

ORSAM WATER BULLETIN

Weekly Bulletin by ORSAM Water Research Programme

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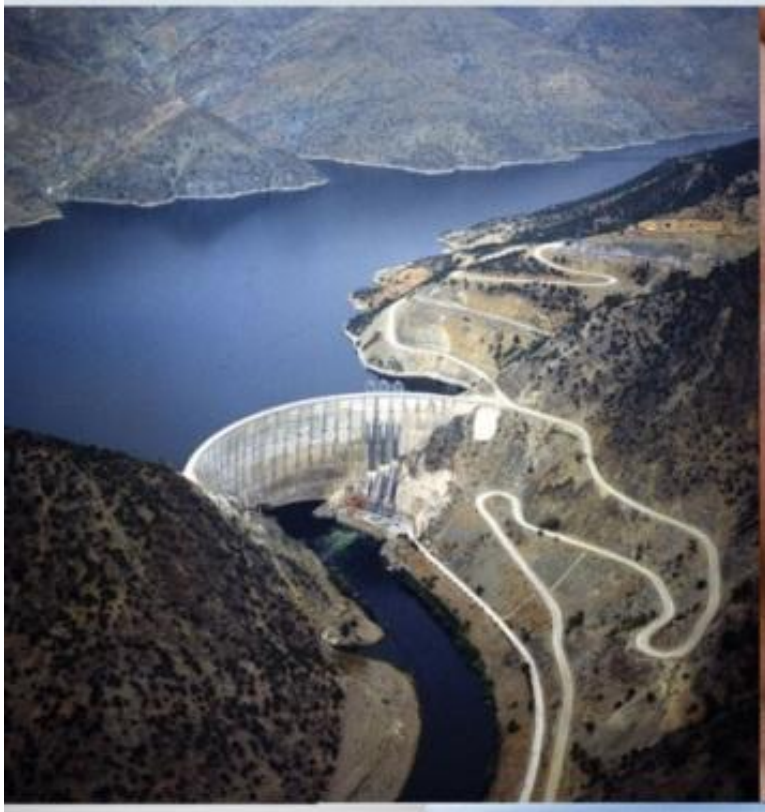



Issue 121

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Mithat Paşa Caddesi 46/4 Kızılay-Ankara TURKEY
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❖ Forestry and Water Council Meeting Held in Ankara

The Forestry and Water Council Meeting was held in Ankara between 21-23 March 2013. The "Forestry and Water Council" gained legal status as a permanent council of the Ministry of Forestry and Water Affairs in accordance with the 645 numbered Decree Law regulating the establishment and duties of the Ministry. The main theme of the Council meeting that was held for the first time was defined as "For our future...". 11 different Working Groups including technical work items and working fields of Ministry convened as from July 2012, and prepared the working reports to define the decision to be made in the Council. The aforementioned working groups are listed respectively as follows; improvement of water resources, climate change and adaptation, water quality management, basin management and water information system, sustainable biological diversity management, protected areas and wild life management, fight against desertification and erosion, conservation of forests, improvement of forests, group of benefiting from forests, and meteorological observation and early warning systems.

During the three-day Council meeting, working groups were gathered under five different commission titles, and the decision taken as a result of the Council meeting were shaped in line with the studies carried out by these five commissions. Commissions were gathered under the titles of; Water, Forestry, Nature Conservation and Biological Diversity, Desertification and Erosion, Climate and Meteorology. Assessing the decision taken at the end of the Council meeting;

The Forestry Commission designated its strategies through 27 decisions in total taken at the end of the meeting. As the objectives focus on sustainable management of forests increasing the carbon stocks at a basin level, it is necessary to carry on forestation efforts, as well as for these efforts to be supported by both public and private sectors, and to keep rural labor force at local level. Besides, it is also necessary to develop the industry of forest products, to introduce it to the international market, and to provide the required financial support.

The committee on fight against desertification and erosion asserted that it is necessary to combat against desertification and erosion, to improve the affected areas and maintain the sustainable management, to raise the awareness of public on this subject, to combat against desertification at international, national and regional level, and to support the research and development works to

minimize the impacts of drought. In accordance with the international agreements signed on this subject and to which we became a party, developing policies were indicated within the strategies.

According to the decisions taken by the committee on Nature Conservation and Biological Diversity; sustainable biological diversity should be restored, the protected areas and sensitive eco-systems should be used effectively, and above all, nature protection policies should be integrated to development policies.

The primary goal of the committee set on water was to introduce and put into force a law on water as soon as possible, of which the draft works were completed. In accordance with the decision of the committee on water, it is necessary to adopt an integrated water resources management at a basin level, and to have a parallel administrative structure, as well as to provide an integrity in monitoring, control and investment. Water should be used effectively and productively, and also National Water Information System (NWIS) should be established to monitor water bodies and determine water potential.

According to the decisions taken by the Committee on Climate and Meteorology; the quality of datum that have an important place in planning and management should be increased, the meteorological network should be broadened in line with the demands of sectors, by taking the climate change into consideration, its influence on water resources and sectors should be assessed, and while studies on adaptation to climate change are carried out, institutional capacity should be developed in parallel with this. In addition to this, management policies on flood and drought, which are important consequences of the climate change, should also be formed.

During the Council meeting, where the committees took detailed and important decisions, there were also times when those decisions were not brought up to the agenda; but it is expected in the forthcoming council meetings to be held that those decisions will contribute to planning and implementation of policies, strategies and activities related to the management of forest and water resources in our country.

"Forestry and Water Council Meeting Held in Ankara", Tuğba Evrim Maden, ORSAM, 26/03/2013, online at: http://www.orsam.org.tr/en/WaterResources/showAnalysisAgenda.aspx?ID=2199

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❖ Finalization of water pipeline to Northern Cyprus to boost agriculture, economy

As the completion of the water pipeline from Turkey's southern coast to the Turkish Republic of Northern Cyprus (KKTC) in the Mediterranean Sea nears, the government has heightened its studies concerning the improvement of the agriculture sector which will highly benefit from the pipeline and contribute to increasing the country's economic revenues.

A groundbreaking ceremony was held last October for the 107-kilometer (67-mile) pipeline that will run from Alaköprü Dam in the Anamur district of Turkey's Mersin province on the Mediterranean to a dam that is being built in Geçitköy in Northern Cyprus. Although the pipeline is expected to be operational by March 2014, its current progress indicates it will be completed earlier, by October 2013.

Speaking to Today's Zaman in an exclusive interview, KKTC Agriculture and Natural Resources Minister Ali Çetin Amcaoğlu provided information regarding the project that carries vital importance for the country as a source for potable water and irrigation. The increased water supply will thus play a key role in the development of agriculture and animal husbandry while granting Turkish Cypriots greater access to quality water.

Amcaoğlu recounted that the KKTC has for one-and-a-half years been working on plans for more effective vegetable farming in conjunction with the completion of the pipeline, conducting soil analyses to determine which crops will bring the highest yields in which region of the country. Noting that one-third of the country is settled land and the remaining two-thirds made up of forests and arable land, the minister said that even after exempting forest lands, the area available for agricultural production will still represent half the island.

According to the soil analyses, the Güzelyurt region in western KKTC is appropriate for irrigated farming while the central Mesarya region is more suitable for farming and animal husbandry. Additionally, the studies suggest that the eastern Mağusa region would be ideal for greenhouse cultivation and growing artichokes while the northern tip of the island, Karpaz, would be suitable for livestock.

