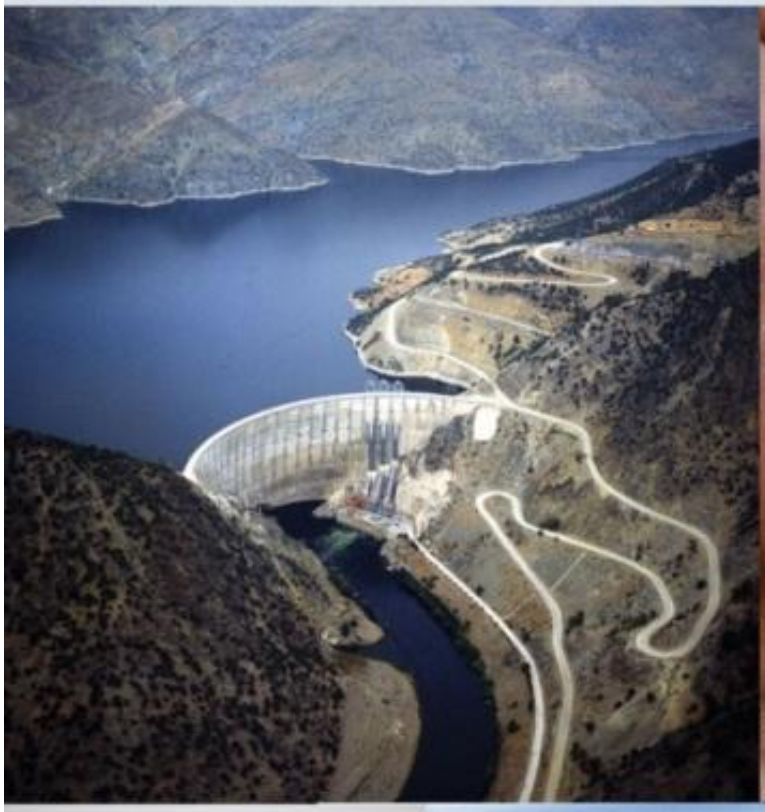


ORSAM WATER BULLETIN

Weekly Bulletin by ORSAM Water Research Programme

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





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ORSAM WATER BULLETIN

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❖ Iranian official: 'Saving Urmia lake with the water of Araz River is a pretext'

Baku. Real Jafarli – APA. 'Saving Urmia lake with the water of Araz River is a pretext', Head of the Iranian West Azerbaijan Province's Environment Organization Hassan Abbasnejad said, APA reports citing ISNA.

To him, the project on transferring the water of Araz River into Urmia lake is realized only to develop agriculture, mastery and tourism: 'Don't the persons, who realize this project for such purpose, know that the agriculture will be ruined after Urmia lake dries up?"

Abbasnejad said that at present time, only 1/3 part of Urmia lake remains: 'And after it dries up the salt of the lake will cover the entire Iran, including Azerbaijan, Kurdistan, Mashhad and Tehran provinces'.

Head of the Iranian West Azerbaijan Province's Environment Organization stressed that 24 projects have been implemented to save Urmia lake from environmental disaster up now.

The project on water transfer of the Araz River to Lake Urmia was started in Julfa in the west of Iran's East Azerbaijan province on July 27. The purpose of the project is to meet water demand of the population in 22 towns and 286 villages, provide the required amount of water for Lake Urmia and create conditions for modern irrigation methods of the sown areas there.

"Iranian official: 'Saving Urmia lake with the water of Araz River is a pretext'", 12/08/2013, online at: http://en.apa.az/xeber_iranian_official_____saving_urmia_lake_wit_197542.html

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❖ Iran Faces Environmental Crisis

TEHRAN, Iran — As temperatures soared above 105 degrees Fahrenheit during one of the hottest summers here in recent memory, no snow was visible atop the mountains ringing Tehran and no water flowed down the narrow channels along main streets (known as *jubes* in Farsi) that a year ago were still full of fresh mountain runoff. A furry brown haze obscured the skyline, irritating eyes and tickling throats.

While most press attention has focused on the inauguration of a new Iranian president, the nuclear crisis and the impact of Western economic sanctions, global warming and a deteriorating environment loom as large if not larger as a threat to the well-being of Iran's 75 million people.

"Here in Iran, we are situated in a low-precipitation belt of the planet," Gary Lewis, the UN resident coordinator in Iran, told *Al-Monitor*. "One primary concern must therefore be water. We are at risk of a perfect storm: water scarcity, land degradation and climate change all feeding into each other."

Water resources are dwindling as Iran's three major lakes dry up, the majority of the country's other lakes are also in the process of disappearing and becoming contaminated with wastes and chemicals, neighboring countries build dams that divert shared rivers away from Iran and underground aquifers are depleted.

Lake Orumieh in northwestern Iran has been "despoiled to the point of destruction," wrote Eskander Firouz, a legendary Iranian environmentalist, in his 2005 book *The Complete Fauna of Iran*. Lake Hamoun in the southeast, "once the greatest expanse of fresh water in Iran, is now totally dry," according to Firouz, while a third once-giant lake — Bakhtegan near the southern city of Shiraz, the third-largest lake in Iran, dried up completely almost a decade ago.

Lewis told *Al-Monitor* that expanding agriculture to feed Iran's growing population has led to "unsustainable harvesting of aquifers." There are currently about 650,000 wells in Iran that provide more than half the water consumed in the country, he said.

Despite the looming shortages, Iranians do not use water efficiently.

Domestic use of water resources in Iran is about 70% more than the global average, said Lewis. In Tehran, shopkeepers can be seen hosing off the sidewalks in front of their stores instead of sweeping up the dirt; during last week's heat wave, municipal workers also liberally watered public gardens with hoses rather than using more scientific means of irrigation.

Lewis said official statistics show that there is only 30% water-use efficiency in agriculture, a sector which accounts for over 90% of water use in Iran. Deforestation and desertification are also major problems contributing to land degradation, he said.

"We need to price the resources we are consuming fairly — including water," Lewis said. "And we need to build climate-change resilience at the community level over and above what we do to change attitudes at the national and sectoral levels."

While there are dozens of national parks, wildlife refuges and protected areas in Iran, biodiversity is decreasing and more needs to be done to bolster guards assigned to prevent poaching, experts say. Firouz told *Al-Monitor* that Iran's wildlife has declined by 85%, that rangelands are being degraded and destroyed and that the best of Iran's forests have disappeared and have often been replaced by orange trees and unsustainable agriculture.

Air pollution is another major problem. Since the 1979 revolution, Tehran's population nearly tripled from about 4.5 million to more than 12 million people, who sometimes all seem to be jamming the roads at the same time.

Relatively cheap gasoline — still less than $1 a gallon after subsidy reforms — the poor quality of locally made gas (which Iran must refine because of sanctions that block imports) and the preponderance of cars with substandard emissions controls are major contributors to pollution in the Iranian capital. The lack of a more extensive and reliable public-transportation system is also a major factor. The Tehran municipality has invested more in roads, tunnels and flyovers that benefit private automobile owners than in buses, subways and trams that could relieve congestion and pollution.

The pollution has serious health consequences. In the winter, when the air is at its dirtiest because of inversion which traps pollutants under a layer of cold air on windless days, the Tehran municipality often closes offices and schools and those Iranians who do venture out wear face masks.

Over the past several years, Iran has also been suffering from increasingly severe dust and sandstorms. These are especially impacting western provinces bordering Iraq, from where the storms mainly originate. According to Lewis, "The sandstorms have been caused by the abandonment of vast swathes of agricultural land during the past 10 years as well as the drying out of wetlands and rivers. Where they are hitting Iran hardest is in agriculture, infrastructure, the environment and public health."

In the height of summer, pollution levels are also high, particularly in south Tehran, which is at a lower elevation than the wealthier north. A pharmacist in the south Tehran neighborhood of Javadieh

told *Al-Monitor* that asthma is a growing problem, particularly among young children and that there is a shortage of inhalers — because of sanctions and government mismanagement — to treat this potentially life-threatening condition.

Iran has also been slow to embrace renewable energy, which currently provides less than 1% of energy demand.

All is not bleak, however. There is rising environmental consciousness in Iran, particularly among educated youth. A middle-aged ecologist named Mohammad Darvish writes frequently on the subject and has predicted that Iran will someday have a "green" movement that is environmental rather than ideological in nature.

Firouz, who headed Iran's first department of the environment before the 1979 revolution, told *Al-Monitor* the topic is increasingly covered by the Reformist-moderate Iranian press, including *Etemaad* and *Shargh* newspapers, and that more than 1,000 young people have formed a blog on Facebook devoted to his work on biodiversity, conservation and the need for better planning that takes the environment into account.

The United Nations is also doing its part, advising Iran on reforestation, carbon sequestration and wetland-recovery programs.

"Countries of the region — including Iran — need to learn the hard lessons of the Chinese development model, which in recent decades has seen substantial wealth generated but at massive environmental cost," Lewis told *Al-Monitor*. "But the real breakthrough will only come when discussion on the impact of climate change … goes beyond a discourse between the technocrats and policy-makers. The public as a whole needs to understand what is at stake. For this, we need much, much more public discussion and awareness raising."

"Iran Faces Environmental Crisis", 16/08/2013, online at: http://www.al-monitor.com/pulse/originals/2013/08/environment-pollution-iran-water.html

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❖ Tajikistan names Iran as strategic partner

Iran is among strategic and important partners of Tajikistan, so presence of Iranian president in the International Water Conference would be very important, Deputy Foreign Minister of Tajikistan Khosrow Nazeri said.

Nazeri said that International Water Conference will be held in Dushanbe on August 21-22 under chairmanship of the United Nations and with participation of delegations from 60 countries, IRNAreported.

Nazeri continued that so far heads and officials of 30 countries as well as representatives from 19 international bodies have accepted invitations and 52 more states have expressed their readiness to attend the meeting.

He added that totally 800 experts and officials will attend the meeting.

The aim of holding water conference is an cross-border cooperation between countries.

Tajikistan has huge resources of pure and crystal-clear water and ranks first in the central Asia and third in the world in this regard, so the officials of the country are trying to attract foreign investment.

Generating electricity can develop Tajikistan economy, so in the past 22 years, 221 small power plants have been constructed in the country, but these plants have not been able to remove shortage of electricity in Tajikistan and there is a pressing need for foreign investment.

"Tajikistan names Iran as strategic partner", 12/08/2013, online at: http://www.azernews.az/region/57985.html

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❖ The Middle East's delicate balance of trade: exporting oil and importing water

So how has a region that water experts say ceased to have enough water for its strategic needs in1970 proved so resilient to water scarcity?

"Trade is the first means of being resilient; it's the process that enables an economy to be resilient. The ability to trade effectively depends on the strength and diversity of the economy," Anthony Allan from King's College London and the School of Oriental and African Studies told IRIN.

That does not literally mean that countries import water directly; it is rather that because so much water is used, not for drinking, but for agriculture (around 90 percent), by importing food staples like wheat you are in effect importing water, something Allan calls "virtual water".

As a result, the region's growing population imports around a third of its food - a figure that shoots up in the Gulf states where arable land is negligible.

But while such resilience may "miraculously" solve extreme water scarcity and make life that exists today possible in the Middle East, it can create its own vulnerabilities; countries need economies that can generate enough foreign currency to pay for imports.

That may be easy in oil-rich countries with small populations like the United Arab Emirates (UAE) and Qatar, but it is far more difficult in places like Egypt, which struggles to find the reserves to pay for wheat imports for its 84 million citizens in a context of declining crude oil exports and a slump in tourism.

Such trade "resilience" is also largely unaffordable in a place like Yemen - the region's poorest country, which has 25 million people in an extremely water scarce (and hence food scarce) environment.

Each Yemeni only has access to about 140 cubic metres of water annually and the capital, Sana'a, is

on track to be the first in the world without a viable water supply.

An uncertain future

While trade, an abundance of historically cheap food on international markets, and for some oil - sold at high prices - have combined to create an unexpected resilience in the face of water scarcity, such lessons may not travel well in the developing world.

Trade may have reduced dependency on local water supplies, but it has shifted dependency to international markets and exposed people to fluctuating world prices.

It has also hidden the gravity of the water scarcity situation in the Middle East and made it easier to neglect the development of other solutions to a problem that shows no sign of going away.

