

ORSAM WATER BULLETIN

Weekly Bulletin by ORSAM Water Research Programme

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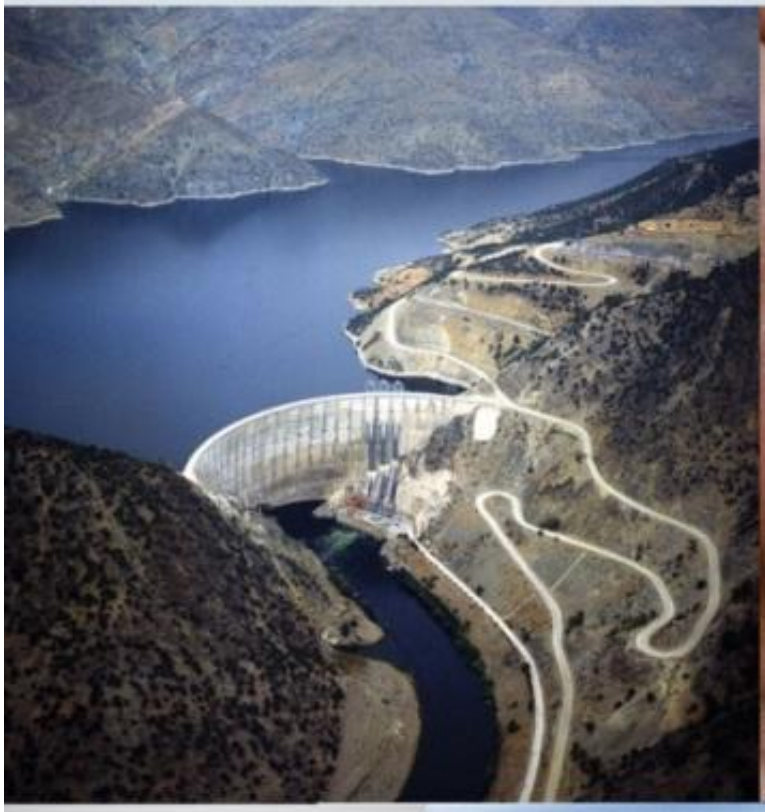



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Mithat Paşa Caddesi 46/4 Kızılay-Ankara TURKEY
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❖ After decades of war Iraq faces water scarcity, floods, desertification and climate disruption

Iraq has suffered decades of war with much of the social and agricultural infrastructure being damaged and now poorly maintained. Climate change was already impacting the country under Saddam Hussein with desertification and reduced river flow rates. Climate impacts of desertification, water scarcity, flood damage from more intense rain when it falls, are all taking their toll on food production. The legacy of decades of war, UN sanctions and a dictatorial regime have only added and multiplied these impacts.

The fertile plain between the Tigris and Euphrates rivers has provided the basis for agricultural production feeding Iraq's population which has tripled between 1970 and 2007 to 30 million people. Indeed, ancient Mesopotamia may have been one of the birth places for agricultural civilisation. But according to Matteo Mantovani at TEDxBaghdad "Agriculture is dying in the place where it was born." he told the audience.

Mantovani is working with the Iraqi Ministry of Environment to fulfill the requirements of the UN Framework Convention on Climate Change (UNFCCC). He is currently leading a team of specialists in the creation of Iraq's first national greenhouse gas inventory with the goal of developing strategies and policies for emissions reductions.

Fertile Crescent under threat by end of century

Iraq is characterized by cold winters and hot summers, with limited rainfall, high evaporation rate and water scarcity. Only 28% of land is arable and this is declining with desertification. Iraq loses around 250 square kilometres (96 square miles) of arable land annually due to degradation of various kinds. Already 31% of land is classified as desert with an additional 54% under threat.

Dr. Hassan Janabi, Iraq Ambassador to the Food and Agriculture Organization (FAO) of the United Nations, has written a perceptive paper on the climate challenge facing Iraq - *Climate Change Imapct on Iraqi Water and Agriculture Sectors*. He paints a pessimistic picture for the future based upon IPCC predictions:

"The predictions of the General Circulation Models (GCMs) used by the Intergovernmental Panel on Climate Change present a pessimistic picture of the flows in the Tigris and Euphrates rivers. Precipitation in the highlands of Turkey is predicted to be reduced by 10-60%, which in turn translates into a similar decline in the flow in the Tigris and Euphrates rivers. One recent study

predicted that the Euphrates river flow will be reduced by 29% to 73% and the entire Fertile Crescent may disappear by the end of the century. The negative impact of climate change on Iraq is further magnified by human intervention in the natural cycle."

Desertification is a major problem reducing agricultural productivity and food availability. Declining soil moisture and lack of vegetation cover results in huge dust storms originating in the western desert causing myriad health problems of choking, asthma, and eye problems, with the incidence and intensity of these dust storms increasing. Dr Janabi continues:

"This has been evident in the rapid expansion of the desertification process, increasingly frequent and intense dust storms, prolonged drought conditions, a reduction in rainfall across the country and unprecedented heat waves with temperatures rising above 50°C just last summer. (The recorded temperature in Iraq has risen significantly."

"The average temperature for the period 1988-2007 is higher than the average temperature for the earlier twenty years by 1°C in Baghdad and 1.5°C degrees in Nasiriya south of Baghdad). Similar trends can be seen in the recorded rainfall. For instance, rainfall in Baghdad during the past decade is less than the long-term average by about 50% (excluding the recent rainfall in Baghdad in late December 2012)."

"FAO scientists believe that an increase of 1% in average temperature results in a 10% loss in agricultural productivity. It is therefore hardly surprising that the productivity of cultivated land in Iraq has declined until domestically produced food meets only 30% of the population's needs."

Water Scarcity and Flooding events

Iraq relies on more than half it's water originating outside it's own borders: mainly in Turkey, and to a lesser extent Iran and Syria. Flow rates in the Tigris and Euphrates rivers have fallen to a third of normal capacity. This will get much worse with Turkey's large scale dam building.

As crop production relies substantially on seasonal availability of water, river flows and irrigation. The interference in river flows will add to the woes of the country.

James Denselow reported in an 2009 article on Climate Change and Iraq in the Huffington Post:

Despite World Bank opposition, Turkey is proceeding with large scale dam building as part of its "south-eastern Anatolia project", involving the construction of 22 irrigation dams and 19 hydroelectric plants. The subsequent reduction in river flows in Iraq led a recently emboldened Baghdad parliament to pass a resolution last May urging the government to demand a greater share of water resources from neighbors. However, with internal issues still volatile (over 400 civilians died in June 2009) the Iraqi state is in no real position to exert effective pressure on its neighbors.

"Climate change, the change in temperatures, drought, have made (upstream) countries depend on irrigating their land from the rivers. As a result, it has affected Iraq's water share from the Tigris and Euphrates," Ali Hashim, director general of the state commission operating water and drainage projects told Reuters in a November 2010 article.

Reductions in flow are already reducing power from Iraq's hydro-electric power stations which provided up to 20 per cent of Iraq's power needs according to the 2012 UN factsheet on Climate Change in Iraq.

But the paradox in climate variability and climate change produces more droughts and dust storms as well as more intense heavy rain events, which cause flash flooding, washing away topsoil as well as inundating roads and houses. Years of damage and neglect to sewerage and drainage systems means that floods produce a fetid mess, with poorer suburbs bearing the brunt of the damage. Strong accusations of political corruption reverberate on the failure of the Government to launch major infrastructure projects using oil export income to repair the decades of war torn damage and neglect.

The drought of 2007 to 2009 was particularly severe adding to the trend for desertification and soil erosion. The number and severity of dust storms also increased: Baghdad endured 122 dust storms in 2008 and 82 in 2009, up from only three or four a year recorded in the 1970s according to a 2010 Reuters report.

This last winter intense rain events caused major flooding and disruptions. A heavy rain event over much of central Iraq and Baghdad in December 2012 caused the worst flooding in 30 years with Iraqi authorities even declaring a national holiday due to bad weather and heavy rain.

Heavy flooding was repeated in northern and central Iraq in late January and early February 2013 according to this report by Patrick Cockburn. Xinhua reported that Torrential rain causes flooding in Iraq villages. The Tigris river was at it's highest flood level in 50 years submerging whole villages near the cities of Shirqat, Baiji, Alam, Tikrit and Samarra in Salahudin province, and washing away roads and bridges.

In the south of the country, flood waters in early January combined with heavy rains caused intense floods near Nasiriya, a little north of Lake Hammar on the shores of the Euphrates River. Over 8,000 people were evacuated, and at least 180 houses were destroyed.

Even though these winter rains have eased the long drought conditions, the prospect for water availability still looks bleak. A seminar in November 2012 of Al Mustansiriyah University Weather Sciences Department identified a long term shortage of water resources accompanied by an intense

drop of water level in Dijla and Euphrates Rivers due to the reduction of water flows from neighboring countries.

Restoring the Degraded Marshlands

Much of the water that flowed down the Tigris and Euthrates rivers once ended up in the marshes and wetlands in the southern delta - an area once double the size of Lebanon. The Saddam Hussein regime after the Iraq-Iran war in the 1980s drained 90 per cent of these marshes.

"These unique wetlands, which have been a major contributor to food production and to the preservation of biodiversity in the area, were transformed into lifeless dry land as the result of a political decision. Unfortunately for Iraq, this decision coincided with the assumption by neighboring countries of almost complete control over water resources, forcing tens of thousands of inhabitants to flee the area." describes Dr. Hassan Janabi.

Since the downfall of the Hussein regime the new Iraqi regime has reversed the policy on the marshlands with additional water inflow, but the marshlands have changed irrevocably. Only about half the former marshland has been able to be partially restored as wetlands. The water flows are no longer there, being diverted in Syria and Turkey for their own hydro electric power and irrigation purposes. The water in the restored wetlands is more saline than before it was drained, too salty to grow rice. Salt tolerent fish have been introduced, but the Marsh Arabs who have returned don't like the fish.

Dr. Hassan Janabi summed up the need for the future, after decades of war, sanctions, and disruption in Iraq.

There is a pressing need to factor in the impact of climate change on Iraqi agriculture and other climate sensitive activities in the country. Obviously, Iraq's capacity to adapt to climate change at the moment is marginal. However, it is never too late to develop the country's capacity to adjust to this unavoidable eventuality both at the human and the economic levels. Iraq has the financial resources to invest in its future and to neutralize the negative impact of global warming on its economy. Moreover its youthful population is a significant human asset that can help guarantee a successful transition towards a better future and sustainable development.

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❖ Nature Iraq Founder Honored for Protecting the Marshes of "Eden"

The Goldman Environmental Foundation today announced that Dr. Azzam Alwash, founder of Nature Iraq, was one of six recipients worldwide of the 2013 Goldman Environmental Prize, recognizing fearless environmental leaders around the world.

Dr. Alwash founded Nature Iraq in 2004 as an Iraqi non-governmental, environmental organization in order to protect, restore, and preserve Iraq's natural environment and the rich cultural heritage that it nourishes. His most internationally recognized work has centered on the restoration of the southern Iraqi Marshlands. The idyllic Mesopotamian marshlands of southern Iraq, thought to be the location of the Garden of Eden, the birthplace of Abraham, and the site of the great flood where Noah built his ark, was the third largest wetland in the world twenty years ago.

However, in the late 1980's Saddam Hussein engaged in a massive 'engineered genocide' of the Marsh Arabs by diverting the flow of the Tigris River, ultimately turning the marshes of southern Iraq into a desert. After the toppling of Saddam Hussein in April 2003, Azzam created the Eden Again Project, which later became Nature Iraq. After four years of the program, more than half of the marshlands were restored. After this initial success, Nature Iraq worked to get the marshes on the Ramsar List of protected wetlands and is now fighting to get the marshlands designated as a national park so that there will be a legal framework for protection of the area.

In 2010, after recognizing the importance of the Tigris and Euphrates rivers to the health of the marshlands, Dr. Alwash was instrumental in founding Waterkeepers Iraq, a member of the international Waterkeeper Alliance, to act as a voice for water throughout Iraq. "Dr. Alwash's work as part of the Waterkeeper movement in the Middle East has shed light on the importance of clean water in a region that depends on abundant, clean and accessible water for the health of its communities and culture," said Marc Yaggi, Executive Director of the Waterkeeper Alliance.

In early 2011, the Nature Iraq Foundation (www.natureiraqfoundation.org) was established as a U.S.-based philanthropic organization that works to fund Nature Iraq and other organizations working to protect the natural environment of Mesopotamia. "Dr. Alwash and Nature Iraq's groundbreaking work to restore the cradle of civilization is inspirational, and we are pleased to help support this

important work," said Nature Iraq Foundation CEO Virginia Tice.

About the Goldman Environmental Prize

The Goldman Environmental Prize was established in 1989 by the late San Francisco civic leaders and philanthropists Richard and Rhoda Goldman. Prize winners are selected by an international jury from confidential nominations submitted by a worldwide network of environmental organizations and individuals. The winners will be awarded the Prize at an invitation-only ceremony on Monday, April 15, 2013 at 5 p.m. at the San Francisco Opera House. A smaller ceremony at the Smithsonian's National Museum of Natural History in Washington, D.C. will follow on Wednesday, April 17.

"Nature Iraq Founder Honored for Protecting the Marshes of "Eden"", 15/04/2013, online at: http://www.paramuspost.com/article.php/20130415193708723

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❖ Iraq: the world's next big eco-tourism destination?

Iraq's southern marshes could become a centre for eco-tourism, based around floating hotels and guided wildlife tours, according to the winner of one of the world's most prestigious environmental prizes.

The marshlands between the Euphrates and Tigris rivers are frequently described as the Garden of Eden or the Cradle of Civilisation. But after the Iraq war of 1991, in an act of environmental vandalism Saddam Hussein drained the marshes and persecuted their inhabitants as punishment for an uprising against his rule.

Yet one former occupant of the marshes believes the area has enormous tourism potential. Azzam Alwash fled the persecution and trained as an engineer in the United States but returned in 2008 to oversee the restoration of the marshes. His efforts this week won him the Goldman Prize, widely regarded as the environmental equivalent of the Oscars.

Mr Alwash believes the rejuvenation of the marshes will soon enable tourists to regularly visit and stay in the area. "It is a truly magical place," he said. "My dream is for the marshes to become a major stop for eco-tourists, with floating hotels and the Marsh Arabs giving guided tours. No self-respecting birder can complete their life's checklist until they've visited the marshes."

In winter the marshes now cover 76 per cent of their previous range and wildlife is returning, with water buffalo abundant, marbled teal numbering about 43,000, along with pygmy cormorants and the African darter. Another notable animal is a local species of otter, first identified by Gavin Maxwell, the author, when he toured the marshes with Wilfred Thesiger, the explorer, in 1956, and which features in his novel Ring of Bright Water.

"Iraq: the world's next big eco-tourism destination?", 17/04/2013, online at:
http://www.telegraph.co.uk/travel/travelnews/10000817/Iraq-the-worlds-next-big-eco-tourism-destination.html

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❖ Restoring Iraq's Garden of Eden

LONDON — Azzam Alwash says he remembers the reeds towering above his head, lining cool corridors in the Iraqi heat as he sat with his father, the district irrigation engineer, in a small boat plying the waters of the ancient wetlands between the Tigris and the Euphrates rivers.

That was the early 1960s, and the marshlands covered as much as 20,000 square kilometers, or 7,700 square miles. "I have very warm memories of those times," Mr. Alwash, a 54-year-old, Iraqi-born, U.S.-educated civil engineer, said in an interview here last month.

Biblical scholars say this massive oasis in the desert may have been the Garden of Eden. For more than five millennia, tribal groups of Marsh Arabs lived sustainably in this water world, using the dominant plant, a giant grass called Phragmites australis, for housing, animal feed, fuel, and commerce. Under their ministrations, the marshes teemed with life, serving as one of the world's most important stopovers for migratory birds and as breeding habitat for Persian Gulf fisheries.

But in Mr. Alwash's lifetime, those waters nearly ceased to be.

Now, however, they are experiencing rebirth, thanks in part to Mr. Alwash, who this week received the Goldman Environmental Prize, which honors grass-roots environmental activists.

In the 1970s upstream dam projects began to reduce water levels; and in the early 1990s Saddam Hussein ordered the construction of massive diversion canals and dams that drained more than 90 percent of the original marshlands. His motive was to retaliate against the Marsh Arabs for a Shiite uprising and to destroy rebel hideouts. After siphoning away the water, Hussein ordered the land poisoned and burned, leaving the wetlands a cracked, dusty salt pan.

According to a 2011 U.N. paper on managing change in the marshlands, some 175,000 people were forced to flee. From the United States, Mr. Alwash watched, aghast.

Mr. Alwash had left Iraq in 1978 and landed in the United States, where he ultimately earned a doctorate, got married, and had two daughters.

In response to the attack on the marshlands, Mr. Alwash and his wife Suzanne Alwash, an environmental geologist, founded the Eden Again Project in 2001, the seed for a nongovernment organization, Nature Iraq, which works to protect Iraq's environment. Mrs. Alwash has written a book about the restoration effort, "Eden Again: Hope in the Marshes of Iraq," due out in July.

Seeing opportunity in the 2003 U.S.-led invasion of Iraq, Mr. Alwash left his family for the war zone, to see what he could do about restoring the wetlands. When he arrived, he found that some Marsh

Arabs had already begun to break holes in the levies to reflood the land. He set to work to support them, leading a team of scientists to develop a master plan to restore the marshes.

Mr. Alwash has since worked through Nature Iraq teaching Iraqis and Iraqi institutions — governments, universities, nonprofit organizations — about environmental awareness and stewardship. That has included meetings with government officials to convince them of the environmental, social and economic benefits of restoring the marshes and the promotion of community-based environment clubs. To support this work, Nature Iraq has hired its own scientists and worked with researchers at Basra University to build a database of Iraq's environmental conditions and trends, focusing particularly on water resources, ecology and biodiversity.

Today the wetlands are in recovery. The Goldman Prize says that about half the historical area is now reflooded. Water levels fluctuate due to seasonal changes, drought and upstream water diversions but fish, birds, animals and people are returning.

A subspecies of otter, Lutrogale perspicillata maxwelli, thought to be extinct, was recently sighted in the marshes. "The warbler is back in good health," Mr. Alwash said. "We've seen the Euphrates soft-shelled turtle in abundance."

Mr. Alwash hopes to see the marshes become the country's first national park this spring.

But is it enough to just let in the water? Is the ecosystem healthy? A 2010 study by Iraqi and Canadian scientists found that most plant species had reappeared — but not all. Plant quantities and diversity were low, it said.

Still, Joy Zedler, a University of Wisconsin wetlands restoration biologist, is optimistic. "If I had to restore a wetlands with a gun pointed to my head, I'd pick the Mesopotamian wetlands," she said in a phone interview last month. That's because the dominant tall reed there, Phragmites australis, is an aggressive invader in restoration efforts elsewhere. "That's the kind of native plant you want in a restoration site," said Ms. Zedler, who was a co-author of the Mesopotamian marsh restoration plan.

The ecosystem is resilient, having been modified by human hands for millennia, she added.

A key concept in restoration is adaptive management, in which scientists conduct research as wetlands are rewatered and change course if needed. But adaptive management was not possible with the rapid reflooding in Iraq.

"People really needed the food," Ms. Zedler said. "They were not going to wait to test the fish for contaminants if their kids were starving."

In fact, water quality is an ongoing problem. According to the 2011 U.N. report on the region, marshland water is generally not safe for human consumption and is potentially unsafe for agriculture

and other economic uses. A Nature Iraq scientist found declines in fish species that require clean water.

While traces of chemical weapons used to destroy the marshes are a concern, a quotidian issue is a bigger problem. "The Tigris and Euphrates are open sewers," said Mr. Alwash.

The bigger barrier to successful restoration, however, is water quantity. The headwaters of the Tigris and Euphrates Rivers are in Turkey, Syria and Iran. Upstream dams, particularly in Turkey, have reduced flows.

In 1977-78, the lowest flow in the confluence of the Tigris and Euphrates rivers was 990 cubic meters, or 35,000 cubic feet, per second, according to Ms. Stevens. By 1993-94, that figure was 550 cubic meters per second. In 2008-09, the latest data available, it was less than 100 cubic meters per second. Yet dam building continues.

Turkey's Southeast Anatolia Project includes more than 30 major upstream dams, the majority of which are completed, said Mr. Alwash.

"My next challenge is to try to help Iraq, Turkey and maybe even Syria and Iran to reach agreement on the equitable distribution of the water," said Mr. Alwash, who is building partnerships among regional nonprofit organizations and universities to study the issue and propose solutions. He is also planning a floating demonstration down the Tigris River to publicize the problem.