With the water pumped in from southern Turkey, it will be possible to irrigate 60 square kilometers out of the 800 designated for farming by the project. The increase in irrigation of farming land will boost the island's harvests and enable surplus production to be exported, said Amcaoğlu. The minister also explained that potable water will, after its use by residents, be treated and then used towards growing feed crop for animal raising. "We have also modernized the irrigation system, which will lead us to have greater harvests with the use of less water," he added.

Meanwhile, Amcaoğlu expressed the government is also researching where opportunities exist in foreign markets in order to export excess production. "We have excelled at producing fine potatoes, artichokes, olives, olive oil and citrus, all of which can be produced in greater amounts for export with the increase in farmland. Also, most of the land has never been used, so it represents a great opportunity for organic farming, something around which we have begun a few projects with Turkey's Ege University. Research into the cultivation of aromatic and medicinal herbs is also being conducted with the partnership of universities in the country to take a share in the future of an already huge existing market," the minister concluded.

"Finalization of water pipeline to Northern Cyprus to boost agriculture, economy", 28/03/2013, online at: http://www.todayszaman.com/news-311025-.html

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❖ The water issue in Iraq and attempts to solve it

Iraq, which has been in constant conflict for the last three decades with the Iran-Iraq War from 1980-1988, the Gulf War from 1990-1991, the embargo placed on it between 1990 and 2003 and the US intervention between 2003 and 2011, is in shambles.

While this situation has negatively affected water resource management in Iraq, it has also damaged water infrastructure such as dams and channels.

According to data from the Food and Agriculture Organization (FAO) of the UN, the annual potential in Iraq for access to water is 94.1 billion cubic meters. Given the aforesaid figure, the annual amount of water per capita in Iraq is 2,632 cubic meters. According to the World Bank, this figure was more than 2,500 cubic meters in its 2006 report. According to the "Water in Iraq Factsheet" prepared by the UN, it was 2,400 cubic meters in 2010. The UN World Water Development Report estimates renewable water in Iraq per capita at 3,287 cubic meters. While the inconsistency in data constitutes a major problem on its own, the figures show that Iraq does not experience water scarcity. However, mismanagement of water resources in Iraq and problems related to the quality of water create problems in people's access to water.

According to 1995 data from the World Health Organization (WHO) and UN Children's Fund (UNICEF), in Iraq's pre-war period, 96 percent of water supplied to Iraqi cities was sanitized, and 48 percent to rural areas was considered clean. Ninety-three percent of city populations and 31 percent of the rural population could access clean water thanks to different sanitation methods. As a result of the bomb attacks by the US in March 2003, dams, pumping stations, channels, sea water desalination plants and wastewater treatment plants were damaged.

The UN predicts that Iraq will have difficulty attaining the 91 percent domestic usage of water in 2015. The Iraqi Ministry of Water Resources started work on the 20-year Strategy for Water and Land Resources in Iraq, to cover the years 2015 to 2035, in order to find a solution to the problem of water management, expected to increase in the coming years. The evaluation and detailed mapping of 121 irrigation projects, seven major dams and 18 barrages across the country are included in this plan, which firstly focuses on collecting data and analytic tools that will be necessary to implement

the plan. While the first five years of the plan are projected to be a busy period, the project design involves its being updated every five years until 2035.

This plan will be implemented with the support of a management committee, decision-makers and a technical committee, selected from ministries, as well as with the support of domestic institutions. Taking an integrated approach to water resources management, five-year master plans will be prepared in 2015, 2020, 2025 and 2035. Water infrastructure will be privatized within this integrated approach, and capital will be invested by different sectors for sustainable development.

Many countries invest and cooperate in Iraq for the effective use of water resources. To that end, Iraq and the EU signed an agreement on July 25, 2012, to improve the management of water resources in Iraq. The agreement focused on an integrated approach to the management of groundwater, monitoring of water quality and water education.

As for water quality, according to 2004 data, 73 percent of city populations and 43 percent of the rural population have access to clean water. On the other hand, 25 percent of the population in Baghdad does not have access to the water distribution network. According to 2007 data, only 17 percent of wastewater was treated before it was discharged into rivers. As a result, waterborne diseases became widespread among children, and a problem in water quality began to be observed in surface water and aquifers.

According to the "Water in Iraq Factsheet" data released by the UN, 884,000 cases of diarrhea, 57 percent of which were attributed to children under the age of 5, were reported in 2010. Because of waterborne diseases, 41 out of every 1,000 children died before the age of 5. The quality of water used for drinking and agricultural purposes still remains far below the values recommended by Iraqi National Standards and WHO. The agreement also concentrates on water quality to this end and envisages 4 million Iraqi people benefiting from an improved water quality monitoring system.

The excessive use of groundwater in Iraq also requires attention. The fact that aquifer control and management is conducted at a minimum level threatens the quality and quantity of groundwater as well. Within the framework of cooperation between Iraq and the EU, studies will be carried out to analyze the potential of groundwater resources for sustainable management.

The UN stated on World Water Day in 2011 that 50 percent of all used water is being wasted in Iraq. This wastefulness stems from the mismanagement of water resources and damaged water infrastructure (dams, channels, water networks, irrigation systems, etc.), as indicated before. Within the scope of the aforesaid cooperation, water management employees will be trained with modern water management techniques. Additionally, campaigns and training programs to raise public awareness on the economical use water will be carried out.

Water shortage prevails in Basra, southern Iraq, both due to the destruction of wetlands as well as dry periods. The salinization of water further exacerbates the problem. Iraq, in cooperation with Japanese companies, plans to purify salty water in what is called the Grand Basra Water project. It aims to provide the people of Basra with 666,000 cubic meters of water per day by building water transmission networks, storage tanks and a pipeline. Eighty percent of the Basra population will be able to access clean drinking water thanks to this project, which is expected to be completed by 2016.

Should all these plans aimed at improving the management and quality of water resources in Iraq and which will be carried out thanks to major investments be realized and successful, they are expected to be of major benefit to Iraq in terms of its effective use of water resources and alleviating the current water problem to a great extent.

"The water issue in Iraq and attempts to solve it", Tuğba Evrim Maden, 31/03/2013, online at: http://www.todayszaman.com/news-311203-the-water-issue-in-iraq-and-attempts-to-solve-it.html

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❖ Iraq seeks fair share of cross-border river water

Iraq long-term water strategy will be completed in 2014

Iraq aims to gain a greater share of river water flowing into the country from neighbouring states through mutual coordination over projects affecting water volumes, the chairman of the prime minister's commission, Thamir Ghadhban, told the MEED Iraq Energy Projects 2013 conference on 25 March. "This is a legitimate demand," he said.

Ghadhban added that talks have been held with neighbouring countries about water and that the most pressing issue is with Turkey. "Most of the time, they [undertake] projects without telling Iraq," he said.

The conference was told that Iraq's annual water needs averaged 55 billion cubic metres, but the flow of water in the Tigris and Euphrates rivers now averaged less than 25 billion cubic metres.

"Once we used to have to deal with floods, now we are dealing with droughts," Ghadhban said. "This is mainly due to climate change."