A recent study of NASA satellite data published last month found that parts of Turkey, Syria, Iraq and Iran along the Tigris and Euphrates river basins had lost 144 cubic kilometres of water from 2003 to 2009 - roughly equivalent to the volume of the Dead Sea.

An analysis of the data published in the Water Resources Research journal attributes about 60 percent of the loss to the pumping of groundwater from underground reservoirs - reserves people fall back on when rivers dry up.

Underground reserves can only last so long, and importing ever increasing amounts of food to feed a growing population is not an option for poorer countries.

Resilience and efficiency

Nevertheless, there are other lessons in water scarcity resilience from the Middle East - either measures that have been shown to build resilience, or that water experts have come to understand would improve the strength of the system to further shocks if they were broadly implemented.

Some of these solutions are not new.

For a start, though the region may be drying, it has been dry for a long time.

"Water scarcity is not new to the region," Hamed Assaf, a water resource management specialist at the American University of Sharjah in the UAE, told IRIN. "It has been the norm for thousands of years and people have adapted their survival strategies to changes in rainfall and temperature," he told IRIN.

With scientist predicting an increase in extreme weather events, adaptability has become increasingly important. It is also true that there remains a degree of unpredictability in the system, particularly in Egypt where it is not clear if future rainfall will increase or decrease.

Resilience is about being strong in the face of whatever happens. And in any situation, strong water systems make the most of what they have - including through treating and reusing waste water like at the Al Gabal Asfar water treatment plant in Egypt.

Rainwater harvesting

One old technique is rainwater harvesting. "In Jordan there are indications of early water harvesting structures believed to have been constructed over 9,000 years ago," Rida Al-Adamat, director of the Water, Environment and Arid Regions Research Centre at Jordan's al-Bayt University, told IRIN.

Jordan harvests 400-420 million cubic metres of water annually, according to Ministry of Water and Irrigation spokesperson Omar Salameh.

"We have 10 major dams with a total capacity of 325 million cubic metres, in addition to hundreds of sand dams in different locations to develop local communities and recharge groundwater."

Water harvesting can be done at the household level especially in areas that get enough rainfall during the rainy season. "If your area gets 500mm of rain per year, you can collect enough water for

household use," said Assaf.

"In Lebanon, people used to build ponds to collect water during winter and use it later on for irrigation and breeding animals," said Assaf.

"The main idea of water harvesting is to increase green water or soil moisture… Farmers in the region used to build small sand barriers on slopes to prevent the water from going down and thus recharge the area. Then they used to plant in the areas behind the barriers," he added.

Data collection

A key aspect of efficient water use is data collection - important for sound water management at the country level.

"As the saying goes: what you cannot measure you cannot manage," Heba Yaken, water and sanitation operation analyst at the World Bank office in Cairo, told IRIN. "It is important to know how much you are consuming in order to manage it in a good way."

Jordan, which some say has one of the most monitored water scarcity situations in the world, has gained widespread recognition for its data collection.

"Jordan's data is relatively well organized, especially when it comes to agriculture. The volume of water consumption is precisely known in every area. They have installed measuring tools in every area so they know what kinds of crops are being cultivated and the amount of water they consume," Hiba Hariri from the Arab Water Council told IRIN.

Data-sharing in the region is limited, according to Yaken. "Countries are not as transparent as they should be," she said.

Other solutions

A whole range of solutions are being piloted and recommended in the Middle East.

In Egypt, the Arab Spring has encouraged farmers to become more outspoken in demanding their water rights, says Yaken from the World Bank.

Farmers have come together in "water users' associations" to help manage supplies and become more aware of water scarcity issues.

"Farmers are now responsible for the `mesqas' [canals]", Yaken told IRIN.

"People at the tail of the `mesqa' don't get as much water as the people upstream. People are receiving much more training so that they can manage those disputes between the different farmers, and different demands," she said.

Elsewhere, capacity building is being carried out by the German Agency for International Cooperation (GIZ), which is running a climate change adaptation scheme designed to help Arab states climate-proof water systems.

While trade provides substitutes for much agricultural water use, the remaining 10 percent of water needs are increasingly being met by desalination, half of which globally is carried out in the Middle East.

Recent years have seen a large increase in desalination, clearly useful in a region without any landlocked countries, but it is an energy-intensive phenomenon almost entirely powered by fossil fuel power, which raises other environmental concerns.

Saudi Arabia uses 1.5 million barrels of oil a day to power its desalination plants, although it is looking to develop solar-powered plants.

Solar is a largely unexplored option for desalination, but also for increasing the efficiency of water systems, through technologies like solar-powered water pumps.

Consumption

But although desalination may become an increasingly affordable, and renewable, solution, water experts say it can only be used as part of wider reforms.

A more resilient water system will also need adaptions on the demand side, including more efficient consumption of water, as well as cooperation between countries on the sustainable use of current resources.

"The problem is that we have short-term plans that change with the change of personnel or ministers," said Hariri from the Arab Water Council.

As climate change and population growth increase pressure on water systems, the MENA region will need to be increasingly efficient in its use of water - and may have lessons for other parts of the world.

"The Middle East's delicate balance of trade: exporting oil and importing water", 13/08/2013, online at:
http://www.albawaba.com/business/water-oil-middle-east--513305

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❖ Nabi Salih's calm before the storm: Protesting Palestinian village takes an Eid hiatus

Nabi Salih's main square sits about 50 meters from the 19th century Ottoman shrine dedicated to the prophet of the same name. It surrounds a circular grove of palm trees and overlooks the local mosque. On Friday, August 9, it was silent. Besides a few villagers walking home from afternoon prayer, it was deserted also. For the first Friday in nearly four years, there was no protest.

Inhabitants of the Palestinian village, located about 20 kilometers northwest of Ramallah, began weekly protests in December 2009, when a nearby Israeli settlement seized Ein al-Qaws Spring, which had supplied the farming community with water for irrigation.

As their Olive trees withered, many Palestinians fled. "Most of the people who left went to Jordan. But some went to Gulf countries as well," said Iyad Tamimi, 45, who remained in the village and often leads the Friday protests. According to Iyad, about 630 people still live in the village. For them, survival is resistance.

Halamish, the Israeli settlement just south of Nabih Salih, was created in 1977. According to international law outlined by the Fourth Geneva Convention, Israeli settlements like this in the West Bank, as well as in the Gaza Strip, Golan Heights and East Jerusalem, are illegal. Despite affirmation by the U.N. Security Council, U.N. General Assembly, and International Court of Justice, Israel disputes the illegality of settlements in territories acquired after the 1967 war, saying they do not apply to the Fourth Geneva Convention because no sovereign government therein exists.
Since Halamish's inception, and more frequently since the spring was confiscated in 2009, Palestinians from Nabi Salih say they have been terrorized by settlers. "One year ago, settlers rode in at night on bicycles and tried to burn down the mosque," said Naji Tamimi, 51, a cousin of Iyad. "And we can no longer use the southern part of our land because they burned down the trees that were there."

Water has been a crucial factor in the villagers' attempt to survive. According to Naji, Nabi Salih is allocated 12 hours of water usage per week, and that 12 hours comes only on Sunday. "We are hardly ever able to fill up enough water to last the week," he said. According to Naji, Halamish has no such water restrictions.

What's more, Naji said that Israeli Defense Forces often drive into the village at night with tanks of "skunk water," a foul substance leaving everything it touches with a horrible smell, spraying it onto houses and water tanks that villagers keep on their roofs. Although skunk water is not poisonous, Naji said that after their water tanks have been sprayed, many villagers cannot stomach the smell enough to drink what's inside.

The protests have a history of violent suppression. Villagers gather at the main square after Friday prayer, and are usually joined by a handful of internationals: activists, journalists, and the generally curious. The crowd then marches down the road, or down the hill on the opposite side, to Ein al-Qaws Spring, where IDF soldiers meet them, often firing teargas canisters and rubber bullets into the crowd. On several occasions, they fired live ammunition.

"We have had two martyrs," said Iyad, before telling the stories of Mustafa and Rushdi Tamimi, who were killed in 2011 and 2012 respectively. Mustafa died after being shot in the face by a teargas canister. Rushdi, according to Naji, was shot twice in the back, first with a rubber bullet, then with a live round; he died in the hospital two days later.

Iyad said that 140 Palestinians from Nabi Salih have been arrested at protests in the last four years, including 35 children under the age of 18. The IDF has not been shy about arresting international and Israeli protesters from the crowd as well. On August 2, *palsolidarity.org* reported that Israeli troops fired rubber bullets, sound bombs, and skunk water at the demonstration, before arresting four Israelis who took part.

Protest vacation

The reason for the protest's cancellation on August 9 was that the Friday fell on the first day of this year's Eid al-Fitr, the Islamic holiday marking the end of the holy month of Ramadan. "During protests, Israeli forces close down the roads," said Naji. "Many of us have family coming in and out of the village to celebrate Eid, so we could not risk the soldiers shutting down the roads." Naji said that in the past, the first day of Eid never fell on a Friday, so protests continued normally.

The Nabi Salih-Halamish settlement dispute comes amid ongoing peace negotiations between Palestinian and Israeli officials, brokered by Washington and U.S. Secretary of State John Kerry.

Iyad said he is suspicious but hopeful of U.S. involvement in the deal. "The U.S. has been a major problem because they support Israel in everything," he said. "But they can have a good impact because they have the ability to pressure the Israelis." Iyad expressed frustration, though, because the solution being discussed seems to be a two-state solution, which he said will never work. "Any two-state deal will be an Israel victory because they will take the most fertile land and leave Palestine even more divided, with even more checkpoints and travel restrictions," he said.

But Iyad and Naji conceded that they have no influence over what their representatives decide in the peace talks. All they can do is defy the occupation by not leaving their home, even as settlements siphon off their means of survival. "We cannot leave because they want us to leave or to die," said Naji. "We want to end the occupation. We want to live like any other people in the world. We want our rights."

"Nabi Salih's calm before the storm: Protesting Palestinian village takes an Eid hiatus", 14/08/2013, online at: http://www.albawaba.com/news/palestine-israel-nabi-salih-protests-513557

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❖ The Complications Of Getting Running Water In The West Bank

Four enormous water tanks sit high on a hill in the West Bank. These hold the lifeblood for Rawabi, the first planned, privately developed Palestinian community, about 25 miles north of Jerusalem.

After five years, the first neighborhood is nearly built. But developer Bashar al-Masri is worried, because when it comes to water, Israel controls the spigot in the occupied West Bank.

"We're about to have people move into the city," he says, "and we still do not have a solid solution for the water."

Right now, a 2-inch temporary pipe brings in less than half the water needed for construction and to run the offices. The rest is trucked in to those storage tanks, an extra expense and hassle. Rawabi's first residents are due to move in at the end of this year. Eventually, developers hope, 40,000 people will call Rawabi home.

They also hope this will be a new kind of living experience. Rawabi is designed to offer an environmentally friendly, middle-class lifestyle. There will be walking and biking paths.

Like in Israel, but unlike in any other Palestinian city, wastewater here will be cleaned and reused to irrigate landscaping. Homes will have meters to help monitor water use and instant hot water to reduce waste.

Amir Dajani, the deputy managing director of the project, says these are big cultural changes. Most Palestinian homes have their own water tanks on the roof, because in the West Bank water comes through the pipes erratically. Some places get it several times a week; some places less than once a month.

"People hug their tanks in the summer," Dajani says. "If they go up on the roof and feel the tank, they know that there is enough water to keep them going."

Seeking Israeli Approval

To get enough water to keep Rawabi going, a new pipe needs to be laid. And because that pipe would run across territory entirely controlled by Israel, in what's called "Area C" in the West Bank, the community needs Israeli permission.

An application is in to a joint Israeli-Palestinian commission. But Israeli water expert professor Alon Tal says it's a lopsided relationship.

"Israel doesn't need Palestinian permission to undertake any number of water development projects," he says. "Palestinians are required to get Israeli permission to do so."

But he says he believes Rawabi will get its pipe.

"I think all the major decision-makers, including our prime minister, see Rawabi as a good thing," says Tal, who supports the idea himself. "It sends a message to the world that Israel's not trying to sabotage Palestinian development. It sends a message to the Palestinians: It pays to cooperate; we're going to let you guys develop new cities.

"It's the first city in the West Bank in what, 100 years?"

Developer Masri is not so sure.

"We have had positive feedback from the Israeli authorities since day one," he says. "But the delivery is very slow and always incomplete. Always incomplete."

