare fish and flora and affect protected local nature reserves.

Developers, it said, had pledged to take "counter-measures" to mitigate the effects.

Right now the title for China's tallest dam goes to the Xiaowan project, at 292 meters, while the tallest dam in the world is currently Tajikistan's Nurek dam, at 300 meters. The Sichuan dam will top 314 meters when all is said and done.

China has been at the forefront of hydroelectric development for a while now, with an enormous number of dams either constructed, in the works, or in the planning stages. Even individual projects can be of tremendous scale, providing in at least one instance an electrical capacity equal to nearly half of Britain's entire national grid, and preventing 200 metric tons of carbon emissions each year. As of 2010, worldwide hydroelectric capacity was 850 to 900 gigawatts, meaning about one-fifth of the world's electricity — and half the electricity for almost two thirds of the world's countries —

comes courtesy of hydropower. Though that use varies widely: the United States and Europe have developed 70 and 75 percent of their hydroelectric potential, while Africa has only taken advantage of 7 percent.

At the same time, the large bodies of water and massive landscape alterations that are part and parcel of large dam projects mean hydroelectricity can come with unusually significant downsides. The construction of the Three Gorges Dam in China's Hubei province, for example, caused significant ecological damage, increased the risk of landslides, flooded a number of archeological and cultural sites, and displaced 1.3 million people. And the constricted water flow can hurt downstream populations that rely on the rivers for their fresh water supplies.

Meanwhile, climate change itself is also making hydropower less reliable, as altering weather patterns dry up some river flows, boost others, and generally make the future availability of water flows more difficult to predict.

One answer to those challenges could be small scale hydropower. Studies suggest there's as much as 30 gigawatts of unused potential for such projects in the United States. These set-ups generally provide 10 kilowatts to 30 megawatts a piece, and don't require damming rivers. (Or they can be built into already existing dams, the vast majority of which are not hydroelectric.) Unfortunately, regulatory red tape is in many ways the major hurdle to taking advantage of small scale hydro.

"Energy in China: Construction of Biggest Hydropower Dam Yet to Come", 20/05/2013, online at: http://theenergycollective.com/josephromm/226701/china-just-endorsed-construction-its-biggest-hydropower-dam-yet

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❖ Gogoi thanks PM for taking up dam issue with Chinese premier

Assam CM had voiced his serious concerns over water flows of trans-border rivers

Assam chief minister Tarun Gogoi has thanked Prime MinisterManmohan Singh for taking up the matter of construction of dams by China on the Brahmaputra river with his Chinese counterpart Li Keqiang during the latter's recent visit to New Delhi.

Gogoi said he had voiced his serious concerns over water flows of trans-border rivers, especially in view of construction of three additional dams approved by China on the Brahmaputra river during his recent meetings with the Singh in New Delhi. Gogoi said he was happy that the prime minister had taken up the matter in right earnest with his counterpart and also with the Chinese President Xi Jinping on the sidelines of Durban BRICS summit in March this year.

During his meetings with his Chinese premier in national capital, Singh had raised the issue of India's concern over the construction of dams in Tiber region and that the dams would affect water flow to India. However, China maintained that the three dam projects at Dagu, Jiacha and Jiexu in Tibet region were just run-off-the-river project that would not hold water. India is also concerned with the construction of dam projects like Zangmu , Lengda, Zhongda and Langzhen.

"Prime minister's bold stance on the dam issue would allay the apprehensions from the minds of the people of the state in particular and the North-East region as a whole," said Gogoi.

"Gogoi thanks PM for taking up dam issue with Chinese premier", 22/05/2013, online at: http://www.business-standard.com/article/current-affairs/gogoi-thanks-pm-for-taking-up-dam-issue-with-chinese-premier-113052201135_1.html

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❖ 'Indigenous knowledge more helpful in water conservation'

On the International Day for Biological Diversity, Rajendra Singh, known as the 'Waterman of India' said that the present education system needs to step out from the confines of textbooks and adopt indigenous knowledge systems for water conservation.

Citing example of Rajasthan farmers, where he and his NGO Tarun Bharat Sangh (TBS) has brought water to over a thousand villages, Singh said "adopting indigenous practices was the key to success in Rajasthan.

"Neither I nor any farmer had any professional knowledge about the water systems. We observed the Earth and took decisions on the basis of our observations and indigenous knowledge".

Singh was speaking at a conference in Lucknow-based Ram Manohar Lohia National Law University to mark the International Day for Biological Diversity, with focus on water and biodiversity.

"'Indigenous knowledge more helpful in water conservation' ", 23/05/2013, online at: http://www.indianexpress.com/news/indigenous-knowledge-more-helpful-in-water-conservation/1119445/

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❖ Shrinking Ganga Continues To Battle Pollution

VARANASI: Even as the world gets set to mark the International Day for Biological Diversity (IDB) on May 22, the Ganga continues to be threatened by pollution.
The United Nations had declared May 22 as the International Day for Biological Diversity (IDB) to increase understanding and awareness of biodiversity issues. Water is essential for life as no living being on the planet can survive without it. It is a prerequisite for human health and well-being as well as for the preservation of environment. The theme 'Water and biodiversity' was chosen to coincide with the United Nations designation of 2013 as the International Year of Water Cooperation.

The polluting factors like municipal and industrial waste with toxic substances are damaging the river and its aquatic life, maintains BD Tripathi, noted environmental scientist at BHU and member of National Ganga River Basin Authority (NGRBA). The decline in sight of Gangetic dolphin that is the indicator of clean water is an example, he adds. According to him, the increasing discharge of industrial effluents and other harmful matters are causing harm to the critically endangered species.

However, the census conducted in 2012 shoed an increase in the number of Gangetic dolphins in Uttar Pradesh from 600 in 2005 to 671. It may be mentioned here that a three-day census of the Gangetic river dolphins was held by the state forest department, WWF-India and 18 other NGOs. Once present in tens of thousands, the dolphin had dwindled abysmally to less than 2,000 during the last century owing to killing, habitat fragmentation by dams and barrages, indiscriminate fishing and pollution.

It is painful to see the deteriorating health of Ganga whose middle stretch from Haridwar to Varanasi is biologically very productive. In a study conducted under Ganga River Basin Environment Management Plan by a consortium of seven Indian Institute of Technology (IITs), it has been found that the middle Ganga is biologically very productive due to the presence of higher concentration of nutrients, warm water and meandering river, flood plains and reduced flow velocities.

The consortium of IITs has been given the responsibility of preparing Ganga River Basin: Environment Management Plan (GRB EMP) by the ministry of environment and forests. Memorandum of Agreement (MoA) was signed between seven IITs including Bombay, Delhi,

Guwahati, Kanpur, Kharagpur, Madras and Roorkee. In the study, the entire stretch of Ganga is viewed into three segments including upper Ganga (294 km) from Gaumukh to Haridwar, middle Ganga (1082 km) from Haridwar to Varanasi and lower Ganga (1134 km) from Varanasi to Ganga Sagar.

The study on 'Floral and faunal diversity in middle Ganga segment from Haridwar to Varanasi' suggests that it supports 356 species of phytoplankton, 114 species of periphyton, 58 species of zooplankton, 51 families of insects, eight families of molluscs, assorted group of annelids as zoobenthos and 126 species of fish. Higher vertebrates are also common. Dolphin is also a characteristic and indicator species of the middle Ganga.

But, the study conducted by the Japan International Cooperation Agency (JICA) suggests that the Ganga water is highly polluted between Kanpur and Varanasi. The bathing standard of water, as per the objective of the Ganga Action Plan (GAP), suggests that there should be dissolved oxygen (DO) not less than 5 mg/litre, bio-chemical oxygen demand (BOD) not more than 3 mg/litre, bacterial load/coliform count not more than 10,000 per ml and faecal coliform, not more than 2,500 per 100 ml. But, according to the UPPCB report, the total coliform is not at the desired level in both upstream and downstream in Varanasi.

"In such a situation, proper policy should be adopted to increase water quantity and maintenance of ecological flow, rainwater harvesting, groundwater recharging, natural cleaning, extraction of water directly from the river and ground water and land use near banks," says Tripathi.

Uttar Pradesh State Biodiversity Board is organising activities in Lucknow to mark the International Day for Biological Diversity (IDB).