Mahdi al-Hamdani, deputy director of the Water Resources Ministry, said a comprehensive, long-term energy strategy is being prepared and should be finished in 2014. He said the ministry is concentrating on projects involving the harvest of surface water and is building more than 50 small dams to capture water. These will be used to provide irrigation water and, after processing, potable water.

Al-Hamdani said there were no plans for new major dam projects. Iraq's two biggest dams are the Haditha dam on the Euphrates, which has water storage of 8.5 billion cubic metres and the Mosul dam which has storage capacity of 11 billion cubic metres.

Ghadhban said a higher committee dealing with water issues chaired by the prime minister met for the third time last week. "The idea is to get all the stakeholders in the water sector working together," he added.

"Iraq seeks fair share of cross-border river water", 26/03/2013, online at: http://www.meed.com/sectors/water/iraq-seeks-fair-share-of-cross-border-river-water/3176131.article

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❖ Ahwazi: River Diversion Dries Up Land

The Iranian government's decision to divert the Karoun river adds to the numerous economic and environmental problems Ahwazi Arabs are already facing.

In 2011, the World Health Organization declared that Ahwaz City, the capital of the Khuzestan governorate, was the most polluted city in the world, with high asthma levels among children and teenagers due to industrial waste and emissions. Industrial pollution has damaged the natural environment, and marshland biodiversity is so seriously threatened that migratory birds have left the area. The Bandar Iman petrochemical complex is a major pollutant, and has created environmental devastation and low fish stocks, directly impacting the livelihoods of the Ahwazis.

Despite or more likely because of their region's strategic importance – most of Iran's oil wells are there – many Ahwazi Arabs have been forced to migrate. The Iranian government has pursued a policy of encouraging ethnic Persians to move in from other provinces. The confiscation of Ahwazi land has been so widespread that it has amounted to a government policy of dispossession.

The creation of the Arvan Free Zone in 2005 involved the mass expulsion of Ahwazis and the destruction of their villages. Iranian authorities have also followed a policy of ethnic segregation in Khuzestan, by constructing walls that separate Ahwazis from non-Arab districts and neighbourhoods. In urban areas, many Ahwazis live in shanty towns which lack plumbing, sewerage and safe drinking water.

In recent years, the Iranian government's decision to divert the Karoun River in Khuzestan to other drier regions has had further serious implications on the livelihood of Ahwazis. In May 2011, the director of the Ahwaz Human Rights Organization claimed that the diversion of waters from the Karoon and Karkhe rivers from Arab lands to ethnically Persian provinces of Isfahan, Yazd and Kerman represented a further erosion of Ahwazi farmers' economic security. The river is essential for agriculture and fishing, and is the largest source of income for them. The disruption of water sources will lead to a lack of safe drinking water, diseased fish and a decline in fish stock. River diversion erodes farmer's economic security.

The United Nations Environmental Programme (UNEP) has repeatedly warned the Iranian government of the disastrous environmental impact of diverting the Karoun River, but the Iranian government has rejected concerns. The governors of Khuzestan, Chahar Mahaal va Bakhtiari and

Lorestan provinces have also reportedly expressed their opposition to the diversion project. The project was due to start in 2011, but as a result of the protests the project was postponed.

"Ahwazi: River Diversion Dries Up Land", 26/03/2013, online at: http://www.unpo.org/article/15690

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❖ Did climate change cause the Syrian uprising?

Climate change played a role in the Syrian uprising, according to a new study. Due to the devastating drought and subsequent lack of food and water in rural areas, hundreds of thousands fled to the cities, where existing problems were only exacerbated by the influx of new mouths to feed, Kennedy writes.

A new study on the Arab Spring and Climate Change, finds evidence to suggest that it was not merely a coincidence that the Syrian revolution began just as the entire country was still struggling to survive after the worst drought ever recorded.

Between 2006 and 2011 nearly 60% of Syria experienced the worst drought ever, turning much of the country's farmland into barren dust bowls, and resulting in a series of severe crop failures.

Due to the devastating drought and subsequent lack of food and water in rural areas hundreds of thousands fled to the cities, where existing problems were only exacerbated by the influx of new mouths to feed.

As water became scarcer some farmers turned to groundwater supplies to continue to grow their crops, but this then caused ground water levels around the country to plummet, compounding the effects of the drought. (Related article: Syria Chemical Attack Raises Sinister Questions)
The water and food shortages then led to unrest and anger amongst the populace which eventually culminated in a revolution in 2011.

Since that time the conflict has created one million refugees, left more than 70,000 dead, and cost billions in destroyed homes, businesses, and livelihoods.

Syria is not the only country that has been badly affected by climate change.

A lack of rain in Libya led Moammar Gadhafi to develop an elaborate irrigation system to pump water from the Nubian Sandstone Aquifer System, water which has been stored there since the last ice age 40,000 years ago. The problem is that Egypt, Chad, and Sudan all share the water, so as it depletes tensions are bound to rise.

"Did climate change cause the Syrian uprising?", 25/03/2013, online at: http://www.csmonitor.com/Environment/Energy-Voices/2013/0325/Did-climate-change-cause-the-Syrian-uprising

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❖ Washington should embrace the 1997 U.N. Convention on Transboundary Rivers

Global water supplies create an increasing problem for growing population and the agriculture need to feed the additional people

WASHINGTON, March 29 (UPI) -- Washington's global footprint, particularly since the Sept. 11, 2001, terrorist attacks, U.S. diplomacy, frequently accompanied by military forces, has been greatly expanded in new regions, from North Africa through the Middle East to Central Asia.

One element that these regions share is that these arid regions are all "water stressed," presenting Washington with a new diplomatic conundrum: how to deal equitably with the competing claims of riverine states competing for limited aquatic resources.

As Washington's foreign priorities are primarily military and economic, local economic issues usually are of lesser concern. But a rising issue of local concern in regions where the United States is expanding its presence rarely merits a comment in Washington -- water.

The issue has raised concerns in other international forums, with the United Nations designating March 22 as the first "World Water Day" and 2013 as the "International Year of Water Cooperation."

Water is a finite resource and population increases are increasing pressures on its equitable distribution. One billion people have no access to fresh water and 2 billion lack access to basic sanitation.

Last September during a meeting of 40 former leaders in Oslo, Norway, former Canadian Prime Minister Jean Chretien said the world needs to find the equivalent of the flow of 20 Nile Rivers by 2025 to grow enough food to feed a rising global population and avoid conflicts over water scarcity.

Accordingly, on World Water Day the United Nations issued a first working definition of water security, highlighting sustainable supplies to ensure human well-being, avert water-related disasters, conserve ecosystems and aid economic and social development.

Ten years ago, former U.N. Secretary-General Boutros Boutros-Ghali observed, "Water will be more important than oil this century." Given this rising importance, the possibility of conflict over the precious resource is also rising.

The problem is most acute in transboundary river basins, where a number of countries share a river course. Among the most visible of these are the Nile River basin, which encompasses 11 countries; the Tigris-Euphrates, which originates in Turkey before flowing through Syria and Iraq to join as the Shatt al-Arab before debouching into the Persian Gulf; and the Amu Darya and Syr Darya, which arise in Kyrgyzstan and Tajikistan before flowing westward through Uzbekistan, Kazakhstan and Turkmenistan before reaching the Aral Sea.