Political Pressure

As an example, he points to Rawabi's attempt to get a road built to the city big enough to handle, first, construction traffic, then residents. The road also crosses part of Area C.

Israel eventually permitted a temporary road. A Western official told NPR that Tony Blair, the former British prime minister who now serves as the official envoy of the Mideast Quartet, had raised the issue with Israeli Prime Minister Benjamin Netanyahu.

Tal, the Israeli professor, says the question of Rawabi's water could also get caught up in politics — even in peace negotiations, if they begin.

"Israel grants a certain amount of water, under agreement, to the Palestinians," he says, noting that the amount Israel provides the West Bank has grown since figures were first worked out under the Oslo Accords two decades ago.

"It's very easy for us to increase that. But that's a concession. What are they going to do for us? At least this is the thinking of Israeli politicians," Tal says.

U.S. Secretary of State John Kerry is pushing a $4 billion economic investment plan for the West Bank, to parallel potential political negotiations with Israel. No details have been made public, but Kerry has spoken about removing "bottlenecks and barriers" to business in the West Bank. Experts in the West Bank economy say allowing development in Area C could be an important piece of that.

Rawabi's developer says even if Israel gave the green light for a water line right now, he would expect to continue hauling water even as early residents move in.

"But whether we haul it for three or four months or three or four years — that's the big question," he says.

"The Complications Of Getting Running Water In The West Bank", 12/08/2013, online at: http://www.npr.org/blogs/parallels/2013/08/12/205736028/the-complications-of-getting-running-water-in-the-west-bank?utm_source=Circle+of+Blue+WaterNews+%26+Alerts&utm_campaign=a18e3449d7-RSS_EMAIL_CAMPAIGN&utm_medium=email&utm_term=0_c1265b6ed7-a18e3449d7-250657169

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❖ Rush for Nile Water - Now Uganda Plans Massive Hydroelectric Site

In East Africa, the major water resource is the Nile river, the world's longest, at 4,130 miles, referred to by Egypt since antiquity as the country's heart.

The past several decades have seen the mighty river's water flow increasingly contested amongst the river's eleven riverine states.

Three months ago, Egypt's recently deposed President Mohammed Morsi said, "Egypt is a gift of the Nile, and the Nile is a gift of Egypt," and promised that he was ruling no options out concerning its future. Morsi's comment should carry some weight, as Egypt is the most populous and most militarized nation on the Nile concourse.

Upstream states are increasingly eyeing the Nile's headwaters as a source of hydroelectric power, with the latest contender being Uganda.

Uganda is constructing a new 6o megawatt hydroelectric dam on the White Nile. The Karuma Hydropower dam will cost $1.4billion and will be built by China's Sinohydro Corp.
On 12 August Uganda's President Yoweri Museveni praised Chinese investors at the inaugural ceremony, noting that they had the technical expertise and money to fund infrastructural projects and provided finance on favorable terms, "completely free of the usual meddling and high-handedness of some of the friends from outside." Further lauding Chinese involvement Museveni noted that the Chinese were focusing on "primary sectors of the economy such as infrastructure instead of focusing on secondary sectors of national life."

The country could use the facility, as the Uganda Electricity Transmission Co. states that Ugandan demand for electricity is currently surging by 15 percent annually.

Ethiopia is also scrambling to get into the hydropower shuffle. Ethiopia is the source of 80 percent of the Nile's waters and now intends to impose its own vision for the river, which would entail a different division of its waters.

Both states' power divisions will likely increase tensions with Cairo, as Egypt is entirely dependent on other states for its water, almost all of which comes from the Nile. The Nile's four principal

sources rise several hundred miles beyond Egypt's southern border: the Blue Nile, Sobat and Atbara in Ethiopia, which provide around 80 percent, and the White Nile in Uganda, which provides the rest.

Egypt relies on the Nile for most of its water supply and Ethiopia's Lake Tana is the source of the Blue Nile, which contributes 86 percent of the water arriving at Egypt's Aswan High Dam. The White Nile's main source is Lake Victoria, whose shoreline is shared by Uganda, Tanzania and Kenya and which joins the Blue Nile south of Khartoum.

Nile water access issues are rooted in history, as nearly a century ago Britain, as East Africa's dominant colonial power, effectively handed Egypt the lion's share of Nilotic waters in a 1929 accord. Under terms of the agreement Egypt had and currently maintains its historic right to three-quarters of the Nile's water, 55.5 billion cubic meters that it annually diverts of the Nile's total flow of roughly 84 billion cubic meters. Under the 1929 agreement Sudan was apportioned a further 11 percent of the Nile's waters, leaving the other littoral states to share the remainder. Under terms of the accord Egypt has persistently vetoed neighboring countries' rights to build dams or irrigation projects upstream which might affect the river's flow.

In 1959, when Egypt and Sudan were independent and but all Nile upstream states except Ethiopia were still colonies, Egypt and Sudan signed a bilateral convention that essentially reaffirmed the 1929 accord, under which Egypt received 55.5 billion cubic meters a year and Sudan 18.5 billion, leaving only 10 percent of the Nile's water to the upstream countries. The convention argued that upstream nations had significant rainfall, unlike Egypt or Sudan.

Instability, poor governance, lack of finances and the availability of other water sources left the issue largely dormant until the 1990s, when Nilotic governments seriously started to consider using their Nile Basin waters to generate energy and irrigate crops.

Now the Nile's current annual flow averages 84 billion cubic meters, 10 billion of which evaporate from the Aswan High Dam's Lake Nasser reservoir, created when the dam came into operation in 1964.

Not surprising then, that most African countries, where only about 25 percent of the population is connected to electricity grids, are seeking any and all electric power sources.

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Guaranteeing an ongoing and increasingly fractious source of tension for Nilotic states.

Ethiopia has begun a number of hydroelectric projects, including the 1,870 megawatt $2.2 billion Gilgel Gibe III dam on the Omo River and the proposed 5,000 megawatt $5 billion Grand Ethiopian Renaissance Dam, formerly known as the Millennium Dam, on the Blue Nile.

While both have attracted international criticism, Ethiopia's Ministry of Water and Energy Sector Mapping and Database Development office has determined that the country's wind potential could generate 10,000 megawatts annually, which has not yet been developed.

So, how to proceed on the contentious issue? With the current political turmoil roiling Egypt, Cairo's ability to influence upstream states is currently constrained, which until the dust settles may well provide Egypt with a number of aquatic fait accomplits.

If Kampala and Addis Ababa press forward with their hydroelectric projects in the interim, then they will probably eventually face some "frank and candid" diplomatic discussions with Egypt, which, after all, has a 4,000 year old history of Nile concerns. Not a happy scenario.

"Rush for Nile Water - Now Uganda Plans Massive Hydroelectric Site", 16/08/2013, online at: http://oilprice.com/Geopolitics/Africa/Rush-for-Nile-Water-Now-Uganda-Plans-Massive-Hydroelectric-Site.html

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❖ Uganda Launches Construction of Mega Power Dam On River Nile

Kampala — Uganda's President Yoweri Museveni on Monday launched the construction of a new dam along the river Nile that is expected to add 600MW on the national grid. The Karuma Hydro power dam will cost $1.4b and will be constructed by Chinese company, Sinohydro Corporation

Speaking at the commissioning of construction in Kiryandongo district, President Museveni praised the Chinese for having the technical expertise and money to fund infrastructural projects.

"Happily, our Chinese friends also have, not only the technical capacity, but financial capacity as well on favourable terms", said Museveni.

Museveni said Chinese lending is also "completely free of the usual meddling and high-handedness of some of the friends from outside".

It is suspected by the reference to "meddling friends from outside", Museveni meant western countries who peg values as democracy and good governance to projects that they fund, unlike the Chinese.

Museveni also praised the Chinese for focusing on "primary sectors of the economy such as infrastructure instead of focusing on secondary sectors of national life".

Uganda faces regular power outages as a result of increased demand for electricity which has shot up from 10% to 15% annually, according to the Uganda Electricity Transmission Company.

"Uganda Launches Construction of Mega Power Dam On River Nile", 13/08/2013, online at: http://allafrica.com/stories/201308140429.html

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❖ Ethiopian dams won't cause harm - ex-head of Ethiopian Environmental Protection Authority

ADDIS ABABA (Thomson Reuters Foundation) – The former head of the Ethiopian Environmental Protection Authority (EPA), now an advisor to the country's new environment minister, has told Thomson Reuters Foundation that major dam projects will not cut off water supplies downstream nor worsen living conditions for local people.

The EPA was Ethiopia's main body for environmental regulation and monitoring for nearly two decades after it was established in 1994. The agency – responsible for developing environmental laws and standards – was upgraded last month to become the Ministry of Environmental Protection and Forestry, with a new minister, Belete Tesfa.

E.G. Woldegebriel spoke with Dr. Tewoldebirhan Gebregzabher, the EPA's former director-general, about its work, as well as his views on cutting emissions, deforestation and controversies surrounding the country's hydro-electric dam projects.

TRF: Ethiopia plans to have grid electricity by 2014 that will be produced without using fossil fuels. How will it reach that target?

TG: In 2014, when the 1,870 megawatt Gibe III hydro-electric dam starts to generate power, the electricity in the grid system will be entirely from renewable energy. That is from hydro-power primarily, but also from wind power and some geothermal power.

TRF: How would you respond to critics of the Gibe III project who say it endangers the existence of Lake Turkana and will displace thousands of people in southern Ethiopia and northeastern Kenya?

TG: Gibe III is for generating electricity - after it generates electricity, the water will flow to Lake Turkana. I don't see how it will dry up Lake Turkana. I think it's either people who mistake hydropower generation with irrigation, or some mischievous individuals who want to cause problems that have been exaggerating.

It's true that during the filling-up period of the dam, if water was completely stopped, it would prevent water flowing into Lake Turkana from the areas upstream of Gibe III. But that's not going to happen, because as part of the environmental impact measures, water will continue to flow down and enter into the lake. Therefore, I don't think there will be any harm.

With regard to displaced people, I think the number is around 100 families. When you consider the employment opportunities it gives - including to them - and the fact that they are being given land and money to resettle, it's not an issue. There is no development that doesn't have a negative impact; only a country must be cautious and correct (in its response to) those negative impacts, and (in this case) those negative impacts of displacement are being taken care of.

TRF: Ethiopia contributes about 86 percent of the waters of the River Nile. What is the Ethiopian government doing with its counterparts in downstream Nile Basin countries to assess the impact of the 6000 MW Grand Ethiopian Renaissance Dam (GERD) project, and to solve potential misunderstandings?

TG: The governments of Ethiopia, Sudan and Egypt established a technical workforce that evaluated - and again, for the reasons I described for Gibe III – that the Renaissance Dam isn't going to stop water from flowing. The water will generate electricity and continue to flow. The technical team who examined it have all agreed that its impact is going to be positive in both Sudan and Egypt.

The reason is that, in summer time, in the heavy rainfall, especially Khartoum (Sudan's capital) suffers from flooding and this will no longer be the case, because the same water will continue to flow but it will be regulated by the dam. The dam makes sure that the water doesn't go in one burst, and that it will flow continually throughout the year. Sudan and Egypt will continue getting the water that they have always been getting.

TRF: Do you think Ethiopia will be able to achieve its vision of becoming a carbon-neutral economy by 2025?

TG: The indications so far are that it will, and I have no reason to think we will slip back, but of course we can only be certain when it happens. I also expect Ethiopia to be the first carbon-neutral economy in Africa - however this isn't a very easy thing to define in the sense that there are many

countries with big forests that existed before and are not considered as valued sinks for carbon. But I think that's wrong and therefore the forested countries like Democratic Republic of Congo…I believe (are) already carbon neutral.

TRF: Ethiopia's forest cover is estimated to have fallen to below 3 percent from around 40 percent about a century ago. What is the trend in deforestation?

TG: (The percentage of Ethiopia's land area covered by forests) was 20 percent 100 years ago… Ethiopia has been an agricultural country for at least the last 5,000 years, and most of its closed (contiguous) forest areas were cleared for crop cultivation….The 40 percent (figure) is only the potential area of the country that could have had (contiguous) forest.

It's true (that) in the 19th century the forest cover started coming down, and the estimate was that it went down to about 3 percent. But recent estimates show that reforestation programs have been successful and it has been rising. We are planning to make a much more precise measurement soon, but at the moment I wouldn't be very happy to put a figure on the present forest cover. However I'm absolutely certain it's more than the 3 percent it had dwindled to.