"Shrinking Ganga Continues To Battle Pollution", 20/05/2013, online at: http://articles.timesofindia.indiatimes.com/2013-05-20/varanasi/39391600_1_ganga-river-basin-authority-ganga-continues-bd-tripathi

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❖ UAE Minister of Environment and Water to open Middle East Smart Landscape Summit

The UAE Minister of Environment and Water His Excellency Dr. Rashid Ahmad Bin Fahadis confirmed for the ribbon-cutting ceremony at the inauguration of the Middle East Smart Landscape Summit taking place on 27-28 May at the Jumeirah at Etihad Towers in Abu Dhabi, under the patronage of Municipality of Abu Dhabi City (ADM).

Over 400 high-profile delegates have registered to attend the region's leading landscape event including government authorities, landscape architects, urban planners, property developers, environmental specialists and theGCC Specialized Team of City Beautification who are working to enhance the co-operation between the regional countries within the field.

The 2-day Summit will see presentations given from over 20 regional and international experts including an update of the Abu Dhabi Irrigation Master Plan by Dr. Amar Jarar, Irrigation Expert at ADM, and the Abu Dhabi Sustainable Public Lighting Strategy by Martin Valentine, Lighting Expert at ADM.From Dubai Municipality Ahmed Abdul Karim, Director of Public Parks and Horticulture Department, will be giving a speech that spotlights the accumulated experience of greening and horticulture to ensure sustainability in all natural and urban areas in the Emirate of Dubai.

International presentations will also be of particular interest to delegates eager to learn of successful urban landscaping projects that have increased the quality of life for residents and visitors in large cities. Kenneth Er, Chief Operating Officer at Gardens by the Bay in Singapore will be showcasing the award winning attraction that is located on reclaimed land in Singapore's new downtown Marina Bay. London-based ecologist, environmentalist and masterplanner Gary Grant will be speaking about green roofs and living walls in hot and dry climates as part of bringing an ecosystem approach to urban landscape design.

The continued growth of the MENA region and quick recovery from the GFC has intensified demand for landscape products and services. The planned spend on major projects including theme parks and other tourist attracts across the region is $3 trillion, and a fresh investment in the UAE construction industry is expected to provide the landscape sector around $3.8bn worth of new projects this year.

"With an increased focus by municipalities and property developers on sustainability, landscape architects and product manufacturers have the challenge of formulating designs and technologies that are smart, visually appealing and cost effective, with a view to protect natural resources", said Jo Ann Jain, Director at event organizer Expotrade Global.

"This has created a strong need for education and the sharing of best practice, and committed professionals are using the Summit as a platform for connecting and contributing visions and

opportunities for the advancement of the dynamic landscape industry", added Jain.

Smart landscape technologies are being used to increase sustainability across the MENA, and an exhibition lounge at the Summit will see 25quality suppliers from UAE, Lebanon, Portugal, Canada, USA, France, Australia and South Africa showcasing their cutting-edge solutions. Gold Sponsors include Desert Group, Convic, Fontana Fountains and Silver Sponsors include Crystal and Gulf Perlite.

Other presentersinclude Talal Al Ansari, Planning Manager at Abu Dhabi Urban Planning Council, Hana Ameen Al Zarooni, Head of Nurseries at Dubai Municipality, Geoff Turnbull, Senior Design Manager at ALDAR Properties PJSC, Holley Chant, Executive Director of Corporate Sustainability at KEO International Consultants, Michael Holm, Senior Consultant at HOK and Ali Shehail, Landscape Consultant at Nakheel.

Expotrade Global is a conference and event organizer based in Melbourne, Australia, with a regional office in Dubai, UAE. Working alongside government authorities and industry organizations for close to 10 years Expotrade has delivered some of the most high-profile events in the infrastructure, IT, mining and resources, sustainability, banking and finance, lighting and energy sectors.

"UAE Minister of Environment and Water to open Middle East Smart Landscape Summit", 23/05/2013, online at: http://www.ameinfo.com/uae-minister-environment-water-middle-east-342791

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❖ UN urges collective efforts to achieve 'water secure world' on Day for Biological Diversity

22 May 2013 – Unless greater efforts are made to reverse current trends, the world will run out of freshwater, the United Nations said today marking the International Day for Biological Diversity and urging stronger scientific alliances to understand and protect natural resources.

"We live in an increasingly water insecure world where demand often outstrips supply and where water quality often fails to meet minimum standards. Under current trends, future demands for water will not be met," Mr. Ban said in his message for the Day.

"Although seemingly abundant, only a tiny amount of the water on our planet is easily available as freshwater," he added.

Of the total volume of water on Earth, freshwater makes up around 35 million km3, or about 2.5 per cent of the total volume, according to the UN Environment Programme (UNEP).

Water scarcity affects almost every continent and more than 40 per cent of the people on our planet, the UN Food and Agricultural Organization (FAO) said. With current trends, 1.8 billion people will be living in countries or regions with absolute water scarcity by 2025, and two-thirds of the world's population could be living under water stressed conditions.

"Biodiversity and the ecosystem services it provides are central to achieving the vision of a water secure world," Mr. Ban said, noting the mutually supporting roles of forests, wetlands and soil biodiversity.

"Integrating nature-based solutions into urban planning can also help us build better water futures for cities, where water stresses may be especially acute given the rapid pace of urbanization," he added.

This year's theme for the Day is 'Water and Biodiversity', which coincides with the UN designation of 2013 as International Year of Water Cooperation. The Year is being coordinated by UNESCO on behalf of UN-Water.

"This is an opportunity for us to join efforts to enhance fair and innovative water management arrangements and to share best practices for the preservation of wetlands – streams, lakes, coasts and marine zones – that play a substantial role in ensuring biodiversity," Irina Bokova, head of UNESCO, said in her message for the Day.

Ms. Bokova and Mr. Ban noted the importance of strong scientific alliances as part of a global effort to protect natural resources. They encouraged parties to the Convention on Biological Diversity who have not already done so to ratify the Nagoya Protocol on the fair and equitable sharing of the benefits arising out of the utilization of genetic resources. Adopted in 2010, the Nagoya Protocol also sets a goal of cutting the current extinction rate by half or more by 2020.

Recognizing the importance of biodiversity, the UN General Assembly encouraged the use of the Convention on Biological Diversity's Strategic Plan for Biodiversity 2011-2020 and its Aichi Targets in the elaboration of the post-2015 development agenda. Last year's Conference on Sustainable Development (Rio+20) also recognized the role of ecosystems in maintaining water quantity and quality.

He stressed that a focus on water and biodiversity is particularly important now as the international community strives to hasten progress towards the eight anti-poverty targets known as the Millennium Development Goals by the 2015 deadline and to plan a new set of development targets.

"As the international community strives to accelerate its efforts to achieve the Millennium Development Goals and define a post-2015 agenda, including a set of goals for sustainable development, water and biodiversity are important streams in the discussion," he noted.

In a press conference in New York, Braulio de Souza Dias, Executive Secretary of the Convention on Biological Diversity said biodiversity needs to be seen as part of a 'win-win' solution for sustainable development.

"It's very easy to say that yes, we should provide water for everyone, but how do we do that, so the traditional way of doing this is to work in silos," Mr. Dias said, stressing the importance of thinking beyond traditional engineered solutions in a more integrated, collaborative way to effectively deliver on the MDGs.

He also noted that Governments sometimes make decisions based on "short-sighted information" without informing sufficiently communities about the impact of those decisions on local ecosystems.

"UN urges collective efforts to achieve 'water secure world' on Day for Biological Diversity", 22/05/2013, online at: http://www.un.org/apps/news/story.asp?NewsID=44967&Cr=water&Cr1=biodiversity#.UaG_DdKe8zH

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❖ Warming driving accelerating river erosion in Bangladesh

SIRAJGANJ, Bangladesh (Thomson Reuters Foundation) – Worsening erosion along the banks of the Jamuna River has dramatically increased the number of families losing their homes and land – but dredging could help ease the problem, experts say.

Erosion is a long-standing problem in Bangladesh, with much of the country made up river deltas deposited by the region's many rivers. But more extreme weather and heavy runoff has led to growing deposits of soil in the Jamuna River, which is in turn driving worsening riverside erosion, residents and experts say.

This rainy season alone, hundreds of families in Sirajganj district have lost their homes or their farmland, they said.