Given rising U.S. diplomatic and military presence in Africa, the Middle East and Central Asia, the question for U.S. policymakers then, if whether to favor the interests of a particular nation in one of these contested waterways or seek a regional solution? For in many of these basins, the United States has clear favorites along with those nations with whom it has chillier relations. While Egypt, the last nation the Nile transits, is a U.S. ally, upstream neighbor Sudan is most certainly not. Father east, in the Tigris-Euphrates basin, Turkey is a strong U.S. ally but the same cannot be said of downstream neighbors Syria and Iran.

In Central Asia the United States is on relatively equitable terms with the five "Stans" -- Kyrgyzstan, Tajikistan, Uzbekistan, Kazakhstan and Turkmenistan -- but the United States must be seen to be evenhanded in approaching the sensitive issue of transboundary rivers. The 1,500-mile-long Amu Darya and the 1,380-mile Syr Darya, whose combined flow before massive Soviet agricultural projects were implemented, equaled the Nile.

The rivers together contain more than 90 percent of Central Asia's available water resources but upstream states are interested in building massive hydroelectric projects that the downstream countries fear will lessen water flow. Kyrgyzstan wishes to build the Kambarata hydroelectric cascade, Tajikistan the massive Rogun dam, which downstream Uzbekistan, Kazakhstan and Turkmenistan all fear could damage their agriculture.

It isn't a problem that U.S. diplomacy can ignore forever -- worldwide there are 260 international river basins, covering nearly half of the Earth's surface, along which 40 percent of the world's population lives.

Fortunately for Washington a diplomatic solution exists, should it wish to avail itself of a key piece of U.N. legislation -- the Convention on the Law of the Non-Navigational Uses of International Watercourses, adopted by the U.N. General Assembly in 1997 after 27 years of negotiation, whose Article 5 states, "Watercourse States shall in their respective territories utilize an international watercourse in an equitable and reasonable manner."

Rather than attempt to craft endless bilateral treaties with riverine states, which is certain to cause additional diplomatic stresses in such watercourse basins, the United States should make it an integral element of its foreign policy to urge all disputing states to ratify and adhere to the convention's terms as a basis of negotiations.

And there are indications that Congress is beginning to take an interest in water issues. On March 13 a briefing was convened to look into water resource management issues in Central Asia. It was led by U.S. Rep. Dana Rohrabacher, R-Calif., chairman of the Europe, Eurasia and Emerging Threats Subcommittee of the House of Representatives.

Highlighting the importance in giving Washington an in-depth view of the region's water issues, among those speaking were Uzbek Minister of Foreign Affairs Abdulaziz Kamilov; Uzbek Senate Committee on Foreign Affairs chairman Sadiq Safayev; Deputy Speaker of the Uzbek Legislative Chamber Bori Alihanov and Deputy Minister for Agriculture and Water Shavkat Khamraev.

As the United States downsizes its military footprint in Afghanistan, other regional issues will inevitably arise and if the United States makes supporting the U.N. Convention on the Law of the Non-Navigational Uses of International Watercourses an integral part of its foreign policy, its impartiality will win it friends not only in Central Asia, but throughout the world's arid regions.

Such a policy will still have obstacles -- as if underscoring the intricacies of aquatic issues, the convention has yet to enter into force, as to enter into force, it requires ratification by 35 countries but

only 29 have done so. While Uzbekistan has ratified the convention, it is the only Central Asian country to do so.

If the United States wishes to retain its influence in Africa, the Middle East and Central Asia, its policies must be seen to be evenhanded, and given the rising importance of water, ratifying the U.N. convention and then promoting it as a model for negotiation would be a good place to start, as far from raising tensions, the convention can only ease them.

"Washington should embrace the 1997 U.N. Convention on Transboundary Rivers",29/03/2013, online at: http://www.upi.com/Top_News/Analysis/Outside-View/2013/03/29/Outside-View-Washington-should-embrace-the-1997-UN-Convention-on-Transboundary-Rivers/UPI-43961364530560/

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❖ A drier Middle East means future water wars

Last week, I highlighted a new study that found evidence that water shortages helped fuel tensions that led to the ongoing Syrian revolution.

Last month, a report from The American Geophysical Union found supporting evidence that water will be the source of more conflict in the coming years.

UPI reports:

The AGU study, published in its journal Water Resources Research Feb. 15, showed that freshwater reserves in Turkey, Syria, Iraq and Iran along the Euphrates and Tigris rivers that rise in Turkey and flow southward into the Persian Gulf have lost 144 cubic kilometers of the total stored fresh water in 2003-09.

That, the study says, constitutes the second fastest loss of groundwater storage after India.

That volume of water, according to UPI, is equivalent to the water needs of 100 million people and "fresh water is almost the size of the Dead Sea shared by Israel and Jordan."

Because of the climate change-fueled droughts plaguing the region, rain, which is already rare in the Middle East, is coming less frequently, which means more and more fresh water is being pumped from underground aquifers.

The Nubian Sandstone Aquifer System, which is shared by Libya, Egypt, Chad and Sudan, for example, contains water left from the last ice age, but scientists estimate it could be depleted in as soon as fifty years.
Something to think about as we continue debating water-intensive extraction methods for natural gas and tar sands oil.

"A drier Middle East means future water wars", 25/03/2013, online at: http://www.treehugger.com/clean-water/drier-middle-east-means-future-water-wars.html

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❖ Israel appropriates 82% of Palestinian water

A Palestinian water expert has criticised the 1993 Oslo Peace Agreement signed between the Palestinians and the Israelis for giving Israel the right to control Palestinian water.

The Director of the Association of Palestinian Hydrologists, Abur-Rahman Al-Tamimi, said: "The Oslo Agreements gave control over basic water resources to the Israelis. The role of the Palestinian side was limited to serving it."

During a discussion panel in Ramallah, Al-Tamimi said: "The problem emerged when the Palestinians agreed to postpone the issue of water to final status negotiations. They did not even discuss the issue of irrigation water." He said the Israelis steal about 82 per cent of Palestinian water.

Al-Tamimi severely criticised the "Palestinian negotiators who ignored the rights of the Palestinians regarding water."

At the same time, he said: "The agreements laid down the right of the Israelis to the water of the River Jordan. It also laid down their rights to veto against any future talks regarding it."

The Palestinian expert also added: "The agreements included the rights of the Israeli to control all Palestinian water wells."

Regarding the future of Palestinian water, Al-Tamimi said: "As the Israelis completely control Palestinian water resources, future conflict in the region will be over water resources."

"Israel appropriates 82% of Palestinian water", 25703/2013, online at: http://www.middleeastmonitor.com/news/middle-east/5574-israel-appropriates-82-of-palestinian-water

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❖ Palestinian Authorities Criticize Israeli Control of Water Resources

GAZA — Two Palestinian agencies last week criticized Israel's control of Palestinian water sources, saying the Israeli government had restrict Palestinian access to water, denied approval of new well development and reneged on international water agreements.

In a joint statement issued to mark World Water Day on March 22, the Palestinian Central Bureau of Statistics and the Palestinian Water Authority said that Israel controls the majority of the shared renewable water resources, which total 750 million cubic meters a year. The Palestinian territories receive only 120 million cubic meters, they said.