TRF: What were the main challenges for Ethiopia's EPA?

TG: The most important was that of capacity - we had more government support than I had expected, but we did not have enough trained staff to meet the demands of the work at hand. And of course, Ethiopia is a poor country, and finance comes next.

TRF: What did Ethiopia take away from the 2012 U.N. climate talks in Doha?

TG: The aspiration that there will be a new legally binding international protocol negotiated by 2015, which will come into force in 2020. It's so that the whole world can unite and curb climate change - that's the biggest issue in my view.

TRF: How do you see the likelihood of Ethiopia being able to access climate finance from the fledgling U.N. Green Climate Fund?

TG: The fund has been established, the secretariat is in existence - hopefully then the rich countries will provide the funding they have promised. But we can't as yet accuse of them of not having provided (money) since the fund has only just started.

TRF: What's the status of carbon credit schemes that have already been started in some parts of Ethiopia?

TG: The first one was in the Rift Valley region regarding a community forest…there are also others in areas like Bale in southeastern Ethiopia and Welayta in southern Ethiopia. A number of others are in the process. But really in carbon financing, Ethiopia - as the rest of Africa - is a late starter.

"Ethiopian dams won't cause harm - ex-head of Ethiopian Environmental Protection Authority", 12/08/2013, online at: http://www.trust.org/item/20130812133857-74iy1

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❖ Egypt: River Nile's Flood Reaches 6.3 Billion Cubic Meters Within Days

Water revenues of the River Nile's flood since the beginning of the new aquatic year, 2013, hit 6.3 billion cubic meters within the course of only few days, said Minister of Irrigation and Water Resources Mohamed Abdel Moteleb.

Until Monday 12/8/2013, volume of the High Dam Lake's water reservoir amounted to 108,168,000,000. Level of the Nile rose by 8 centimeters.

The Nile department at the Ministry of Irrigation is currently considering the nature of the New Year's River Nile flood and analyzing the Satellite pictures, he added.

"Egypt: River Nile's Flood Reaches 6.3 Billion Cubic Meters Within Days", 13/08/2013, online at: http://allafrica.com/stories/201308141190.html

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❖ Tom Campbell: America Would Be Wrong to Favor Egypt in Water Rift

Egypt's sense of nationhood is tied up in control of the Nile. So is energy self sufficiency for Ethiopia. The clash between these two realities can have deadly consequences. America will be tempted to intervene – on the wrong side.

The issue is a major dam proposed by Ethiopia on the Blue Nile River, the source of over 80 percent of the water that eventually enters the Nile River system. The Blue Nile starts in Lake Tana in Ethiopia, and flows through tall, narrow chasms to the Sudan border. Within Sudan, the Blue Nile meets the White Nile in Khartoum, and from there flows into Egypt.

Ethiopia's hydroelectric dam is worth $4.2 billion and would be Africa's largest. It would also challenge colonial-era water agreements, including the 1929 and 1959 Nile Water Treaties, which have given Egypt and Sudan most rights to Nile water.

For many years, all the Nile's water has been divided between Sudan and Egypt; any other country that dared to touch the Nile was met with stern threats from Egypt and its protectors: first England, then America. When Ethiopia sought World Bank financing for this dam more than 20 years ago, the U.S. leaned on the bank to say no. Egypt was at peace with Israel at America's request, and Egypt demanded America's help with the Nile question (and $2 billion a year) in return. The calculus was clear: Ethiopia brought us nothing, Egypt, under Mubarak, brought peace with Israel. So we did Egypt's bidding with the World Bank.

The last several years, however, have brought Ethiopia into a partnership with the U.S. in attacking al-Qaida and similar groups in Somalia. Meantime, Egypt deposed longtime U.S. ally Hosni Mubarak, and we were not enthusiastic about his replacement, Mohamed Morsi. Trying to stir up nationalist sentiment, Morsi focused on Ethiopia's announcement that it would start to divert the Blue Nile so dam construction could begin. He said, "We will defend each drop of Nile water with our blood if necessary," and summoned leaders of the Islamic parties to discuss Egypt's likely responses. Infamously, a leader of one of those parties, not knowing the meeting was being broadcast, said on live television that the "real enemies" were America and Israel. Talk included a military strike.

Morsi is gone. Secretary of State John Kerry has embraced the new military government. The danger is that the U.S., in its effort to prop up the Egyptian military successors to Morsi, will try to give them a victory over the dam issue.

When has the U.S. managed to play the internal politics of another country with any success? It is so much more likely that, if we go down this route, we will alienate our ally in the fight against extremism in Somalia, and do nothing to appease the widely held belief in Egypt, voiced at that televised meeting, that somehow all wrongs are due to America. We'll choose the wrong side – once again.

Why do we need to take sides at all? We can't stop Ethiopia by cutting off its financing: Ethiopia has come up with the funding for this project from the sale of bonds, and loans from China. The dam, once finished, will produce tremendous amounts of electricity that can be sold to neighboring countries to retire the bonds.

And if the new Egyptian regime wants to show it is at least as nationalistic as the deposed Morsi government, and threatens to bomb the dam, will we be proud to be associated with that?

If we do take sides, the dam is the right thing to do for environmental and humanitarian reasons. Ethiopia will become a net energy exporter in a part of the world chronically lacking in electricity. The stored water can alleviate the droughts that occur every seven years, filling world newspapers with horrifying pictures of starvation in Sudan and Ethiopia. Once the reservoir is filled, the flow of the Nile won't be diminished. The time to fill the reservoir can be during the wet seasons, and spread out over many years.

There are many ways for America to signal its support of the new regime in Egypt. Shutting down Ethiopia's dam, or looking the other way while Egypt does so, is not one of them.

"Tom Campbell: America Would Be Wrong to Favor Egypt in Water Riff", 12/08/2013, online at: http://www.tadias.com/08/12/2013/tom-campbell-america-would-be-wrong-to-favor-egypt-in-water-rift/

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❖ Sudan Struggles With Worst Floods in Decades

GENEVA — The International Federation of Red Cross and Red Crescent Societies is appealing for nearly $1 million to provide emergency aid to thousands of flood victims in Sudan. These floods, considered to be the worst in decades, have taken the lives of at least 36 people and injured more than 90.

These are the worst floods to have hit Sudan since 1988. Early this month, heavy rains fell in the states of Khartoum and River Nile, causing flash floods and extensive damage there and in seven other states.

The International Federation of Red Cross and Red Crescent Societies reports about 130,000 people are affected by the flooding. It says infrastructure and livelihoods have been ruined. It says 14,000 houses have been destroyed. Many of the mud houses have been washed away, while others are submerged by water.

Red Cross spokeswoman Jessica Sallabank says about 80,000 people are displaced and without shelter.

“We have reports of people camping out on the roads. They have moved to higher ground or they are lodging with people. So, we do have a humanitarian emergency on our hands. More rain is forecast. Water levels of the Blue Nile and the White Nile Rivers are still rising. So, we are concerned that this flooding could get worse, which is why international assistance is now very welcome," said Sallabank.

The hardest hit areas include the states of Khartoum, Gazira, Northern and River Nile. The Red Cross appeal aims to assist 35,000 people over the next six months. Priorities are to provide emergency shelter and relief items and emergency health care.

Sallabank says help with water, sanitation and hygiene is of paramount importance to prevent the outbreak of disease.

"Thousands of latrines and drinking water sources are being washed away so that, of course, presents a health hazard. There also is an urgent need to prevent the outbreak of diseases - diseases typically associated with floods - diarrhea. When you have got pools of stagnant water lying around there is an increase of malaria, diarrhea. I know that WHO [World Health Organization] said a few days ago that the number of mosquitoes and houseflies has increased as well. So, you have got a very, very unpleasant situation for thousands of people now," she said.

Sallabank notes some flood-stricken areas remain inaccessible, so the true extent of the emergency is not known. She says more assessments must be made to get a fuller picture of the needs. Once this is done, she says it is likely the Red Cross will have to ask for more money to take into account the increased humanitarian needs.

"Sudan Struggles With Worst Floods in Decades", 15/08/2013, online at: http://www.voanews.com/content/sudan-struggles-with-worst-floods-in-decades/1730357.html

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❖ Namibia drought: one in three at risk of malnutrition

Climate change fears as 778,000 people face food insecurity amid Namibia's longest dry spell in a generation

One in three people in Namibia is at risk of malnutrition, the UN has warned, as the driest country in sub-Saharan Africa endures its worstdrought for a generation.
The government declared a state of emergency after the failure of crops in May and pledged $20m (£13m) of relief for the worst-hit households. The Kunene region in the north has had no rain for two years, and families have been forced to sell livestock and migrate to cities in search of work.

After a summer lacking rains and a typically dry southern hemisphere winter, Unicef, the UN's children agency, has appealed for millions more to tackle the situation.

"An estimated 778,000 Namibians, a third of the population, are either severely or moderately food insecure," said Unicef, noting that this includes 109,000 under fives. "Against a backdrop of underlying fragility, including pre-existing high levels of food insecurity and maternal and child undernutrition (29% national stunting) combined with low sanitation coverage (14% in rural areas), children and women are particularly at risk of worsening health and nutrition status given the current drought conditions," the agency added.

Unicef has appealed for $7.4m (£4.8m) to support efforts to respond to the needs of women and children affected by the drought. The International Federation of Red Cross and Red Crescent Societies (IFRC) is asking for $1.48m (£1m).

On Monday, an Associated Press (AP) report described how the drought has struck the village of Orupembe, forcing residents to go elsewhere in search of water and grazing ground for their livestock. More or less the only people left in the village, once home to 400, are about 20 police officers, said AP.
"They left for the other side of the mountain, looking for water for the cows," Olani Imanul, the chief of police, told AP. "It has not rained for over two years here."

The drought is being described as Namibia's worst for 30 years, and some have been quick to blame climate change. When Namibia's president, Hifikepunye Pohamba, declared a state of emergency in May, he said: "It has now been established that climate change is here to stay and humanity must find ways and means of mitigating its effect." Crop production in some areas was expected to decrease by about 50% because of the lack of rain, he added.
Mark Leon Goldberg, author of the UN Dispatch blog, posted a video about the drought, observing: "Yet more evidence that the poorest people on the planet are most vulnerable to global climate change."
But Dr Mary Seely, an associate at the Desert Research Foundation of Namibia, struck a note of caution. "We can't say anything happening right now is because of climate change," she said. "Some people will disagree with me of course."
Seely, who has lived in Namibia since 1964, added: "We've had good rains for the last 10 years or so but nobody was doing any planning for the future. It's a dry period, but that's to be expected."

Namibia, which won independence from neighbouring South Africa in 1990, is classified as a middle-income country, although a quarter of its 2 million population live in poverty. A third of Namibians are dependent on some form of subsistence farming.

"Namibia drought: one in three at risk of malnutrition", 14/08/2013, online at: http://www.theguardian.com/global-development/2013/aug/14/namibia-drought-malnutrition-state-emergency?CMP=twt_fd

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❖ Drought hits Namibia; herdsmen, livestock, wild animals seeking scarce water in the desert

ORUPEMBE, Namibia — The police are about the only people left in this village of 400 in the Namibian desert because the infrequent rains have ceased due to a drought, forcing residents to seek precious water and grazing ground elsewhere for their livestock.

"They left for the other side of the mountain, looking for water for the cows," said Chief of Police Olani Imanul, whose roughly 20 officers feel a tad useless with just about everyone gone. "It has not rained for over two years here."

Summer rains usually flood the plains and rejuvenate the flora, but they did not come. Now, in the Southern Hemisphere winter, it is especially dry.

UNICEF said the drought in this arid corner of southwest Africa is said to be the worst in three decades and that families are selling assets such as livestock, have less to eat and are migrating to cities to find work.

"An estimated 778,000 Namibians, a third of the population, are either severely or moderately food insecure," UNICEF said in an online report on Wednesday.

One of those affected is Jormany Mupetami, who sells semi-precious stones outside the village of Uis to tourists. His dreadlocks and his smile make the visitors at ease. Yet, even after making a sale for US$50 he whispers, almost embarrassed: "Would you have some canned food you could give us for the children?"

"It has now been established that climate change is here to stay and humanity must find ways and means of mitigating its effect," Namibian President Hifikepunye Pohamba said in May as he declared a state of emergency as a result of the drought. He said crop production in some areas was expected to decrease by about 50 percent below average because of the lack of rain.