With reduced water flows comes a companion problem: too much salt. Regional farmers still use the ancient practice of flood irrigation, Mr. Alwash said, which brings salt to the surface. Historically, annual floods washed away the salt and deposited new silt and nutrients. For thousands of years, "farmers didn't need fertilizer," he said.

"But the last major flood in Iraq was in 1968," he said, citing the dams as a cause. "If the Iraqi government doesn't address this problem, agriculture will die in the land where it was born."

One answer is drip irrigation. Using less water would reduce saline runoff to the Tigris and Euphrates, he said. He has proposed that Iraq capture and sell gas currently flared during oil production to raise money for drip irrigation systems. It could then either sell the systems at a subsidized rate to both Iraqi and upstream farmers, or give them away as part of a watershed management agreement.

The Goldman Prize administrators recognize that the Mesopotamian marshes are not fully restored. The deputy director of the prize organization, Lorrae Rominger, said, "What Azzam has done to date is remarkable, and we hope that winning the prize will help support the work he has in front of him."

As for Mr. Alwash, he said he dreams of the day when the marshes become a national park and ecotourism destination. Then he will at last be able to share the landscape of his boyhood with his daughters.

Missing his daughters' birthdays, spelling-bee wins, and first dates was very hard, he said. "But I cannot give up Iraq. I found my calling."

A couple of months ago, his daughter sent him a speech she'd given to her class. "In the middle of that letter, I started sobbing," he said, his voice breaking. "She understands. I'm forgiven."

"Restoring Iraq's Garden of Eden", 17/04/2013, online at:
http://www.nytimes.com/2013/04/18/world/middleeast/restoring-iraqs-garden-of-eden.html?pagewanted=all&_r=0

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❖ Parks Beyond Borders: Pioneer Of Iraq's First National Park Wins Global Environmental Award

The world's largest prize for grassroots environmentalism has been awarded to Iraqi Azzam Alwash for the impending creation of Iraq's first national park. The National Park of the Marshes, the largest marshland in Southern Asia, is set to be named later this month.

The startling fact is that this soon-to-be realized national park in the Mesopotamian Marshland had to be recreated from scratch after being completely destroyed by Saddam Hussein in the mid-1990s. The marsh's Shiite Arab residents had staged uprisings following the Kuwait invasion and fled to the marshes for refuge.

Hussein burned and poisoned this precious ecosystem, creating dust bowls in a place once known as the Garden of Eden. The massive destruction drove out the descendants of ancient Sumerians who had inhabited the area for thousands of years.

Iraq's Best Idea

Enter Azzam Alwash, winner of one of six2013 Goldman Environmental Prizes. After fleeing Iraq when Hussein rose to power, Alwash earned advanced degrees and established a successful career as a civil engineer. He married an American woman and raised two daughters in an affluent Los Angeles suburb.

Alwash remembered the marshes from childhood visits, and when the Hussein regime fell, he left California in 2003 to return to Iraq. He founded Nature Iraq, an Iraq-based non-profit, and has succeeded in restoring the Mesopotamian marshes to 50 percent of their original size.

Besides restoring the marshes and the local way of life, the 54-year old Alwash has spearheaded the April 2013 release of the Key Biodiversity Areas Survey, an atlas of 300+ Iraqi biodiversity sites intended to guide preservation and ultimately establish an Iraqi system of national parks.

On one of a handful of visits this year to the United States, ***National Parks Traveler*** interviewed Alwash about his inspiring story, motivation, and the future of Iraq's national parks.

NPT: How does it feel to be the father of Iraq's national parks?

Alwash: I am not going to be so egotistical to claim it is me. I will tell you it takes a village, that it takes a team, this is the effort of the entire team of Nature Iraq, and a combination of the desires of the locals. Yes I was instrumental in convincing the locals it was in their interests, but it is not the work of a single man.

NPT: Were you aware of national parks before coming to the United States?

Alwash: No, no, no, I didn't even understand that I was an environmental conservationist before I came to the US. Two weeks after I arrived in the US I saw Yosemite and I was in awe. My god, I was in love. I saw Yellowstone, Zion, and so many national parks in the United States that the idea of national parks has become second nature. With those experiences, I decided this was the one way of making sure that Iraq, somehow, comes up with a plan to conserve these marshes, not only for Iraqis but for the rest of the world.

NPT: Why not just designate a mountain range instead of restoring a destroyed ecosystem?

Alwash: That's a question that would need weeks to answer. First of all I didn't know it couldn't be done. I thought it would take me two or 3 years, to get things on the right track and come back to the good life in California. I didn't realize that this was a lifetime commitment, a multi-generational commitment.

I chose the marshes because of my deep personal connection to them as a young boy in the 60s and early 70s. I was living nearby with my family and my father was a district irrigation engineer. I have very warm memories of my time with my father in boats going around these marshes in the spring as the area awaits the annual flood. I have very vivid memories of these times because it was one of the few times that I had my father all for myself...

NPT: How ironic it is that so many similar experiences link fathers and sons, mothers and daughters, in the US—often in national parks.

Alwash: I had those same experiences with my own daughters—in the United States! I haven't visited the marshes yet with my daughters (they live in the US; he visits a handful of times a year)—but that will happen soon.

NPT: What is Nature Iraq?

Alwash: Nature Iraq is a not for profit corporation, an NGO. It is focused on the preservation of Iraq's environment and cultural heritage. And that's not just in southern Iraq—but for example in the northern Iraqi mountains of Kurdistan (an ethnic area spanning Turkey, Syria, Iran and Iraq). Southern Iraq is a sedimentary plain. That means that the soil came from somewhere else, originating in the mountains of Kurdistan, borne in on the waters of the Tigrus and Euphrates. Few Iraqis understand that this organic connectivity between Southern Iraq and Kurdistan predates humanity.

NPT: Sounds like you have the makings of a cross-border national park.

Alwash: We have 25 million land mines along the border between Iraq and Iran, and I have plans for what I call a series of peace parks in those areas. Once we declare the National Park in the Marshes we have a series of ten places we want to focus on to create these new parks.

Instead of spending the money on clearing the mines, let's declare it as national park, blaze trails for hiking and various activities—but keep the mines in place. I want to preserve nature and one unique aspect of having mined area in the mountains of Kurdistan is that people have left nature alone! Yes we have a few mines that go off every now and then, that kill a rabbit, but by and large, these mines have protected the mountains from development.

NPT: That puts a whole spin on environmental regulations—and "peace park" too!

Alwash: It may sound crazy (says, Alwash, breaking into laughter), but you have to think outside the box.

NPT: I can see the signs now—"Stay on the trail or you'll get blown up!" Speaking of fun in the sun, will Iraqis look to national parks for recreation?

Alwash: Southern Iraq is not a picnic area. People don't go to the marshes to picnic. The tradition of picnicking or going out in the park is not something that is normal, at least not yet. I'm hoping the National Park in the Marshes will eventually become a site for ecotourism and that the marsh arabs will move from using the marshes for their livelihood to protecting the marshes as a new way to benefit from ecotourism.

On the other hand, in Northern Iraq, the tradition of picnicking is entrenched and woven into society. Every Friday and Saturday, people go out in the mountains, they picnic in the open air, barbecue, dance, and drink, all year, except when it's too damn cold in the snow-covered mountains. (Editor's note: There are of course countries where cold weather picnicking is a way of life—check out this video from Finland.)

In the north, I presume park usage will be totally different from the south—different park models. In the north I can see parks collecting fees for entrance and use of picnic areas. In the south we're gonna have 40,000 oil workers working within 20 minutes of the marshes, so instead of flying off to Dubai for recreation, they can visit the marshes for birding or fishing...

NPT: Are there any environmental controversies lurking in Iraq's future?

Alwash: Dams upstream will be a hindrance to the survival of the marshes, so we need to work on resolving water issues. If Iraq doesn't address the salinity of water coming in from Turkey we will have a loss of agriculture in the land where it was born. Over the horizon, we will need to work with Turkey and Iran to resolve water issues before it becomes too big of a problem.

NPT: The marshes sound as dependent on the flow of water as the Everglades National Park in the United States.

Alwash: Yes. I have a few ideas that I can put forward, but we need to convert the discussion with Iraq and Turkey from "whose water is this" to "how can we change this to an economic question, how can Turkey make money for water, how can we in Iraq get water without paying for it." We need to start entertaining trade-offs to make an economic model that benefits all our countries.

NPT: There are many historical national parks in the United States, but having a park in "The Cradle of Western Civilization" seems pretty distinctive.

Alwash: Yes, indeed. There are seven historical sites in the marshes national park. On top of that, we have 25,000 archeological sites in the country. Iraq is the Cradle of Civilization—so, do the marshes belong to Iraq? I don't think so. They belong to the entire world. That was where writing was invented. Where agriculture was invented. Where Abraham was born. Let's call it the birthplace of Western civilization. It's not only Iraq that needs to preserve this. I think it is the world that needs to help Iraq preserve these marshes.

"Parks Beyond Borders: Pioneer Of Iraq's First National Park Wins Global Environmental Award", 15/04/2013, online at: http://www.nationalparkstraveler.com/2013/04/parks-beyond-borders-pioneer-iraq%E2%80%99s-first-national-park-wins-global-environmental-award23094

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❖ Middle East will face severe water scarcity between 2015 and 2020

Jordan faces massive water shortages due to limited resources, population growth, open borders for refugees, constant interruptions to water projects and an ongoing water dispute with Israel

Water, like any natural resource or energy source, is a matter of national security. The depletion or scarcity of water limits a nations industrial development, economic growth, food production and overall well being and health of its population. Jordan not only has one of the lowest levels of water available per capita in the world and it has already been forced to tap into its "non-renewable water resources from fossilized deep-water aquifers," according to the World Health Organization (WHO).

"In 2010 Jordan's water demands exceeded its water supply by roughly 200% and 10 out of the countries 12 groundwater aquifers were already being over-exploited," according to last years Water and Security Protection report by Jordan's Ministry of Water and Irrigation.

Water Scarcity is defined as the point when the demand for water resources by all sectors -including human, industrial, agricultural, and environmental- cannot be met and the supply or quality of water is affected according to the United Nations. In the Arab world where rainfall is sparse, severe water scarcity will mean, "annual per capita share is less than 500 cubic meters. This is below one-tenth of the world's average, currently estimated at over 6,000 cubic meters," according to the Arab Forum for Environment and Development (AFED). Experts are placing severe water scarcity in the Arab World between two to seven years away "unless effective steering mechanisms for sustainable water management and measures to reduce the agricultural consumption of water are applied," according to the Euro-Arab Organization for Environment, Water and Desert Research.

Jordan is currently ranked among the top five countries most threatened by water shortages according to the US based energy management and water treatment - research and manufacturing company, Seametrics. But "Jordan suffers acutely from demographic, migration and political issues – all of which mean that solutions must reach far beyond working with local people and giving aid for water projects," according to an initiative called FutureChallenges launched by the politically non partisan Bertelsmann Foundation. Water projects in Jordan suffer from constant interruptions to infrastructure construction and management; the most recent wave of disturbances being water theft according to local news reports. Typically the interruptions to management and delivery arise from

disputes because a business contract is given to businessman of a certain tribe and regardless of whether its transport, construction or logistics, it creates a rival tribe to meddle with productivity.

Jordan's geographical location doesn't make the stress of its water demands any lighter when it comes to population control. Refugees flow with greater ease through Jordan's borders than water. Historically the Hashemite Kingdom of Jordan has provided refuge to people from Palestine and Iraq. More recently its borders have been open to a steady inflow of people from Egypt, Libya and Syria. Demands for natural resources continue to increase as a large portion of permanent and transit refugees making up Jordan's 6.5 million total population. Additionally the country's natural growth rate stands at about 2.5 percent and its population is expected to double according to the Jordanian government.

Control of a water resource, again like any natural resource or source of energy, equals control over the economy and population dependent on that water resource. Jordan shares the Jordan and Yarmouk Rivers, its major surface water sources, with both Syria and Israel. Both Israel and Syria have their own national water systems. In 1994 Israel and Jordan signed a Treaty establishing guidelines for distribution and availability of water from the Jordan and Yarmouk Rivers for both countries.

"The Jordan River, once a major source of water for the kingdom, was diverted after animosity grew between its stakeholders," says FutureChallenges. And upstream regions or countries like Israel enjoy the benefit of using water flows firsthand while downstream areas like Jordan tend to receive smaller quantities of water across state borders. "The dams built by Syria, Israel and Jordan have caused the (Jordan) river to lose 95% of its original flow. This has also been the fate of Jordan's other significant waterway, the Yarmouk River, which is now reduced to a mere muddy trickle" according to FutureChallenges.

Note: The Euro-Arab Organization for Environment, Water and Desert Research will be hosting a scientific conference in Jordan with researchers from around the world between April 8th and 12th in hopes of finding a solution to water scarcity in the Arab world.

World Connection? "There are 263 international basins that cross political boundaries of two or more countries. These basins which are home to almost 40% of the world's population, nearly half

the land area and account for an estimated 60% of the flow of freshwater in the world. There are a total of 145 nations include territories within international basins, and 121 countries are located entirely within international basins," according to the Euro-Arab Organization for Environment, Water and Desert Research.

"Middle East will face severe water scarcity between 2015 and 2020", 17/04/2013, online at: http://www.digitaljournal.com/article/348183

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❖ Palestine activists call on Netherlands prince to disassociate from JNF water project

Palestinian boycott activists are calling on the Netherlands' Prince Willem-Alexander to reconsider his decision to lend his name to a water project undertaken by the Jewish National Fund Netherlands in the Naqab/Negev desert in the south of present-day Israel. The project is in honor of the prince's inauguration as king later this month.

Omar Barghouti, a Palestinian human rights activist and a founder of the boycott, divestment and sanctions movement, told The Electronic Intifada: "The [JNF] has played a key role in the dispossession of the Palestinians and in colonizing their lands. Today, [the JNF] continues its explicitly racist practices against Palestinians and rejects any notion of equal rights for all. Palestinian civil society appreciates the prominence that equality and non-discrimination have in the Dutch constitution and based on this, appeal to Prince Willem-Alexander to reconsider his decision to lend his name to a project of the JNF."
Jamal Juma', director of the Stop the Wall campaign, commented in an email to The Electronic Intifada: "For Palestinians, the JNF is not only one of the key material agents that implement Israeli policies of discrimination and dispossession on either side of the Green Line. The JNF is one of the most striding symbols of apartheid and the Israeli ideology of racial supremacy. The King of the Netherlands accepting as a gift a 'civilizing' project by a colonial agency in a country that is not his brings us back to the darkest days of colonialism when the white people where convinced they could dispose of territories and the people living there at their whim and pleasure. I urge the Netherlands to instead valorize the tradition of tolerance, equality and respect for human rights they are known for today and to ensure this gift will be rejected."
The Service and Research Center Palestine (docP), an organization which supports the boycott, divestment and sanctions movement in the Netherlands, wrote to The Electronic Intifada that it supports the call on the prince to not lend his name to the water project.

JNF Netherlands

A press release from the Jewish National Fund-Netherlands falsely claims that the JNF-NL's core business is the development of the land of Israel and making it habitable for the benefit of **all its inhabitants**. In reality, the organization's work contributes to the dispossession of the Palestinian people and the entrenchment of Israel's apartheid system. The JNF-NL charter mentions the **Jewish**

people as the beneficiary of its aim and activities, explicitly excluding the indigenous Palestinian population, which makes up 20 percent of the total population in present-day Israel.
In 1992, the JNF-NL adopted a new charter which shows it operates as a branch of JNF Israel, also known as Keren Kavemeth LeIsrael (KKL). The Electronic Intifada obtained a copy of this charter, which is written in Dutch. It is still valid because no changes were registered by the Chamber of Commerce while foundations have the duty to report changes in their governance to this body.
The aim of the JNF-NL is to "bring the land into Israel inalienable property of the Jewish people and enabling the development and afforestation of land in Israel in the interests of the Jewish people" (Article 2).

The charter shows that KKL actually controls the governance of the JNF-NL. KKL headquarters needs to approve the nomination of the members of the Dutch board of directors and will appoint new members when the board has no members. Furthermore, the JNF-NL board has to consult with KKL on the appointment, dismissal and salary of the director, and the JNF-NL board needs the approval of KKL if it wants to change its charter. All revenues of the JNF-NL will be transferred to KKL, unless otherwise has been expressly stipulated.

JNF Israel

The Jewish National Fund was founded in 1901 with the primary objective to "purchase, take on lease, or in exchange, or receive on lease or otherwise lands" in Palestine and the surrounding areas for the purpose of "settling Jews on such lands."
Following war and the establishment of Israel in 1948, the JNF took control of most of the land which had been confiscated from Palestinian refugees. In the 1950s, the JNF became a quasi state organization when Israel formally linked the private fund to the state under the World Zionist Organization – Jewish Agency (Status) Law and the Keren Keyemeth LeIsrael Law. With these laws, the Israeli government decided that the World Zionist Organization, the Jewish Agency and their affiliates, including the JNF, were to be treated as part of the State of Israel, and as institutions empowered to carry out public functions. Subsequently, the JNF joined the Israel Lands Administration (later renamed Israel Lands Authority), which is the public authority managing approximately 93 percent of all land in Israel.

According to Ilan Pappé, the JNF directly owns 13 percent of the land, and through its influential position in the Israel Lands Authority has a stronghold over 93 percent of all land in Israel.

According to the JNF charter and the "Basic Law: Israel Lands," the JNF may exchange and lease land only to Jewish legal persons, to the state and the government-controlled Development Authority, writes Palestinian refugee rights organization Badil.
The funds collected by the JNF-NL are transferred to and spent by the Israeli para-state organization JNF-KKL.

Institutional discrimination

In 2004, the rights group Adalah in Haifa challenged at the Israeli high court the Israel Lands Authority's policy to open tenders for JNF lands only to Jews. Adalah demanded that the ILA, as a public agency, respect the principles of equality, just distribution and fairness, and cease acting as a sub-contractor for discrimination on the basis of nationality. In its response to the high court, the JNF underscored its special role "as the owner of an eternal possession of the Jewish people." It argued that the allocation of JNF lands to non-Jews will be "extreme damaging, retroactively, to the rights of the JNF and of the Jewish people." JNF writes:
Israel's Knesset and Israeli society have expressed their view that the distinction between Jews and non-Jews that is the basis for the Zionist vision is a distinction that is permitted and is not discriminatory, at least in regard to resources held by the Zionist movement. *[Emphasis added in original letter]*
The JNF's response reveals a determination to continue its discriminatory marketing of land, stating the "JNF is not a public body which acts on behalf of all the citizens of the state. Its loyalty is to the Jewish people and its responsibility is to it alone."
The JNF's discriminatory practices against 1.5 million Palestinian citizens of Israel were addressed by several UN bodies. In 2007, the UN Committee on the Elimination of Racial Discrimination urged Israel to ensure that the JNF is bound by the principle of non-discrimination in the exercise of its functions.
In 1998, the UN Committee on Economic, Social and Cultural Rights noted with grave concern that the JNF is "chartered to benefit Jews exclusively" and called on Israel to remedy the problem.
In 2007, the UN Committee on Non-Governmental Organizations (NGOs) rejected the JNF-USA's application for consultative status with the UN Economic and Social Council. The JNF-KKL's violations of the principles of the UN Charter, which emphasize respect for human rights and equality, was one of the main reasons for the rejection, according to Adalah. Furthermore, the committee was unable to distinguish between the activities of the JNF-USA and JNF-KKL, contrary to the JNF-USA's claim it was an independent non-governmental organization.

JNF present no crown jewel

Citizens expect their king to show respect for the core values as laid down in the kingdom's constitution. The principle of non-discrimination is crucial in Dutch values as it is the very first article of the Constitution of the Netherlands. However, JNF-NL operates as a branch of the JNF-KKL, an Israeli para-state organization that carries out essential government functions and discriminates on the basis of religion and ethnicity at the expense of the rights of the indigenous Palestinian population.

"Palestine activists call on Netherlands prince to disassociate from JNF water project", 18/04/2013, online at: http://electronicintifada.net/blogs/adri-nieuwhof/palestine-activists-call-netherlands-prince-disassociate-jnf-water-project

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❖ Israel's Monopoly over Water Distribution in the West Bank: Supports Illegal Settlers, Impoverishes Palestinians

lllegal settler gets more than 4 times as much water as Palestinian neighbor — and US signed off

Lauren Gelfond Feldinger in Haaretz reports on water distribution in the West Bank and says that the Palestinian Authority has gone along with the apartheid system of inequitable division because of the Oslo Accords.
The figures:

On average, West Bank Palestinians have access to about 70 liters a day per person, although in some areas availability is as low as 15 liters, depending on the season. In contrast, Israeli citizens inside the Green Line or in West Bank communities utilize around 280-300 liters per person a day year-round, according to rights organizations, water NGOs and the Palestinian Water Authority.