Amir Hosen, 70, of East Bahuka village, said he had gradually lost all of his two acres of land to the river, and now has had to rent about a tenth of an acre of farmland to house and support his family, at a cost of $70 a year.

"I had to move three times with my belongings as the Jamuna River continued eroding. I was a land owner. Now I have become a refugee," said Hosen, the father of three daughters and two sons who have had to leave the area to find jobs.

He said erosion of river-side land now happens throughout the year. "Earlier, we saw erosion in April- May season, but now it is eroding throughout the year," he said.

Atiq Rahman, executive director of Bangladesh Center for Advanced Studies (BCAS), told the Thomson Reuters Foundation in a telephone interview that due to formation of char – land that emerges from riverbeds as a result of accumulating deposits of sediment – rivers like the Jamuna now store lower volumes of water than in the past.

That leads to displacement of river water, with more of it pushed against the riverbank, leading to worsening erosion, he said.

"Getting no other option, water starts hitting the river banks as the flow increases during the rainy season, causing erosion and making people landless," he said.

DREDGING AN ANSWER?

He believes that large-scale dredging could restore the depth of the riverbed and increase its ability to hold water, cutting the rate of erosion.

Dredging on the Indian side of cross-border rivers like the Jamuna, the Padma and the Brahmaputra means losses of land to erosion are much smaller there, he said.

"The rivers there (in India) are stable while here these are very much unstable," he said.

But the soil makeup is also playing a role in Bangladesh's more severe erosion, he said. Riverbank soils in India contain more rock, he said, and have more resistance to the erosive forces of water. Bangladesh's riverbanks, however, have few rocks.

Some embankments in Bangladesh are strengthened with stones or concrete slabs, but not all have been properly maintained, he said. For such protections to be effective, "the maintenance costs have to be an integrated part of an embankment construction budget so that steps can be taken immediately when signs of possible erosion emerge."

Jail Hossain, a member of Shuvogacha Union Parishad, a local government body, said the Jamuna's erosion had eaten up three villages in 2007, forcing 2,000 inhabitants to move to Bahuka village.

In 2009 and 2010 they were again displaced by erosion and forced to move towards East Bahuka village. In 2011, the main Bahuka village was totally lost to the river and now East Bahuka village is also being eroded away.

Abdus Salam, headmaster of Chandnagar primary school, said the whole of Chandnagar village was eroded by the Jamuna River in just one year and the school had been forced to move a kilometer away to East Bahuka village, now itself under threat.

"This year the intensity of erosion is very high and I am in doubt whether any portion of this village will be left intact," he said.

EMBANKMENT PROBLEMS

Aynal Mia, a farmer of the village, said the Bangladesh Water Development Board (BWDB) is focused on building new embankments but has not done enough to stop the continuing erosion.

"You see work on a new embankment going on, leaving a big part of the village for the river to eat up, instead of (workers) taking measures to protect the existing embankment," he said.

Anisur Rahman, a sub-divisional engineer of the water development board, told the Thomson Reuters Foundation that erosion has washed away three entire embankments in the sub-district since 1971, when Bangladesh gained its independence.

He said due to a lack of maintenance funds the board could not protect existing embankments with stones, sand bags, and concrete slabs. He agreed that river dredging was needed.

"Necessary dredging in the river can help storage more water by the river and protect the embankment from erosion," he said. He noted that "erosion nowadays is much faster" than in the past.

Rahman, who was born and brought up in this area, said the changing river depth was evident from the types of ships that could navigate it.

"During our childhood we saw big ships were plying through this river. The depth of the river was nearly 100 feet then. Now it is reduced to 25 to 30 feet," he said.

Fazlul Huq, a sub-assistant engineer of the water development board, said his agency needs Tk 1.5 billion ($1.5 million) to carry out a proper maintenance work to protect the local river embankment.

"But we don't have such a budgetary allocation. So, we are now building an alternative mud wall so that water can't enter the remaining part of the village this season," he said, admitting such work was a short-term measure.

BCAS's Rahman said the worsening erosion was in part of a result of climate shifts which have led to more rapid melting of ice in the Himalayas. The increased runoff carries additional sediment into the beds of rivers such as the Jamuna, leading to increased riverbank erosion.

"Warming driving accelerating river erosion in Bangladesh", 23/05/2013, online at: http://www.trust.org/item/20130523094322-57c38/?source=hptop&utm_source=Circle+of+Blue+WaterNews+%26+Alerts&utm_campaign=4b1e998218-RSS_EMAIL_CAMPAIGN&utm_medium=email&utm_term=0_c1265b6ed7-4b1e998218-250657169

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❖ DR Congo waits on funding for world's largest hydropower project

Complete set of Grand Inga dams on the Congo River would generate a massive 40,000MW of electricity

The dream of harnessing the mighty Congo with the world's largest set of dams has moved closer, with the World Bank and other financial institutions expected to offer finance and South Africa agreeing to buy half of the power generated.
In the past 60 years French, Belgian, Chinese, Brazilian and African engineers have all hoped to dam the river.

But decades of civil war, corruption, and the Democratic Republic of Congo's (DRC) reputation as a failed state have limited the hydropowerdevelopments at the country's Inga Falls to two relatively small dams, built in 1972 and 1982. These, known as Inga 1 and 2, have a theoretical capacity of 1,400 megawatts but produce about half that.
A new $20bn (£13.2bn) development to generate a further 4,800MW was announced over the weekend in Paris, with work planned to start in October 2015. According to the DRC government, working with European and other consultants, five further stages at Inga Falls could eventually have a capacity of 40,000MW – equivalent to more than 20 large nuclear power stations.

This would make the complete Grand Inga development the largest hydro project in the world, generating twice as much as the Three Gorges dam in China. In theory, say its backers, it could provide 40% of Africa's electricity needs.

The attraction of developing hydropower on the Congo, says the government, is that unlike most of the world's great dam projects, it would not require tens of thousands of people to be relocated, nor would it block the river and result in significant environmental consequences. Because the Congo River around Inga is so vast and falls nearly 100 metres over a short distance, water can be diverted to create a massive new lake without disturbing its main flow.

"The impact on land use is very limited. The development can be progressive and carried out in a series of further phases, eventually providing 40,000MW of power," says the technical data for the proposed development.

The African Development Bank, World Bank, French Development Agency, European Investment Bank and Development Bank of South Africa have all shown interest in financing the next stage of the project. No developer has been chosen but Chinese, Korean and Spanish companies are said to be in the forefront.

Key to the project is South Africa's commitment this week to buy 2,500MW of capacity. "We have affirmed our commitment to the project by already provisioning for this purchase in our budgetary plan," said a South Africa ministry of energy official, Garrith Bezuidenhoudt.
But the prospect of local people getting power from Inga in the next 20 years is remote. Less than 10% of the population has electricity, with nearly all Inga 1 and 2 power going directly to multinational mining companies in the Katanga "copper belt". It is expected most Inga 3 power would travel 1,500 miles to power-hungry South Africa or large mines in DRC.

Giant hydropower schemes in Africa have a poor track record. "Projects such as Inga 1 and 2 have not unleashed economic development, but have been major contributors to African countries' unsustainable debt burden," said the US-based International Rivers network, which has led opposition to major dams around the world for 20 years.
In a letter last week to the World Bank president, Jim Yong Kim, the International Rivers and 18 other civil society organisations and networks from Africa, Europe and the US said the reality of large-scale dams seldom matched their expectations, mostly adding to debt problems and allowing powerful companies to cheaply exploit and export Africa's vast natural resources.
According to the groups, the International Energy Agency (IEA) has found that because of the continent's low population density, grid-based electrification – including through large hydropower projects – is not cost-effective for much of rural Sub-Saharan Africa.

The letter said: "Renewable energy solutions such as wind, solar and micro hydropower projects are much more effective at reaching the rural poor.
"According to the IEA report, 70% of the world's unelectrified rural areas are best served through mini-grids or off-grid solutions.
"In the DRC, the World Bank and other financiers have invested billions… in the construction and rehabilitation of the Inga 1 and 2 hydropower projects and associated transmission lines over the past 40 years.

"After all this investment, 85% of the electricity in the DRC is consumed by high-voltage users, while only 6-9% of the population has access to electricity. We are concerned that the bank's proposed focus on large hydropower projects will write off electricity access for the majority of Africa's poor."