At the Van Zyl pass community camp, skinny cows fight with birds for water at the camp's faucet. The Ombuku river is dry and has been for the past two years.

Outside Purros, a hamlet graced by giant sand dunes in the midst of a mountainous Martian landscape, a river has been reduced to a narrow stream. Desert elephants, oryx, baboons and springbok gather around a few puddles of water along with skinny livestock, seeking relief in the heat of the day.

The Namibian government in May committed about US$20.7 million to provide food and water to affected people and called on the international community to assist, UNICEF said.

"Drought hits Namibia; herdsmen, livestock, wild animals seeking scarce water in the desert", 12/08/2013, online at: http://www.washingtonpost.com/world/africa/drought-hits-namibia-herdsmen-livestock-wild-animals-seeking-scarce-water-in-the-desert/2013/08/12/214b25dc-0359-11e3-bfc5-406b928603b2_story.html?utm_source=Circle+of+Blue+WaterNews+%26+Alerts&utm_campaign=a18e3449d7-RSS_EMAIL_CAMPAIGN&utm_medium=email&utm_term=0_c1265b6ed7-a18e3449d7-250657169

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❖ Uganda: Pupils in Rural Schools Struggle to Access Water

Millions of pupils in rural schools in Uganda still struggle to access water and sanitation facilities.

The schools where such pupils study from are part of the over half of the developing world's primary schools that do not have access to water and sanitation facilities.

This leads to several problems such as loss of school days as the pupils travel long distanced to fetch water. Worldwide, about 443 million school days are lost each year due to water-related diseases.

One of such schools is Bushozi primary school in Uganda's mountainous district of Buhweju in southwestern region. The school depends on a neighboring shallow well. But the water well is drying up as a result of the degradation of the wetland which has been the well's catchment area. According to the residents, local leaders are among the people who have degraded the wetland.

"Uganda: Pupils in Rural Schools Struggle to Access Water", 12/08/2013, online at:
http://waterjournalistsafrica.wordpress.com/2013/08/12/uganda-pupils-in-rural-schools-struggle-to-access-water/

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❖ East Africa Experts Hope Better Water Data Will Promote Sharing

Nairobi — A row broke out among small farmers in central Kenya's upper Tana water catchment area around four years ago, with accusations and counter-accusations flying, tempers rising and fighting not far off.

Water experts say better management is needed and hope such disputes will dwindle once an EU-financed Water Information System (WIS) is in place, enabling East Africa's farmers and herders to manage and share their precious water more efficiently.

The bone of contention in the upper Tana zone was whether some farmers were extracting more than their fair share of water from the river Thiba, a tributary of the Tana they relied on for irrigation in Kenya's largest rice-growing scheme, Mwea, in Kirinyaga county.

While some farmers were using small pumps to water their crops, others were using small canals and some were digging even bigger canals, mostly illegal, all but diverting the river and badly affecting the downstream flow, threatening other users' supplies.

As the arguments grew more heated, local water authorities and officials had to step in to restore peace by taking action to ensure that everyone got their share of water, including setting the amount an individual could draw and licensing all irrigation users.

Eng Wangai Ndirangu, coordinator of Water Capacity Building Network Kenya (Watercap), says an Integrated Water Resources Management (IWRM) approach to Africa's diminishing inland water resources would make such rows redundant.

"IWRM is what every water manager needs to deploy in planning and running this critical resource, to ensure there is sustainable use for all," Ndirangu told a regional training workshop in Nairobi.

This approach would match available volumes with the interests of domestic users, farmers, factories and people living downstream, he said. Catchment conservation and maintaining the sustainability of the water supply must also be taken into account, he said.

REAL-TIME INFORMATION

People in the Horn of Africa - among the parts of the world most prone to drought and floods - have long been sensitive to factors affecting the vital supply of water.

The regional body formed to support drought control - the Intergovernmental Authority on Development (IGAD) - has now joined the World Meteorological Organization (WMO) to build and operate a regional Water Information System (WIS) to monitor water supply and use in its nine member countries.

A tracking mechanism, the first of its kind, will monitor water levels, temperatures, flows, quality and quantity in Kenya, Uganda, Ethiopia, Djibouti, Somalia, Sudan, South Sudan, Rwanda and Burundi.

"The aim is to collect data on a daily basis, and relay it to a central database in real time for processing and dissemination to planners, managers and users, among others," said Mohamed Tawfik, head of IGAD's Hydrological Cycle Observation System (HYCOS).

"By 2015 when the project is fully functional, we want to have a strong database on all surface water" accessible to users, he said. It has not yet been decided where the central database will be located.

The project, budgeted at 14.7 million euros (about $19.5 million) and financed by the European Union (EU), will place a strong emphasis on cross-border cooperation, encouraging communities using the same water systems to share their resources, Tawfik said.

"We want to encourage regional cooperation for riparian countries through data exchanges," he added.

Some 100 hydrometric stations will be set up in critical inland water systems, including rivers, wetlands, natural dams and lakes, by the end of this year. Member countries will choose the sites and grants of up $100,000 will be available to buy the equipment.

The WMO and IGAD will train water professionals in the use of modern digital tools to help build a strong regional capacity for water management, and the data gathered from the sites will be shared with government ministries and agencies, NGOs, inter-governmental bodies and others who need it.

NEED FOR CONFLICT RESOLUTION

According to Simeon Dulo, a University of Nairobi lecturer, climate change, water mismanagement, population growth, poor policy, physical development and lack of proper regulation all threaten water resources in East Africa.

he region has experienced frequent and severe droughts since 1999, with lengthy dry spells inflicting great human suffering.

Pastoralists have been major victims, enduring the death of millions of animals and the eruption of deadly fighting over the meagre supply of water available for livestock and humans. Cross-border cattle raids to replenish stocks lost to drought, in Kenya, Uganda, and Ethiopia, have become the norm in recent years, costing hundreds of lives.

Dulo said a conflict resolution mechanism is crucial in managing water, as is striking a balance between demand and supply.

"As this resource gets scarcer and the potential to attract conflict rises, women and disadvantaged groups such the elderly and the disabled must inform decisions on who to supply water to first at times of shortage," said Dulo.

"Women are the custodians of family health, hygiene and provide water for cooking," he added.

Maina Waruru is a freelance science journalist based in Nairobi.

“East Africa Experts Hope Better Water Data Will Promote Sharing”, *Maina Waruru* , 14/08/2013, online at: http://allafrica.com/stories/201308150414.html

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❖ Water level in Ganga comes down slightly

Kanpur: The water level in the Ganga here on Monday came down slightly although the river still continues to flow close to danger level.

"The water level in Ganga river was recorded at 113m and 45cm at 9 A.M. Today. It has come down by 23cm from 113m and 68cm recorded yesterday," said ADM (finance) SP Singh, the nodal officer for flood relief.

"However, the river is still flowing 45cm above the warning level of 113m and 55cm below the danger level of 114m," he added. "The administration is on high alert as the sky remains overcast and there is a possibility of rain," Singh said.

"If the water level in Ganga breaches the danger mark, residents of 30 villages near the river will be evacuated and shifted to relief camps. The villagers have been informed about it," Singh said.

"Water level in Ganga comes down slightly"15/08/2013, online at: http://zeenews.india.com/news/nation/water-level-in-ganga-comes-down-slightly_862387.html

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❖ Water Wars in India's South

The "temples of modern India" was how an enamored Jawaharlal Nehru described the country's dams. Today, the sentiment rings true insofar as these behemoths, much like India's ancient temples, remain a source of never-ending wrangling. The Mullaperiyar Dam, a 112-year-old reservoir located on the Periyar River in Kerala, is no different. The dispute over the dam, distinct as it may be in its historic makings, is ultimately symptomatic of a festering federalist crisis in India.

The central government's writ is no longer as powerful as it once was. In recent years, violent protests have emanated on either side of the borders of Kerala and Tamil Nadu, which enjoys the diverted water, threatening both trade between the two states and the welfare of their people.

In December 2011, Prime Minister Manmohan Singh said, "Given goodwill on both sides, an amicable and mutually acceptable solution can be found through a process of dialogue and communication." But since then, even as the issue has continued to escalate, a hapless central government has looked on, incapable, and seemingly even unwilling, to broker peace.

According to Kerala, the dam is in a withering, parlous state. New tremors, to which the area is prone, could cause the reservoir to be brought down, endangering more than three million people. Tamil Nadu says that the dam is mostly invulnerable, and that Kerala's assertions are hyperbolic and politically motivated.

Water diverted by the dam serves five districts in the south of Tamil Nadu and is indisputably critical to irrigation and the creation of power in the region. A new dam, if built further downstream on the Periyar, is likely to be incapable of trapping and diverting water into Tamil Nadu, putting much of the state in peril.

All of this and more are under contest in the Supreme Court, where the two states are presently locked in a battle of substantial legal intricacy. Any decision in the case, and its resultant consequences, may well tell us a thing or two about the future of Indian federalism: will India remain a potpourri of territories arranged together as states, or will it, as described in Article 1 of its Constitution, become a true "Union of States"?

The arrangements over the workings of the Mullaperiyar Dam are inimitable in that Kerala is the only riparian state of the Periyar River. Yet, Tamil Nadu enjoys all the water diverted by the dam. This apparent oddity, today a subject of a seemingly insolvable legal maze, has its genesis in an 1886 agreement between the British secretary of state for India and the maharaja of Travancore. The contract, seen by many, particularly in Kerala, as an upshot of subtle coercion, allowed the British the right to use the entire volume of water diverted by the Mullaperiyar Dam in British territory in exchange for a nominal fee. This right was used until 1947 to route water into what was then the Madras Presidency.

After India's independence, Kerala, which came to represent what was earlier the princely state of Travancore, was seemingly under an impression of being bound by the 1886 agreement. In exchange for a revised rent, Kerala continued to allow Tamil Nadu to use all the water channeled by the reservoir, based first on a series of informal agreements and later, in 1970, on a formal agreement.

It is now far from clear why the maharaja of Travancore, or for that matter the government of Kerala, signed agreements that were so palpably unfair. But as Kerala's own taps began to run dry, a sense of uneasiness soon stemmed from within the state. There was a feeling in Kerala that it had been gimmicked into giving away its water on the cheap. Even though Kerala maintains that it is loath to reneging on its commitment to supply water to its neighbor, Tamil Nadu believes that Kerala's proposals to build a new dam could make the agreements academic. The foundations of the dispute between the states may have only concerned the height of the water level to be maintained at the reservoir, but it has slowly expanded into a larger, more elaborate examination on the validity of the colonial-era understandings.

In February 2006, after Kerala had reduced the water level in the dam in what was among its initial expressions of dissent, the Supreme Court, in its first ruling on the matter, ordered that the water be maintained at 142 feet. The standard, the court held, was in conformity with a report of a centrally appointed commission. But soon after, in a move that would help thwart the effects of the ruling, the state's legislature amended the Kerala Irrigation and Water Conservation Act of 2003 in such a manner as to fix the maximum height of the water level in the reservoir at 136 feet. What's more, the law established a Dam Safety Authority, which could potentially suspend the operation of the dam if found environmentally unsustainable — an option, which the state has since sought to have implemented.

Today, Tamil Nadu argues in the Supreme Court that the Kerala law traverses beyond the authority of the state's legislature. Kerala counters that the 1886 lease and all concurrent and subsequent agreements are unlawful, and that within its territory it exercises an almost-sovereign power, allowing it the right to pass such legislation as it deems fit.

It is easy to see both sides of the argument. Several regions in the south of Tamil Nadu are hugely dependent on the Periyar River, so any decision that impinges on the state's ability to exploit the water diverted by the Mullaperiyar Dam could prove ruinous. But Kerala's position is far from untenable. It has thus far been foiled from accessing water from a river that almost entirely flows through its own territory, and to make matters worse, any destruction to the dam is likely to endanger millions of its people (a position that is, no doubt, contested).

A 2009 report by the Indian Institute of Technology Roorkee, shows that Kerala's fears are not unfounded. An earthquake of a 6.5 magnitude, the report concluded, could damage the Mullaperiyar Dam at its presently maintained water level.

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In times such as this, when the fiat of the central government runs so weak, how is the problem to be solved? If the agreements entered into by Kerala are, as suggested by the Supreme Court in oral hearings presently under way, a product of a mistake of law or fact and are therefore invalid, can't Kerala's legislature pass laws to govern its own water resources as permitted under the Constitution? After all, Kerala is the only riparian state of the Periyar River.