"The situation of water in Palestine differs from other countries due to the presence of the Israeli occupation that controls all water resources and denies Palestinians their water rights stipulated in Oslo Agreement II of 1995," The Jerusalem Post quoted the Palestinian Water Authority as saying.

Director of the Association of Palestinian Hydrologists Abur-Rahman Al Tamimi also criticized the water-sharing aspect of the Oslo Agreements last week.

"The Oslo Agreements gave control over basic water resources to the Israelis. The role of the Palestinian side was limited to serving it," Middle East Monitor quoted him as saying.

"The problem emerged when the Palestinians agreed to postpone the issue of water to final status negotiations. They did not even discuss the issue of irrigation water."

Al Tamimi also accused Israel of stealing about 82 percent of Palestinian water. He blamed "Palestinian negotiators who ignored the rights of the Palestinians regarding water" for this.

He said that the Oslo agreements give Israel the right to the Jordan River's waters, and veto power over any future discussion about the issue.

"The agreements included the rights of the Israeli to control all Palestinian water wells. As the Israelis completely control Palestinian water resources, future conflict in the region will be over water resources," he said.

The Israel Water Authority responded to the accusations, saying: "The State of Israel meets all its obligations under the agreement and among other things even supplies the Palestinians with 22 million cubic meters beyond its obligations and at a special price."

It said the Palestinians are the ones who do not meet their obligations under the Oslo agreements.

Palestinians drill wells without the require approval from the Joint Water Committee, and the Palestinian Authority does not properly treat its wastewater; as a result, groundwater is being polluted, according to the Israel Water Authority.

The agency added that the data provided by the two Palestinian agencies are inaccurate. There is only 680 million cubic meters of water in the shared aquifer, and the Palestinians get 196 million cubic meters of this under the Oslo Accords, as well as an additional 31 million cubic meters at a special price, it said.

In their statement, the Palestinian agencies said Israel is not accounting for "future needs," which have grown since the agreements were signed and will continue to grow.

"Palestinian Authorities Criticize Israeli Control of Water Resources", 27/03/2013, online at: http://www.ooskanews.com/daily-water-briefing/palestinian-authorities-criticize-israeli-control-water-resources_26894

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❖ PA accuses Israel of blocking water resources

Israel Water Authority says Israel is supplying above and beyond international requirements.

Palestinian government bodies slammed Israel for restricting access to water resources and denying them new water wells, in addition to allegedly reneging on an international water agreement.

The Palestinian Central Bureau of Statistics (PCBS) and the Palestinian Water Authority (PWA) jointly timed these claims for World Water Day, which was marked on Friday.

While Israel controls the majority of the shared renewable water resources of 750 million cubic meters annually, the Palestinians only receive 120 m.cu.m., the PCBS and PWA said. Blaming Israel for the Palestinian water shortage, the authorities blasted their neighbor for providing 75 m.cu.m. of water each year to its settlements, of which 44 m.cu.m. comes from wells controlled by Israel in the West Bank, according to authorities.

"The situation of water in Palestine differs from other countries due to the presence of the Israeli occupation that controls all water resources and denies Palestinians their water rights stipulated in Oslo Agreement II of 1995," the Palestinian Authority organs' said.

Although water is priced at NIS 2.7 per cu.m. in the West Bank and NIS 2.4 per cu.m. in Gaza, households not connected to the national water supply must pay much higher prices to private tanker suppliers, the report said. Approximately 91.8 percent of houses in Palestinian areas are connected to the water network, with 89.4% of Palestinian housing units in the West Bank connected, and 96.3% in Gaza. The remainder of the houses, which are not connected to the water supply, must pay up to NIS 24.40 per cu.m. for their water, they said.

"These sources of supply are extremely expensive and there is no guarantee of the quality of water provided," the groups said.

Water and sewage in the West Bank is regulated by Article 40 of the Oslo II Accords, an interim agreement that was signed by Israel and the PLO in September 1995. In addition to establishing a Joint Water Committee with equal representation from both sides, the agreement stipulates the

division of the mountain aquifer and the mode of management for each of the parties until a final settlement is reached, the Israel Water Authority explained.

"The State of Israel meets all its obligations under the agreement and among other things even supplies the Palestinians with 22 m.cu.m. beyond its obligations and at a special price," the Israel Water Authority said.

The PCBS and the PWA argued, on the other hand, that Israel was not sharing the major water basins in the region and was not accounting for "future needs" of water, which have grown since the signing of the Oslo II agreement.

The Israel Water Authority said, however, that Israel more than complies with its obligations under the agreement, and it is the PA that does not. Palestinians have drilled a vast array of wells without the required approval of the Joint Water Committee – with about 300 such wells known to the Israeli contingent. In addition, the PA largely does not treat its waste-water, and the Palestinian sewage is penetrating and polluting the groundwater, the Israel Water Authority said.

The data provided by the PCBS and the PWA is simply inaccurate, it stressed. Rather than containing 750 m.cu.m. as claimed, there are 680 m.cu.m. of water in the shared aquifer. Oslo II provides the Palestinians with 196 m.cu.m. of this water, as well as an additional 31 m.cu.m. for sale at a special price, the Water Authority said.

Although the State of Israel brings in about 63 m.cu.m. of water from within the Green Line to Judea and Samaria annually, the Jewish settlements in the West Bank only consume about 49 m.cu.m. of that, the Water Authority stressed.

Tariffs charged by the PA for water are much lower than Israeli rates. Residents of the West Bank cities of Ariel and Ma'aleh Adumim, for example, pay nearly double the prices that Palestinians do, the Water Authority said.

While the Palestinian WAFA news agency reported that 91.8% of Palestinians are connected to the national water system, Israeli Water Authority officials said that the number is actually 95.2% according to data released to them by the PWA. For the sake of comparison, only about 10% of the

Palestinian population was connected to the water system in 1967, then under Jordanian control, the Water Authority said.

"The division of water and sewage prices with the Palestinian Authority is the responsibility of the Palestinian Authority and its management," the Israeli Water Authority added.

Regardless of who is to blame for water shortages, one water expert stressed that the area west of the Jordan River has one water system.

"The drops of water, exactly like birds, don't know any borders," said Prof. Eliyahu Rosenthal, a hydrogeologist and hydrogeochemist from Tel Aviv University's Porter School for Environmental Studies and geophysical, atmospheric and planetary sciences department. "Water flows across borders."

"Who has more rights? Those who are the upstream riparians or the downstream riparians?" asked Rosenthal, who was involved in the 1995 water negotiations. Rather than arguing over exact numbers, more partnership concerning the water resources is needed from both sides, he said.

"The thing is what is absolutely needed is complete cooperation in development and management of common water resources," he said. "There is no way out of it."

About 20 or 25 years ago, Palestinian water resources began undergoing natural salinization because of rising brines (salty water), something that Rosenthal said he alerted his Palestinian colleagues to after monitoring water chemistry there. It took some time, however, before the Palestinian authorities began managing the situation properly.

Tight cooperation and common research ventures are therefore critical, Rosenthal said.

Friends of the Earth Middle East, an environmental NGO with staff in Israel, the PA and Jordan, responded to the Palestinian allegations by saying that now is the time to move forward with Israeli-Palestinian water negotiations, particularly in light of US President Barack Obama's visit to the region. "We believe that the issue of water can no longer and need not wait," the organization said.