Feldinger says that EWASH (a coalition of 28 international NGOs working locally on Palestinian water issues) along with the Middle East Children's Alliance, started a program to get international volunteers to use only 24 litres of water for one day, so as to dramatize the inequality.

Those who volunteered to limit their water usage ranged from college students to retirees, and included Christian clerics, and Jewish, environmental and social-justice activists, recruited by the participating water organizations, via mailings, word of mouth, and social media. Semi-retired factory worker Jenefer Israel, 52, of California, said 25 liters was the bare minimum she could use, even though she gave up her shower and asked a family member to tend to her animals and vegetable garden. She used 14 liters to flush the toilet twice, nine liters to disinfect her goats' milking equipment, and two liters for drinking, washing hands, preparing food and brushing her teeth….

Eleanor Roffman, 69, a professor of psychology and counseling at Lesley University in Massachusetts, had to give up her daily shower, laundry and dish-washing she said. Roffman and Israel said it was manageable − but only because it was for one day.

Here are the politics of the matter:

Since 1967, Israel has controlled the major underground West Bank water sources. The 1995 Oslo II agreement allocated specific amounts for West Bank Palestinians, based on estimated annual use and

projected future use. International transboundary water consultant David Phillips, who has advised Palestinian negotiators, charges that the Oslo agreement expired in 2000, and was always inequitable.

Phillips wrote in an e-mail to Haaretz from Africa that Palestinians signed the agreement "because of the power asymmetry in the mid-1990s, coupled with the inexperience of the Palestinians in negotiations and the failure of the US 'facilitator' to demand a more equitable outcome." Phillips urges Israel to "negotiate in good faith with Palestine to attain an equitable and reasonable allocation of the shared fresh water resources, taking into account any other water resources to which either party has access."

"Israel's Monopoly over Water Distribution in the West Bank: Supports Illegal Settlers, Impoverishes Palestinians", 15/04/2013, online at: http://www.globalresearch.ca/israels-monopoly-over-water-distribution-in-the-west-bank-supports-illegal-settlers-impoverishes-palestinians/5331417

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❖ Saving the Dead Sea Could Mean Changing it Irrevocably

EIN GEDI, Israel—The World Bank approved a rescue plan to save the Dead Sea, which is drying up at a rate of about three feet annually, but environmental groups argue the plan will result in ecological disaster.

After a decade of debates, the World Bank confirmed in January the feasibility of building a canal between the Red Sea and the Dead Sea at a cost of $10 billion.

At the beginning of the 20th century, about 2 billion cubic meters of water per year would flow into the Dead Sea, much of it from the Jordan River. But, says Gidon Bromberg, director of Friends of the Earth Middle East, "Today 95 percent of this water is taken by Israel, Jordan, and Syria."

Meirav Ayalon, spokeswoman for the Kibbutz Ein Gedi, says: "Once, the sea shoreline in Ein Gedi Spa bordered the road. Now, you have to [travel] half a mile to reach it."

Friends of the Earth, Society for the protection of Nature in Israel, and even Israel's Environmental Protection Ministry, say replenishing the Dead Sea with water from the Red Sea could have a bad effect.

The mixing of sulfate-rich Red Sea water with calcium-rich Dead Sea brine could result in gypsum precipitation. In other words, it could turn the Dead Sea a chalky white.

Phosphate from the Red Sea and dilution of the surface water could also cause a large outbreak of algal blooms.

"All studies have shown that the project will cause a huge ecological disaster as it produces a plaster layer and red algae," Ayalon said.

The Dead Sea—the lowest place in the world, famous for its black mud pools and iconic photos of people floating in the highly salinized water—is a troubled body of water in a troubled region.

The canal project is lauded as a great feat of cooperation among Jordan, Israel, and Palestine. The joint effort is enthusiastically supported by Israel's Ministry of Regional Cooperation.

It would include hydro-electricity power plants and the world's largest desalination facility.

In 2005, the partners asked the World Bank to conduct a feasibility study on the plan, which they hoped would stabilize the water level of the Dead Sea and supply the region with drinking water and electricity.

For the past few decades Israel's water supply has relied on Kinneret Lake (also known as the Sea of Galilee), north of the Dead Sea, for water. It is now becoming more dependent on desalinated water from the Mediterranean Sea. Bromberg suggests that more water be used from the Mediterranean to give Kinneret a chance to fully replenish.

Kinneret follows a natural course into the Dead Sea. If water levels rise in Kinneret, says Bromberg, they will help replenish the Dead Sea.

Bromberg also calls on the governments of Israel and Jordan to restrict corporate water use, which is depleting the Jordan River and thus the Dead Sea. He says the potash industry has no incentive to operate with less water.

"If Israel and Jordan will require the enterprises to pay for every cubic meter [of water] and monitor the amount of water consumed," Bromberg says, the companies would develop alternative technology that would require less water.

He suggests a combination of desalinating water from the Mediterranean Sea, reusing treated water, and limiting corporate water use to ease the strain on the Dead Sea and let it replenish from its natural sources.

"Saving the Dead Sea Could Mean Changing it Irrevocably", 17/04/2013, online at:
http://www.theepochtimes.com/n3/17443-saving-the-dead-sea-could-mean-changing-it-irrevocably/

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❖ Navy complicit in Kishon River pollution?

Base sitting on river bank spilled toxic substances for years; IDF officials suspected of failure to report lack of sewerage, obstructing justice

An IDF navy base may have been complicit in dropping toxic waste into the Kishon River, which has allegedly made many divers and Navy soldiers seriously ill over the years, prompting high profile compensation claims. The new findings came up in an upcoming report on the issue by the Environment Protection Ministry.

Haifa's Kishon River has become infamous for the extremely high levels of pollution due, allegedly, to industry in the area. Many soldiers in the Navy have become sick, apparently from working in the polluted waters of the river, and this case has been ongoing for many years.

Navy complicit in Kishon River pollution?

Base sitting on river bank spilled toxic substances for years; IDF officials suspected of failure to report lack of sewerage, obstructing justice

Amir Ben-David
Published: 04.17.13, 15:16 / Israel News

An IDF navy base may have been complicit in dropping toxic waste into the Kishon River, which has allegedly made many divers and Navy soldiers seriously ill over the years, prompting high profile compensation claims. The new findings came up in an upcoming report on the issue by the Environment Protection Ministry.

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Related stories:

* Kishon River to undergo NIS 220M rehabilitation
* Compensation proposed to Kishon divers 'insulting'
* Oil Refineries gives NIS 90M for Kishon cleanup

Inspectors in the ministry's marine and coastal department launched an independent probe into the issue following reports regarding pollution in a fishing marina located in one of Kishon River's estuaries. The inquiry led the to a nearby IDF marine base, which, contrary to what IDF officials led the ministry to believe, had never been connected to a sewerage system, and has been dropping its waste, including industrial oils, into the river.

Ministry officials said the base was not included in a report submitted two years earlier by the IDF, specifying all the military facilities not connected to sewerage systems; it was this omission, officials

said, which enabled the base to go unexamined by environmental inspectors, though the spillage is suspected to have been carrying on unnoticed for years.

The probe revealed that IDF officials in the base installed a few years earlier equipment designed to minimize the spillage of toxic pollution into the river. It is suspected, however, that once the implementations failed, officials at the base brought the fact to the attention of their superiors at the Navy Command. Reportedly, they were told there were no budgetary means available to deal with the malfunction, and that no further steps were taken since.

The probe has not yet reached completion. Its findings will be forwarded to the Military Prosecutor's Office.

Reni Amir, the head of the ministry's marine and coastal department, issued a warning to navy chief Ram Rothberg prior to taking legal action against the navy. Following this measure the spillage problem was immediately fixed by hiring an independent body specializing in disposing of toxic waste.

Ministry inspectors also claimed Navy officials at the base kept them waiting outside the facility for approximately two hours before letting them inspect the base, in contravention to the established code of conduct between the ministry and the navy. Thus officials at the base are also suspected in attempted obstruction of justice.

The revelation has implications that go further than the specific case. For years, on the heels of a Yedioth Ahronoth exclusive, the extremely high levels of pollution in the Kishon river were blamed exclusively on the factories sitting on the river bank. Now the role of the IDF in spilling industrial oils and metallic waste has come to the fore, though providing exact figures regarding the extent of the spillage from the base is most likely to prove impossible.

IDF Spokesperson's Unit told Yedioth Ahronoth that "the issue is under investigation by the 'green police' at the Ministry for Environment. Their findings will be forwarded to the Military Prosecutor's Office." The spokesperson added he believed the inspectors were not impeded in the process of their inquiry into the base.

"Navy complicit in Kishon River pollution?", YNET, 18/04/2013, online at:
http://mideastenvironment.apps01.yorku.ca/?p=7111

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❖ Israeli waterways still polluted despite billions of shekels in sewage treatment

Plan could keep money issues from getting in the way of cleanup.

Many Israeli waterways are still polluted despite the billions of shekels that have been spent on sewage treatment plants in the past few years, according to a study commissioned by Zalul Environmental Association. The reason, says Zalul, is a failure to repair damaged or malfunctioning waste treatment systems. In some cases, the nongovernmental organization notes, even relatively inexpensive repairs are held up by bureaucracy or, in the case of some of the poorest local governments, by a lack of funds.

Gadi Rosenthal and Dana Gabay of Kivun Strategy and Economics evaluated pollution events in Israeli streams and responses to them. According to the report they issued last week, each year the Environmental Protection Ministry's hotline receives between 300 and 350 reports of waterway pollution. More than 80 percent are the result of problems originating in the pipes or pumps of a wastewater treatment plant operated by a local government.

While wealthier communities generally fix significant malfunctions within a few days, poorer local authorities, especially in Arab communities, often cannot address the problems for months on end. As a result, waterways are heavily polluted and serious environmental damage occurs.

For example, last year sewage flowed into the Yehiam stream, in the Galilee, for three months before the malfunction causing the problem was fixed. A similar situation occurred in the Iron stream, due to a malfunction in a pumping station in one of the area's Arab towns.

The report cites a few outstanding examples of pollution in recent years. These included repeated problems with the sewerage systems in Upper Galilee towns that caused serious damage to the Nahal Beit Hakerem nature reserve, as well as malfunctions in the system at Jisr al-Zarqa that polluted the nature reserve around the Taninim stream, the only stream in the coastal area through which wastewater does not flow.

The Water Authority responds to waterway pollution by issuing a repair order requiring the responsible entity to fix the problem, at its own expense. But the report notes that in many cases the

responsible party is a local government or water utility that lacks the funds for the repair, even though the average cost of such work is around NIS 31,000.

In other cases the delay in making the repair is due to bureaucratic complications, as when more than one party is responsible for the problem.

Kivun's solution, which Zalul plans to promote, calls for creating a sort of superfund that could be used to repair waterway pollution events within a few days of reporting. The Water Authority would collect payment from the responsible party at a later date.

"We have to deal with these malfunctions the way we deal with putting out fires," explained Kivun's Rosenthal at a meeting last week of environmental groups and government representatives to discuss the report. "First you deal with the fire and then you deal with covering the cost of the damage."

He noted that the total cost of these repairs would be about NIS 11 million annually, far less than the cost of cleaning up the streams when repairs are delayed.

Most of the meeting's participants supported the idea of an immediate-response mechanism. But some stressed that at the same time there must also be a way to ensure that the local authorities and water corporations continue to invest the funds necessary to prevent the malfunctions in the first place.

"Israeli waterways still polluted despite billions of shekels in sewage treatment ", Haaretz, 18/04/2013, online at: http://mideastenvironment.apps01.yorku.ca/?p=7113

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❖ Authorities rent private wells in Mafraq to meet rising water demand

Maintenance of artesian wells ongoing as water per capita drops by half
by Hana Namrouqa

AMMAN — Authorities have rented scores of private wells in Mafraq Governorate to meet the surging demand for water as summer approaches, according to a government official.

The Water Authority of Jordan (WAJ) is also carrying out maintenance work on several artesian wells in Mafraq as part of measures to generate water for the town, which has a population of 50,000, and hosts 70,000 Syrians as well as over 123,000 Syrian refugees in two refugee facilities.

"The water situation in Mafraq is exceptional because it is receiving a constant influx of Syrian refugees, which necessitates exploring new water resources and the rehabilitation of existing ones," WAJ Secretary General Tawfik Habashneh said.

Habashneh noted that during the past week the Mafraq Water Directorate has received equipment and a number of vehicles from UNICEF to improve the water supply in the governorate.

Mafraq Governorate, 80km northeast of Amman, sits on one of the Kingdom's main reservoirs and supplies Amman, Irbid, Jerash and Zarqa with water from the Sumaya artesian wells.

Water per capita in Mafraq was one of the highest in Jordan, reaching more than 100 cubic metres per year, according to water officials in the governorate, who said in previous statements to The Jordan Times that the amount has dropped by half over the past year since it is shared with the Syrian refugees residing in the city.

Officials and town residents have complained about the deteriorating water situation and expressed concern that the supply will further drop during summer, when temperatures reach their 40s.

Habashneh said the new equipment and measures to generate more water for town residents will positively affect the water supply in Mafraq.

On a national level, he said the Ministry of Water and Irrigation will activate its summer emergency plan next week.

"The plan aims at addressing challenges and increasing pressure over water, especially as temperatures rise and the population grows with the return of expatriates and the influx of tourists," Habashneh noted.

The plan entails exploring new water resources, and rehabilitating wells and water resources among other measures, according to the ministry.

"Authorities rent private wells in Mafraq to meet rising water demand", Jordan Times, 18/04/2013, online at: http://mideastenvironment.apps01.yorku.ca/?p=7115

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❖ Study Says Israel's water policy in West Bank is apartheid

RAMALLAH, April 16, 2013 (WAFA) – Israel's policies and practices in relation to water in the Occupied Palestinian Territory (OPT) amount to a system of "water-apartheid," said a new study by the human rights group, al-Haq, published Tuesday.

The report, "Water For One People Only: Discriminatory Access and 'Water-Apartheid' in the Occupied Palestinian Territory," said that "the threshold for apartheid is met because the inhuman acts, committed against Palestinians through the denial of access to water in the OPT, are carried out systematically in the context of an institutionalized regime with the intent of establishing and maintaining Jewish-Israeli domination over Palestinians as a group."

While the Oslo Accords intended for greater access to the water resources in the OPT, Palestinians today have less and less access to their natural resources, it added.

Indeed, Palestinians have seen their access to water reduced from 118 million cubic meters per year as promised by Oslo II to 98 million cubic meters per year in 2010 – a decrease of almost 20%.

It said more than half a million Israeli settlers in the occupied territories consume more than six times the amount of water allocated for domestic purposes to 2.6 million Palestinians in the West Bank. This discrepancy is even greater when water for agricultural purposes is taken into account.

The study said Israel extracts almost 90% of the mountain aquifer water largely located in the West Bank, which are subsequently allocated to those residing in Israel and in Israeli settlements.

As a result, Palestinians are forced to rely on Israel's national water company, Mekorot, to meet at least one third of their domestic water needs, making Mekorot the single largest supplier in the West Bank, said the study.

Commenting on the study, Shawan Jabarin, general director of Al-Haq said: "Not only does Israel continue to profit economically from the occupation of the OPT, but it has imposed a system of 'water-apartheid' in order to do so. It is a practice that subjugates the Palestinian population and ensures that the only development we see inside the OPT is that of settlements and settlement farms."

Al-Haq said that "Israel's policies and practices with regard to water sources in the OPT violate peremptory norms of international law, including the right to self-determination and the prohibition of extensive destruction and appropriation of property, as well as constituting breaches of the international legal prohibitions of colonialism and apartheid."

It called on the Israeli authorities "to halt these illegal policies and to guarantee Palestinians the exercise of their sovereign rights, including permanent sovereignty over natural resources."

"Study Says Israel's water policy in West Bank is apartheid", WAFA, 16/04/2013, online at: http://english.wafa.ps/index.php?action=detail&id=22152

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❖ Water restrictions in Area C threaten to displace villages

MASAFER YATTA (Ma'an) — "Life is hard, but I won't leave the village," Zahira al-Jundi says.

Despite winter rainfall which has painted green patches on the rolling south Hebron hills, the 145 residents of Tuba face a daily struggle to access the most basic levels of water needed to survive.

Like 70 percent of Palestinian communities in Area C, Tuba is not connected to the water network.

The weekly sight of a water tanker negotiating the rocky sand-colored terrain to reach the village is a welcome relief for residents, but only a temporary measure to ease the humanitarian impact of an acute water shortage.

Located in 30,000 dunams of land designated by Israel as a closed military area, or Firing Zone 918, Israel's Civil Administration forbids all construction in Tuba. Villagers live in caves and tents and depend entirely on cisterns and tankered water to meet their daily needs.

"These communities live in conditions similar to that of a post-disaster situation, such as an earthquake or tsunami," Advocacy Task Force Officer for EWASH, Alex Abu Ata, tells Ma'an.

"People affected by natural disasters are forced to live in tents and have little access to water or food. They basically only have what is provided to them through aid."

International NGOs implement humanitarian projects in the south Hebron hills but cannot obtain authorization from Israel to build long-term water infrastructure.

"They can only really delay the problem, without ever solving it," Abu Ata says

Between 2009 and 2011, Israel's military destroyed 173 water, sanitation and hygiene structures in the West Bank including 40 wells, 57 rainwater collection cisterns and at least 20 toilets and sinks, OCHA says.

In 2012, dozens of international aid agencies issued a collective call for Israel to halt the "continuous targeted destruction" of cisterns in Area C, labeling the demolitions a "clear breach" of international humanitarian law.

"If communities in Area C were allowed to develop real infrastructure they would have water by now, like all nearby Israeli settlements," Abu Ata says.

The Israeli water company Mekorot has built pipelines in the south Hebron hills to service settlements, outposts and agricultural industries but Palestinian villages, with the exception of al-Tuwani, have not been allowed to connect to the network.

"Israel's policy in the West Bank is to exercise pressure on communities in Area C to force them to leave. Demolishing water infrastructure is one of the means, as is harassment, and Israel pressures vulnerable communities, the poorest communities, in an effort to displace them," Abu Ata says.

The discrepancy in water consumption between Palestinians and Israeli settlers in the West Bank is vast. EWASH estimates that around 9,400 Israeli settlers in the Jordan Valley enjoy water allocation equal to almost a third of the consumption of the entire population of 2.5 million Palestinians.

Israelis, including settlers, have access to 300 liters of water per day, according to EWASH, while the West Bank average is around 70 liters, below the World Health Organization's recommended minimum of 100 liters per day for basic sanitation, hygiene and drinking.

In the south Hebron hills, average water consumption varies between 10-60 liters per day, similar to consumption levels in sub-Saharan Africa or Haiti.

Around 10 kilometers southwest of Tuba, the village of Imneizil faces similar challenges accessing enough water to survive.

Several of the 14 water cisterns built by international NGOs have received demolition orders, and the village school received a stop-work order in January 2012.

Solar panels which provide electricity to run the pumps of the water cisterns have demolition orders pending and a sanitation unit for boys received a stop-work order in 2012, placing pressure on the 500-member community.

"Our work is very limited, and we do it in low visibility because otherwise we won't get permission from Israel," Palestinian water engineer Fadi Shamisti tells Ma'an.

The nearest filling point for water in Imneizil is over 12 kilometers away, Shamisti says, meaning that if the village's water cisterns were demolished, residents would face a huge physical and financial burden to access enough water for their community and livestock.

"Water is an essential commodity for people, and water therefore becomes a pressure tool to evacuate the area of people, as high prices create economic difficulties," Shamisti says.

With tankered water costing from between $8 to $12 per cubic meter, and rainwater collected over winter rarely lasting more than a few months, the community would have little choice but to relocate if demolition orders on water infrastructure were carried out.

“The solution is simple,” Shamisti says. “An Israeli settlement lies only one kilometer from both the communities of Tuba and Imneizil, yet they are unable to connect to the water network.”

Fadwa Baroud, an information officer with the European Commission, told Ma’an that Area C communities were at risk of “forced displacement” due to the difficulty of obtaining permits from Israel for the development of water facilities.

But with international aid projects facing demolition and Israel’s water policy in Area C clearly designed to exclude Palestinian communities, villagers are well aware of their vulnerability.

“Whatever they try to do, we will stay here. This is our land,” Tuba resident Ibrahim al-Jundi says. “This is the place we were raised, we have no other place to go.”

“Water restrictions in Area C threaten to displace villages”, Maan, 18/04/2013, online at: http://mideastenvironment.apps01.yorku.ca/?p=7119

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❖ Rooftop Gardening in Nahr El Bared Refugee Camp, Lebanon

Sobhieh Suleiman has finally moved back to her newly rebuilt home five years after fleeing the fighting that destroyed Nahr El Bared refugee camp in northern Lebanon. But something was missing for the 62-year-old, known by her friends as Om Maher. Thanks to ANERA's rooftop garden project Om Maher has found it: a garden of vegetables, herbs and fruit trees, within easy reach on the rooftop of her building.