"DR Congo waits on funding for world's largest hydropower project", 21/05/2013, online at: http://www.guardian.co.uk/environment/2013/may/21/dr-congo-funding-world-largest-hydropower-dam?CMP=twt_fd&utm_source=Circle+of+Blue+WaterNews+%26+Alerts&utm_campaign=7507cc5bb3-RSS_EMAIL_CAMPAIGN&utm_medium=email&utm_term=0_c1265b6ed7-7507cc5bb3-250657169

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❖ Delaying Kalabagh dam a serious crime

LAHORE: President Pakistan Economy Watch (PEW) Dr Murtaza Mughal said that delay in construction of Kalabagh dam is a crime as it will suspend economic revival of Pakistan.

He was talking to Rehmat Khan Wardag, President Tehreek-e-Istaqlal on Sunday

He said that it is now responsibility of the incoming government to make an example out of them so that masses can take a sigh of relief otherwise it will risk losing credibility and fail the uphill task of revamping the country's economy.

Holding politicians responsible for price hike, unemployment, lawlessness and plunder of national exchequer, he said that situation merits immediate accountability process.

On the occasion Wardag said that in order to bridge the demand and supply gap of electricity, the government should set up small dams. Pakistan is an agricultural state but unfortunately, the farmers were being exploited economically, he observed.

He said that new government should implement all the recommendations of Water Vision 2016 to thwart threat of a failed state.

He said that most parties have promised to eliminate corruption therefore those who made it to corridors of power should walk their talk.

“Corruption has been the proverb of the PPP-led coalition government during which the President spent much of his time dodging the Supreme Court's efforts to reopen corruption cases against him”, he added. These efforts cost him one PM to bring another accused of taking massive kickbacks in rental power scam. Misuse of secret funds, missing containers case, Hajj and ephedrine scams, mysterious suicides by officials probing scams, controversial energy projects, investment deals, public procurement and natural resource exploration must be probed, he demanded. Government must act before masses start questioning the merits of a system that cannot deliver, he warned.

He said plunderers of national wealth should not be spared so that no opportunist can follow their suit in future. The corrupt cabal that ruled country for five years brought economy to its knees and made life impossible for majority deserves no mercy, he said.

He said that masses have voted out incompetent political band known for dysfunction, negligence and mismanagement.

"Delaying Kalabagh dam a serious crime", 21/05/2013, online at: http://paktribune.com/business/news/Delaying-Kalabagh-dam-a-serious-crime-11202.html

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❖ Deltas under the microscope

VietNamNet Bridge – Viet Nam will work with other countries to develop its river basins and deltas in a sustainable way, Deputy Minister of Natural Resources and Environment Nguyen Thai Lai said.

Nguyen Thai Lai and more than 350 deltaic leaders from around the world are in HCM City for the World Delta Dialogues II to address the challenges affecting all great deltas and the solutions needed to solve problems.
Two of the earth's great river systems, the Mekong in Viet Nam and the Mississippi in the US, are the focus of discussion at the event.
The conference is co-organised by the American WETLAND Foundation, Viet Nam National University – HCM City and the Dutch Government.
Speaking at the conference, Lai explained that deltas, which are located at the end of large rivers and the border of seas, contain fertile soil and are the habitats for millions of people around the world. Moreover, they are sensitive to changes in water resources and subject to severe climate change and upstream development.
Lai said the Mekong Basin was facing challenges related to water resources, salinity and other impacts of climate change.
It has become one of the five basins in the world experiencing the most significant decrease in flow due to drought, he said.
Sea levels in Viet Nam could rise by one metre by 2100, and 40 per cent of the Mekong Delta area could be lost, seriously affecting agriculture, fishery production and the livelihood of millions of people in the region and food security of Viet Nam and other countries.
King Milling, chairman of the American WETLAND Foundation, said: "We come to the Mekong Delta both in search of answers and to leverage what we have learned in attempting to restore one of the most productive US assets, the Mississippi Delta.
He said that sustainability of delta regions – environmentally, economically and culturally – was necessary, not just for the next generation but for the many generations to come.
Rising sea levels due to global warming, along with subsidence and river system development will all be discussed at the three-day conference, along with other challenging global issues.
Dr Phan Thanh Binh, chairman of Viet Nam National University – HCM City, said that low water flows, flood flows, alluvium from upstream sources, as well as rising sea levels from downstream, were all uncertain and nearly impossible to control.
Le Thanh An, US Consul General in HCM City, said deltas were the guardians of historic cultures and the site of valuable resources that could be put into service for humanity.
"In the US, we have a rapidly eroding Mississippi River delta. Sediments and nutrients that normally would support a healthy, growing delta ecosystem area are instead trapped within a levee system designed to control flooding and ensure a sound navigation route," An said.
America's wetland erodes at an average equivalent of a football field of land each hour.

If the ecosystem continues to degrade, the support it provides for the levees and navigation routes will be lost, he added.

"So we face a conundrum: how do we balance the multiple, and often times conflicting, uses of a river, while ensuring its sustainability," he said.

Also speaking at the conference, Renske Peters of the Ministry of Infrastructure and Environment of the Netherlands, said that large populations used massive resources and produced not only important economic output but also copious waste, which influences limited water resources in two ways, by extraction and by pollution.

The theme of the conference will focus on preventing "unintended consequences," or actions related to managing river systems that later create negative and costly consequences.

Stephen Gambrell, director of the Mississippi River Commission, will speak about that issue today. He will also illustrate the unintended consequences of river management decades ago that have left coastal areas in the US losing land at one of the fastest rates on the planet.

The first World Delta Dialogue event was held in New Orleans in the US in October in 2010, with 15 delta regions represented.

An action agenda to both help draw attention to coastal land-loss issues and create solutions was adopted by delegates who represented governments, NGOs, science, engineering and cultural groups.

Today, the conference continues with other discussions about delta-related issues.

"Deltas under the microscope", 23/05/2013, online at: http://english.vietnamnet.vn/fms/environment/74857/deltas-under-the-microscope.html

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❖ Rapid drop in Lake Malawi's water levels drives down fish stocks

1.5m people depend on lake for food – including popular Chambo fish – and Malawians are alarmed at decline in stocks

Lloyd Phiri, a fisherman from Senga Bay on Lake Malawi's shores in Malawi's central region, knows that the lake's water levels are dropping. He can see it in his catch, which has shrunk by more than 80%.

Years ago, it was the norm to catch about 5,000 fish a day, Phiri says. But now, if he is lucky, he brings in one-fifth of that. And if he is not, he catches a mere 300 fish a day. "My fish catch has gone down in recent years and this has affected my earnings. I now have problems paying school fees for my children," Phiri tells IPS.

The rapid drop in Lake Malawi's water levels, driven by population growth, climate change and deforestation, is threatening its floral and fauna species with extinction, says Malawi's ministry of environment and climate change management. And included among the wildlife threatened are the fish that Phiri depends on for a livelihood.

"Over the last three decades some water balance models have been done on the lake and have shown that the water levels have dropped from 477 metres above sea level in the 1980s to around 474.88m," says Yanira Mtupanyama, principal secretary in the ministry, of the 29,600 sq km lake that straddles the borders of Malawi, Mozambique and Tanzania.

"It's a big deal because studies are showing that the water levels in the lake will keep on dropping in coming years because there are signs that show [there will be] less rainfall and increased evaporation," she says.

An estimated 1,000 fish species rely on the fresh waters of Africa's third-largest lake for their survival, which also provides 60% of this southern African nation's protein requirement. The mbuna cichlids species and the famous tilapia fish, locally known as chambo, are facing extinction. Chambo is Malawi's most popular fish.

The country's department of fisheries says fish stocks in the lake have dwindled by 90% over the past 20 years. It is a huge concern as, according to authorities, about 1.5 million Malawians depend on the lake for food, transportation and other needs.

Of even greater concern are Malawian government reports that the water mass may hold oil and gas reserves. Environmentalist Raphael Mwenenguwe fears that, if oil and gas mining starts on the lake, it could lead to further biodiversity losses.

"The fish stocks have declined in the last two decades from about 30,000 metric tonnes per year to 2,000 per year because of a drop in water levels, overfishing and rapid population growth. But this may get worse if oil is discovered on the lake," Mwenenguwe tells IPS.