Although India was built on what was at the time a fragmented federal foundation, the Supreme Court in the years immediately following independence was careful not to recognize any form of "political sovereignty" inherent in the country's states, according to Fali Nariman in his new book, "The State of the Nation."

In its ruling in the State of West Bengal v. the Union of India in 1963, the Supreme Court was quick to recognize the central government's primacy. Asked whether the central government, in exercise of its powers of eminent domain, could acquire territory belonging to one of the states, the court ruled in the affirmative. On behalf of five of the six judges who heard the case, the chief justice at the time, B.P. Sinha, wrote: "It would be difficult to hold that Parliament which is competent to destroy a state, is, on account of some assumption as to sovereignty of the state, incompetent effectively, to acquire by legislation property owned by the state for governmental purposes."

To vest absolute sovereignty in the states, as Justice Sinha wrote, would run counter to the basic structure of India's Constitution. While a normal corporate existence must allow states to enter into contracts and carry on trade and business as they deem fit, the central government must nonetheless maintain "political sovereignty." The property of the states, under India's constitutional framework, is not therefore immune from the operation of the center's reasonable writ.

But given that today's central government is unwilling to take a stance of any substance in interstate disputes, as in the case with the Mullaperiyar Dam, the sole dissenting opinion of Justice K. Subba Rao in 1963 could come to represent the laws of India' future. States, wrote Justice Rao, should remain autonomous and legally sovereign within the contours of power allotted to them.

It is this premise that has occupied most of the important thoughts of the five-judge bench presently determining the dispute over the Mullaperiyar Dam. On June 23, Justice R.M. Lodha, who leads the bench, specificallyquestioned Tamil Nadu about its ability to seek rights from an agreement that was first struck between the princely state of Travancore and the government of India.

If no rights from the 1886 agreement devolve onto Tamil Nadu, can Kerala not exercise its "sovereign" right to legislate over a dam and a river contained within its territorial limits? The question attains an unnerving significance when one considers that the central government has had little of substance to say on the determination of a dispute that could have grave ramifications in the not so distant future.

If Tamil Nadu's right to claim water from the Periyar River stands annulled, and if Kerala is allowed to build a new reservoir further downstream, the two states may, in theory, have to negotiate as separate "sovereign" entities to determine how the water ought to be apportioned. Such a scenario might be largely in keeping with true federalist principles, but consequently it would also signify a progressively weakening central regime. New Delhi's ability to resolve disputes between states, which are no longer as dependent on the center as they once were, has never been weaker.

"Water Wars in India's South", 12/08/2013, online at: http://india.blogs.nytimes.com/2013/08/12/water-wars-in-indias-south/?_r=1&utm_source=Circle+of+Blue+WaterNews+%26+Alerts&utm_campaign=a18e3449d7-RSS_EMAIL_CAMPAIGN&utm_medium=email&utm_term=0_c1265b6ed7-a18e3449d7-250657169

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❖ India plans to grab more Pak water as rulers look on

ISLAMABAD: Institutional incompetence and apathy of successive rulers and key water managers of the country have encouraged the presently warmongering India to further its water offensive against Pakistan.

Besides constructing dams, one after the other, on Pakistani rivers in violation of Indus Waters Treaty between the two countries, the latter is now hotly pursuing a project to link Chenab with the Indian Beas River.

According to documents the Indian regime had even allocated funds in its Budget 2011-2012 of Ministry of Water Resources of the Government of India, for preparation of a detailed design to link Chenab River with Beas River through Gyspa Dam (being built on Chenab river) to Solong Nala by constructing a 23 kilometers long concrete tunnel.

"It would be a far more serious blow to our water rights compared to the violations like Baglihar, Kishangnga and Ratle projects by India," a non-governmental Pakistani water expert Arshad H Abbasi said when approached, warning: "If materialised and not stopped, it would be the biggest water dacoity by India."

Tender for detailed design of Gyspa Dam on Pakistani river, having live storage capacity of one million acre feet, was floated in October 2009. "Now the Dam is ready for construction but there has been no conspicuous reaction shown by the government of Pakistan on this issue," lamented Arshad Abbasi.

The documents show that the high court of Himachal Pradesh had ruled against the construction of Gyspa Dam following the petition filed by local community and Indian environmentalists and observed that it would create unnecessary conflict with Pakistan on water sharing issues.

In their petition to Governor Himachal Pradesh, the environmentalists of India had even warned, "The Dam site also borders China and Pakistan thereby it is strategically very sensitive. Displacing inhabitants from such strategic areas would invite uncalled security threat.

Further, the Bhaga River which is a tributary of Chenab, whose water usage is governed under Indus Waters Treaty, 1960 with Pakistan. By building this dam would create unnecessary conflict with Pakistan on water sharing issues.'

According to sources, after going ahead with the controversial project of Gyspa Dam India is diverting water of Chenab to Beas River by Building Jyspa Dam on Chenab River at the village in Lahaul and Spiti district, in the Indian state of Himachal Pradesh.

The waters of Chenab River will be diverted into Solong Nala a tributary of Beas River, the source said, adding that the detail project report (DPRs) is under preparation after completing the detail feasibility report.

This project is considered a gross violation of the Indus Waters Treaty, which gave the use of the Eastern Rivers- Sutlej, Beas and Ravi- to India, while giving the use of the Western Rivers- Indus, Jhelum and Chenab- to Pakistan.

As against the apathy of Pakistani authorities to defend and protect the country's water rights, the environmentalist and local community of Himachal Pradesh started a campaign against Gyspa dam in 2010, which ultimately drew attention of the High Court, which took suo moto notice and constituted a committee on hydro projects, headed by Avey Shukla, additional secretary forest HP.

In its decision on July 20, 2010, the HP High Court categorically directed GOI (Government of India) that "hydro projects above 7,000ft (above tree line) should not be built". Therefore, the Gyspa dam that is proposed to be built at an altitude of 10,800ft in an ecologically and geologically fragile zone. This goes against the committee's recommendations, yet violating the judgment of apex court of Himachal Pradesh. Indian Government is going to start Jyspa dam so that water of Chenab River can be diverted to Beas and then Ganga River Basin.

Sources demand that there is a dire need to find snakes in our grass to protect and guard the water rights of Pakistan. In the past there have been reports published about the alleged link of Pakistan's key water managers with India besides the reported alleged deliberate losing of a water dispute with India in the International Court of Arbitration by Pak representatives.

Through its unending violations of Indus Waters Treaty, India has actually launched water war with Pakistan to sabotage the economy of Pakistan. In India, it is said that a team of dedicated professionals at Planning Commission is providing full technical support of Indus Water Commissioner India, whereas in Pakistan tainted water quacks are running the show.

"India plans to grab more Pak water as rulers look on", 13/08/2013, online at: http://www.thenews.com.pk/Todays-News-13-24753-India-plans-to-grab-more-Pak-water-as-rulers-look-on

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❖ Four Asian countries including Pakistan will build over 400 dams

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

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

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

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

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

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

According to Chellaney, India is in the weakest position because half its water comes directly from China; however, Bangladesh is fearful of India's plans for water diversions and hydropower.

Bangladeshi government scientists say that even a 10% reduction in the water flow by India could dry out great areas of farmland for much of the year. More than 80% of Bangladesh's 50 million small farmers depend on water that flows through India.

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

"Four Asian countries including Pakistan will build over 400 dams", 12/08/2013, online at: http://www.geo.tv/article-113272-Four-Asian-countries-including-Pakistan-will-build-over-400-dams

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❖ Central Asia's Valuable Hydropower Potential

Anyone who saw the recent social media backlash against Nestle knows that water access is becoming a global flash point. And that's especially true in Central Asia, a region singled out by the U.S. Director of National Intelligence as having an "inadequate" ability to provide stability and mitigate political grievances over water. Here, international water rights hang between economic, political and environmental disaster.

In Tajikistan, the upland source of the Amu Darya River, efforts to harness the flow of water to liberate the region from dependence on fossil fuels – as well as regular energy blackouts – have challenged an unsustainable status quo.

Tajikistan wants to resume work on a dam on the Vakhsh River that would increase manyfold its electricity generation capacity and light up villages all the way to Pakistan, several hundred miles away. Originally chartered in the Soviet era and then delayed by civil war, flooding, stop-and-go funding and international gridlock, the Rogun Dam project is a necessity which has long been denied to the Tajik people.

Six months from now, the winter snow will be replenishing the Vakhsh River at its mountain source and Tajikistan will have to run its turbines at full capacity to help keep a population as big as New York City's from freezing in the high country (Tajikistan is 93% mountainous). This situation is made worse by Uzbekistan's propensity to shut off gas pipelines and ban energy transit from other countries into Tajikistan – an action which epitomizes the kind of zero-sum perspectives which have pervaded the region.

Creating a 'Win-Win'

Yet, with top United Nations water experts gathering nearby in two weeks, the Rogun Dam could still become a symbol to the world of how water projects can generate mutually beneficial outcomes. After all, a South and Central Asia which is served by vast quantities of clean, sustainable energy would have huge comparative advantages benefitting all countries in the region.

Numerous independent and world-renowned experts have argued that the Rogun Dam, when operational, would provide a valuable source of green, environmentally friendly energy which would

be both cheap and plentiful – meeting not only domestic energy needs, but also those of neighboring Afghanistan and Pakistan.

Since Rogun is located upstream from the Nurek Dam – a major hydro-electric power station and reservoir built during the Soviet era – the new system of dams which would be created would also enable the water flow to be managed more effectively, to the benefit of all riparian, i.e. downstream countries.

For this to happen, however, all interested parties must overcome the zero-sum focus which has plagued the region and commit to finding a 'win-win' solution.

For its part, the U.S. government would be wise to use its influence in the region to encourage all parties to come to the negotiating table, given that regional stability that could be created by such a solution. As a 2011 Senate Foreign Relations Committee reported outlined:

By neglecting the interconnectivity of water issues between Central and South Asia, the [existing] U.S. approach could exacerbate regional tensions. Our activities should be carefully calibrated to address a broad range of needs and encourage reluctant state actors to come to the negotiating table…while regional stability will not be determined solely by our efforts to support water cooperation, regional stability can be strongly undermined by misguided support.

The High-Level International Conference on Water Cooperation is coming to Tajikistan's capital city of Dushanbe on August 20. Its goal is straightforward and complimentary to the recommendations above: get politicians, scientists, think-tanks and thought leaders and potential investors talking with NGOs and each other – just a two-hour drive from the unfinished dam's shadow.

Tajikistan has already shown willingness to compromise in the pursuit of a lasting solution. It has, for instance, suggested that the dam's reservoir be filled over a longer period of time than the original 8-10 years in order to mitigate any effects on downstream agricultural production in Uzbekistan.

Furthermore, it has pledged its continuing commitment to use no more than its quota of water under international law – they currently draw less than 15% of the Amu Darya for their own needs – enabling every other drop to continue flowing into agricultural fields downstream.

This kind of leadership from Tajikistan's President, Emomalii Rahmon, should be encouraged by the international community. He has offered concrete concessions which could avert conflict and implement a solution which is considerate of all regional actors. For a cooperative solution to be brokered, however, other actors with voicable concerns must be encouraged to do the same.

"Central Asia's Valuable Hydropower Potential", 12/08/2013, online at:
http://www.forbes.com/sites/hilarykramer/2013/08/12/central-asias-valuable-hydropower-potential/

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❖ Farmers struggle to adopt climate-smart methods

14 August 2013, Rome - Preliminary results from a project aimed at helping Malawi, Vietnam and Zambia make the transition to a "climate-smart" approach to agriculture show that some farmers are struggling to adopt the new methods, while others are finding ways to cope well with climate-change problems like late rains.

"To broaden the options available to farmers, we believe that increased investment, coming from both traditional agricultural finance, as well as emerging climate finance such as the Green Climate Fund, may be required to help farmers make the needed transition," said Leslie Lipper, leader of FAO's **Economics and Policy Innovations for Climate-Smart Agriculture (EPIC) Programme**, which houses the project.

Launched in January 2012, the €5.3-million three-year FAO-EC project promotes a climate-smart agriculture approach in each country, with supporting activities ranging from research to policy support and investment proposals.