"Under the interim water arrangements of 1995 Palestinians fail to receive an equitable share of shared waters while the management structure created under Oslo fails to advance sustainable water management practices. Moving forward on a final agreement on water can no less importantly build the needed trust to help move forward on all other peace process issues," the NGO said.

"PA accuses Israel of blocking water resources", 24/03/2013, online at: **http://www.jpost.com/Sci-Tech/Article.aspx?id=307594**

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❖ Israel Refutes Palestinian Accusations Over Water

While the Palestinians on Friday blamed Israel for the Palestinian water shortage, the Israel Water Authority responded that Israel more than complies with its obligations under the [Oslo] agreement, and it is the PA that does not. "The State of Israel meets all its obligations under the agreement and among other things even supplies the Palestinians with 22 million cubic meters beyond its obligations and at a special price," the authority said.

Palestinians have drilled at least 300 wells without the required approval of the Joint Water Committee. In addition, the PA largely does not treat its waste-water, and Palestinian sewage is penetrating and polluting the groundwater. Furthermore, water rates charged by the PA are much lower than Israeli rates. Israeli residents of the West Bank cities of Ariel and Ma'ale Adumim, for example, pay nearly double the prices that Palestinians do.

"Israel Refutes Palestinian Accusations Over Water", 31/03/2013, online at: http://matzav.com/israel-refutes-palestinian-accusations-over-water

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❖ No solution in sight for Gaza's severe water crisis

GAZA, March 29 — The Gaza Strip's ongoing water crisis looks unlikely to be solved any time soon with pollution affecting 95 percent of the aquifer in the Palestinian coastal enclave, Palestinian and international experts said on Friday.

Husam Zaqout, the Gaza-based expert of environment, told a local workshop marking the International Water Day that the groundwater in the Gaza Strip "is polluted to different degrees by toxic organic and non-organic materials."

He warned that the water pollution and shortage may develop into a full-scale humanitarian crisis sooner than people expect.

Since Islamic Hamas movement took control of the Gaza Strip in 2007, Israel has been imposing a blockade against the Palestinian enclave. The embargo makes it difficult to build an efficient water sanitation infrastructure for the rapidly growing population.

"Water shortage in Gaza climbed to 80 million cubic meters," said Zaqout, adding that the rocks in the aquifer are gradually eroding, giving rise to the amount of salt and pollutants in the water it contains.

Monzer Shublaq, director general of the Gaza waters authority, told Xinhua that another factor behind the water crisis is Israel' s abuse of Gaza's groundwater.

Shublaq accused Israel of establishing dozens of huge water pumps along its border with Gaza. He said these pumps have taken an excessive amount of groundwater from Gaza's aquifer, drawing in salty seawater and polluted water to fill up the hole.

Echoing Shublaq's opinion, a report prepared by an Arab League committee said Israel is using 90 percent of the Palestinian territories' water while the Palestinians are only using 10 percent.

The water issue is one of the six major permanent status issues, which also include issues of settlement, refugees, Jerusalem, borders and security.

"A German study two years ago showed that the samples of Gaza drinkable water contained a high percentage of toxic oxidized nitrates that could damage the health of young children," said Shublaq, warning that within a few years, the Gaza Strip will face a real, crucial humanitarian crisis.

Jane Ghoff, the special envoy of UNICEF said the biggest problem that confronts the Gaza Strip "is the bad water that can't be used by humans." She told a news conference here that saline and waste water that has infiltrated Gazan aquifer "is so dangerous that it directly harm the population."

She noted that the Gaza Strip is currently suffering from a severe shortage in water, which see each individual in Gaza only get 90 liters per day, far below the level of 100-150 liters set by the World Health Program.

Majdi Duhair, a director in the Hamas-run ministry of health told Xinhua that the chemicals in Gaza's water aquifer is very poisonous, adding that such elements can cause diseases that harm kidneys and livers.

"No solution in sight for Gaza's severe water crisis", 30/03/2013, online at: http://www.nzweek.com/world/no-solution-in-sight-for-gazas-severe-water-crisis-57047/

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❖ PM:" Jordan shall not be dragged into regional war over Syria"

Ensour: Jordan succeeded in not drowning in "Syrian Crisis"

* Government not failing or lacking in handling refugee issues

* 1,000 security personnel to maintain order in Zaatari camp

By Wael Al Jaraisheh

AMMONNEWS - Prime Minister-designate Abdullah Ensour said on Thursday that Jordan has managed to successfully evade "drowning in the puddle of the heartbreaking Syrian crisis."

In his address before the Lower House of Parliament, Ensour stressed that the Jordanian leadership and government managed to handle the Syrian crisis domestically with the least "humanitarian, national, and moral" losses.

"Jordan does not wish to be part of a regional war," Ensour stressed, noting that Jordan is careful not to get dragged into the crisis.

On the Syrian refugee crisis, Ensour stressed that no country has the right to turn back refugees of war, "this is the law," stressing that "the refugees are not fighting forces, they are our people of Horan."

Over 120 Members of the Lower House spoke on Thursday during a general session to discuss the refugee crisis.

Ensour noted that the Zaatari refugee camp in Mafraq is built on 8500 dunums, 6700 of which belong to the Armed Forces and the remainder is rented from Industrial cities by the Hashemite Charitable Organization for a duration of one year to maintain the camp.

Ensour responded to MPs questions on the water resources crisis, noting that the Zaatari camp is above a 100-meter underground water pool that provides over 170 million square meters of water

annually.

"This amounts to double the capacity of the water basin, which is being depleted because of increased water pumping," Ensour said about the water reservoir that feeds Mafraq, Zarqa, Irbid, and parts of the capital Amman.

On environmental pollution, Ensour said that the water reservoirs and basins are monitored and no pollution has been detected, meanwhile noting that the Jordanian government is negotiating with UNICEF to finance sewage water transport pipes to the Mafraq water treatment facility at the cost of JD 16 million.

On the second biggest refugee camp opened in Jordan, Ensour said that "Mreijib el Fhoud" was opened in Al Azraq district and is managed by the United Arab Emirates.

Ensour noted that the Azraq Water basin production reaches 27 million annually, noting that the underground water is being depleted quickly from the basin because of increased water needs in the kingdom with the arrival of over half a million Syrian refugees.

Ensour noted that the Jordanian authorities are preparing to set up a third refugee camp in Al Azraq.

"We are facing a humanitarian crisis," Ensour told MPs, noting that thousands of refugees enter Jordan on a daily basis. Ensour stressed however that the Jordanian Armed Forces are working around the clock to ensure safe passage to refugees over the 380 km long border with neighboring Syria.

"No country has the right to turn down accepting refugees of war for not carrying documentation, we view the refugees entering Jordan as brothers and family, they are the people of Sham and Horan," Ensour said, stressing that Jordan has a record of accepting refugees "from the east and west."

On the security concerns at refugee camps, Ensour said that a higher committee was formed to administer Syrian refugee camps and it includes leaders of security forces, the military, and ministers

who meet regularly.

"We are handling the Syrian refugee case with complete awareness of all its details, the government is not failing or lacking in administering this case," Ensour said.

In response to MPs who called for setting up secure areas inside the Syrian territories for refugees, Ensour said that the security conditions in neighboring Syria does not facilitate for such a proposal, but stressing that Syrians in Jordan are in a safe area provided with adequate services.