Williman Chadza, executive director of the Centre for Environmental Policy and Advocacy, a local NGO that promotes activism on environmental issues, shares Mwenenguwe's fears. "Oil is a resource of paramount importance to a country like Malawi, which is seeking revenue alternatives for its socio-economic development. But its discovery may deepen the country's biodiversity loss and impact badly on water sources," says Chadza.

Mining also poses a threat. A uranium mine in Karonga, a town near Lake Malawi in the north of the country, is one example. The mine, owned and operated by Australian mining giant Paladin (Africa) for the past four years, is regarded as a pollution threat.

"Uranium is a highly radioactive material and therefore there are still threats of polluting the freshwater in Lake Malawi," says Udule Mwakasungura, a human rights activist.

The need to arrest the loss of biodiversity is particularly important in Malawi, where people depend on biological resources to a greater extent than they do in other parts of the world. The 18,000 families of Nguwofishing village in Senga Bay are an example of this dependency.

"We know that the fish stock has depleted because of unsustainable fishing practices and non-compliance with fishing regulations … we also know that cutting trees unsustainably is ultimately affecting the quality of the water we drink," says village headman Radson Mdalamkwanda.

Mdalamkwanda says fishermen in the village have been working with local authorities to address the threats and challenges facing theconservation of Lake Malawi. He says anyone not following the

rules or bylaws is banned from fishing on the lake during October and November, when the fish spawn.

For the past five years, the village development committee has been going to local gatherings to educate residents about the bylaws and the need to protect the lake. "Apart from protecting the fish, we also want to safeguard the water so that it's safe for drinking. We do that by creating awareness at gatherings like weddings and funerals," says Ibrahim Kachinga, the chair of the village committee.

Their efforts complement the Malawi government's attempts to address the challenges to conserving the lake's flora and fauna. "There has been a ban for the last few years on the use of high-yield fishing gear in Lake Malawi between October and November, when the fish are spawning," Mtupanyama says.

Mtupanyama adds that in 2003 the government launched a 10-year strategic plan, which largely seeks to restore the lake's fish stocks. "For the last 10 years we have been restocking the lake with fish by breeding juveniles outside the lake and then reintroducing them. We haven't done badly," she says. Mtupanyama could not say if this had significantly increased the lake's fish stock, however.

Regardless of what may come of this restocking project, the Nguwo village committee understands that the future of the lake is important. They are educating those who can do something about it – future generations. Kachinga says: "With the help of government, we are also encouraging teachers in nursery and primary schools to teach our children about how to protect the lake."

"Rapid drop in Lake Malawi's water levels drives down fish stocks", 22/05/2013, online at: http://www.guardian.co.uk/global-development/2013/may/22/lake-malawi-water-levels-fish-stocks?utm_source=Circle+of+Blue+WaterNews+%26+Alerts&utm_campaign=7507cc5bb3-RSS_EMAIL_CAMPAIGN&utm_medium=email&utm_term=0_c1265b6ed7-7507cc5bb3-250657169

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❖ Death in Parched Farm Field Reveals Growing India Water Tragedy

Sachin Ingale slipped out of his family's two-room, white-painted mud hut about 4 p.m. and walked into their farm field where the 22-year-old took a deep swig of pesticide from a plastic bottle. He died later that evening.

Four months later, the mercury is pushing 50 degrees Celsius (122 degrees Fahrenheit) in his village in India's Maharashtra state. Inside the family hut, a picture of a serene Buddha decorates a wall above a cracked concrete floor.

Elder brother Satish Ingale is sitting on a plastic chair in a white singlet as he explains the pesticide killed Sachin, but it's the loss of water rights to heavy industry, the worst drought in four decades and the rise in debt that follows that's causing farmers to take their own lives.

In 2003, Maharashtra -- which is bigger than Italy and has a population of 112 million or about the same as Mexico -- gave industries and municipalities access to 25 percent of the water in its irrigation reservoirs. Power plants were the biggest beneficiaries, prompting a spurt of investment, according to a March report by Pune-based non-profit advocacy group Prayas.

"Water for food and water for industry is a debate on in much of the world, and we're no exception," Sachin Kalantre, a deputy administrator in Maharashtra's Amravati town, said in an interview. "The way out is for both to work together. There has to be a consensus," he said, with a picture of a waterfall filling the wall of his office behind him.

Debt, Suicide

More than 2,200 farmers in India committed suicide in the past four years, as water loss and drought drove them deeper into debt. Sachin Ingale killed himself the same day his family's tractor was repossessed for two missed loan repayments.

The suicides on the one hand and a power shortage on the other pose a dilemma for an economy trying to boost the slowest pace of growth in a decade.

While routing water to industry can rob India's 235 million farmers of supply, electricity shortages and blackouts close companies, cut jobs, impede education and put the lives of hospital patients in peril. Prime Minister Manmohan Singh's government promised electricity to every household by March 2012. About 400 million of the nation's 1.2 billion people today are still without power.

Increasingly, farmers are fighting back to stop power plants and factories siphoning off water needed for crops, threatening to stall more than $100 billion in spending by such companies as electricity utility Indiabulls Power Ltd. (IBPOW), South Korea's Posco (005490) and Luxembourg-based ArcelorMittal (MT).

Stalled Projects

Posco (005490)'s proposed $12 billion steel plant in the eastern state of Odisha has been stalled for more than seven years because of opposition from farmers concerned about loss of land and water rights. ArcelorMittal (MT), which plans to build a $10 billion steel mill in both Odisha and in the neighboring state of Jharkhand, has faced similar resistance.

The water connection to Posco's plant from a nearby dam won't affect supplies to the residents of the area, Posco India spokesman I.G. Lee said in an e-mail. Vijay Bhatnagar, the chief executive officer for India and China at ArcelorMittal, declined to comment when reached on his mobile phone.

"Water is our life," said Satish, 25, cradling a photograph of his dead brother. "We'll be finished if we don't water the fields. What can we do but hope and fight?"

The drought in Maharashtra isn't just because of a lack of rainfall. In the state's Vidharbha region, where Indiabulls is building a power station, monsoon rains last year were an average 8 percent above normal, according to Meteorological Department data.

"Rainfall isn't always the problem, inefficient distribution for irrigation is," said Mandar Sathe, a senior researcher for Prayas. "A lot of the drought is man-made."

Mango Orchards

Mumbai, India's financial hub, is the capital of Maharashtra, which in turn is famed for its sugar and cotton plantations along with mango and orange orchards.

Those harvests depend on the state's 12 main reservoirs and eight of them have water levels below the 10-year average, according to data on the Central Water Commission website. The Jayakwadi dam, the state's second-biggest, has dried up, according to the commission.

Yet, electricity demand in the country is growing and lack of investment led to a blackout in July in an area inhabited by more than 600 million people. The gap between peak demand and supply is about 9 percent. Water shortages have prevented construction of 30,000 megawatts of power plants throughout India, 13 percent of current capacity, Naina Lal Kidwai, country head of HSBC Holdings Plc, said April 24.

India, China

India and China alone plan to build $720 billion of coal-burning power plants in two decades, or more than twice the total power capacity in the U.S., International Energy Agency data show. Coal-powered plants on average consume three times as much water as natural gas-fired stations per unit of power produced, according to U.S. Department of Energy data. The water is boiled to produce steam and drive turbines.

"The situation is somewhat more acute in India than in China, because the per-person availability is lower," said Richard Manley, a Hong Kong-based Managing Director at Goldman Sachs Inc. "Today, the situation is at a point where it's quickly going to become a real business risk in Asia," said Manley, the Asia head of GS Sustain, which analyzes environmental, social and governance issues.

India, the second-biggest producer of rice, wheat and sugar, is the most vulnerable among the world's leading industrial and emerging economies to future water stress, according to HSBC. India exhibits the most worrying trends among the Group of 20 nations with the resource "hovering dangerously near extreme scarcity levels" by 2030, HSBC said in a Sept. 19 report.

Indiabulls Plant

Indiabulls Power (IBPOW) is building a $1.3 billion coal-fired electricity plant in Maharashtra that is emblematic of the water conflict between heavy industry and agriculture in India.

The New Delhi-based company has been allocated 87.6 million cubic meters of water annually from the Upper Wardha dam about 20 miles from the 2,700 megawatt plant, according to itswebsite. It hasn't been able to build a water pipeline from the dam because 5,000 farmers, Ingale among them, oppose it.