Agriculture and the communities who depend on it for their livelihoods and food security are highly vulnerable to climate change impacts. At the same time agriculture, as a significant producer of greenhouse gases, contributes to global warming. "Climate-smart agriculture" is an approach that seeks to position the agricultural sector as a solution to these major challenges, prioritizing food security and the adaptation needed to achieve it, while reaping potential mitigation co-benefits.

It involves making changes in farming systems that achieve these multiple goals, as well as in supporting institutions and policies.

African project experience

One of the main activities of the project is identifying which agricultural practices are "climate smart" for specific conditions. For example, the project has studied conservation agriculture (CA), which involves reduced tillage, permanent soil cover and crop rotation. The practice has been promoted by the governments of Malawi and Zambia.

Conservation agriculture can, at least potentially, increase productivity through better soils and help farmers adapt to climate change through better water retention. It also can help mitigate climate change by trapping carbon in the soil.

Project analysis indicates that many farmers in the two countries have difficulties adopting the full CA package, because, for example, they need crop residues for animal feed instead of soil cover. Sometimes the problem is that farmers are too poor to wait several seasons for the benefits of the practice to materialize.

But the project is also finding that climate change is already altering which agricultural practices work best for farmers, which could increase the appeal of CA.

In Zambia, analysis of climate data shows an increasingly late onset of rains in some areas. Since crops are only planted after the first rains, late rains mean late planting, which can seriously shorten the growing season. Project research shows that farmers in these areas of variable rainfall and late onset of rains are the most likely to maintain CA practices, which has the advantage of preparing the land before rains arrive.

Vietnam project experience

In Vietnam, at the project site in the northern part of the country, maize is planted on sloping land all the way to the tops of mountains, which in theory should be covered only in forest. Once the maize is harvested, the rains come, washing away the soil. The erosion has led to landslides, with loss of life.

Project researchers studying Vietnamese climate data have found that climate variability is increasing, which will exacerbate the erosion problem. In response, the project is looking at more sustainable land management practices but also the use of perennial crops such as coffee and tea, which unlike maize can stay in the ground for 30-40 years.

However, coffee and tea production require years to generate high returns, which is a challenge for farmers currently growing maize, which has strong demand and fetches a high price.

Policy dialogues

The project works to identify areas of potential conflict between climate change and agricultural policies and supports high level policy dialogues to resolve them. It also brings together a wide range of stakeholders to discuss what climate change may mean for the future and the options available to confront it.

At the international level, the project supports participation of ministry of agriculture staff on negotiating teams at the UN Framework Convention on Climate Change (UNFCCC) meetings. Taking the needed action to address climate change requires investment and that is why building investment proposals that can link agriculture and climate finance is a key function of the project

While the three project countries have different physical, economic, social and cultural characteristics, the project has found opportunities for the countries to learn from each other. For example, Vietnam is focusing on building climate smart value chains for key commodities, which could hold lessons for Malawi and Zambia.

How the African countries are moving to link climate change and agricultural issues at the policy level may hold lessons for Vietnam.

The project also found that variances in how the weather is changing from country to country — as well differences in the capacities of famers, institutions and economies — mean that no there is no single "one size fits all" CSA blueprint solution, although the approach to identifying appropriate measures is universally applicable.

"Farmers struggle to adopt climate-smart methods", 14/08/2013, online at: http://www.trust.org/item/20130814085443-8z7zh/?source=hptop&utm_source=Circle+of+Blue+WaterNews+%26+Alerts&utm_campaign=dafbdcbbec-RSS_EMAIL_CAMPAIGN&utm_medium=email&utm_term=0_c1265b6ed7-dafbdcbbec-250657169

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❖ Dams threaten city's water supply

The extensive hydropower development in the upper reaches of the Yangtze River will threaten the safety of Shanghai's water supply in the future, an expert with the World Wildlife Fund (WWF) said Thursday.

"One of the most direct consequences for Shanghai is the reduction of the total amount of fresh water that flows from the upper reaches," said Yong Yi, a project manager from the WWF's Shanghai office. "This will cause water safety problems for Shanghai, because the coastal city will suffer from seawater intrusion."

Areas in the Yangtze's lower reaches have already experienced changes, including longer droughts and shorter flood seasons, Yong said. Still, the changes are difficult for the average person to perceive.

The WWF released a scientific report on the upper reaches of the Yangtze River based on a 12-day scientific investigation of the entire Jinsha River Basin in June, the Shanghai Evening Post reported.

The Jinsha River is one of the major headwaters of the Yangtze River. It runs through three provinces before converging with another river in Sichuan Province to form the Yangtze.

The scientists found that more than 25 hydropower stations have been planned along the river, more than half of which were already under development.

The construction of the hydropower stations has tamed the Jinsha, once a rapid and tumultuous river that carried silt down to the Yangtze's lower reaches, Yong said.

"The sand and soil are very important for Shanghai, which sits on the tip of the alluvial plain of the Yangtze River Delta," Yong told the Global Times. "With the Yangtze River carrying down less sand and soil, the tidal flat will shrink. The flat is considered an important land reserve."

The intensive hydropower development has also had a destructive impact on the ecosystem along the Yangtze. During their expedition, scientists found 17 species of fish in the Jinsha River, down from 143 species in the past.

The situation has been aggravated by overfishing, which brought some species to the brink of extinction. "The problem we have found is that the more fishermen fish, the poorer they become," Zhao Yimin, director of the executive office of the Yangtze Fishery Resources Commission of the Ministry of Agriculture.

Experts and scientists have called for a moratorium on fishing along the Yangtze River to allow the ecosystem to rebuild itself. However, any ban would face many obstacles, including finding new ways for fishermen to support themselves.

"Dams threaten city's water supply", 15/08/2013, online at: http://www.globaltimes.cn/content/804229.shtml?utm_source=Circle+of+Blue+WaterNews+%26+Alerts&utm_campaign=923952bf2f-RSS_EMAIL_CAMPAIGN&utm_medium=email&utm_term=0_c1265b6ed7-923952bf2f-250657169#.Ug4ZYNJPiol

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❖ How do we really solve the world's water challenge?

*In July, the **World Justice Forum IV** (organized by the **World Justice Project**) brought together more than 550 business and nonprofit leaders, legal experts, development practitioners, journalists, military leaders, social entrepreneurs, and other global luminaries from more than 100 countries to address critical rule of law issues around the world. In partnership with the **Skoll World Forum** and the **Thomson Reuters Foundation**, we asked a number of speakers to reflect on a wide range of issues including land rights, access to water, criminal justice, and much more. View the **full series here**.*

I had the honor of chairing a session on ***Sustainable Water Solutions and the Rule of Law*** at the recent World Justice Forum IV in The Hague. During the vigorous two hour dialogue, it became clear that the street between water and rule of law runs both ways: A solid rule of law foundation will likely enhance the sustainability and scalability of water programs by increasing collaboration with and leadership from governments, and effective water programs will fortify rule of law by strengthening the social contract between citizens and their governments.

I spent years implementing democracy and governance programs in Africa on behalf of the U.S. government, and jumped at the opportunity to build this bridge between that world and my current water portfolio - two seemingly distinct development sectors. In framing the panel, I positioned rule of law - broadly defined, as in Wikipedia's "**authority and influence of law in society**" - as an enabler, as a catalyst, of sustainable, institutionalized progress toward all global development challenges. On the flipside, I also see more progress on water challenges as one of many ways to strengthen the rule of law. For example, the most interesting question asked during the opening plenary of the World Justice Forum was "*Is there a primary school for rule of law, or does one have to wait until graduate school to learn about it?*" I assert that there is indeed a primary school for the rule of law: a anywhere in the world. The first experience many people - especially women - have in the developing world with rule of law and with participatory democracy is via their participation on local committees designed to identify and sustainably address local challenges. Tip O'Neill, a famous American politician, said "All politics is local." Well, so are development challenges and solutions, *especially* those related to water. So that village water committee in rural India is a primary school for rule of law. An HIV support group in South Africa is a primary school for rule of law,

solving its own community challenges, often alongside its government. A women's neighborhood group focused on sanitation in Nairobi or Mexico City is a primary school for rule of law, as are local school boards, housing committees, and the like.

Water challenges at local, national, and transboundary levels all offer individuals an opportunity to strengthen the Social Contract between themselves and their governments. To achieve universal coverage of safe drinking water on the planet, in the compressed timeframe for which **U.S. Supreme Court Justice Anthony Kennedy** advocated at the Forum, governments must work hand-in-hand with their constituents.

Here are a handful of rule of law / water solutions underway, and worth tracking and supporting:

- Community water boards by the **thousands** are becoming stronger throughout Latin America with the help of la **Fundación Avina**, making safe water more accessible to millions of Latin Americans, and at the same time creating more open, democratic societies.

- Rule of law is making water more accessible and safer across the globe: e.g., cities are adding rainwater harvesting to building codes in India, and municipal development plans are incorporating community sanitation facilities in the favelas of Rio de Janeiro.

- The **Nile Basin Initiative** continues to strengthen the capacity of the Nile's riparian states to stay ahead of the water conflict predicted by many for the region.

- Water For People's **Everyone Forever** effort focuses first and foremost on the interaction between citizens and their governments, with the international community playing a catalytic role; this will eventually obviate the need for any outside assistance.

- The **Sanitation and Water for All Partnership** attracts Finance Ministers to its **High Level Meeting** every two years. Stronger political will makes it possible for those Finance Ministers to do what they already want to do: increase budgets and strengthen policies for water in their countries by making and meeting tangible, time-bound commitments.

- Civil society organizations across the developing world are now using this toolkit "**How to Campaign on Water and Sanitation Issues During an Election**" to make sure that elected leaders have committed to tackling water challenges long before their terms in office. This toolkit should be used in **every election** tracked by the **International Foundation for Electoral Systems**.

The water challenges across the globe are grave. But they are solvable, and *being* solved by communities and governments as I write. My ambition is that rule of law and water communities will find more ways to work together across a number of platforms, and that both communities will emerge stronger from those collaborative efforts.

*Editor's Note: John Oldfield leads the efforts of **WASH Advocates** to increase awareness of the global WASH challenge and solutions, and to increase the amount and effectiveness of resources devoted to those solutions throughout the developing world.*

"How do we really solve the world's water challenge?", 12/08/2013, online at: http://www.trust.org/item/20130812172548-fbuqh/?source=hpeditorial

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❖ Transboundary aquifers feel the strain

Internationally shared aquifers are under increasing pressure, according to the first worldwide view of groundwater stress on the resources. Thirty-one transboundary aquifers are currently stressed due to human overexploitation. Meanwhile, stress on other aquifers has been increasing "at an alarming rate" for the past 50 years due to groundwater abstraction for food production.

"Internationally shared, or transboundary, aquifers have long played an important role in sustaining drinking water supply and food production, supporting the livelihoods of millions of people worldwide," Yoshihide Wada of Utrecht University in the Netherlands told **environmentalresearchweb**. "Rapidly growing populations and their food demands cast significant doubt on the sustainability of transboundary aquifers."
Along with Lena Heinrich from the International Groundwater Resources Assessment Centre in the Netherlands, Wada calculated aquifer stress for 408 transboundary aquifers around the world from 1960–2010. Their aquifer-stress indicator included measures of groundwater abstraction, natural groundwater recharge and additional recharge from irrigation as return flow. The pair found that 8% of the aquifers are currently stressed by human overexploitation, with the rate of groundwater pumping increasing substantially over the past 50 years.

According to Wada, it is difficult to assess transboundary aquifers because there is a lack of observed data for factors such as groundwater abstraction and groundwater recharge. Groundwater may also transfer from one country to another in a complex way. "For instance, most of the groundwater recharge may occur in one country, whereas the groundwater may be extensively abstracted in the other countries," he said. "Therefore, we opted to use a global modelling approach and combined it with available country statistics of groundwater abstraction and socio-economic data worldwide with an uncertainty assessment."

The team found several transboundary aquifers with substantial groundwater depletion, including the India River Plain (India and Pakistan), Paleogene and Cretaceous aquifers in the Arabian Peninsula and several aquifers crossing the US-Mexico border.

"Our analysis is unique such that human overexploitation is assessed at transboundary aquifers where data is rather difficult to obtain due to multi-state involvement and their conflict of interest," said Wada.

The researchers found that improving irrigation efficiency might reduce the amount of groundwater depletion for some transboundary aquifers but could aggravate depletion where both surface water and groundwater are used for irrigation by decreasing groundwater recharge from surface water.

"The analysis of irrigation efficiency provides a new insight of how overexploitation may be mitigated," said Wada.