"I am passionate about planting. ANERA introduced the idea and I wanted to try it!" Back in November 2012, Om Maher was one of the 42 people who attended a workshop on rooftop agriculture and irrigation techniques taught by Dr. Luis Manrique, an expert in urban and rooftop agriculture. Under the USAID-funded ACDI VOCA's Farmer to Farmer program in Lebanon, Dr. Manrique had volunteered to study and evaluate ANERA's pilot urban agriculture project in Ein el Helweh refugee camp, in southern Lebanon. The goal was to explore the viability of rooftop gardens for food production in other marginalized and overcrowded refugee camp.

The response was positive. With guidance from Dr. Manrique and a successful experience working on home gardens in in Nahr El Bared, ANERA decided to experiment with rooftop agriculture.

Each interested family receives plants, trees, flowers, seeds, fertilizers, soil and containers to create a rooftop garden. They use old plastic barrels, recycled buckets and old tires painted in bright colors and elevated on stone blocks that are transformed into planting containers for a variety of vegetables and small fruit trees.

An agriculture engineer works with a community-based action and learning program for on-the-job training. Eight rooftop gardens have been planted since March 2013 and more are being prepared.

"When we started in Ein El Helweh, we believed in the benefit of urban agriculture," says Samar El Yassir, ANERA's country director in Lebanon. "We are still testing the economic viability but we plan to expand this in the rest of Lebanon's camps and potentially other Lebanese urban communities."

Wissam Ali, father of five lives next door to Om Maher. He says seeing Om Maher plant her rooftop garden has encouraged him to do the same. Wissam teaches biology at an UNRWA school and this is the first time he is trying his hand at planting.

"I never thought I could actually grow vegetables and fruits on my rooftop." Wissam even added more trees and vegetables to what he received through the project. "My mother used to grow herbs and flowers in pots on the stairs but never vegetables and fruits. I wanted to have the trees we always had in the garden that we had lost when when the camp was destroyed in 2007. "I added guava, fig, pomegranate and red berries to the lemon, loquat and prunes."

For Wissam and other volunteers, this is a learning experience. He says what he learns from the first planting will guide his next planting. "I am even thinking of covering a few beds with plastic to make some greenhouses, but I think I'll need some technical assistance for that."

Dr. Manrique has calculated that a crop of tomatoes planted in the average 50 square meter space available on a rooftop could generate an income of as much as $378 a year. That would be a welcome resource for struggling Palestinian refugee families whose average monthly income is less than $400.

Om Maher hopes the garden's produce will help feed her four sons and their families. For now, she is just excited to watch it bloom. "The garden gives peace and provides a beautiful space. I encourage all my neighbors to do the same. It helps save money and at the same time it is a great physical activity for me."

Wissam Ali hopes his garden will feed his family and 15 other relatives living in the building.

Producing food is a priority but Wissam and others in the project welcome the greening of Nahr El Bared that is brightening the gray landscape of crowded alleyways and buildings. "Have you seen the concrete masses around? Anyone who sees it wants to put in more green."

"Rooftop Gardening in Nahr El Bared Refugee Camp, Lebanon", Anera, 18/04/2013, online at: http://mideastenvironment.apps01.yorku.ca/?p=7121

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❖ Cooperative Water Diplomacy: A Fine Way To Prop Up Asian Century

Water is vital for life and to attach its great significance, many civilizations have water gods and goddesses to represent lakes, rivers, other sources of water, and seas. It is central to ensure economic growth and enhance development. Access to safe water, its adequate availability for all, and its effective management is the most important indicator of the level of development of a country. A developed country means a country that has most effective institutions to manage its water resources. Anywhere, if water is easily and adequately available for people when they need it in their household, in farms or in industrial works – it means people there enjoy democracy and human rights.

Water.org – an American nonprofit development aid organization says that more than 3.4 million people die each year from water related causes and almost all such deaths occur in developing countries. In every 20 seconds, a child dies from water related illness and women spend 200 million hours a day in collecting water, the Water.org states.

UN agencies and World Bank has admitted that around 1.2 billion people are already living under water-starved situation. Another 500 million are approaching this situation and another 1.6 billion – global population is facing water shortages. That means they lack necessary water infrastructures to collect water from fresh water sources. This ultimately has created tough geo-political rifts in every part of the world and has impeded political stability and development efforts of many countries and societies.

By 2025, two thirds of world's countries and more than one third of global population will have been suffering from severe water scarcity. Countries thus hit hard by water starvation will have to face chain of tremendous socio-political and developmental pressures and even among them; those that are weaker, smaller, and poorer indubitably suffer worst.

By the first half of this Century, we will have other 3 billion people mainly in developing countries – already under water stresses. According to a projection made by two academics of University of Minnesota David Tilman an ecologist and Jason Hill an economist, global food demand could double by that time. However, UN Food and Agriculture Organization (FAO), has predicted that food demand by 2050 will have increased 70 percent more than it is today. Various UN and other

international agencies have also approximated that only "Asia's food and feed demand is expected to double" by that time. Similarly, FAO says, "The daily drinking water requirement per person is 2-4 litres, but it takes 2,000 to 5,000 litres of water to produce one person's daily food".

An assessment of United Nations Environment Program (UNEP) states that the total volume of water on the Earth is about 1.4 billion cubic meters (km3) but the volume of fresh water resources is around some 35 million km3, that is about some 2.5 percent of the total volume. Nevertheless, even from that 2.5 percent, the total usable fresh water supply for ecosystems and human use is about 200,000 km3. That makes it less than 1 percent of all fresh water resources. Rest is locked in Arctic zones.

Moreover, according to UN World Water Assessment Programme (WWAP), since the formation of the planet total volume of water on the earth in its liquid, solid and vapor forms has been the same. Not a single drop of water has been added in the Earth's water reserve since it was created, but the people using it have reached 7 billion now and within the first half of this Century, we will have 2 more billions.

Simply, more people mean more water for our food, for our farms, industrial units, and households. That makes it an impossible task by present day measures. Furthermore, an assessment of the Asian Development Bank says, "More than 75% of the countries in Asia and the Pacific are experiencing a serious lack of water security, with many of them facing an imminent water crisis".
Inevitably, economic growth in many countries will uplift many people above the poverty level and this will make up a huge and vibrant middle class. Naturally, their food habit will change with their new source of income. That means they demand more water consuming foods like meat, dairy products, fruits, and vegetables. Therefore, much of the efforts are needed to produce more food and bring greater change in agricultural practices. Failures to meet these challenges will create major food shortages and greater environmental disasters.

UN International Year of Water Cooperation 2013

On March 22, we observed the World Water Day. The year 2013, is also being observed as the UN International Year of Water Cooperation. The press statement released by United Nations on the World Water Day 2013 – Cooperation for peace, prosperity and Sustainable development reads – "The fulfillment of basic human needs, the environment, socio-economic development and poverty

reduction are all dependent on water. Cooperating around this precious resource is key for security, poverty eradication, social equity and gender equality". In his message for the International Year of Water Cooperation 2013, UN Secretary-General Ban Ki-moon said, "Water is central to the well-being of people and the planet", and it becomes our common responsibility to work together to protect and carefully manage this fragile, finite and most precious natural resource.

"One in three people already lives in a country with moderate to high water stress, and by 2030 nearly half of the global population could be facing water scarcity, with demand outstripping supply by 40 per cent", Ban Ki-moon continued. The UN Secretary General in his message focused competitions growing among people in all sections of societies at all places – in towns, villages, "upstream and downstream; and across borders."

According to Roar Hagen, Graham Chapman, and Terje Tvedt, in 1900 the global population was just 1 billion. Fifty years later in 1950, another 1.8 billion was added. However, in 1992, it reached 5.3 billion and in 2012, it became 7 billion. By 2050, the world population will be more than 9 billion. In the world we are living in, nothing is more challenging than to secure water related needs of all these people around the world.

It was on this backdrop, when President of the Republic of Tajikistan Mr. Emomali Rahmon initiated an important proposal for global level water cooperation at the Fifth World Water Forum held in Istanbul in March 2009. On December 20, 2010, UN General Assembly unanimously adopted the resolution entitled "International Year of water cooperation 2013" – that was moved by Tajik delegate that was co-sponsored by 48 UN member countries representing all the continents.

UN General Assembly in its resolution calls the attention of all its member organization to note that water is critical for sustainable development, indispensable for human well-being, to upkeep environmental integrity, eradicate poverty and hunger and also central to achieve the Millennium Development Goals.

The General Assembly expressed its deep concerns on the slow and uneven progress in achieving its water related goals that was further complicated by the continued shortage of water in quantity and deterioration of its quality due to climate change.

Following its resolution, the General Assembly empowered its Secretary General to take needed steps to organize the activities of the International Year of Water Cooperation 2013 in coordination with UN- Water and develop necessary activities to support and facilitate member countries to implement the Year.

It was later decided to dedicate the "International Year of water cooperation 2013" to the "World Water Day", being observed on March 22 every year and UNESCO was appointed to coordinate the "Year" and the "Day" for its multidimensional mandates and tremendous contributions it has made since its inception.

The events that followed the UNGA resolution, several round of discussions at various levels occurred to highlight the links between growing need for water security and international peace.

Most notable, was the High-Level Roundtable Discussion on Water, Peace, and Security, jointly hosted by the United States, the European Union, and UN-Water that took place during the 67th Session of the United Nations General Assembly in September 2012. During the session then U.S. Secretary of State Hillary Clinton, highlighting the importance of water security and international cooperation said that water security is key for ensuring peace and security and for human development. Clinton further underlined that water security offers opportunities for cooperation, collaboration that would address the challenges in a multi-disciplinary and cross-sectoral way in order to reduce risks for potential conflicts and manage continued sustainable development and growth.

Water sources like rivers, lakes, and aquifers do not recognize political units of a country or across borders. Therefore, when political borders and natural courses of water collide, it poses enormous challenge to water security inside the country and across its borders.

According to UN – Water, around the world, there are some 276 major trans-boundary watersheds, crossing the territories of 145 countries. These watersheds cover nearly half of the earth's land surface. Similarly, there are more than 300 trans-boundary aquifers located across two or more countries. Until countries joined by such water sources develop a common policy and credible institutional mechanism to implement them, water scarcity is liable to eat up all the economic prospects of many countries and every here and there people will be fighting for water.

Water Scarcity in South Asia and China

Take India and China – twin great powers that are defining this Century with their exponential economic rise followed by the heavy political influence they are enjoying with their economic power. When combined, Indo-centric South Asia and China comprise more than 40 percent of the global population. However, with reduced water supplies from depleted groundwater source and shrinking the major rivers system in their territory, riding high on the growth record they have enjoyed and projected for future, can turn into a tough challenge to sustain their economy. Moreover, with numerous conflict zones, increased social tensions, violence, and state fragility, threat to water security can turn the region – these two countries represent into a major crisis spot.

China – the second largest economy of the World and projected to overtake United States earlier than 2020, has experienced severe water shortage. Its Northern part where nearly 50 percent of their populations live has to survive with less than 19 percent of water availability.

According to Rory Pike and Rick Stathers, China annually spends some 2-3% of its GDP in water resource development, but the situation has not improved. A country that has 20 percent of the world's population has to survive with only 8 percent of its renewable fresh water availability. In years to come, to sustain its heavy industrialization, it has to spend more of its GDP in securing more water and reallocate water from agriculture to industry. It will create a water deficit for China up to 80 percent by 2050 – a cost that may not be easy to bear.

Note one example -most part of basins of the Yellow River- the second longest of China after Yangtze and the world's sixth with a total length of 5,464 kilometers, have gone arid and semi arid in the last three decades. The river – that meanders across its nine provinces among the 21 in the mainland is also known as the birthplace of ancient Chinese culture and the cradle of Chinese Civilization – is facing greater risks and uncertainty.

Similarly, abundance of natural resources, unique geo-political location, the power of its economy and above all the Tibetan plateau that has collected the largest reserve of water in the World only next to polar regions, have given China an unparallel strategic asset. That, if used strategically, will create major political crisis from South Asia to South East Asia – dependent on Himalayan waters.

The situation might become worse in South Asia. Monsoon rains and Monsoon fed Himalayan Rivers are its major source of water supply. The average natural flow of water in South Asian River is about some 1800 billion cubic meters, but for its geography only some 1100 billion, including some 500 billion cubic meters from ground water source – that also depends upon the recharge during Monsoon, is available for human use.

A recent Report commissioned by several UN agencies working in India and involved in water issues says that the demand for water in India far outweighs its supply. The Report entitled – Water in India: Situations and Prospects, has stated that India that has some 16 percent of the world's population, as compared to only 4 per cent of the global water resources.

The Report also mentions that per capita water availability in India is around 1.170 cu m/person/year much lower than global average. Because of this, severe water shortages have led to a growing number of conflicts between users from agriculture to industrial and domestic sectors. The conflict has taken another dangerous dimension in India when it becomes an issue of sharing waters among its various states within the same river basins. Indian Ministry of Water Resources (MoWR), has also estimated that by the year 2050, India's overall water demand will double and if water use and water management and water development policies are not reinvented and updated, impending economic, political social and environmental crisis may turn India and South Asia into a major disaster zone.

Pakistan – the second most powerful nuclear country of South Asia is in most vulnerable situation. The Indus River that originates from Tibet and enters Pakistan from Indian Territory is largely the single source of all its major water supply. More than 80 percent of its cultivated land that contributes a quarter of its gross domestic product depends upon the waters of this river, but various water bodies have acknowledged that Pakistan has almost fully exploited the surface and groundwater sources that is available to it.

Water and Power Development Authority (WAPDA), a government owned body in Pakistan says that the per capita water availability in Pakistan has dwindled by over 406 percent from 5,260 cubic meters in 1951 to 1,038 cubic meters in 2010. It is marginally above the 1,000 cubic meters per person threshold value under the global criteria, the report said.

The report further says that If the status quo continues, then by 2020, the water availability in Pakistan would further plummeted to 877 cubic meters per annum, which will further go down to an alarmingly level of 575 cubic feet in 2050.
Unfortunately, Pakistan has no more options to increase its water availability, because with the 1960 Indus Water Treaty, India has agreed to provide 80 percent of the waters of the Indus River system – that flows from India to Pakistan and India itself is reconciled with just 20 percent of it. India, itself a water stressed country, agreed to share 80 percent of its water with its lower riparian, is perhaps unparallel magnanimity on the part of India even by any international standards. With experiences of Indian approach with other neighbors like Bangladesh and Nepal, it is an impossible treaty. Therefore, any possibility to increase its share of water from Indus River seems bleak.

Inevitability of Effective Water Diplomacy for Meaningful Cooperation

The Ganges – the mighty river that discharges 19,000 cubic meters of water per second in its mouth supports 500 million people in its basin. However, in dry season when the Ganges enters Bangladesh its flow at times is so slow and low – that "you can walk across the river" quoting a water expert in Dhaka , The Economist (November 19,2011.) says. Similarly, the third largest river of the South Asia – the Indus that covers a drainage area of some 724,205 square kilometers and supports 300 plus millions people in its basin in India and Pakistan when meets Arabian Sea, seldom any water flows in its delta. As a result of this and people living in Indus delta have abandoned their settlements and migrated.

Nepal has adequate water resources to meet all its water and energy needs. It can also help India and Bangladesh to realize their pressing water requirements. However, for a huge majority of the people in Nepal, even in its capital, public water supply system is almost dead for years. Availability of water when they need it for their domestic use or for agricultural or industrial use has become a pipe dream for almost all people in Nepal.

All the Himalayan Rivers of Nepal including those originated in Tibet flows into India. However, Nepal's murky and shortsighted politics and India's over bearing attitudes have left Nepal with limited options. With Bangladesh, the situation is the same. During Monsoon in Bangladesh, everywhere there is water, but when dry seasons come, water becomes scarcer and scarcer.

Seventy percent populations of Pakistan depend upon the waters of the Indus River. It originates in Tibet, flows in India then it enters into Pakistan and ends up in Arabian Sea. Similarly the Brahmaputra and some major tributaries of the Ganges: the Sunkoshi, the Tamakoshi, the Arun, and the Karnali that flows into India from Nepal, originate in Tibet. This way, all the three major rivers of South Asia – with their origin in Tibetan plateau stretch across Bangladesh, Bhutan, India, Nepal, and Pakistan.

Obviously, India shares all the three great river system with its neighbors. With Pakistan, it shares the Indus; with Nepal, it shares the three tributaries of Ganges – The Koshi, the Gandaki and the Karnali. Similarly, with Bhutan, it shares the Brahmaputra. And with Bangladesh India shares both the mighty rivers of the Ganges and the Brahmaputra. As the scarcity of water is hitting China hard, a new dimension of South Asian waters has emerged. In years that follow, China might come to play a critical role as an upper riparian in sharing the waters of Tibetan plateau.

In 1949, when China occupied Tibet, perhaps neither China nor India had realized the real significance of Tibet as a water tower of Asia or the third pole that has the biggest reserve of fresh water after the two other poles. Besides, Tibet is also a "treasure land" – extraordinarily rich in bio-diversity. Tibet has also the huge reserve of minerals from coal and dolomite to lithium and uranium. For long, Indian media and academics have been reporting a huge construction work ever built in world – the Brahmaputra River water diversion project in Tibet. The dam site is said to have located at Medong, 30 kilometers north of the Indian border in the Great Bend of Brahmaputra from where it moves south and enters India. A project estimated to divert 200 billion cubic meters of water from Brahmaputra and generate 40,000 megawatts of electricity would have devastating effects upon the environment of North Eastern Indian states and Bangladesh. Although, China has categorically denied about any such plan, people in India have been much concerned about it and they hint Chinese intransigence to sign any bilateral or multilateral treaty in sharing the water of its Trans border rivers originating in Tibet as an indication of China's ulterior motives.

In this regard, South Asia and China – the most vulnerable region in all aspects from environmental to socio-economic, political, can be a test case to foster cooperation on use of most precious thing that is available to them with very limited quantity. On the other hand, if used with reason and prudence, it is more than adequate to satisfy all the needs of these countries – including the sustenance of its eco-system. Much needed is the Diplomatic skill to work together, encourage

ongoing dialogue, stimulate larger trans-border and regional cooperation, supported by such competent multilateral instruments is the key to their shared survival.

Both China and India –two fastest growing economies, connected through a vibrant bilateral trade that has stood for over $4 trillion was unimaginable few years back from now. When markets are integrated, they cannot disrupt or reverse only at the cost of their people. What do they want is a strong country, a prosperous national community, and a competitive work force. The economic integration between these two countries at the one hand and on the other, their integration to a rule based global economic order, can only give them the role they expected to play in the prospective Asian Century.

A broader bilateral framework followed by the multilateral one that can effectively address the food security of their people. That is largely depends upon availability of water for their agriculture and industry. The countries that have responsibility to feed the world's largest population, provide them better jobs, instill confidence in them and inspire them to work hard and excel in life, cannot just sink deep upon the misadventure of their political and military masters. The best security they can attain is to institutionalize their economic integration and that kind of institutionalization has to cover a broad range of issues from trade to climate change and water security. The starting point can be a water treaty between them.

If China and India could invent effective diplomacy between them on sharing of trans-border river waters, a new era of mutual trust and confidence would begin in the region. Nevertheless, no fragmented approach of water use may work. Together with this, and to substantiate the global power and influence they enjoy, first in principle, India and China should agree on the modality of any such water cooperation between them. Later, they are to be joined by all South Asian countries sharing Trans- Border Rivers. It can be followed by an integrated institutional mechanism of China and South Asia to develop all the trans-border water resources and promote effective management of it. This would ensure its benefits to all the countries as per the International Water Law. This in result would completely change the strategic scenario of the region as a whole and conducive environment to attain food and energy security for all could be created. This will certainly promote larger peace and political stability in the region that ultimately would spur unhindered economic growth in South Asia and a huge market for China and India to lead and realize an Asian Century.

It is easy to fight for water, but it has never solved water problems anywhere. But water scarcity was never so precarious than it is now and it will continue to get worse. Therefore, the only option available to us is to build alliances and partnership for sharing water and expanding cooperation on making best use of it among people, communities, and countries. For that reason, nowhere is diplomacy needed more than on building effective practices and creating institutions that ensures water for all and water dearth to none. Indubitably, water front is the test case for the new rising Asian powers to reflect that whether they are true to the global recognition they attained or not.

"Cooperative Water Diplomacy: A Fine Way To Prop Up Asian Century – Analysis", 16/0472013, online at: http://www.eurasiareview.com/16042013-cooperative-water-diplomacy-a-fine-way-to-prop-up-asian-century-analysis/

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❖ Water Dispute Claims Two Lives in IBB

SANA'A, April 17 — Confrontations over access to a natural spring erupted on Sunday, in Al-Mashana district of Ibb governorate, killing two men from the local families of Bani Salah and Bait Dhawi.