On Arab and International aid to Jordan in regards to refugees, Ensour said that Kuwait, Saudi Arabia, and UAE delivered half of the international aid promised so far. Jordan's share of international aid reached $500 million for the upcoming six months, Ensour said, noting that the aid is both in funds and in material goods needed by refugees.

Qatar provided refugees with tents and blankets, among other goods, and announced its intention to send caravans to house refugees, Ensour said, noting that the promised aid has not reached Jordan yet but noted that Qatar sent a team to observe the needs on the ground.

"Gulf nations provided aid to set up hospitals, tents, and medical clinics at Mreijib El Fhoud camp being administered by the UAE and houses only 5,000 refugees.

The European Union and International NGOs also provided material aid to pump water and provide medical services, "but Jordan still carries the heaviest burden," Ensour said, while noting that the cost of administering the camps is shared by UNICEF, UNHCR, and other International organization.

The Lower House of Parliament on Thursday resumed discussing the implications of the Syrian Crisis on Jordan, with MPs calling for forming a parliamentary committee to follow up on Syrian refugee affairs, while other MPs called for forming a ministry to deal with crises and emergency cases.

The lawmakers called on the government to intensify its efforts in pressuring the international

community to partake in the humanitarian responsibility towards Syrian refugees, and called for holding an international conference for donor countries aimed at raising funds to continue hosting the increasing numbers of Syrian refugees in Jordan.

On the political level, MPs questioned the government's political efforts on the Arab and international level to end the violence in Syria, warning of the dangerous implications of a Syrian spillover "that poses serious dangers to Jordan."

A number of MPs called on the government to stop the influx of refugees into the kingdom and limit entry to humanitarian cases, they also called for halting all treasury funds being spent on refugee camps to pressure the international community to step up in aiding the refugees.

MPs voiced concerns over smuggling refugees out of camps and into Jordanian towns and cities, and warned against allowing Syrians jobs in the Jordanian market which is already suffering from high unemployment among Jordanian citizens.

The lawmakers also voiced concerns over the increased pressures on healthcare, energy, education, and water sectors as a result of increased influx of refugees, "these are dangers that threaten Jordan's security and the government must find alternative plans to deal with such challenges," one MP said.

The MPs questioned the government on the condition of communicable diseases inside refugee camps and the measures taken to contain them and prevent their spread outside the camps.

They criticized the results of the Arab Summit held in Qatar earlier this week for failing to recognize Jordan's role in hosting refugees, and the summit ending without any additional promises of financial aid to Jordan to enable it to continue providing services to refugees amid the difficult economic conditions facing the nation.

The MPs called for adopting an initiative that calls on all conflicting parties in Syria to sit on a negotiation table to end the violence and escalating bloodshed in the neighboring country. They called on Jordan to adopt a clear strategy in dealing with the Syrian crisis on the Arab and

international level.

The MPs praised the role of security apparatus, the armed forces, and intelligence services in monitoring the camps and discovering dangerous sleeping cells that target Jordan's security inside the camps.

The House decided to prepare a list of recommendations and proposals voiced by MPs during the general session to the government, and following up on the government's performance regarding the MPs proposals and questions.

“PM:" Jordan shall not be dragged into regional war over Syria"”, 28/03/2013, online at: http://en.ammonnews.net/article.aspx?articleNO=20543

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❖ 'Regional council to regulate shared water resources'

ISTANBUL — Water experts and policy makers from five regional countries are in the process of setting up a new council to regulate sharing of trans-boundary water resources.

The council, comprising high-level members from Iraq, Jordan, Lebanon, Syria and Turkey, will draft policies for regional water and for creating cooperation between countries that share joint water resources.

Setting up the council was one of the recommendations of the "Blue Peace: Rethinking Middle East Water" report, which seeks to turn water from a cause of conflict into a source of peace and cooperation between countries in the Middle East.

"The council will be tasked with drafting cooperation policies, studying the water situation of each country and proposing mechanisms to improve it and overcome water-related challenges," Maysoon Zu'bi, a member of the Blue Peace core group, told the press.

She made the remarks on the sidelines of the "Blue Peace in the Middle East: International Media Conference", which was held in Istanbul last week.

The conference was co-hosted by the Turkish Review journal and the India-based think tank Strategic Foresight Group (SFG), in partnership with the Swedish International Development Cooperation Agency.

The Swiss Agency for Development and Cooperation and Bahçe?ehir University also helped host the event.

The Blue Peace report, launched in 2011 by SFG, proposes that water in the Middle East can be used as an opportunity for achieving peace and development rather than be treated as a problem and a source of conflict.

The report treated countries covered by the study in distinct circles of cooperation; the first encompasses the northern countries, Turkey, Syria, Iraq, Lebanon and Jordan, while the second includes Israel and the Palestinian territories.

The report's authors suggested creating a cooperation council for the northern countries tasked with standardising measurements of quality and quantity of water resources, combating climate change and drought, and promoting research in environment-friendly and energy-efficient water technologies among other tasks.

In her address at the conference's inaugural session, HRH Princess Sumaya, president of the Royal Scientific Society, said the Blue Peace project seeks to ensure a safe and equitable future for the region, noting that the initiative is admirable and timely as it aims at saving the region's people from a "dangerous and uncertain future".

"We are meeting to highlight a process of depletion and unjust distribution that is well advanced, added the princess, who represented HRH Prince Hassan at the event.

It is estimated that in just 20 years, some 300 million people in the Arab world will live under conditions of water scarcity, with an average of about 500 cubic metres of water per person per year, which is half the threshold of 1,000 cubic metres per capita per year that is set as the demarcation line of water poverty, she added.

"Water scarcity is perhaps our region's most pressing challenge, yet it gets little diplomatic attention," Princess Sumaya underscored, noting that the region can overcome such challenges if countries act in conjunction with their neighbours and with the support of the international community.

"… Such are challenges that only science empowered by policy can solve, therefore we must engage our scientists and researchers with policy makers and civil society, so they become part of a third-sector solution to a universal problem," the princess said.

Local and international academics, politicians, analysts and journalists participated in the two-day conference to tackle the issue of water in the Middle East, with participants warning of potential water shortage and stressing necessary measures to avoid drought.

Turkish Review Editor-in-Chief Kerim Balci said the event sought to prepare the ground for sharing experiences in managing regional water resources through cooperation.

Underscoring the media's role in promoting and spreading knowledge and experiences regarding the issue of water management, Balci said they aim to create awareness and sensitivity in the media about the water issue, which he described as the most critical issue for the region's future.

"'Regional council to regulate shared water resources'", Jordan Times, 28/03/2013, online at: http://mideastenvironment.apps01.yorku.ca/?p=7033

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❖ Israel Eyes The Mediterranean Sea Like An Eagle Waiting For It's Next Victim

Did you ever take a shower in Singapore? I don't mean one of those tropical showers pouring down from the tropical skies almost every day, but an indoor shower in a nice bathroom. In Singapore, everything is brightly clean; you can shave using the faucets as mirrors. Unlike other tropical destinations, hot water is always available. After a minute or two, one feels an odd tingling on the skin. Yet, there weren't any bedbugs in the clean sheets; they couldn't have survived all the way from…Carefully tasting a drop, one finds that it is acidic. Singapore uses ion-exchange desalination technologies; to the bathrooms it supplies slightly cheaper water, which has been left acid and tingling.