"We haven't given permission for the pipeline to run under our village," said Durgabai D. Aghane, headwoman of Nimbi village, which is on the planned route of the pipeline. "People are committing suicide. Look at what's happening because there's no water."

Indiabulls Power's offices in Amravati, about 15 kilometers (9 miles) from the plant, were attacked by people protesting the water allocation in March, Press Trust of India reported March 25, citing a company spokesman. The previous day its offices in Mumbai were also attacked, according to the report.

Kubeir Khera, vice president for marketing at Indiabulls, didn't respond to more than three requests for comment.

'Years of Neglect'

"Conflicts between industry and farmers will get worse as water becomes more and more scarce," said Jai Krishna, an official at environment lobby group Greenpeace, who campaigns for farm-water rights in Maharashtra's Vidarbha area and other parts of the country. "Prioritization of water for farmers over industry is essential especially in an area where irrigation has been neglected for years."

Indiabulls Power isn't the only utility facing water shortages. Maharashtra State Power Generation Co. shut a 1,130 megawatt plant in Beed district on Feb. 15 because of lack of water, said Mahesh Aphale, a Mumbai-based spokesman for the company.

"We had to close the plant because drinking water had to be given priority over all else," Aphale said. "We were working at half the capacity for about two-and-a-half months since November."

Ajit Pawar, deputy chief minister of Maharashtra, and Sunil Tatkare, minister for water resources, could not be reached after eight calls made to each of their offices on May 14 and 15 for comment. Neither responded to e-mails.

'Nothing to Hide'

"Definitely there's a water shortage in India, there's nothing to hide," federal Water Resources Minister Harish Rawat said in New Delhi on May 17. "It's for the regional governments to decide how they'll allocate water to agriculture and industry."

The water assigned to Indiabulls Power from the Upper Wardha dam is enough to irrigate 23,200 hectares of land, according to the Maharashtra government. The diversion will affect land owned by about 25,000 farmers, according to Sanjay Kolhe, coordinator of farmer body Kisan Ekta Manch, the organization protesting the water allocation.

Irrigation Water

Another 1.98 billion cubic meters of irrigation water was diverted between 2003 and 2011 from 51 dams, according to researcher Prayas. Of this, 46 percent was allotted to industries and more than half went to power plants. The diversion reduced the irrigation potential in the state by 323,296 hectares, it said.

Wheat farmers in Maharashtra may have lost as much as 5.71 billion rupees ($104 million) of potential earnings because of reduced water availability for the crop, Prayas estimates. While the government announced debt relief of 600 billion rupees for the nation's rain-starved farmers five years ago, the waiver failed to benefit the Ingales.

"We have to live with debt," said Satish, who now borrows his neighbor's tractor. "You just sink further and further into debt. There's no end."

"Death in Parched Farm Field Reveals Growing India Water Tragedy", 21/05/2013, online at: http://www.bloomberg.com/news/2013-05-21/death-in-parched-farm-field-reveals-growing-india-water-tragedy.html?utm_source=Circle+of+Blue+WaterNews+%26+Alerts&utm_campaign=7507cc5bb3-RSS_EMAIL_CAMPAIGN&utm_medium=email&utm_term=0_c1265b6ed7-7507cc5bb3-250657169

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❖ Early warning technology protects Nepali villagers from sudden floods

HIRPU PHULPINGKATTI, Nepal (Thomson Reuters Foundation) – For years, Deepa Newar and her neighbours lived with the fear that their livelihoods – and even their lives – might be swept away without warning.

Newar and her fellow residents of Jhirpu Phulpingkatti, a village some 112 km (70 miles) northeast of Kathmandu, Nepal's capital, live perched on the bank of the **Bhote Koshi River**. The river is prone to sudden, devastating floods that can swamp fields, carry away livestock and even kill those who do not manage to flee to higher ground.

The 2.5 acres (1 hectare) of land on which Newar cultivates paddy rice and maize have suffered severe flooding four times in the last 32 years, most recently in 2011.

Looking at the swirling grey waters of the river that flows into Nepal across the border with China's Tibet Autonomous Region, 10 km (6 miles) upstream, the 39-year-old recalls those disasters.

"(The river) left behind a trail of death and destruction whenever it has turned into a monster," she says.

But Newar now enjoys a sense of safety for herself and her family, thanks to an early warning system for floods installed by the Bhote Koshi Power Company (BKPC) at its hydropower plant on the river.

GLACIAL LAKE THREAT

Flash floods can be caused by severe storms or the failure of levees, but the Bhote Khosi River is also susceptible to glacial lake outburst floods. These result from the catastrophic failure of a natural dam high in the mountains that contains glacial meltwater. Such failures are becoming a greater risk as warming temperatures linked to climate change lead to faster glacial melt and greater volumes of water in the lakes.

The Bhote Khosi river basin covers an area of about 3,400 square km (1,300 square miles) and has an estimated 150 glaciers. Of its 139 glacial lakes, whose area totals some 16 square km (6 square miles), 59 are highly vulnerable to outbursts, according to a **study** conducted by the International

Centre for Integrated Mountain Development (**ICIMOD**), an intergovernmental body of eight countries in the Hindu Kush-Himalaya region, including Nepal and China.

In 1981, a glacial lake outburst flood in the river basin washed away several bridges, including the China-Nepal Friendship Bridge along the Araniko Highway, said Pradeep K. Mool, a glaciologist at ICIMOD in Kathmandu.

Until 2010, floods could strike the villages with no warning. Residents had virtually no time to move to higher ground and were forced to leave behind their livestock and crops, suffering financial losses as well as emotional distress.

"Before the advent of the warning system … we were at risk of being washed away," said Newar.

Janak Raj Pant, maintenance manager at the Bhote Koshi power plant, said that the river is subject to erratic flows, particularly during the monsoon. For this reason, the power company arranged for the early warning system to be installed in 2010 to benefit the downstream communities in Sindhupalchowk district.

5 TO 8 MINUTES WARNING

The early warning system gives villagers 5-8 minutes' notice of a flood – just enough time to save themselves.

Five flood sensors are positioned near the Nepal-China Friendship Bridge, about 6 km upstream from the power station.

If the water in the river reaches a dangerous level, the sensors activate sirens placed at four locations, including one at the power plant. The sirens warn the communities to flee to higher ground. Residents use their mobile phones to warn other villages further downstream.

According to Pant, a glacial lake outburst flood takes about five minutes to travel from the Nepal-China Friendship Bridge to the plant. He says lives can be saved if people respond to the alarm immediately.

"At present, the warning system can make the sirens blare five minutes before any flood can strike any of the 79 downstream villages of Sindhupalchowk district," said Pant, standing beneath the red siren mounted on a side wall of the company's building.

According to Pant, it is not currently possible to give more warning because information on flooding is not available from the Chinese side of the border.

About 40 percent of the Bhote Koshi river basin is in Nepal, with the remaining 60 percent in China.

Other residents of Jhirpu Phulpingkatti agree that the system has given them a sense of security, but they would like the lead time given by the alarm to be extended.

More sensors need to be placed further upstream within Nepal, especially at glacier snouts and where glacial lakes have formed or are forming, commented Joydeep Gupta, a New Delhi-based journalist and expert on South Asia river basins and flood warning systems.

NEED FOR CHINESE HELP

The ICIMOD study shows that Nepal has experienced at least 24 glacial lake outburst floods. Of these, 14 are believed to have occurred in Nepal itself, and 10 were the result of flood surge overspills from the Chinese side of the border. According to data from the Nepal Meteorological Department, such floods occur on average once every three years in Nepal.

The glaciers in the Hindu Kush-Himalayas are retreating, which scientists believe is the result of climate warming. As glaciers melt, the water released into lakes can build pressure on the natural dams and increase the risk of an outburst flood.

"We have already sought proposals from interested firms to expand the warning system to other vulnerable districts (near) the Bhote Koshi River," said Pant. "It is hoped that in coming months we should be able to install alarm systems in as many districts as possible."

"(The) Nepali government should also replicate and establish such early warning systems at all streams to (avoid) or reduce loss of lives or damage," said Gupta.

But priority should be given to the streams emanating from the unstable glacier lakes identified by ICIMOD in its **recent study**, he emphasised. According to Gupta, China, as the upstream country, should collaborate with Nepal to share information about flash floods or glacial lake outburst floods hours before they reach the Nepali border, to allow maximum time for warnings to vulnerable downstream communities.