One bystander, unaffiliated with the feud, was also injured.

Security forces rushed to the scene of the fight on Sunday evening. An unspecified number of individuals have been detained and are being questioned in regards to the deaths and injury. Forensic investigations are underway.

What began as a fistfight escalated quickly as members of the two families traded blows using clubs and knives, ultimately exchanging gunfire, Asem Al-Amawi, an eyewitness, said.

Al-Amawi said a man from the Bait Dhawi family killed someone from Bani Saleh. In retaliation, the Bani Salah family killed a man from Bait Dhawi.

Colonel Mohammed Nashwan, the security manager of Al-Mashana district, told the Yemen Times the two families have shared access to the well for years, peacefully.

Abd Al-Salam Razaz, the Minister of Water and Environment, told the Yemen Times the entire country—not just Ibb—is in the middle of a water crisis. This, he assessed, has caused an increase in fights as locals scramble to ensure that they won't be left without access to the shrinking resource.

Last month, two men were killed in Taiz during a fight which broke out over access to a spring. A similar incident took place in Dhamar, in which ten people were injured.

Last week, clashes broke out in Amran governorate, killing two and injuring five.

Yemen faces a severe water shortage, the United Nations Development Program has assessed in past

research. Available ground water is being depleted at "an alarming rate." The country's urbanization in the past decades has aggravated the problem.

Razaz estimates that there are around 55,000 wells in Yemen. That number includes both licensed and unlicensed wells. The proliferation of the unregulated digging of wells is often cited as one of the main reasons Yemen's water resources are so scarce.

Out of the 14 water basins in the country, five basins—Sana'a, Dhamar, Taiz, Amran and Al-Jawf—are under threat of depletion due to over consumption, the Ministry of Water and Environment has assessed. The ministry submitted a report to the National Dialouge Conference, highlighting what they see as an urgent crisis.

"The water problem is more important than any political issue," Razaz said.

"Water Dispute Claims Two Lives in IBB", 18/04/2013, online at:
http://www.yementimes.com/en/1669/news/2241/Water-dispute-claims-two-lives-in-Ibb.htm

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❖ Eritrea supports Egypt's position over Nile water dispute

April 18, 2013 (ADDIS ABABA) – The Eritrean government said this week that it supports Egypt's stance over a colonial-era treaty that granted Egypt a right to utilise the lions share of Nile river's water resources.

The Red Sea nation expressed its support in a message sent from the Eritrean president and delivered to Egypt's president by Eritrean Foreign Minister Osman Saleh and Presidential Adviser for Political Affairs, Yemane Gebreab.

The Egyptian president, Mohamed Morsi, has highly welcomed Eritrea's position towards Egypt's "historic rights" over the sharing of the water of the Nile River.

Morsi said that he looks forward to meeting his Eritrean counterpart.

Although Ethiopia is the source of 85% of the Nile's water, downriver countries, Egypt and Sudan, use 51 billion and 18 billion square meters a year respectively, around 90% of the Nile's resources.

In April 2010, Ethiopia, Rwanda, Uganda, Kenya and Tanzania signed a new agreement in Entebbe, Uganda, to overturn a colonial-era treaty seeking a more reasonable and equitable utilisation of the river.

The deal was approved after Burundi later signed the agreement and joined the group in March 2011.

Newly-independent South Sudan has not yet signed the Cooperative Framework Agreement but it has also rejected the 1959 Nile water agreements between Sudan and Egypt.

Downstream countries of Egypt and Sudan have, however, dismissed the deal, saying the agreement is insignificant because it did not include all Nile basin countries.

Egypt has in the past warned against construction of further dams along the Blue or White Nile's.

One year after the Cooperative Framework Agreement was signed; Ethiopia launched the construction of a massive $4.8 billion dam on the Blue Nile River raising protests from Sudan and Egypt that the dam - Africa's biggest - would reduce the flow of the water to their territories.

Currently a tripartite committee, which is composed of six experts drawn from Ethiopia, Egypt and Sudan, and four more international experts are assessing the impacts of the project.

The team is expected to announce the final findings and conclusions in May 2013.

"Eritrea supports Egypt's position over Nile water dispute", 18/04/2013, online at: http://www.sudantribune.com/spip.php?article46276&utm_source=Circle+of+Blue+WaterNews+%26+Alerts&utm_campaign=d7fec8c3fb-RSS_EMAIL_CAMPAIGN&utm_medium=email

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❖ Egypt worried over negative impact of Ethiopian Dam

An Egyptian government official said a technical report on the impact of the new Ethiopian mega dam, currently under construction, will reveal the need for Addis Ababa to attend to safety and environmental concerns at the construction process.

The report will also reveal concerns of potential negative influence on Egypt's share of the Nile Water "depending on the mechanism and time of water storage behind the dam," the government official added.

The report will be issued at the end of the 6th session of a joint Egyptian-Sudanese-Ethiopian technical committee in late May. The committee has been meeting for almost two years to examine the plan of construction for the Renaissance Dam, which Ethiopia had started building with the intention of storing 84 billion cubic meters of water. The water stored will then generate electricity sufficient for its advanced use and for exports to neighbouring countries, not excluding Egypt.

The report, according to the same government official, is not suggesting that the Renaissance Dam will drive Egypt into "water starvation but it is certainly saying that certain measures have to be followed to make sure that Ethiopia gets the water necessary for storage in the dam in line with Egypt's consent and needs."

Planning of Nile dam

Originally conceptualised in the early 1960s by an American-African team of irrigation engineers to deconstruct the High Dam project, championed at the time by Gamal Abdel Nasser, the Renaissance Dam was baptised in the original blueprint as the Border Dam. It was one of four dams the American-African team said could be built over the Blue Nile, which provides Egypt about 60 percent of its annual over 55 million cubic metres of Nile waters.

A few years ago, Ethiopia decided to embark on the project with a mega international fund and to the contest of Egypt, which is considered the poorest in individual shares of Nile waters. According to national and international records, an individual's share of water in Egypt is somewhere around 625 cubic metres, which is below the safe average of 1,000 cubic metres. Multiple water recycling projects, adopted during the past twenty years, have aided Egypt in making ends meet.

Ethiopia is one of the nine Basin countries (now ten with the two-year old independence of South Sudan) that have failed through a century to regulate differences over the shares of the Nile water with low stream countries, including Egypt and Sudan. Ethiopia, however, argues that it deserves a bigger share of the course water than the upstream countries, given the latter's large share of rain waters.

As of 1902, there have been over ten agreements on the uses of Nile water, including the 1959 agreement that specified the exact share of Egypt. The bulk of these agreements specify that no dams or other irrigation projects should be built on the Nile without prior notification to all the Basin states. This is a precondition consistent with international law and with the applied regulations adopted by the basin states of other rivers.

Egypt had in 1999 agreed to join the other Nile Basin countries in a negotiation process that would address the demands of the upstream countries essentially. Egypt prescribed two things in the course of the process: (1) to reduce water losses, which is estimated in millions of cubic metres – some studies indicate that the loss is more than all of Egypt's annual share – but requires billions of dollars to do the job, and (2) to pursue less costly projects to improve the quality of usage of the upstream countries of the water resources it has – not excluding the rich rain waters.

In 2010, both Egypt and Sudan, the latter still untied, suspended their participation in the talks over failure to define the terms of agreement for building irrigation projects over the Nile. The fate of this process is still undecided with both Cairo and Khartoum insisting on a position of full consensus of all Basin countries ahead of the construction of any dams on the Nile.

Egypt and Nile waters – further cooperation

The issue of the Renaissance Dam, however, is a matter that strictly affects Egypt, Sudan and Ethiopia given that it is these three countries that overlook the Blue Nile.

Egyptian officials assess, in goodwill, the matter could be regulated with minimum influence on the annual Egyptian share.

In a seminar earlier in the week, Mohamed Nasseredine Allam, former minister for water resources, said that the Egyptian annual loss could go up to 18 million cubic metres.

However, concerned government officials tell Ahram Online it could be significantly less – the highest figure offered by an official was around 8 million cubic metres. "And the loss could be compensated for if we actively pursue better water resources management in Egypt, and if the Nile Basin countries collectively pursue projects to reduce the volume of the Nile water loss."

Most of the Nile water losses that could be easily spared will require intensified cooperation with South Sudan – something that Egyptian officials say is being carefully pursued.

"Egypt worried over negative impact of Ethiopian Dam", 18/04/2013, online at: http://english.ahram.org.eg/NewsContent/1/64/69587/Egypt/Politics-/Egypt-worried-over-potential-negative-impact-of-Et.aspx

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❖ Saudi Arabia backs down from criticism of Grand Renaissance project

18 April 2013 - Ethiopia is currently building its Grand Renaissance hydroelectric project, which will have a power production capacity of some 6,000 MW. The project, located on the Blue Nile River near the Sudanese border, is employing some 5,000 local people and 100 foreign contractors.

Recently Saudi Arabia's deputy defence minister made highly critical comments about the US$4.8 billion project and its threat to national security of both Sudan and Egypt.

The Ethiopian government reacted fiercely to the statements and summoned the Saudi ambassador for Ethiopia seeking an official explanation of the remarks, according to the Sudan Tribune.

Saudi Arabia rapidly distanced itself from the deputy defence minister's comments. Despite strong protests from downstream countries of Sudan and Egypt, who argued the dam would reduce the flow of the water to their territories, Ethiopia launched construction on Africa's biggest hydroelectric project in March 2011. The project is reported as being 18% completed with plans to complete the dam in 2016 on track.

"Saudi Arabia backs down from criticism of Grand Renaissance project", 18/04/2013, online at: http://www.esi-africa.com/node/16207

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❖ Zambia: Water, Sanitation Policy On Cards

THE GOVERNMENT is in the process of formulating a national water supply and sanitation policy that will provide clear guidelines on how players in the sub sector should maintain standards of hygiene.

Copperbelt Permanent Secretary Stanford Mschili said yesterday that the Government had decided to urgently revise the national water and sanitation policy of 2010 to take recognisance of the changed circumstances.

Mr Mschili said this when he opened a two day provincial stakeholder's consultative meeting on the development of a national water supply and sanitation policy held at Savoy Hotel in Ndola.

"Zambia: Water, Sanitation Policy On Cards", 18/04/2013, online at: http://allafrica.com/stories/201304181012.html

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❖ South Asian 2013 monsoon seen average, avoiding widespread drought-weather body

KATHMANDU, April 19 (Reuters) - India and its south Asian neighbours are set to avoid widespread drought for a fourth straight year in 2013, a global weather forum said on Friday, raising the prospect of more bumper grains supplies from the region to keep a lid on global food prices.

"This year's monsoon, as a whole, is most likely to be within the normal range," said D.S. Pai, the lead forecaster of the Indian weather office, releasing the consensus forecast of the South Asian Climate Outlook Forum, a group of global weather experts.

Monsoon rains are vital for the 55 percent of India's farmland which does not have irrigation facilities and can make the difference between the country being an exporter or importer of staples such as rice and sugar.

Agriculture is an important part of Asia's third-largest economy, accounting for about 15 percent of gross domestic product (GDP) in a country where more than 800 million people live in rural areas. Ample harvests can also help keep a lid on inflation, which is nearly nine percent.

In March, Pai told Reuters that India was set for average rains in 2013, suggesting a fourth straight year without any widespread drought. (Reporting by Gopal Sharma; Writing by Ratnajyoti Dutta; Editing by Jo Winterbottom and Clarence Fernandez)

"South Asian 2013 monsoon seen average, avoiding widespread drought-weather body", 19/04/2013, online at: http://www.trust.org/alertnet/news/south-asian-2013-monsoon-seen-average-avoiding-widespread-drought-weather-body/?utm_source=Circle+of+Blue+WaterNews+%26+Alerts&utm_campaign=d7fec8c3fb-RSS_EMAIL_CAMPAIGN&utm_medium=email

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❖ Tussle Over Dam Water Adds to Vietnam Drought Woes

An emergency request to release more dam water to alleviate a severe drought in central Vietnam has not been met due to a tug-of-war between local authorities and the hydropower plant's operators.

More than a month after Deputy Prime Minister Hoang Trung Hai issued a directive to the Dak Mi 4 hydropower dam in Quang Nam province near Danang city to release water to address critical shortages in downstream areas, the issue remains unresolved.

More than 1.7 million people living along the Vu Gia River in Danang and neighboring Quang Nam have been reeling from water shortages since the beginning of the year that are threatening 10,000 hectares (25,000 acres) of summer crops.

The authorities have asked the dam operator, Dak Mi 4 Hydropower Joint Stock Co., to release water in line with a directive made three years ago, but the company argues that it is not obliged to do so and that it needs the water for generating electricity.

The endless debate has left officials warning that the issue has to be resolved at the next sitting of the National Assembly, the country's parliament, in May.

The Dak Mi 4 dam issue underscores a larger conflict of balancing water needs between agriculture and electricity generation, said Pham Hong Giang, a senior official in charge of dams and water resources.

"There is a problem with managing water used for electricity generation and water needed for other purposes," Giang, the president of the Vietnam National Committee on Large Dams and Water Resources Development, told RFA's Vietnamese Service.

"We have not done well in this respect," he said.

Seeking intervention

Danang and Quang Nam officials plan to seek the intervention of the Ministry of Industry and Trade to pressure the dam operator to discharge water into the Vu Gia to alleviate water shortages that will harm this year's crops.

The Irrigation Department this month instructed the the Dak Mi 4 and the nearby A Vuong hydropower plant to discharge 39 and 50 cubic meters of water per second, respectively, from May 15 to 30, but it remains unclear whether the volume will be enough to ease the drought.

A senior agriculture official has charged that Dak Mi 4 Hydropower Joint Stock Co. was holding on to water in the reservoir at the expense of local agriculture.

"The water level in Dak Mi 4 reservoir is very high, but they don't release it," Deputy Director of Danang's Department of Agriculture and Rural Development Huynh Van Thang Thang said at one of several meetings in March aimed at ending the row, state media reported.

"This is to ensure the company's benefit. But the Dak Mi 4 has to return the water to us," he said.

"Danang could face the worst drought in 40 years," Thang warned.

He said the hydropower plant, which began operation last year, had not properly carried out government orders and allowed the dam to redirect too much water from the Vu Gia into another river, the Thu Bon.

If the dam continues to direct water from the Vu Gia to the Thu Bon, water levels fall too low for downstream farm irrigation pumps to operate, he said.

Reservoir level low

The ongoing drought has also impacted water levels at the dam, which had already released some water in response to appeals from local officials, Deputy Director of the Dak Mi 4 Hydropower Joint Stock Co. Dao Minh Tien told the March meeting.

Levels have dropped to just 10 meters (32 feet) above the "dead level" of 250 meters (820 feet) at which it can no longer produce electricity, he said, according to state media.

The dam had released water 14 times in March at the request of Danang and Quang Nam authorities, preventing the 190-megawatt plant from operating at full capacity, he said.

Water research official Vu The Hai, the director of Vietnam's Institute for Water and Environment, said other dams in the region were facing similar problems this month.

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"Central Vietnam is facing a severe drought, and water going into hydroelectric dam reservoirs is very limited compared to the capacity they were designed for," he told RFA's Vietnamese Service.

Long-running contention

The Dak Mi 4 dam has been a source of contention between local authorities and hydropower officials even before its construction began in 2008, with Danang officials making numerous requests to the Ministry of Industry and Trade to delay the project.

In 2010, the government ordered investors to add a sluice gate to the dam design so that it could discharge up to 25 cubic meters per second of water to avoid water shortages in downstream areas.

But power plant officials have said the directive only pertains to the design of the dam, and that there is no legal obligation for them to discharge water in the dry season, according to Thanh Nien News.

Hydropower dams are crucial for Vietnam's energy security, contributing about 30 percent of domestic electricity production, dams and water resources official Giang said.

"However, the rapid development of hydroelectricity power plants in the past decades has revealed some conflicts," he said.

"Tussle Over Dam Water Adds to Vietnam Drought Woes", 16/04/2013, online at:
http://www.rfa.org/english/news/vietnam/dam-04162013190004.html?utm_source=Circle+of+Blue+WaterNews+%26+Alerts&utm_campaign=9e49f748f5-RSS_EMAIL_CAMPAIGN&utm_medium=email

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❖ A Capricious River, an Indian Island's Lifeline, Now Eats Away at It

MAJULI, India — Not too long ago, Ganesh Hazarika grew rice, vegetables and peas near the edge of the Brahmaputra River on a small plot that provided him a livelihood and a safety net. Then one day the river took it away. Steadily and mercilessly, it had chewed at the banks until his tiny farm fell into the water.

Landlessness is a rising problem for farmers across India, but Mr. Hazarika's situation is unusual: his plot was located on Majuli, one of the world's largest "inland" islands, an ancient religious center that is home to about 170,000 people and dozens of monasteries. The same river that has encircled the island and sustained it for centuries is now methodically tearing it apart.

"There is nothing permanent here," Mr. Hazarika said on a recent morning, as he stood near a small temple that villagers are planning to move this month as a precaution against erosion. "It changes every year."

For many environmentalists and scientists, the Brahmaputra is a critical laboratory in studying the impact of climate change, with much of the attention focused on the mouth of the river in Bangladesh, where rising waters are expected to radically reorient one of the world's most important estuaries and potentially displace millions of people in the coming decades.

But many miles upstream, the Brahmaputra is also proving difficult to predict or constrain. Seasonal flooding, always a problem, has intensified in recent years in the northeastern Indian state of Assam. Erosion is a concern across Assam, as the huge river regularly shifts course while carrying sand and other sediment from the Himalayas in a simultaneous process of construction and destruction: new sandbars appear even as old, inhabited places are battered by the currents of the river.

Climate change is contributing to these upstream changes, some scientists say, though the Brahmaputra is naturally unstable because of seismic activity and the river's braided shape. The erosion of Majuli has become the most drastic example of the river's ruthless power, and local officials, trying to protect the monasteries and the island's growing population, have responded by building embankments and other protective measures.

"The situation is worsening over time," said D. C. Goswami, a Brahmaputra expert and former head of the department of environmental sciences at Gauhati University. "The measures we are adopting are not able to cope with the problem. We need a more holistic and integrated approach."

Along the southern rim of Majuli, in an area known as Salmara, the Brahmaputra extends to the horizon, seemingly as endless as a churning sea. At its widest, the river can stretch more than 10 miles across. Here, the edge of the island is sheared into a cliff that falls 30 feet to the water, with banana trees floating below, having fallen over the side. Many villagers say they are planning to move deeper into the island this month because of erosion.

"My house fell into the water," said Puna Bhuyan, a hunched farmer in his 70s who was picking mustard seeds recently. He said he had moved three times since 2000. "We are worried about our livelihoods. How can we provide for our families? That uncertainty is always there."

As a braided river — one that divides into a labyrinth of tributaries and channels — the Brahmaputra was essentially tossed off its tracks after a major earthquake in 1950. The quake raised the river's floor, increased its load of sediment from the Himalayas and shifted some of the deeper channels so that currents began pounding Majuli.

Arupjyoti Saikia, a historian and expert on the Brahmaputra who teaches at the Indian Institute of Technology, Guwahati, said that Majuli became an island in the 1760s, after a previous earthquake led to new river channels that severed the area from the mainland and, in doing so, isolated a major hub of Assamese culture and religion. Since the 15th century, Majuli has been a center of Vaishnavism, a monotheistic branch of Hinduism centered on the god Vishnu and his avatar Krishna.

Today, there are 36 monasteries, known as satras, yet erosion has forced several of them to relocate within the island. Another 28 monasteries have been moved off the island altogether.

"We believe that if we worship the Brahmaputra and make all the prayer offerings, then the river will not disturb us," said one Vaishnavite priest, Ajit Sharma, as he sat cross-legged in a satra.

In recent years, government officials nominated Majuli as a candidate for World Heritage status under Unesco, though the initial application was returned because of various problems. Laya

Madduri, the island's highest ranking civil servant, said local leaders were now trying to organize preservation plans for the remaining satras and also draft a comprehensive conservation plan for the entire island.

Estimating exactly how much erosion has occurred is a matter of debate. Data collected in 1901 suggested that the island was more than 463 square miles; but this figure may have included other surrounding islands and riverbeds. A 2004 academic study concluded that Majuli had eroded to 163 square miles in 2001 from 290 square miles in 1917. And where the island once had 49 named streams in 1917, the number had dropped to 7 by 1972.

"There are other braided rivers in the world," Professor Saikia said. "But because of the earthquake, the river continues to suffer, and to fluctuate. The river is still very, very unstable."