Effective management of transboundary aquifers is difficult, according to Wada, as they may cross international political boundaries over several sovereign countries, and international laws for their preservation are limited.

"Conjunctive use of surface water and groundwater facilitates the management of transboundary aquifers for more sustainable use and provides pathways for minimizing aquifer stress and maximizing the beneficial use of the groundwater resources," he added.

Although human overexploitation of transboundary aquifers is a regional problem it has much larger consequences due to the international food trade. "To reduce human overexploitation, various measures can be applied, involving water recycling, crops that need less water, water management and governance, dietary change, and economic incentives," said Wada. "However, some of these solutions require a substantial amount of economic investment that may not be easily realized for developing countries with limited financial and technological resources."

Wada believes that the global modelling approach can be improved further by integrating the results with observed data, including satellite observations such as terrestrial water storage. This will help to reduce model uncertainty.

"Transboundary aquifers feel the strain", 14/08/2013, online at:
http://environmentalresearchweb.org/cws/article/news/54333

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❖ Fortune Telling: Colorado River Teeters Toward First-ever Shortage Declaration

Not far from the magnificent canyons of American lore, the Colorado River's new course is being carved out of figures and formulae. These calculations determine the future for the 40 million rural folks and city dwellers in the Wild West's desert civilization who use water from the Colorado, as well as for the millions who benefit from its cheap hydroelectric power.

Every month, officials at the federal Bureau of Reclamation, the dam-master for the river, run some hydrological assumptions and observations through a computer, peer into the crystal screen, and see a rough outline of the system's health for the following two years. The 24-month study, as it is called, has taken on greater significance since 2007, when the seven U.S. states that share the Colorado River signed an agreement that declared the study as the guidepost for how to operate the Basin's two big reservoirs, Mead and Powell, in times of water surplus and water deficit. (The 2007 shortage-sharing agreement, known formally as the Colorado River Interim Guidelines for Lower Basin Shortages, did not include Mexico, which is guaranteed water from the river under a 1944 treaty. Mexico's obligations during a shortage were worked out in an amendment called Minute 319, signed last November.)

Every year since the shortage-sharing agreement was signed, the August study — the 2013 version of which will be released this Friday — has been the standard-setter. Its projections determine how much water the Bureau will send downstream in the next year. If the results from last month hold, as is likely, the amount of water released from Lake Powell in 2014 will be the lowest since the reservoir was being filled during the 1960s. The resulting 9 percent cut would set the table for the first-ever shortage declaration on the Lower Colorado River, either in 2015 or 2016. By then, the water level in Lake Mead, downstream from Powell, is projected to drop below a trigger point that sets off a round of restrictions on water withdrawals for Arizona, California, Nevada, and now Mexico.

Already there are more claims to water than the river can supply, and Mead and Powell are both less than half full. Even worse, climate experts warn that a warming globe will increase evaporation rates and dial down rainfall. The Bureau of Reclamation, in a landmark study of the river's supply and demand published last December, forecasted an average 9 percent drop in runoff within the Basin by 2060. At the high end, other studies warn that a decline of 30 percent is possible by mid-century.

"We're staring down the barrel of something bad," J.C. Davis told Circle of Blue. Davis is spokesman for the Southern Nevada Water Authority (SNWA), which supplies water to Las Vegas, some 90 percent of which comes from the Colorado River.

Yet, if Lake Mead were to fall below 327.7 meters (1,075 feet) in elevation, thus breaching the first of three shortage levels named in the 24-month study, the short-term effects would not be devastating: there would be a belt-tightening by a small group of users in Arizona and Nevada, a price increase for a larger group in Arizona, and a firm cap on withdrawals in California. In practice, water use would likely remain constant, because groundwater pumping — itself an unsustainable safety net — would rise to offset the restriction on surface diversions.

This is how it goes down

The first number to watch for is 1,089.7 meters (3,575 feet). If Friday's study projects that Lake Powell's elevation will fall below the 3,575-feet barrier in January of 2014 — as the July study showed — then a shortage for the Lower Basin is all the more likely by 2016, because of the smaller slug of water that the Bureau would release from Powell. Shortages, however, are declared based on Lake Mead's elevation and would affect only Arizona, California, and Nevada.

Bruce Williams, who works for the Bureau's river operations group, says that dry soils and below-average rainfall for 2013 point to a similar forecast for this month's study as was predicted last month.

"Based on everything going on in the Basin, the odds are that July is close to what we'll see in August," Williams told Circle of Blue.

If that happens, then attention turns to Lake Mead. The 2007 shortage-sharing agreement sets three reservoir elevations under which water restrictions are imposed on the Lower Basin: 1,075 feet, 1,050 feet, and 1,025 feet. Under the first shortage level, total water use is cut by 4.4 percent in the three Lower Basin states: Arizona would take an 11 percent cut and Nevada 4 percent, while California's allocation would not be reduced. Mexico's deliveries would take a 3.3 percent hit.

Arizona's Story

Arizona's cut would be divided among two tiers and several sub-categories of haves and have-nots. The main tiers are the rights holders along the river and those who take water from the Central Arizona Project (CAP), the 541-kilometer (336-mile) canal that pumps part of the Colorado River into the heart of the state.

Riverside users will see little practical effect of a shortage, because they are not currently using their full entitlement to the river, says Tom McCann, a CAP assistant general manager of planning, engineering, and resources. Rather, the burden of restrictions — which will be offset with water from other sources — falls largely on the canal, because of the hardball politics required to build the conduit.

Authorized by Congress in 1968 and completed in 1993, CAP was designed to move Colorado River water to the state's soon-to-boom Sun Corridor, from the Phoenix conglomeration all the way to Tucson. To get the project approved over the opposition of politically powerful California and its Congressional battalion, Arizona agreed that CAP would take the lowest priority water rights in the Lower Basin. Thus, it is at the head of the line for the steepest cuts in the case of a shortage.

Like a worker taking a pay cut, CAP's first order of business will be to reduce its savings rate. Arizona has rights to 3.4 billion cubic meters (2.8 million acre-feet) from the Colorado River, but the state is not using of all it; a good portion is stored underground, where less evaporates than would in the dry desert air. This water bank, holding nearly 4.9 billion cubic meters (4 million acre-feet), will help municipal customers weather a shortage for a while.

"For the next 15 to 20 years, we would not expect a shortage to have any effect on our cities," McCann told Circle of Blue.

For CAP users, the general immediate effect is this: everyone will pay more for water, and some will have to use less Colorado River water — but not necessarily less water altogether.

That is because the agency that manages the canal has fixed annual costs — an operations and maintenance budget, as well as debt payments for the $US 4 billion project. The agency sets its water

rates to cover these costs. If it has fewer units to sell because less is flowing into the CAP, the cost per unit will rise.

Doing a back-of-the-envelope calculation, McCann estimates that rates would rise by roughly one-quarter to cover the $US 25 million revenue shortfall. But the actual increase would depend on how far CAP dips into its rate-stabilization fund and if the state wants to subsidize the more-expensive water.

Unlike cities or tribes, who have top-priority rights to CAP supplies, farmers in central Arizona who use the canal will be the ones to see their pool of water diminished. Every irrigation district operates under different circumstances, but most will look to pump water from aquifers to compensate for less river water.

Brian Betcher, the general manager of the Maricopa-Stanfield Irrigation District, told Circle of Blue that his district, located 64 kilometers (40 miles) south of Phoenix, is rehabilitating old wells to prepare for a shortage. Some 300 wells exist, but only 140 are working. Before CAP was built, the district irrigated its cotton and pecan fields solely with groundwater.

One of the justifications for the canal, of course, was to move the state away from unsustainable groundwater use and to top off exhausted aquifers with surplus Colorado River water. Arizona's alluvial aquifers showed some of the highest depletions in the American Westover the 20th century, according to the U.S. Geological Survey. The effect on the state's aquifers from a renewed period of groundwater extraction would depend on the length and severity of a shortage.

Nevada's Story

Nevada has a relatively tiny claim to water from the Colorado River — Arizona's share is almost 10 times greater, and California trumps Nevada's claims by 15 to one. When the water was being doled out in the 1920s, Nevada did not have the demands from Las Vegas, which grew rapidly a few decades later and now takes almost all of the state's Colorado River allocation.

The Southern Nevada Water Authority, the regional wholesaler, is in a position to weather a short-term reduction, because of water-conservation measures, said SNWA spokesman J.C. Davis. The bigger threat, he said, is the long-term decline of water levels in Lake Mead, SNWA's main

reservoir. The authority is now building a third pipe into the reservoir to draw water from depths below 304.8 meters (1,000 feet) in elevation.

"It's a race against time for that project," which should be completed by early 2015, Davis told Circle of Blue. SNWA also wants to build a separate 418-kilometer (260-mile) pipeline to move groundwater from four basins in central Nevada that are not connected to the Colorado River.

The Bureau of Reclamation, for its part, is working to keep the river's hydroelectric workhorse functioning. Much of the electricity that the Colorado River produces comes from Hoover Dam, the wall of concrete just outside of Sin City that holds back Lake Mead. New turbines that are designed to operate at lower lake levels and wicket gates that minimize water losses are currently being installed. Together with efficiency improvements in the control systems, these modifications are squeezing as much energy as possible out of every molecule that flows through the powerhouse.

California's Story

And then there is California. Under the shortage-sharing agreement, the Golden State does not see a reduction in its allocation in any shortage scenario. If Mead drops to 1,075 or 1,050 or even 1,025 feet, farmers and cities from Imperial County to Los Angeles would still get 5.4 billion cubic meters (4.4 million acre-feet) of Colorado River water annually. Their withdrawals from the river, however, may decrease a bit.

A policy known as "inadvertent overruns" will be suspended during a shortage. The overruns are extra water that flow through the system and push a state's diversions above what it is entitled to. California, at the end of the river in the United States, has traditionally exploited these flows.

"We're not subjected to cutbacks [under the shortage-sharing agreement], but we'll have a hard limit," Tina Shields, manager of Colorado River resources at Imperial Irrigation District, told Circle of Blue. Imperial, the largest single user of Colorado River water, would feel the pinch: it diverted a net 234 million cubic meters (190,000 acre-feet) above its allocation in 2011 and 2012, and it began "paying back" its excess this year, as is required under the rules of the river, through a bundle of conservation measures.

Endgame

All the trend lines in the Basin point to a shortage in the near future. Recognizing this, the seven Basin states have taken small steps to assess their water challenge. Though these debates about supply are profoundly unromantic — a river collateralized — they are necessary and consequential as the Colorado plunges inevitably toward shortage.

Brad Udall, director of the Getches-Wilkinson Center for Natural Resources, Energy, and Environment at the University of Colorado Law School, says that the Interior Department's Basin study, completed last December with the cooperation of the Basin states, is a first attempt at a long-term management plan for the Colorado River. The study recommended a number of ways to decrease demand and increase supply. Three stakeholder committees are expanding on that work and are preparing reports on conservation measures for the municipal, industrial, and agricultural sectors.

Conservation is the cheapest way to cut demand, according to the study, but two other paths — transfers and augmentation — will be most controversial.

Since agriculture consumes roughly half the water in the Basin, many cities look to the farms for new supplies. There are currently several fallowing programs in California that pay farmers not to farm, then transfer the saved water to metropolitan areas. But irrigators are leery of too many transfer programs, which can disrupt rural communities.

"Imperial Irrigation District is not a big believer in jeopardizing our food supply in exchange for swimming pools," Shields said. "It's one thing to fallow land for emergency measures and another to dry up farmland so that people in the cities can live high on the hog."

Augmentation, which means bringing in supplies from outside the Basin and includes projects such as SNWA's plan to pipe water from central Nevada, may be even more fraught. It promises a parade of lawsuits, yet that will not keep water managers from desiring more supply.

"Down the road, the only solution is to develop new sources of water," said McCann, of the Central Arizona Project.

As Mead and Powell circle the drain, this chatter will grow stronger. Though a shortage might not immediately change the amount of water used — because of water banks, existing conservation benefits, and groundwater — the greater effect might be psychological, University of Colorado Law School's Udall argues.

"It's one thing to talk about hardship and another thing to have to endure it," he said.

"Fortune Telling: Colorado River Teeters Toward First-ever Shortage Declaration", 14/08/2013, online at: http://www.circleofblue.org/waternews/2013/world/fortune-telling-colorado-river-teeters-toward-first-ever-shortage-declaration/

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