"Any viable information-sharing system by which Chinese officials can pre-inform their Nepali counterparts of any risk of flash flood or (glacial lake outburst flood) would be very helpful. A similar system between China and India already saved many lives in a flash flood in the Sutlej river area a few years ago," he said.

"Early warning technology protects Nepali villagers from sudden floods", 22/05/2013, online at: http://www.trust.org/item/20130522093446-pfy20/?source=hptop&utm_source=Circle+of+Blue+WaterNews+%26+Alerts&utm_campaign=7507cc5bb3-RSS_EMAIL_CAMPAIGN&utm_medium=email&utm_term=0_c1265b6ed7-7507cc5bb3-250657169

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❖ Emergency responses begin as rainstorm continues

BEIJING, May 24 (Xinhua) -- Emergency disaster relief responses were initiated on Friday afternoon by China's National Committee for Disaster Reduction as heavy rain continued to batter many parts of the country.

According to a committee circular, local civil affairs departments should work closely with weather, water resources and land agencies to monitor and analyse rainfall and potential disasters while releasing information to the public in a timely manner.

Citing a high chance of landslides and mudslides in regions exposed to repeated rain, the committee called for safety checks of buildings, construction sites and tourist attractions in vulnerable areas, and to arrange special personnel to guide people to nearby shelter.

Official figures showed that a previous round of rain and hailstorms that swept south China from May 14 to 16 had left 33 people dead and 12 missing.

On Thursday, local flood control authorities in south China's Guangdong Province reported that four people were killed and nearly half a million residents were affected by a rainstorm that had lasted for days.

The meteorological authority forecast heavy rain or rainstorms from Saturday to Monday in areas in the provinces of Hubei, Henan, Shandong, Anhui, Jiangsu, Guizhou and Hunan, with estimated precipitation from 100 to 200 mm.

"Emergency responses begin as rainstorm continues", 24/05/2013, online at:
http://news.xinhuanet.com/english/china/2013-05/24/c_132406854.htm?utm_source=Circle+of+Blue+WaterNews+%26+Alerts&utm_campaign=4b1e998218-RSS_EMAIL_CAMPAIGN&utm_medium=email&utm_term=0_c1265b6ed7-4b1e998218-250657169

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❖ Is Global Warming Cooler than Expected?

LONDON – Several leading authorities on climate change have given a guarded welcome to research suggesting the Earth may warm more slowly than scientists had expected.

An international research team led by Alexander Otto of the Environmental Change Institute at the University of Oxford has reported its conclusions in the journal Nature Geoscience.

The Earth is now warming faster than at any time in the last 11,000 years, but scientists do not understand clearly why the atmosphere has warmed less than they expected over the last decade or so – and more slowly than in the 1990s.

The researchers looked at how the last decade would affect the long-term sensitivity of the climate to a doubling of atmospheric concentrations of carbon dioxide and suggest the Earth will warm more slowly than expected this century.

But even though the heating may be slower, giving politicians more time to act, the scientists still believe temperatures will eventually climb to 4°C above pre-industrial levels, well above danger levels.

Clive Hamilton is professor of public ethics at Charles Sturt University in Australia, and author of Requiem for a Species: Why we resist the truth about climate change. Published in 2010, it says climate change will bring about large-scale, harmful consequences for life on Earth which it is too late to prevent.

"The study should certainly be taken very seriously, although we will need to see over the next year or two how well it stands up to scrutiny," Hamilton said. "Let's hope they are right; it's the first bit of good news we have had a for a long time."

Still guesswork

Geoff Jenkins is the former head of climate change prediction at the UK Met Office's Hadley Centre

for Climate Prediction and Research. He said: "Until we actually understand why the global temperature rise has paused over the last decade – and we don't yet – it's still guesswork what the implications are for climate sensitivity and hence the future projections.
If the pause is a "correction" to a naturally-boosted rise over previous decades, then the climate's sensitivity to carbon emissions may indeed be lower than the Intergovernmental Panel on Climate Change's central estimate, suggesting that future rises will be towards the lower end of the range, he added.

But if the pause is a temporary natural offset to the man-made rise, then this offset would disappear at some stage and put the globe back on the central estimate track, he said. "I don't see how we can say which it is until we understand the reason for it."

Many governments have promised to try to limit atmospheric warming to no more than 2°C above pre-industrial levels, believing that threshold will prevent dangerous climate change.

Previous estimates showed that would require global greenhouse gas emissions to peak by 2020 and then fall, a prospect that seemed out of reach while emissions continue to rise fast.

Another member of the research team, Myles Allen of ECI Oxford, said the findings offer some optimism. "Prior to this, a lot of us were feeling quite gloomy that whatever we did, we'll go over 2°C", he said. "It's not a foregone conclusion any more."

That means the protracted UN climate negotiations could still produce a workable agreement. If a deal enters force in 2020 and leads to rapid emissions cuts, "there remains a good chance we could hit the 2°C target," Allen said.

"Is Global Warming Cooler than Expected?", 24/05/2013, online at:
http://www.scientificamerican.com/article.cfm?id=is-global-warming-cooler-than-expected&WT.mc_id=SA_DD_20130524

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❖ International Day for Biological Diversity: Biodiversity Can Provide the Basis for Effective Water Management

This year International Day for Biodiversity (May 22) is focused on "Water and Biodiversity" to coincide with the United Nations declaration of 2013 as the International Year for Water Cooperation. Effective water management has traditionally been viewed as an important factor in maintaining biodiversity in ecosystems. The opposite is increasingly viewed as critical: biodiversity can provide the basis for effective water management. As billions of people continue to face the hardships that come with a lack of access to clean water or sanitation, new thinking to achieve water security, such as including preservation of ecosystem services and biodiversity in water development plans, can provide a more effective way forward.

It is difficult to imagine modern economies functioning without a ready supply of fresh water. Rivers are the single largest supplier of this resource to humans. Without clean, reliable rivers, economic development will remain but a dim hope for billions. In addition, rivers – along with lakes and wetlands – maintain critical amounts of the earth's biodiversity, providing a collective, global ecosystem for over 120,000 animal species (around 10% of all animal species known), including a one third of all vertebrates.

Despite their importance, rivers the world over are distorted, dried, and clogged with the byproducts from a planet crowded with humans, our croplands, and our factories. Decades of neglect render much of the planet's water supply highly threatened. Like politics, water problems are all local – they have often been viewed as unique or confined to our own backyard. But new data sources and mapping techniques are uncovering water syndromes and rivers in crisis on a global scale. Issues as diverse as toxic pollution, poor land management, invasive species, overfishing, and overuse of irrigation water conspire to produce a sobering reality: two-thirds of all rivers are highly degraded, along with the freshwater habitat they support. Freshwater biodiversity is more threatened than in any other ecosystem on the planet.

But the issue also affects huge numbers of people, with nearly 5 billion living in areas of high threat to water systems, which they must rely upon to achieve their sustenance and well-being. Paradoxically, the highest levels of threat are often found in rich countries like the United States and across Western Europe, where one would expect decades of conservation and environmental protection to ensure clean rivers teeming with life. By throwing concrete, pipes, pumps, and chemicals at our water problems, to the tune of a half to three-quarters of a trillion dollars a year, we've produced a technological curtain separating clean water flowing from our pipes and the highly-stressed natural waters that sit in the background.

As rich countries secure clean water for their population's use at the expense of biodiversity, the world's poor are left in a dire state. Exposure to unsafe drinking water and poor sanitation already result in two million preventable deaths a year from diarrhea. By pursuing developed world models of water resource development, most poor countries will be unable to afford the costly engineering investments that offset the water supply threats. These countries will be locked in a vicious cycle of capital and energy intensive engineering solutions, progressive water degradation and overuse, and ever-expanding reliance on costly remedies.

We can turn to nature – and to protecting biodiversity – for an answer. Natural watersheds have a remarkable capacity to buffer against floods and droughts, support productive fisheries, and purify water. Just as preventive medicine proves more cost-effective than intensive care, strategic water policy must be refocused on avoiding problems before they arise. The City of New York has demonstrated such cost-effectiveness in its effort to protect the watersheds that feed the public water supply. Although such integrated approaches are not yet widely applied, they are taking hold, like in successful programs in South America instituted by the Nature Conservancy. In a further sign that integrated approaches are gaining traction, the Secretariat of the Convention on Biodiversity recently published an instructive booklet, "Natural Solutions for Water Security." We would do well to promote such alternative approaches aimed at ensuring water security for all, as water takes a prominent place during this year's International Day for Biodiversity.