For decades, Assam's state government was charged with protecting the island and responded, primarily, by building embankments. India's national government created a special Brahmaputra Board, which plugged breaches in existing embankments and other structures that are intended to enhance siltation or redirect the river's currents. D. J. Bargohain, the board's chief engineer, says these efforts have actually increased the size of the island by nearly eight square miles since 2004.

"It is not possible to stop erosion completely," he said. "We have lost area in certain parts and gained in other parts."

Some experts are skeptical about that claim, especially since much of the new land is often uninhabitable. Some sandbars have enough vegetation for cattle grazing or for growing mustard seeds, but usually the land that is lost is more productive than the land that is gained. Mr. Goswami, the environmental expert, said it was impossible to gauge the impact of climate change on the island, but he noted that environmental patterns did seem to be shifting in the region.

"We have high floods during the flood times," he said. "And we have dry conditions that are more intense now. The periods of drought and periods of flooding are changing, too."

Along the island's southern rim, people are preparing to move again and build thatch huts atop platforms provided by the local government. Binumai Kalita, 40, lives in a hut that is now less than

75 feet from the island's sheared cliff. Her pumpkin patch extends to the cliff, and five days earlier she watched as a stand of banana trees fell into the river.

"We are afraid," Ms. Kalita said. "We see it in front of our eyes. Ten years ago, this land stretched out another two kilometers," or more than a mile.

Now there is only water.

"A Capricious River, an Indian Island's Lifeline, Now Eats Away at It", 14/04/2013, online at: http://www.nytimes.com/2013/04/15/world/asia/indian-island-shrinks-as-brahmaputra-swells-and-sways.html?pagewanted=all&_r=2&utm_source=Circle+of+Blue+WaterNews+%26+Alerts&utm_campaign=8ee4c658d7-RSS_EMAIL_CAMPAIGN&utm_medium=email&

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❖ WAPDA starts construction of Darwat and Nai Gaj dams in Sindh

ISLAMABAD: Water and Power Development Authority (WAPDA) has started construction work on Darawat dam and Nai Gaj dam in Sindh province.

According to an official of WAPDA, the dams would irrigate over 25000 barren land of Hyderabad and Dadu.

The construction of site camps is completed including soil investigation of dam and spillway sites.

The Darawat dam is located at about 70 kilometres west of Hyderabad and 135 kilometres North East of Karachi across Nai Baran near Jhangir village in Jamshoro district of Sindh.

To a question, official said the dam will help conserve flood water of Nai Baran and irrigate 25,000 acres of fertile land adding the dam will help socio economic uplift of remote areas of Sindh and women emancipation and especially fisheries development.

Replying to the question of financial progress, he said PSDP allocation for financial year 2012-13 for constructing dams in Sindh are Rs2000,000 million and expenditure up to February, 2013 were Rs 2027.414 million and cumulative expenditures up to February 2013 were Rs4334.677 million.

Topographic survey of dam, command area and reservoir area is completed and excavation for foundation of dam is completed, he said.

He said concrete pouring work of the dam is in progress and 92 percent work is completed and construction of irrigation system is in progress and 15 percent completed.

Talking about Nai Gaj dam project he said this dam is proposed across Gaj River in the gorge area at the edge of Kirthar range about 65 kilo meter north west of Dadu city in Sindh province.

To a question, he said the objective of this dam to irrigate agriculture development and flood control and fisheries development and uplift socio economic conditions inspiring emancipation of women and poor community of the area.

"WAPDA starts construction of Darwat and Nai Gaj dams in Sindh", 15/04/2013, online at: http://www.brecorder.com/pakistan/industries-a-sectors/115285-wapda-starts-construction-of-darwat-and-nai-gaj-dams-in-sindh.html

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❖ Engineers reiterate demand for starting KBD construction

The water sector experts and well-known engineers of the country Saturday unanimously advocated early construction of Kalabagh Dam, saying that Pakistan's economy has been facing a loss of Rs132 billion annually due to inordinate delay in execution of the project.

Addressing a seminar on 'Importance of Kalabagh Dam' organized by the Sind Tas Water Council Pakistan in collaboration with Institute of Engineers Pakistan, the prominent engineers urged the government to constitute a team of experts belonging to public and private sectors to convince all the provinces that Kalabagh Dam is necessary for Pakistan's progress and prosperity. The issue is technical and it should be resolved technically instead of politicizing it, the speakers said. The speakers included STWC chairman Suleman Khan, IEP Lahore Centre chairman Capt (r) Khalid Sajjad, IEP Lahore vice president Engineer Syed Qamar Raza Naqvi, Shah Muhammad Mehdi, Col (r) Razaq Bugti, Syed Nisar Safdar, Aziz Zafar Azad, Eng Mumtaz Ahmed, Prof Zahid Siddiqi, Ibrahim Mughal and Nazar Hussaind Drashak.

Experts have already proved that there is no threat to Nowshehra city as it is 150 feet above the water level, they added. They said the Kalabagh Dam was not only beneficial to Punjab alone but would also be more helpful in erasing poverty from Khyber Pakhtunkhawa as it would irrigate 800,000 acres of cultivable land that is located 100-150 feet above the Indus River level in the province. They said this land could only be brought under cultivation if the river level is raised that is only possible if Kalabagh Dam is built.

The speakers said that engineers' community would have to play a crucial role in creating a larger consensus as new large water reservoirs would benefit every Pakistani, fearing that a further delay in evolving a consensus from all stakeholders on the construction of unduly politicized Kalabagh Dam would cost this country and its coming generations very dearly. All the stakeholders should show some greater maturity on the issue of Kalabagh, they said, adding that it was the high time that all undue stands should be brushed aside to save the country from that era of darkness.

Addressing the Debate of KBD the experts added that if KBD was constructed, the Rs132 billion paid by consumers countrywide in terms of costly electricity generation could have been saved. Engineers were of the view that the reluctance of rulers in building KBD would bring adverse effects on the federation of Pakistan. Speakers were unanimous in saying that all those who were opposing the KBD were enemies of the country and were playing with the country's future. They urged the

government for early construction of the project and said that the dam was inevitable for survival of Pakistan. "If the government fails to take any practical steps in the construction of KBD, poverty and hunger will be the endless fate which may lead the country to irrecoverable disaster," they held in one voice.

"Unlike Pakistan, India is constructing dams at every possible site and has left us decades behind and coming time does not promise any good thing either and everyone knows that existing dams are constantly silting up leaving ever decreasing capacity to store water."

The construction of Kalabagh dam along with other new ones is desperately needed to store adequate water, he maintained.

According to a conservative estimate about 30 million acre feet of water is being wasted into the sea because the country has no big water reservoirs to store it, he said and added that more importantly, as a result of melting of glaciers due to global warming, a Sword of Damocles remained hanging over our heads in the shape of floods, which had hit hard the country in recent years. Another significant aspect connected with the construction of Kalabagh Dam is the surety of sufficient quantum of electricity at comparatively much cheaper price. The country's dependence on power generated through thermal sources is costing us way too much causing to face insurmountable challenges to remain competitive both in national and international markets.

They said that there was no threat to Nowshehra city in construction of KBD as it was 150 feet above the water level. Eminent engineer added that it was very unfortunate that the decision markers had nothing to lose rather they continued to enjoy all perks under the sky and even if they made wrong decisions, these were the masses who suffered.

They were of the view that the politicians who were opposing the construction of the dam were in fact enemies of the people of the KP province and they did not even saw a dam in their lives.

"Kalabagh Dam issue has been so much politicised and the delay in construction of dam is a part of a great game against the country. Some political parties are manipulating the issue for their advantage," they regretted.

"Engineers reiterate demand for starting KBD construction", 21/04/2013, online at: http://www.nation.com.pk/pakistan-news-newspaper-daily-english-online/business/21-Apr-2013/engineers-reiterate-demand-for-starting-kbd-construction

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❖ India to press China further over building dams on Brahmaputra

NEW DELHI: Ahead of Chinese PM Li Keqiang's visit to India â€" with the new Chinese leadership not responding to New Delhi's concerns over diversion of Brahmaputra waters â€" the Centre has decided to press its proposal for a joint monitoring mechanism further with Beijing. Despite PMManmohan Singh himself taking up the proposal to ensure transparency in China's construction activities on the river during his first meeting with President Xi Jinping in Durban last month, there has been no response from Beijing yet.

Singh had said that he had proposed this mechanism to address concerns in India, which has been exacerbated by reports that China was going to build three more dams on the river. The proposal was first taken up at a technical-level meeting between the two countries.

All India knows until now is Beijing's already stated position that China is a responsible country and that the existing joint expert-level mechanism is enough to deal with all issues related to trans-border rivers. This mechanism, however, is limited to sharing of hydrological data.

It is learnt that the government here has decided to not give up so easily - not after the PM himself took up the proposal with the Chinese again. The issue is likely to again come up in Singh's meeting with his counterpart next month during what will be Li's first visit abroad after taking over as the PM.

Unlike India, China doesn't have a water-sharing agreement with any lower riparian country. China maintains that the dams being constructed on the Brahmaputra are essentially run-of-the-river projects that won't impact the flow of water. A joint mechanism would have ensured transparency in the ongoing construction work, allowing New Delhi to allay the fear of diversion in the north-east which, at times, can border on paranoia. While disclosing the fact that he had raised the Brahmaputra issue with Xi in Durban, Singh had also said that India still believed the Chinese assertion and assurance that water was not being diverted.

The water issue has the potential to turn into a major bone of contention at a time when the two countries are looking to expand cooperation in several other areas, including the issue of post-US-led troops' drawdown in Afghanistan next year.

On Thursday, India and China will hold their first ever dialogue on Afghanistan, a country where both have major economic interests. While China has conveyed to India in no uncertain terms that Pakistan will be a factor that has to be taken into account in dealing with Afghanistan, Beijing also regards certain groups operating in the war-torn country as inimical to its interests and seems willing to cooperate with New Delhi in dealing with those.

"India to press China further over building dams on Brahmaputra", 18/04/2013, online at:
http://articles.timesofindia.indiatimes.com/2013-04-18/india/38645726_1_controversial-karnataka-high-court-brahmaputra-issue-pm-manmohan-singh

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❖ China spikes India's proposal for joint mechanism on Brahmaputra

China has turned down India's proposal for a new mechanism to deal with issues of water made in the backdrop of construction of three more dams on the Brahamputra by the Chinese which had raised concerns here.

India is pressing China to have either a water commission or an inter-governmental dialogue or a treaty to deal with water issues between the two countries in the wake of Chinese approval for construction of three more dams on the Brahmaputra river in Tibet, in addition to the one being built without informing New Delhi.

The main rivers originating from China entering India are the Brahmaputra in the North East and Indus and Sutlej in the Northern Part of the country and under the current Expert Level Mechanism (ELM), the two countries only share hydrological information (water level, discharge and rainfall) on Yaluzangbu/ Brahmaputra river in flood season by China to India.

However, it is learnt that China has conveyed that the existing mechanism on water issues, especially on the Brahmaputra, was "adequate" in response to the proposal by India which has decided to "continue to press" for having such a mechanism.

The issue was also raised by Prime Minister Manmohan Singh during his first bilateral meeting with newly-elected Chinese President Xi Jinping on the sidelines of BRICS (Brazil, Russia, India, China and South Africa) Summit in Durban last month.

Dr. Singh was understood to have conveyed to Mr. Xi concerns in India over the Chinese proposal to construct three more dams across the Brahmaputra. India has said the proposal would affect water flow to India while China says it was just run-off-the-river project that would not hold water.

China is currently building dams at Dagu, Jiacha and Jiexu in addition to a 510 MW water project at Zangmu.

A high-level inter-ministerial committee, comprising officials from External Affairs Ministry, Defence Ministry, and Department of Space among others regularly take stock of the situation and after their meeting in February had recommended that the matter be taken up with China again.

India has an Indus Water Treaty with Pakistan under which the two countries share information and cooperate on the matter while a Ganges Treaty with Bangladesh establishes a 30-year water-sharing arrangement and recognises the neighbouring country's rights as a lower-level riparian.

"China spikes India's proposal for joint mechanism on Brahmaputra", 17/04/2013, online at: http://www.thehindu.com/news/national/china-spikes-indias-proposal-for-joint-mechanism-on-brahmaputra/article4627285.ece

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❖ China unwilling to move on Brahmaputra joint mechanism

New Delhi: Days after Prime Minister Manmohan Singh voiced India's concerns over dam construction on the Brahmaputra river by China and proposed a joint mechanism during talks with Chinese President Xi Jinping, Beijing is believed to have not shown willingness to move on the issue.
During his meeting with President Xi in Durban, Manmohan Singh had sought a joint mechanism to assess the construction work on dams on the Brahmaputra river in Tibet.
He had told reporters that he had raised the issue of trans-border river systems. "I requested the Chinese government to provide a joint mechanism to enable us to assess the type of construction activity that is going on in the Tibetan Autonomous Region (TAR)," the prime minister told reporters on his way back from the Durban BRICS summit.
President Xi had assured him that China was conscious of its responsibilities and the interest of the lower riparian countries and that Beijing would look into the proposal for a joint mechanism.
The prime minister had raised the issue of dam construction in the wake of China's proposal to build three dams on the Brahmaputra.
However, despite the Chinese assurance, Beijing is believed to have told New Delhi that an Expert Level Mechanism between them is "adequate" to decide on the issue.
But India is hopeful of pressing the matter, which is "still on the table".
The Brahmaputra originates in the Himalayas in Tibet as the Yarlung Tsangpo river and flows for about over 2,800 km across southern Tibet through the Himalayas and into India and Bangladesh before merging with the Ganga and emptying into the Bay of Bengal.
Seven rivulets originating from the glaciers in the Tibetan plateau feed the Brahmaputra.
Damming of the river upstream would starve India of water from these snow-fed rivulets during the summer months, according to experts.
According to Ashokananda Singhal, president of NGO Jana Jagriti, spearheading an awareness campaign against China's hydro-projects on the Brahmaputra, China is building 26 hydropower dams on the upper reaches of the Brahmaputra. Once the projects are completed, "85 percent less water will come from China to India" during the summer months, he said.
In 2002, India and China signed an MoU with a five-year duration to help forecasting floods caused by the Brahmaputra in north-eastern India. In 2006, the two sides agreed to set up an Expert-Level

Mechanism for cooperation on provision of flood season hydrological data, emergency management and other related issues regarding rivers.

"China unwilling to move on Brahmaputra joint mechanism", 18/04/2013, online at: http://ibnlive.in.com/news/china-unwilling-to-move-on-brahmaputra-joint-mechanism/386129-3.html

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❖ Concerns Arise Over China's Dam Building Drive in Tibet

China's construction of a series of dams on the Tibetan Plateau has raised concerns both among neighboring countries downstream and among experts, who fear adverse environmental impacts including the interruption of water flows on shared rivers and the possibility of earthquakes.

To feed its growing demand for energy, China is building a hydropower dam called the Zangmu on Tibet's Yarlung Tsangpo River, which flows into India and Pakistan as the Brahmaputra, and plans to build three others.

Meanwhile, in Eastern Tibet, China is building a series of dams on rivers that flow into Southeast Asia.

"Our concerns about the possible impact of these dams include the potential impact on downstream nations' access to a safe, stable water supply," Alison Reynolds, executive director of the International Tibet Network, said in a statement last month.

Other concerns include "the risks of damming rivers in areas of seismic activity, and threats to the most bio-diverse region in the world."

More dams planned

China may eventually build as many as 60 dams on the Tibetan Plateau, with 20 already built or under construction, and another 40 in the planning stages, Reynolds told RFA.

"China Is rapidly building hydro dams in Tibet," acknowledged Australia-based Tibet environmental expert Gabriel Lafitte.

These include "an extraordinary cascade series on all major rivers as they descend from the plateau, with electricity sent by ultra-high-voltage cable all the way to Guangzhou and Shanghai," said Lafitte, author of a forthcoming book on Chinese mining operations called Spoiling Tibet.

Where reservoirs are built, "the impoundment of such huge amounts of water will be harmful for migratory fish and other species, and may even be heavy enough to trigger earthquakes," Lafitte said.

India's concerns

Meanwhile, news media and politicians in India have expressed alarm over China's construction of the large Zangmu dam on Tibet's Yarlung Tsangpo River, fearing interruptions in water flows to downstream countries.

Reductions in water flow have already occurred in Southeast Asian countries fed by the Mekong River, on whose upper reaches China has built a series of reservoirs and dams.

The Zangmu and other dams planned for the Yarlung Tsangpo will not make use of reservoirs, though, said Tashi Tsering, a PhD candidate in Resource Management and Environmental Studies at the University of British Columbia.

"These are run-of-the-river projects-so it may be-as several Indian leaders [now] seem convinced-that these will not impact water flows into India," Tsering said.

"However, the concern is that not just one or two dams, but a series of dams, will be built on the river."

"No one knows how all of these dams will cumulatively affect the river's environment and flow-especially given the uncertainties of the impact of climate change on the glaciers that feed these rivers," Tsering said.

Willing to talk?

China's new president Xi Jinping has signaled a willingness to address India's concerns, said Ed Grumbine, a visiting scholar with the Chinese Academy of Sciences in Kunming, in China's Yunnan province.

Xi met with Indian prime minister Manmohan Singh on the sidelines of an international meeting held in South Africa last month, "and they discussed getting together to discuss specifics of the dam that may impact India," Grumbine said.

"Singh initiated [the discussion] and got a positive response," Grumbine said. "We'll see what happens next."

But China will likely be no more open with India than it has been with Southeast Asian countries along the Mekong, said Brahma Chellaney, an Indian expert on transnational water issues and author of Water, Peace, and War: Confronting the Global Water Crisis.

"Beijing is neither willing to share with New Delhi the technical designs of its dam project nor to permit on-site scrutiny. Furthermore, China refuses to enter into institutionalized water sharing or other cooperative arrangements with any other downstream riparian state."

"This has been all talk and no joint cooperation thus far," Chellaney said.

"Concerns Arise Over China's Dam Building Drive in Tibet", 17/04/2013, online at:
http://www.hydroworld.com/news/2013/04/17/concerns-arise-over-china-s-dam-building-drive-in-tibet.html

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❖ Concern in Vietnam for Ecosystem Damage in Mekong River

Hanoi, Apr 15 (Prensa Latina) The reckless exploitation of natural resources have weakened or completely damaged the ecosystems in Mekong delta, in Vietnam, causing serious future consequences, said experts today, after analyzing the situation there.

That conclusion was reached by more than 200 scientists, executives from ministries and the 13 provinces that make up the region, as well as representatives of international organizations on conservation, research institutes and universities.

In a meeting held on last weekend in the southern city Ca Mau, with the subject "Conserving Natural and Cultural Values for Sustainable Development in the Mekong Delta Region", the importance of conserving the ecosystems within the context of climatic change was especially highlighted.

Those systems have undergone size reductions, so much so that they turned into isolated and fragmentary areas caused by deforestation to promote aquaculture, agriculture, infrastructure building and residential resorts with contaminant effects.

Hoang Viet, coordinator of climatic change in World Fund for Nature in Vietnam, warned that the construction of dams to produce energy, change the river's natural flow, causing the loss of alluvial reservoirs and leaving Mekong river even more vulnerable to the climatic phenomenon.

On that subject he said that in the past the mangrove swamps covered almost the delta, but now they are disappearing and they are only found in 77,000 hectares of provinces Bac Lieu and Cau Mau.

The recently finished 5th Forum, was organized by the Ministry of Natural Resources and the People's Committee of Cau Mau, put special emphasis on the creation of a program to guarantee a sustainable environment for those who depend on the rice growing, the fishing and aquaculture.

"Concern in Vietnam for Ecosystem Damage in Mekong River", 15/04/2013, online at: http://www.plenglish.com/index.php?option=com_content&task=view&id=1313001&Itemid=1

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❖ Water diversion project under fire

Activists have voiced their opposition to Deputy Prime Minister Plodprasop Suraswadi's plan to divert water from the Salween and Mekong rivers to feed the water-starved Northeast. The proposed projects are not the right solution to the drought problem in the region, they said.

Mr Plodprasop, who chairs the government's Water Management and Flood Prevention Commission, said last week that the body is considering three options to increase the water supply in northeastern provinces, which have long suffered from shortages, especially in the annual dry season.

The options are to divert water either from the Mekong or Salween rivers, or from other waterways in Laos.

Whichever is chosen, the project is likely to cost 100 billion baht and should get under way within the next few years, Mr Plodprasop said.

He added that the preferred and easiest option, due to the geography of the region, is to divert water from the Mekong, which forms part of the Thai-Lao border.

However, his ideas have met strong opposition from activist groups monitoring the government's water management policy.

Hannarong Yaowalers, chairman of Thai-Water Partnerships, said the project is set to repeat the failures of the notorious Mekong-Chi-Moon water diversion scheme. That project, which was completed in 1991, failed to come close to achieving its targets, Mr Hannarong said.

Despite the construction of nearly 20 dams, the finished scheme was able to feed just 100,000 rai of farmland, far below the target of 4.2 million rai, he said.

Another problem with Mr Plodprasop's "unrealistic" Mekong proposal is that during the dry season the river level drops significantly, Mr Hannarong said.

Also, Laos has expanded its farmlands in the area, putting increased demand on water from the Mekong, which forms most of the border between the two countries, the activist said.

The amount of farmland in Laos has grown by about one million rai, which equates to an increase in demand for water of two billion cubic metres, Mr Hannarong said.

He said he also doubted Mr Plodprasop's estimate of 100 billion baht for the project, saying the total cost is likely to be much higher once the ecological costs of building dams and water pipelines are taken into account.

Mr Hannarong also warned farmers not to get too excited about the diversion project as it would likely result in them paying higher prices for their water.

Instead of looking to divert water, the government should focus on preserving natural water sources, especially wetlands, which can provide water all year round, he said. It should also consider investing in the construction of small-scale reservoirs for community use.

Pianporn Deetes, the Thailand campaign coordinator for International Rivers, said the water diversion project could also spark conflict with neighbouring countries if Thailand simply draws water from the Mekong and Salween without first getting permission.

It must get consent from other countries that source water from the two rivers, she said.

Meanwhile, the Northern People Network yesterday released a statement calling on the government to scrap its 350 billion baht water management scheme.

The organisation said several dams, dykes, reservoirs and waterways built under the scheme would have an immense impact on the local ecological system.

The projects comprising the scheme were drawn up hastily by the government without the involvement of local people and other stakeholders, the statement said. They are also lacking in detail, especially with regard to timeframes and responsible agencies, it said.

The projects are also likely to stir up land disputes and lead to the displacement of villagers, it said.

"Water diversion project under fire", 21/04/2013, online at: http://www.bangkokpost.com/news/local/346240/water-diversion-project-under-fire

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❖ NCAC objects to Chakpi Dam

Imphal, April 19 2013 : Naga Chiefs' Association, Chandel (NCAC) has raised strong objection to the proposed construction of Chakpi Multi-Purpose Project (Mega Dam) across Chakpi River at Lijong under Chakpikarong Sub-division in Chandel District.

In a statement signed by its General Secretary Marim Chothe, NCAC contended that the design of the Govt.

of Manipur to clandestinely pursue the project without Free, Prior and Informed Consent of the Indigenous people living in and around the Dam site is in violation of the United Nations Declaration on the Rights of Indigenous People (UNDRIP) and the recommendations of the World Commission on Dams 2000 which recognizes indigenous people rights over their land and resources.

Therefore, the Govt.

of Manipur must withdraw its proposal immediately in the best interest of the general populace living in the district.

NCAC observed that people of Chandel District would welcome development in the district but the proposed dam is not for development but it will be a disaster to the ancestral lands of the people as vast tract of agriculture lands and forest areas would be submerged and thousand of villages and churches would be displaced.

In such a situation, Naga Chiefs would never remain a silent spectator but would without any compromise against such anti-people developmental policies.

"NCAC objects to Chakpi Dam", 21/04/2013, online at: http://e-pao.net/GP.asp?src=27..200413.apr13

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❖ Delta ecosystems under threat

VietNamNet Bridge – Uncontrolled exploitation of natural resources has weakened or completely destroyed many of the Cuu Long (Mekong) Delta's ecosystems, experts said at an annual forum last Friday.

More than 200 scientists, policymakers from ministries as well as officials of the 13 Delta provinces, representatives from international conservation and development organisations, research institutes and universities gathered for the "Nature and Culture Conservation for Sustainable Development of Mekong Delta" forum.

Many experts at the forum stressed the importance of maintaining ecosystems in the Mekong Delta, particularly in the context of climate change challenges.

The Delta's ecosystems have reduced in size, become isolated and fragmented because of activities that include forest clearance for aquaculture or agriculture, infrastructure development, residential area enlargement and contamination by production and wastewater discharge, according to Hoang Viet, Climate Change Co-ordinator for World Wide Fund for Nature (WWF) Viet Nam.

Viet said the construction of hydropower dams upstream changed the natural flow of the river, leading to the loss of alluvium, making the delta even more vulnerable to climate change.

"In the past, mangrove forests covered almost all the Delta, but they are disappearing rapidly. Now mangrove forests cover only Bac Lieu and Ca Mau provinces (about 77,000ha)," he noted.

The Mekong river is one of the largest rivers in the world, second only to the Amazon in terms of biodiversity. It includes a vast array of ecosystems including mangrove forests, rivers and streams, sand dunes, seasonal mangrove forest-grasslands, and pond and inland ecosystems.

Each ecosystem provides delta residents with different, essential benefits. For local economies, the ecosystems provide rich fisheries, fruits and/or alluvium for agriculture. They also protect local residents and their surrounding environment with coastline protection, erosion control, flow regulation, microclimate conditioning and carbon absorption.

The ecosystems are home to many rare species of fauna, especially birds like the red Sarus Crane (Grus antigone) and fish like the Mekong giant catfish (Pangasianodon gigas).

Rapid, unplanned economic development, and unchecked population growth, as well as climate change, had continually pressurised these ecosystems and degraded the quality of their services, experts said at the forum.

The ecosystems and their services are nature's gift to the delta, and to maintain their benefits, the understanding of their natural cycles should be enhanced and more plans made to protect them effectively, they added.

The protection of Mekong Delta ecosystems as an urgent task was emphasised by the WWF and the Biodiversity Conservation Agency (BCA) at the Forum for Provincial Delta Policy and Decision Makers. The forum aimed at fostering learning from and sharing of best practices with experts from international organisations.

"Climate Change impacts on the region are already obvious; thus protecting, recovering and maintaining healthy ecosystems have become critical and must be strategic," said Huynh Thi Mai, Deputy Director of BCA, Ministry of Natural Resources and Environment.

"The BCA, with technical support from WWF, other organisations and experts, has been drafting the first National Plan for Biodiversity Conservation, in which the importance of preserving and maintaining ecosystems are emphasized," she said.

WWF experts said the recovery and maintenance of ecosystems and their services required synchronisation of local policies to ensure sustainable livelihoods for those still dependent on rice farming, fishing and aquaculture.

Increasing awareness of the need for environmental protection in local communities was also critical, along with the development of mechanisms and tools to support ecosystem service payments (PES), they added.

In face of the challenges to maintaining the health and integrity of ecosystems, there have been some positive developments in the delta.

The forum seeks to provide policy makers in the thirteen Mekong River Delta provinces with a greater understanding of the importance of maintaining ecosystem services, learn new approaches in planning and maintenance, with particular attention paid to evaluate and quantify ecosystem services.

This is the fifth Forum jointly organized by the Ministry of Natural Resources and Environment, the People's Committee of Ca Mau and the WWF.

“Delta ecosystems under threat”, 20/04/2013, online at: http://english.vietnamnet.vn/fms/environment/71626/delta-ecosystems-under-threat.html

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❖ Agriculture is putting SA in deep water

THERE is not enough fresh water in South Africa to go around, and experts say water availability is the most important factor limiting agricultural production — yet farmers are often their own worst enemies when it comes to water management.

It is projected that South Africa could run out of water by 2025 — and in Gauteng, Africa and South Africa's economic hub, by as early as 2015. More than 95% of the country's available fresh water was already allocated by 2005.

"We've had a huge scare with electricity prices, but I think water is also unreasonably priced (too low)," says Jeanne Nel, a biodiversity and ecosystems services scientist at the Council for Scientific and Industrial Research.

While farmers are not solely to blame, agriculture is allocated the largest portion of South Africa's available fresh water, with about 63% going to irrigation. This is sobering when it is considered that only 12% of South Africa's landmass is considered arable and only 3% "truly fertile". Only 1.5% of the land is under irrigation, producing 30% of the country's crops.

"In the face of the far more obvious negative impacts that mining and industrial use and pollution have (on the environment), farmers often get away with a lot," says Dr Nel. "Farming's effects are a lot more insidious. If you keep drawing up water all the time, that does not create a big change all at once, but it can create a huge problem. We do need to put it into context — there are good and bad mining practices just as there are good and bad farming practices."

Climate change and food security

It is not only irrigation that needs water. Large swathes of South Africa are given over to grazing and livestock farming — 69% of its total surface area, according to the World Wide Fund for Nature SA (WWF-SA).

On top of that, there is growing concern over what climate change will do to a country that already has half the average global annual rainfall and 98% of its water systems in crisis mode. Also, its population is growing and getting wealthier, adding to food security concerns because demand for animal and fish proteins and fresh fruit and vegetables is rising.

Food availability concerns have changed farming. During the 20-30 years during which South Africans' eating habits have changed, farming profitability has, paradoxically, declined.

That decline and water scarcity have stripped South Africa of more than a third of the farmers it had in the early 1990s, says the WWF-SA in a document titled Agriculture: Facts and Trends SA that it released last year. Meanwhile, production remains constant, indicating a rising trend in intensified production.

In short, farmers have generally turned to increased irrigation and use more fuel, fertiliser and genetically modified crops to grow the food South Africans want to eat.

Unlawful water use

Department of Water Affairs compliance monitoring and enforcement director Nigel Adams says that a few years ago, the department noticed an increase in unlawful water use, perhaps because it improved its verification and validation of farmers' water permits and licences.

Under the new National Water Act, the state is the custodian of South Africa's water resources, and anyone who wants to divert a water body, dam or otherwise adapt it needs permission to do so, he says.

"Some are partially unlawful (in their water use), some are blatantly unlawful ... For those whose use is partially unlawful, we deal with them through the validation and verification process," Mr Adams says. "We need to prove they were not using that water before 1998 (because of the legislation). If they agree, fine; if they don't, we issue a directive (to cease the illegal water use)."

According to Department of Water Affairs statistics, in 2010 the mining sector was issued with 32 "pre-directives" and 16 directives to cease illegal actions regarding water, and faced three criminal charges. The agricultural sector was issued 127 pre-directives, 48 directives and 13 criminal charges.

None of this is good for the environment, although there is growing realisation of this, and the tide is turning. Food companies, from multinationals such as Coca-Cola to South African food retailers such as Woolworths and Pick n Pay, have been working with farmers to improve farming practices and reduce their impact on the environment, including water use.

Awareness

Woolworths sustainability chief Justin Smith says when the retailer began working with farmers five or six years ago, there were many who were not sure of their legal obligations. He says increased awareness of the effects farming can have on the environment has "definitely" caused a reduction in water consumption, among other benefits, despite "capacity challenges" in the Department of Water Affairs.

An audit of Woolworths' Farming for the Future programme shows the retailer's top 15 suppliers reduced their water consumption 16% between 2011 and 2012, Mr Smith says.

"The point of Farming for the Future is that it is holistic — it looks at the link between biodiversity management, soil health and water management ... Healthy soil retains more water ... so there is less runoff into water systems, less pesticide and less fertiliser use, if any," he adds.

Intensive farming uses pesticides and inorganic fertilisers. These can pollute river systems, causing algal blooms because of the surfeit of nutrients in the water (algal blooms "kill" the water by cutting off sunlight). Also, silt runoff into rivers and dams can greatly diminish capacity, says Dr Nel. Many dams in South Africa have lost up to 90% of their capacity this way.

The lack of proper measurement and monitoring of farmers' water use is one mentioned by WWF-SA agricultural programme senior manager Inge Kotze, and AgriSA natural resources director Nic Opperman.

"(South Africa) needs to manage and measure water use, and we need to make it compulsory ... We have been waiting for those regulations (that will make water use measurement compulsory) for years," says Mr Opperman.

Last year, Water and Environmental Affairs Minister Edna Molewa reduced the number of catchment management agencies across South Africa from 19 to nine, but the Department of Water Affairs has not yet properly established seven of these, which is a concern, he says.

Dr Nel says South Africa's water scarcity problems are exacerbated by the proliferation of small farm dams that do not require government permission prior to construction. These have a high surface area to volume ratio that promotes evaporation.

"Agriculture is putting SA in deep water", 17/04/2013, online at: http://www.bdlive.co.za/business/agriculture/2013/04/17/agriculture-is-putting-sa-in-deep-water?utm_source=Circle+of+Blue+WaterNews+%26+Alerts&utm_campaign=9e49f748f5-RSS_EMAIL_CAMPAIGN&utm_medium=email

❖ Uganda says in talks with China to fund Karuma dam project

KAMPALA - Uganda is negotiating with China to obtain funding for construction of a Nile River hydro-power dam at Karuma, a project that is expected to generate 600 MW of electricity, a senior official said on Monday.

China - as elsewhere in sub-Saharan Africa - has rapidly expanded investment in Uganda in recent years, funneling vast sums into projects ranging from gleaming public office blocks to highways, hospitals and underground internet cables.

"We have begun negotiations with China to offer us credit to fund the (Karuma) project," junior Energy Minister Simon D'ujanga told Reuters. "We hope we'll get them to agree to help us and once they give us the money they will also supply the contractor so that we don't have to go through protracted procurement procedures."

New Vision, a state-owned daily, reported earlier that President Yoweri Museveni had discussed the Karuma project with Chinese President Xi Jinping during a summit of BRICS emerging economies in South Africa last month. The Chinese leader voiced "a willingness to fund the dam", the paper said.

Construction of Karuma is likely to take five years and cost around $2 billion. It would be Uganda's biggest hydro-electric dam, after the recently commissioned Bujagali dam, also on the Nile. Most of the country's energy is hydro-electric.

Uganda is banking on Karuma to generate cheap, sufficient power to meet fast-growing energy needs and support an economy eyeing double-digit growth rates once crude oil production starts, anticipated in 2017.

The east African nation discovered hydrocarbon deposits near its western border with the Democratic Republic of Congo (DRC) in 2006. Reserves are estimated at 3.5 billion barrels.

Energy officials say the internal rate of return for energy projects in Uganda is fairly attractive at

between 15-18 percent and higher than South Africa's 12-14 percent, although Uganda has a higher risk perception. — Reuters

"Uganda says in talks with China to fund Karuma dam project", 21/04/2013, online at: http://www.saudigazette.com.sa/index.cfm?method=home.regcon&contentid=20130415161491

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❖ Middle East shifting focus in energy

Middle East is shifting focus from its most prized asset, hydrocarbons. Oil and gas, though, still dominates the trade in and out of the Middle East but it is looking to develop its renewable sources of energy as well.

Those are the findings of a recent research report *"Middle Renewable Energy Sector Analysis"* published by KuicK Research, all the countries in Middle East region have started to take the renewable energy way, contrary to their most important possession, non renewable (Hydrocarbons).

The growing economy with growing population has affected a growth in the urbanisation in these nations which has resulted in an increase in consumption of oil and gas. The growing population demands more electricity, power plants based majorly on non renewable sources. The Middle East is one region in the world that requires energy even for drinking water which is produced by desalination of sea water. Growing population means more demand of water requiring more energy. The increasing in house consumption of energy sources has the Middle East worried over the increasing share it has to divert domestically, leaving comparatively lesser for export.

The economy of the Middle East region almost entirely depends on the export of oil and gas to the major markets in the world, Asia Pacific and Europe. With an increase in domestic consumption, as is being predicted, the quantity available for export will keep on reducing leading to a decrease in revenue, jolting the whole economy on the countries. The signs of decrease in the oil and gas exports have already begun to show reflecting in the decreased petro-dollars from the commodities and the governments increasingly trying to diversify their industries. The nations have started realising that they can't depend on oil and gas forever to produce electricity and water and have, thus, now started looking towards renewable sources of energy for power generation.

The financial capability of the Middle East countries to support the advent of renewable energy in their power system is beyond a doubt. However, renewable energy initiatives still take a back seat in the energy agenda of these countries mainly because of it being the comparatively more expensive source of power than the subsidised fossil fuel power generation and distribution. But the ample solar

power availability and wind power in some regions are factors which when seen together with the need and the opportunities obtainable are big enough to attract attention of the industry majors.

"Middle East shifting focus in energy", 16/04/2013, online at: **http://www.gasworld.com/news/regions/middle-east/middle-east-shifting-focus-in-energy/2002060.article**

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❖ Deadly Sins in the Brazilian Amazon

The Belo Monte dam

The controversial Belo Monte Dam, which is under construction on the Xingu River in the Brazilian state of Pará, is roughly twenty percent completed. Belo Monte will displace over 20,000 people, gravely endanger the survival of indigenous peoples and local communities and cause irreparable environmental damage to the Brazilian Amazon.

Belo Monte will be the third largest hydroelectric plant in the world and the second-largest hydroelectric dam in Brazil. At an estimated cost of upwards of $18 billion US dollars, the dam will stand 90 metres high, 3,545 meters long, with a planned installed capacity of over 11,000 megawatts. Belo Monte is not merely a dam. It is a megadam. It is a travesty of human rights and an environmental crime. The land along the Xingu River is home to 25,000 indigenous people from 40 ethnic groups, who have lived and worked in harmony with the river for thousands of years. The Arara, Juruna and Xikrin, who are closest to Belo Monte, depend on the river for their survival: fishing, trade, and transport. The river is their lifeline.

Not for much longer. Belo Monte has already begun to seriously damage livelihoods and the environment. Local riverbank populations such as the indigenous Jericoá community say that the Xingu is no longer a source of potable water, due to contamination from construction at the Pimental site upstream. Explosions, diversion of the river flow, sedimentation and pollution caused by the preliminary earth 'coffer dams' have already had devastating impacts on fish populations in the Xingu. There is little left to eat, and no more living to be made from the river. Cofferdams have diverted approximately 5 kilometres of the Xingu's main channels into one narrow channel of 450 meters, making boat transport extremely dangerous. The Jericoá, like other indigenous communities and local populations, are also dependent on boat transport for trade, basic health and education services. In a statement issued by the Jericoá community on March 21st, they call the actions of the Brazilian government and Norte Energia, the state-controlled company behind the dam, an attempt 'to assassinate the Xingu and the people that depend upon the river for their survival."

Belo Monte will create a 100 km "dry stretch" below the reservoir, where the Xingu will be reduced to dry season levels all year round. The land on this dry stretch includes two indigenous reserves, the Arara and the Juruna da Terra Indígena Paquiçamba, and a number of communities who are

dependent upon the river for their livelihood and for transport. There is no road which will replace the river. The Xingu will become unrecognisable and for many, uninhabitable.

I have campaigned against Belo Monte for many years. In March 2012 I went on a fact finding mission to the Xingu. Construction on the dam had then just begun. I travelled down the Xingu in a small boat. I was accompanied by my courageous friend Antonia Melo, co-ordinator of Xingu Vivo, a collective of local NGOs opposed to Belo Monte, and Ruy Marques Sposati. We saw the great red scarred coffer dams, the beginnings of Belo Monte, rearing out of the river. I met with indigenous leaders, with local communities, NGOs, government officials, extractavists - and the Bishop of the Xingu, Dr Erwin Krautler, whose concern and care for the people affected by Belo Monte was evident. I was distraught by the suffering I witnessed in the area. This dam will not only destroy the Xingu, it will change the Amazon basin forever. I published my findings in a report on the Huffington Post: The Belo Monte Dam, an Environmental Crime. I urge you to read it. The people of the Xingu need our support.

Sex slavery

The Belo Monte dam has brought abhorrent practises to the Xingu. On March 13, 2013, a 16-year-old girl escaped from a 'brothel' on the Belo Monte construction site where, it was subsequently discovered, she and fourteen others had been imprisoned in 'small windowless rooms with no ventilation, with only a double bed, and... padlocks on the outside of the doors.' The women had been lured from all over the state of Para with promises of legitimate employment and security. Instead, on arrival at Belo Monte they were incarcerated, raped and exploited. A congressional panel has summoned the directors of the Belo Monte Consortium to explain how sex slavery could be conducted on the very premises of the Belo Monte dam. But I fear justice will not be done. The dam has enormous financial incentives, and the Brazilian government behind it.

This is not an isolated incident. The influx of tens of thousands of migrant workers into the nearby city of Altamira and throughout the region has caused an explosion of violent crime and sex trafficking.

Working conditions

Conditions on the construction sites of Belo Monte are atrocious. According to Brazilian newspaper Adital, many of the dam workers support the protesters cause, comparing Belo Monte's labour conditions to a 'prison.' They say they would leave, but they are migrant workers, with

nowhere else to go. In November 2012 work on Belo Monte stopped when disputes about pay and poor working conditions escalated into a riot among the construction workers, who 'set fire to vehicles and mattresses, vandalized offices and canteens, burnt a bus and blocked the Trans-Amazon highway.'

Protest

At four in the morning, on March 21, 2013, a hundred and fifty protesters, led by the Jericoá community, occupied the construction site of the Belo Monte Dam. The group comprised women and men - people of all ages. There were representatives of the Juruna, Xypaia, Kuruaia and Canela tribes, as well as local fishermen and displaced farmers.