"International Day for Biological Diversity: Biodiversity Can Provide the Basis for Effective Water Management", 22/05/2013, online at: http://blogs.worldbank.org/water/international-day-biodiversity-biodiversity-can-provide-basis-effective-water-management

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❖ International Day for Biological Diversity: The Water Value of Forests

To increase awareness and understanding about the many ways forests contribute to improving food security and nutrition, especially in developing countries, the FAO hosted an International Conference on Forests for Food Security and Nutrition (May 13-15) in collaboration with the World Bank and with PROFOR.

Trees and forests provide a critical role in ensuring food security, in ways which often are poorly understood and as such are not adequately reflected in policy decision. One of the less direct and often undervalued services provided by forests and trees is their vital role in provisioning water and in maintaining the health of watersheds through water regulation and purification, erosion control, and other ecosystems services. These services complement other critical aspects of forests and trees which help build resilience at the household level to food insecurity.

Traditionally only monetized products such as timber got the needed government attention, and in this context the role of forests in the hydrologic (water) cycle was too often been overlooked. A forested watershed by filtering freshwater and reducing soil erosion and sedimentation helps maintain clean water supplies. Moreover, forest canopy provides a protective cover for the landscape by intercepting rainfall and cycling much of water precipitation back to the atmosphere. As a matter of fact, a World Bank and WWFstudy found that approximately one-third of the world's 105 largest cities source a significant portion of their drinking water from protected forested watersheds.

An appreciation of the value of forests and the ecosystem services they provide including their capacity in provisioning water will enable decision-makers to better assess trade-offs associated with alternative land- and water-use choices. Besides water stored in biomass there is also soil moisture stored below the forest and both disappear from the area when the forest disappears.For instance, a study by the FAO estimated the economic value of the water storage function of China's forests as 7.5 trillion Yuan (approximately US$1 trillion), three times the value of the wood in those forests.

By improving water quality and regulating flow, forests and trees can reduce the risks of flooding or the drying up of rivers during dryer seasons. In Haiti, for instance, as one of the conference presenters explained, widespread deforestation in the 1960s, has meant nowadays only 2% of the once verdant forest cover remains, contributing to desertification, erosion and flooding and in turn increased vulnerability to natural disasters with a drastic impact on food and water security.

While in the past, ecosystem services provisioned by forests, such as water purification have been difficult to quantify and value, new research into natural capital accountingand innovative market approaches such as Payments for Ecosystem Services, provide an opportunity to foster a growing appreciation of forests importance for long-term water security. The good news is there is growing demand from developed and developing countries to integrate natural capital considerations into their decision-making processes.

With the recently published report Turn Down the Heat: Why a 4°C Warmer World Must be Avoided, suggesting that world temperatures could rise by 4 degrees Celsius this century, the stakes of recognizing the contribution of forests to water security are raised dramatically as availability of freshwater resources are predicted to become increasingly scarce in a warming, crowded, and challenging future, with estimations that by 2025, two-thirds of all nations will confront water supply stress.

"International Day for Biological Diversity: The Water Value of Forests", 22/05/2013, online at:
http://blogs.worldbank.org/water/international-day-biological-diversity-water-value-forests

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❖ Stepping Up Efforts to Address Water Issues

As recognized by the World Economic Forum at Davos earlier this year, water insecurity is one of the greatest risks facing the world today. Increased water demand from growing populations and economies, combined with more uncertainty in supply due to expected climate change impacts, require a radical change in the priority we give to managing our water resources and systems to supply water to people. Over the next two decades, water will be needed to feed a planet of 9 billion people and generate energy to meet increased demand. Burgeoning cities will need to provide water supply and sanitation services to 70 million more people each year; yet the quantity of water will remain the same and the quality is expected to decline in many places. Meanwhile there is a water service crisis with 800 million people lacking access to improved source of drinking water and nearly forty percent of the world lacks access to even basic sanitation.

As the world comes to terms with water insecurity, the need for smarter water management is rapidly gaining more attention. Companies and farmers are finding innovative solutions to deal with the links between water and food security, energy security and the environment. Governments are seeking better information to guide allocation decisions, provide adequate services to swelling populations in cities and make agricultural water use more productive. They want to access and use cutting-edge technologies to be able to manage water-related disasters and protect their people and economies.

This emerging demand for new, innovative solutions is forcing the global development community, including the Bank, to go beyond conventional approaches. Financial resources are not enough. We need to innovate, partner in non-traditional ways, influence the decision makers in major economic sectors, and leverage investments with strong analytics.

The World Bank has several instruments to support the countries to face the increasing challenges. One such instrument is the Water Partnership Program (WPP), which allows that Bank to go the extra mile in bringing innovation to its projects, analytical and policy work. Through this program we can design approaches at the basin level to bring water services to people but also put water at the center of energy planning, food security and the protection of the environment. We can help countries mainstream climate change considerations into investment planning and bring state-of-the art

technology to reduce uncertainties, so that instead of reacting to climate change countries can begin to prepare for it. We can demonstrate how to improve productivity in rainfed agriculture and reuse wastewater in irrigation. We can produce innovative analytical work to help countries understand trade-offs and synergies between water and energy and plan investments accordingly.

The program has now started Phase II, a scaled up and bolder effort to help countries build resilience to climate change and achieve inclusive green growth. Results from programs such as the WPP show us that a little ingenuity can go a long way to solving global water issues and ensuring that our investments are done well. The World Bank has a huge potential to shape the global water agenda through this work and to help our client countries ensure water security to support growth, poverty reduction, and shared prosperity.

"Stepping Up Efforts to Address Water Issues", 21/05/2013, online at: http://blogs.worldbank.org/water/stepping-efforts-address-water-issues

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❖ Cutting Water Consumption in Concentrated Solar Power Plants

Concentrated solar power (CSP) systems are a great promise for renewable energy at scale. But they can use a lot of water, which is a problem since they tend to be located in places where water is scarce. Some concentrated solar technologies need to withdraw as much as 3,500 liters per Megawatt hour (MWh) generated. This compares to 2,000 liters/MWh for new coal-fired power plants and 1,000 liters/MWh for more efficient natural gas combined cycle power plants.

CSP are thermal power plants and most of them generate power by creating steam to turn the turbines, just as coal power plants do. The main difference is that CSP plants use energy from the sun as their fuel source instead of coal or gas. The mirrors reflect the sun and concentrate it in one place (absorber tubes in parabolic trough technology and central receiver in tower technology). The sun's energy heats the water and converts it into steam. Once the steam has done its job (turning the turbines to produce electricity), it has to be cooled down to be condensed into water and be able to start the cycle again (closing the so-called steam cycle). Most of the cooling systems used around the world use water as the heat transfer medium and this is where most of the water consumption comes from.

Although CSP still produces intermittent power (depending on whether the sun is shining or not) companies are increasingly developing methods to use the steam to store the excess power generated on sunny days. Moreover, developers of concentrated solar technology are finding ways to cut water consumption by up to 90%.

In Southern Spain, I visited one such plant. Here the mirrors point up at a tower, concentrating the solar energy. Water is pumped up the tower and is heated to 280-540 Celsius degrees producing steam to turn the turbines. On sunny days, the plant generates more energy than it can sell to the grid. So it is designed to produce energy at night with the steam stored in pressurized tanks on the ground and released when the sun is not shining. The company is also testing another tower where they store the surplus energy using molten salt, which is more efficient. Moreover, they are investing in alternative cooling systems, such as dry cooling and hybrid wet/dry cooling, which reduces water requirements to 35-40 liters per MWh.

In the latest test plants in Spain, another important water consumption of the plant is for washing the mirrors (see picture). A small truck equipped with an arm of soft brushes like those used at

commercial car washes trundles around the plant cleaning dust off the mirrors. And even that water consumption is beginning to drop. The company is experimenting with land management options that will cut the dust and therefore cleaning will be less frequent.

"Cutting Water Consumption in Concentrated Solar Power Plants", 20/05/2013, online at: http://blogs.worldbank.org/water/cutting-water-consumption-concentrated-solar-power-plants-0

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