The March 21st protest was the sixth time since construction began in July 2011 that work on Belo Monte has been halted by protests. In June 2012, on the eve of the Rio+20 conference demonstrators broke through one of the coffer dams to restore the flow of the river, chanting 'Free the Xingu.' A few days later, Xicrin and Juruna indigenous protestors occupied the Pimental coffer dams for over a month, calling attention to the project's impacts and the broken promises of the Brazilian government and its private sector partners responsible for construction of Belo Monte. (I wrote an article about this protest and the failure of Rio +20, 'The Future We Want,' which can be found on the Huffington Post.) In January 2013, twenty leaders of the Juruna tribe blocked access roads to the construction site at Pimental, halting work for three days.

The people of the Xingu are invading the construction sites of Belo Monte because they are desperate. They face the destruction of their homeland and the end of their way of life. The Belo Monte dam will displace them, in their tens of thousands; it will strip them of their livelihoods. And their voices are being ignored by the Brazilian government.

The protest on March 21st was the latest of a long line of demonstrations and legal battles against Belo Monte, stretching back nearly forty years. The people of the Xingu have opposed the dam since the 1970's. The plan for Belo Monte was devised in 1975, during the years of Brazil's dictatorship. It was then known as the Kararao dam. The project was abandoned in 1989 after widespread protest. But the scheme was redesigned between 1989 and 2002. President Luiz Inacio Lula da Silva signed the contract for the Belo Monte dam with the Norte Energia consortium in 2010.

At every stage the Belo Monte dam has been opposed by the people who now live in its ever growing shadow.

The government reacted immediately to the Belo Monte protest on the morning of March 21st. They sent troops from the National Guard (Força Nacional de Segurança Pública) to the construction site to subdue it. According to a mandate from the Federal Ministry, the troops will remain onsite at Belo Monte for at least 90 days - they could stay indefinitely.

The culture of intimidation

The people of the Xingu are being silenced with military force. Not because they are a threat, but because their protests halt construction. It is obvious that the Brazilian government has decided that respecting the rights of indigenous peoples is not good for business. The tactics at Belo Monte are indicative of the troubling erosion of indigenous peoples' rights, which is happening not only in the Xingu, but at dam sites all over Brazil. Across the country, the national guard and the federal police (Polícia Federal) are being used as a show of force to oppress critics and protesters.

According to Brent Millikan of International Rivers, this signals a new trend of intimidation; NGOs and protesters are being threatened with fines and imprisonment. Social action, he says, is being criminalised. Local magistrates are being called upon to issue writs of 'Mandado Proibitivo,' which amount to restraining orders for protesters, preventing them from demonstrating near the construction sites.

The Belo Monte consortium has engaged in espionage against the Belo Monte workers, protesters and local organisations opposed to the dam. In February a man was caught recording the annual meeting of Xingu Vivo, a local NGO. He immediately confessed that he had been hired by the Belo Monte consortium to infiltrate the organisation and feed information back to the consortium - and the Brazilian government's national intelligence agency ABIN.

Condemned by intergovernmental organisations

The dam has been denounced by the human rights commission of the Organisation of American States (OAS). The Inter-American Court of Human Rights (IACHR) and the ILO have condemned Belo Monte. When the OAS pronounced the lack of consultation with the indigenous people a violation of the international accords, the Brazilian government retaliated by cutting off its dues payments to the OAS and boycotted a meeting arranged by OAS in Washington DC, in October 2011. The ILO stated in a 2012 report that Brazil has violated Convention 169 which guarantees

indigenous peoples the right to free, prior and informed consultation over projects that affect their lands and rights.

There are currently at least 12 lawsuits pending in Brazilian courts pertaining to the Belo Monte Dam, citing, among other complaints: improper licensing, lack of consultation with local communities and affected peoples, and serious environmental concerns. In 2012 construction was halted by court order on August 14th then resumed on August 28th.
Despite the people of the Xingu's desperate opposition, despite condemnation from intergovernmental organisations and the international community at large, despite the urgent warnings of scientists that this dam is an environmental catastrophe, the construction of Belo Monte is being pushed forward.

It is clear that the Brazilian government and the Belo Monte Consortium are determined to force it through at any cost.

Environmental destruction

The Xingu is an area of outstanding natural beauty. Three streams, the Tamitatoaba, the Romero and the Colisu converge to form the Xingu River. For 1,979 kilometres the river wanders through grasslands, savannahs, wooded archipelagos, pouring over the great cataracts at the Fall of Itamaraca. Near its mouth the river mingles with the waters of the Amazon in a network of eanos, or natural canals. It is an immense, interconnected ecosystem supporting thousands of species: human, animal and plant life.

I consider the Amazon and the Xingu to be wonders of the world.

Belo Monte will destroy the forest, cause the extinction of many rare species of animals and plants, affect the global environment and contribute to climate change. The dam is already decimating the fish populations and hundreds of other species. The black and white-patterned Zebra Pleco fish, which is found only on the Xingu River, is likely to die out. The Sunshine Pleco (Scobinancistrus aureatus), the Slender Dwarf Pike Cichlid (Teleocichla centisquama), the Plant-eating Piranha (Ossubtus xinguense) and the Xingu Dart-Poison frog (Allobates crombiei) are other species whose existence is threatened by the dam. As the Jericoá community knows all too well, the fish near Belo Monte are nearly gone. It will not be long before the other species follow suit.

Dams across Brazil

Belo Monte is part of a plan for an overhaul of Brazil's infrastructure: at least 34 dams are planned across the country, which will inundate at least 6,470 sq km of the world's largest tropical forest. All over Brazil, even now, the Amazon's waterways are being blocked and diverted. The river system that provides a fifth of the world's fresh water is being dammed, polluted and fouled up. Everywhere, the protests of the Brazilian riverine communities are being drowned out by the sound of construction - and they are being suppressed with military and police presence.

São Luíz do Tapajós, Jatobá and Chacorão - the Munduruku

Further into the Amazon Basin, west of Belo Monte on the Tapajós river, another major Amazonian tributary, the ancestral home of the Munduruku indigenous people is being threatened by three planned mega-dams: São Luíz do Tapajós, Jatobá and Chacorão. The dams are planned by the parastatal energy company, Eletronorte and its private sector partners, among them Brazilian construction giant Camargo Correa and the engineering firm CNEC, owned by Worley Parsons of Australia. Eletronorte also holds a 49.98% stake in Norte Energia, the consortium behind Belo Monte.

There are approximately 11,630 Munduruku people across Amazonas, Pará and Mato Grosso do Sul. If constructed, the dams will flood much of the Munduruku territory. Despite legal mandates by international bodies such as the International Labour Organisation (ILO) Convention 169, the Munduruku have not been consulted by the Brazilian government on the construction of these three dams.

The Munduruku are vehemently opposed to these huge dam projects. They have seen the damage that Belo Monte has done to the Xingu.

Brutal raid at Teles Pires

In October 2012 the inhabitants of the Munduruku indigenous village known as Teles Pires, located on a river of the same name - a major tributary of the Tapajós that divides the states of Pará and Mato Grosso do Sul -expelled researchers inspecting the site of the São Luíz do Tapajós dam, which would flood over 700 square kilometres of the forest.

A month later, on the 7th of November 2012 a helicopter and dozens of men in flak jackets, armed with machine guns and assault rifles, descended upon Teles Pires.

The villagers, including women, children and elderly people, were teargassed, subdued and told to lie on the ground. They lay there in the sun for many hours. They were forbidden to speak to one another in their own language. The village radio was confiscated, and the phone wires cut. Memory cards, phones, and cameras were destroyed and thrown into the river.
This brutal raid was carried out not by guerrillas or militia in a military dictatorship, but by the Brazilian Federal Police and the National Guard.

Those villagers who resisted were deal with harshly. Some were beaten and shot at, sprayed with pepper spray. Several people were seriously injured and one man, Adenilson Kirixi Munduruku was killed. His body was thrown in the river, perhaps for the purposes of concealment; it resurfaced the next day. According to reports a bomb was let off to confuse the scene of the crime.

Meanwhile the police destroyed a river dredge in front of the village, which had been used to extract gold - which was the ostensible cause for the police operation. Mining is not permitted in the area. All the contents of the dredge were also destroyed including a fridge and a gas cooker. The river was left swimming in petrol and chemicals.

Was the small gold dredge the real reason for the raid? According to Munduruku leaders, the operation was a blunt message from President Dilma Rousseff's administration to indigenous peoples: either suspend immediately protests against the government's ambitious dam-building plans for Tapajós and its tributaries - or face the consequences. As at Belo Monte, it seems the Brazilian government has been quick to answer resistance with a show of military and police force.

A declaration of war

In late March 2013 following a presidential decree signed by President Rousseff, the Brazilian Air Force deployed a task force of some 240 troops, with participation of the National Guard (Força Nacional), Federal Police and Federal Highway Police to the tiny Itaituba airport near the Munduruku village of Sawyré Mubú. The purpose of the mission, known as Operation Tapajós, has been to provide security for 80 members of private consultancy firms engaged in technical studies for the São Luiz and Jatobá mega-dam projects. As in Belo Monte, there is no indication how long the troops will remain

The Munduruku have suspended talks with the government until the troops are withdrawn. Theirpublic statement reads: 'We are not criminals. We feel betrayed, humiliated and disrespected. We want dialogue... Our final warning. If the operation does not stop... we will have war.'
All of this military and police presence is being imposed upon indigenous and tribal people - unarmed communities. The Universal Declaration of Human Rights, is being openly flouted. Belo Monte and Munduruku are being occupied - by corporate interest.
The Brazilian government's parastatal energy giant Eletrobras doesn't want the delays the protesters cause to planning and construction at Belo Monte or at the sites of the planned Tapajós megadams. They are steamrolling human rights for profit - with the blessing of the Brazilian government.

The Madeira Dam

The Madeira complex in the state of Rondônia will consist of four dams: the Santo Antonio and Jirau which are already well underway, the Cachuela Esperanza Dam on the Beni River near Riberalta, Bolivia which is nearly ready for construction and the Guajará-Mirim Dam on the Madeira River upstream from Abunã, which is in the planning stages. When it is completed in 2015, the Jirau hydroelectric dam will span 8km of the Madeira river and contain the largest number of giant turbines of any dam in the world. 2,250km of power lines will run between the Jirau and São Paulo.
I visited the Madeira River on my fact finding mission to Brazil in 2012. I attended an open meeting in the town hall, where I met with local communities and indigenous people. The stories I heard were tragically familiar: people were being evicted from their ancestral homeland: some had brought their orders of eviction to show me. Some told of their houses being flooded, and avalanches caused by the dams. Others told me of the sudden decline in the fish populations. I listened to their concerns, their accounts of the destruction of their livelihoods and their cultural identity by the Madeira Dam complex.

Slave labour

Like Belo Monte, the Madeira dam complex is being constructed by exploitative labour. Workers flooded into the region drawn by the promise of employment. In September 2009, Brazilian authorities found 38 people working in 'slave-like labour conditions' in the construction site of Vila Mutum. According to the report the workers living arrangements were 'subhuman... an overcrowded wooden shelter, with no beds, no adequate electricity or sanitary facilities.' In 2011 riots broke out on

the San Antonio and Jirau dam construction sites. According to Amazon Watch, protesting workers set fire to buses, living quarters and offices.

Several isolated indigenous peoples live near the Madeira, including the Mujica Nava and the uncontacted Jacareuba/Katawixi Indians. What will happen to them when the dams are built? What will they do when the river changes forever?

All this, and yet the Jirau and the downstream Santo Antonio complex will provide just 5 percentof what government energy planners say Brazil will need in the next 10 years.

Intimidation across Brazil

The culture of intimidation is not restricted to dam sites. The heavy handed measures being taken by the Brazilian government may signal a return to the old, dark days, to a culture of impunity in which persecution, harassment and even the murder of protesters is escalating - all across Brazil.

According to the Catholic Church's Pastoral Land Commission (CPT), the number of activists threatened in conflicts over land rose from 125 to 347 between 2010 and 2011.

Cícero Guedes, a leader of the landless movement, or MST, which campaigns for land reform and the rights of landless workers, was shot dead in Campos north-east of Rio de Janeiro on the evening of the 25th of January 2013. He was cycling home.

Mr Guedes, a sugar-cane cutter, had recently led an occupation of the nearby Usina Cambahyba sugar plant, in protest at a judge's ruling that the estate should be expropriated.

Jose Claudio Ribeiro da Silva and his wife Maria were gunned down on a bridge near the reserve of Nova Ipixuna in 2011. Two men were convicted, and landowner Jose Rodrigues Moreira was accused of hiring the assassins to shoot the couple after they opposed the eviction of three families who lived on his farm.

Some had hoped Moreira's trial would prove to be a landmark in Brazilian land dispute killings - but he was acquitted on April 4th, 2013.

A delegation of laureates from the Right Livelihood Award, otherwise known as the alternative Nobel Prize, organised a mission to Marabá to report on the trial. Marianne Andersson (former Member of the Swedish Parliament), Angie Zelter (Trident Ploughshares) and Dr Raul Montenegro (President of FUNAM, Fundación para la defensa del ambiente) were shocked by the results of the trial. 'It is unacceptable that people committed to the common good can receive a bullet to the head

because they are defending the rights of the dispossessed,' Dr Montenegro said. 'The Brazilian government and the Brazilian justice system must put an end to impunity, and the murders.'
Mercedes Queiroz, a friend of the da Silvas, told Al Jazeera English: "Everyone is upset with the verdict. Once more there is a feeling that impunity reigns in the Amazon region."
In November 2011, Nisio Gomes, a leader of the Guarani Kaiowa tribe was shot dead by a group of 42 armed men who broke into camp in the middle of the night. The men reportedly shot him in the head, chest, arms and legs, before taking his body away in a truck. His body has not been recovered. The Guarani Kaiowa were occupying their ancestral land in Ponta Pora, in the southern state of Mato Grosso do Sul - they had been evicted when the land was given over to cattle ranchers.
In July 2012 ten men from a private security firm were arrested for the murder. They claim landowners hired them to kill Mr Gomes. Six landowners have subsequently been arrested.

It should come as no surprise that land disputes in Brazil are rife, and highly dangerous: when one percent of the population controls 46 percent of the country's cultivated land. This is a glaring inequity, and it seems the rights of indigenous peoples are the first to be sacrificed in the name of development and profit. If the Brazilian government does not take action to protect those rights, and prosecute criminals with the full weight of the law, murders like these will become all too common.

Mining in indigenous territories

The indigenous peoples of Brazil may soon face even greater challenges in their struggle to retain their ancestral land. There is a draft bill on mining currently working its way through the Brazilian Congress, known as Projeto de Lei 1610. Its aim is to open up and regulate large scale mining in indigenous territories.

According to Fiona Watson of Survival International, 'One of the objectives of the government's drive to build so many hydro-electric dams in the Amazon is to provide cheap subsidized energy to the mining companies which are poised to mine in indigenous lands.'
There are currently over 4,000 requests to mine in indigenous territories, and new requests are made every day. The mining requests in the Xikrin territories, Xikrin do Catete and Baú in Pará cover 100 percent and 93 percent of the territories respectively. 'Very worryingly,' says Watson, 'there do not appear to be any safeguards in the bill to prevent 100 percent of any given territory being mined.'

In the cases of both Belo Monte and the Tapajós, there is a clear connection between construction of mega-dams and mineral exploitation, both of which have devastating impacts on indigenous cultures their ancestral lands and the environment, since much of the electricity will go to energy-intensive mining industries.

Dams and development

Those who suffer most from these irresponsible destructive projects rarely see any benefit from them. It is large corporations, investors and the government who profit. As Peter Bosshard writes for International Rivers, 'Mega-dams and other complex, centralized infrastructure projects have a bad track record in terms of addressing the water and energy needs of the poor and reducing poverty more generally.'

Examination of other megadams across the world does not bode well for the future of the Amazon and its peoples. The Three Gorges dam in China, the largest dam in the world, displaced 1.2 million people, flooded 13 cities and 140 towns. The Brazilian/ Paraguayan Itaipu dam displaced 59,000 people, and destroyed 700 square kilometers of rainforest. In the worst dam disaster in history, the flooding at the Banqiao Dam in China in 1975, 26,000 people died in the flooding and another 145,000 died during subsequent epidemics and famine.

Donor governments came together in Paris, France from March 20 to 21, 2013 to start negotiations for the 17th replenishment of the International Development Association fund. To my surprise, the World Bank is recommending several large dam projects as regional infrastructure initiatives, including the Inga 3 dam on the Congo River, and hydropower projects on the Zambezi River. I hope World Bank President Jim Yong Kim will reconsider this decision.

The World Wild Life Fund (WWF) recently published a report, The Seven Sins of Dam Building. The list of sins is comprehensive: building on the wrong river, neglecting downstream flows, neglecting biodiversity, falling for bad economics, failing to acquire the social license to operate, mishandling risks and impacts and blindly following temptation, and the bias to build.

The WWF report ascribes just five of these evils to Belo Monte. But actually the Belo Monte Dam commits every single one of these sins. This dam is an act of hubris and greed, committed in the name of development - but the real objective is profit.

Belo Monte is being promoted as a source of green energy. As Dr Erwin Kräutler, the Bishop of Xingu, and a staunch opponent of the dam, said to me, 'they call it a green project. What is green

about Belo Monte? It will only be green if they paint the dam green. It used to be green around here. The forest was green.'

Large dams are not sustainable. They are not 'clean' energy. But they are lucrative- for some. Large international companies like Alstom, Andritz, Voith Hydro and Daimler, all of whom are involved in the construction of Belo Monte, are profiting from the dam at the expense of the tens of thousands of people who call the Xingu their home. By persisting with this unconscionable project, President Rousseff is failing her people.

The Brazilian government claims that the planned installed capacity of the Belo Monte Dam complex will bring cheap energy to households across Brazil. But it is estimated that only 70% of the energy generated by the megadam will be sold for public consumption. The remaining 30% has already been bought by Eletrobras and earmarked for export, mining and industrial activities.
The farcical, tragic reality is: Belo Monte probably won't be capable of delivering the promised, massive output. The installed capacity of 11,000 Megawatts (MW) will on average only generate 4,500 MW due to large seasonal variations in river flow. During the dry season, when the river is at its lowest level, the dam will only be able to produce 233 MW.

Which is why there are five other dams planned upstream.

As Philip Fearnside points out, 'Belo Monte itself is economically unviable because the highly seasonal water flow in the river would leave the 11,000 MW main powerhouse completely idle during 3-4 months out of the year... It suggests that the government and the investors are, in fact, counting on the upstream dams that would flood vast areas of indigenous land and tropical forest.'
A study by Conservation Strategy Fund (CSF) concludes that Belo Monte will not be sustainable without the proposed Altamira (Babaquara) dam which would have a reservoir 12 times the size of Belo Monte's and would flood indigenous territories of the Araweté/Igarapé Ipixuna, Koatinemo, Arara, Kararaô and Cachoeira Seca do Irirí tribes.
All the evidence suggests that the Brazilian government will need to build more dams to make the Belo Monte Dam viable. Belo Monte is only the beginning.

Conclusion

By prioritising these large infrastructure projects at immense cost to the people and the environment, by suppressing protest with military force, by condoning the appalling conditions in these construction sites, by failing to prevent the murder of protesters and indigenous and grassroots leaders, the Brazilian government is sending the dangerous message that the pursuit of profit prevails over human rights and the rule of law.

These are the facts. If Belo Monte and the other dams are allowed to go ahead, they will devastate the livelihoods of thousands of people among the tribes and communities in the Amazon Basin. A great part of Brazil's rich, varied cultural heritage will be lost. The dams will destroy enormous tracts of rainforest, unique ecosystems- the like of which cannot be found anywhere else on earth. The patrimony of Brazil will be squandered, and for what? The dams will not provide the energy the country needs.

I add my voice to the indigenous peoples' appeal to President Rousseff to stop the construction of megadams across the country.

We must support the indigenous peoples and communities whose livelihoods, culture and ancestral lands are threatened by megadams, mining, cattle ranching and illegal logging in the Brazilian Amazon. President Rousseff must examine the government's current model of development and its policies towards indigenous peoples, local communities and the environment. President Rousseff has a choice. She can steer Brazil towards a sustainable future, based on principles of respect for human rights, good governance, justice, equity and environmental protection. If however the President fails to reform the current model of development, if she continues down this path, Brazil may slip back into an era of violence, exploitation and civil unrest.

"Deadly Sins in the Brazilian Amazon", 16/04/2013, online at: http://www.huffingtonpost.com/bianca-jagger/belo-monte-dam_b_3076501.html?utm_hp_ref=yahoo&ir=Yahoo

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