Singapore and Israel are close allies; I have often commented on the military links between the two island states. Israel may not be a physical island, but it is an isolated culture, with much in common with its Eastern Asian friend. The links don't end at the missiles level, both countries are water-thirsty. Singapore solved its problems with large desalination plants; Israel is working on that and on the verge of taking strategic decisions.

Water has been always a strategic asset in the Holy Land. The foundation of the State of Israel wouldn't have been possible without the establishment in 1937 of "Mekorot" ("Origins" in Hebrew), the national water company. The transfer of water from the fertile north to the semi-desert central plains allowed the creation of Gush Dan (Dan's Block), the large metropolis at Israel's center with Tel Aviv at its heart.

In the first two decades of the state, "HaMovil HaArtzi" (The National Water Carrier) established a fast water-route between the Sea of Galilee (a lake), the Central Plain, Jerusalem (via Burma Road) and the Northern Negev Desert. It worked for a few years, but the level of the Sea of Galilee dropped dangerously. In order to save this vital lake, the amount of waters that was allowed to flow southwards through the Jordan River was severely limited.

I grew up next to this river, yet, seeing it amounted to a minor miracle. This excessive exploitation was one of the causes for the dry up of the Dead Sea southern part (see map below); if no solution is

found to this problem the sea level of Earth's lowest point will drop to minus 550m in the following 100 years.

Several projects exist, but they are expensive and may cause other environmental problems. In the future, one of them would be implemented to save lucrative Israeli and Jordanian bromine derivative industries, but this topic belongs to a future article. Further drilling of the Mountain Aquifer is forbidden by the 1995 Interim Agreement, which is part of the Oslo Peace Process. In the late 1990s, Israel started exploring the desalination options for the Mediterranean Sea.

Israel's Desalination Plants

An Urgent Phone Call to Marie Antoinette

Considering the ugly stereotype assigned to French people by Israelis, one must wonder at the strategic help this country has given to Israel along the years. After all, they can't claim ignorance; many French live in Israel, including in the West Bank (France Fortifies Israeli Settlements). France provided Israel with the initial technologies for its nuclear program; this option was promoted by Shimon Peres who discarded their independent development by the Weizmann Institute. In the 1990s, Israel remembered this and chose France as one of the desalination project developers.

Unlike the Israeli obsession to give the Eastern Mediterranean Gas Fields as a gift to the USA, the desalination project was freer, with a limited international bid taking place. The Finnish Kemira, represented by the Jacobson Agencies was the underdog, and lost all bids and attempts. The winner was French Veolia; its predecessor Compagnie Générale des Eaux (CGE) was created by an Imperial decree of Napoleon III.

The first experimental plant in Israel was opened in Eilat in 1997. The first commercial plant opened in Ashkelon in 2005. In 2013, Israel has seven desalination plants. The one in Hedera (see picture above) is a seawater reverse osmosis (SWRO) desalination plant; it is the largest of its kind in the world. With the expansion of the projects, the price of desalinated water is dropping; by the end of this year it is expected to reach $0.50 per cubic meter. Two other plants are expected to open this year, in Ashdod and Soreq (next to Israel's research nuclear reactor), bringing the use of this water to over 10% of the total. The latter project is owned by a billionaire from Hong Kong, Li Ka-Shing. However, Israel is stuck.

Israel's Eugenics Program: Dr. Mengele Blues

The USA is practically empty; during my trips there, even what Americans call cities looked to me like a vast emptiness, a long series of large and quite empty parking lots. America is so empty that Americans consider China a densely populated country. That is true along China's coast, but take a railway trip from Shanghai to Kashgar—across the country—and most of the time only a vast desert would be seen from the train windows.

Israel and Palestine are populated beyond Western comprehension; I won't cite density numbers here because that would imply recognizing Israel's borders. The point is that there is no space left; it is so crowded that certain cemeteries bury the dead in multi-level graves. The Mediterranean Eastern coast from Gaza to Lebanon is home to almost ten million people, many military bases and countless, bulky civilian infrastructures. In other words, there is no place left for additional desalination installations.

The IDF is moving much of its intelligence and training infrastructure to the Negev. The Intelligence Corps will move to the Likit Area, east of Beer Sheva, and west of the Shoket Junction. The Military Intelligence School will move to the Negev Junction. Technological intelligence units (mainly the SIGINT 8200 base at Glilot) would be relocated near the town of Omer. The last step includes the move of Mamram—the IDF computing unit—to a location adjacent to the Negev University in Beer Sheva.

All these would be transferred by 2017. The massive complex of military bases at Tzrifin—a military area dating back to the British Mandate—will move to the new City of Training Bases being built south of Beersheba until 2014. Even after this radical change in the IDF deployment, there would be a lot of space controlled by the army within Israel's largest metropolitan area. Yet, the freed land would be used for residential and commercial areas, which can pay much more than desalination plants. Israel needs room for them, new airports and military bases that must be kept in the center.

In June 2012, the Cabinet—the Israeli government committee of senior ministers—approved a feasibility study on the construction of three artificial islands in front of Tel Aviv, a plan dating back to the 1990s. In contrast to the original residential project, these islands would contain airports, large industrial facilities, power stations, military bases, and further desalination plants.

They would also ease Israeli military control of the gas fields disputed between this country and Lebanon. This idea has problems. Anybody who has splashed in the sea next to Tel Aviv knows that it goes deep fast, and features strong undercurrents. The seabed rapidly drops over 2km, setting sharp limitations to engineering projects. Yet, Israel is thirsty and has never missed an opportunity to advance the idea of a Greater Israel; the Mediterranean Sea would be its next victim.

"Israel Eyes The Mediterranean Sea Like An Eagle Waiting For It's Next Victim", 30/03/2013, online at: http://www.spyghana.com/israel-eyes-the-mediterranean-sea-like-an-eagle-waiting-for-its-next-victim/

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❖ This Desalination Infographic is Like Taking Climate Change Advice from Shell

If Shell were to design a clever infographic with a bunch of facts, it would probably highlight the amount of fossil fuels the United States imports from "dangerous" foreign countries, how expensive those imports are, and how the company could save the world if only they had unrestricted access to the Arctic's fossil fuel reserves – for example.

Now read this infographic from Energy Recovery, a company that provides technology for the fossil fuel industry, that attempts to persuade us that desalination is a panacea for chronic water shortages. Granted, more than one third of the world's population lacks access to decent sanitation. And yes, our planet is comprised of 96.5 percent salt water.

But can we rely on a company whose bottom line depends on selling desalination technology to give us the straight scoop on the detriments of desalination?

Desalination is a necessary evil

Most experts see desalination as a necessary evil that should be used sparingly. In addition to being energy intensive, using at least three times as much energy as that required to treat freshwater, desalination processes pump brine back into its source, disrupting the marine ecosystem.

Yet Energy Recovery pitches the idea as the best thing to happen to humanity. And of course they would. This infographic – which points out that 780 million people have zero access to safe drinking water – is little more than a marketing strategy for their brand.

To their credit, they do mention the need to improve energy recovery systems and boost the efficiency of current desalination techniques, and they also point out the importance of greater environmental stewardship, but the data does not give proper weight to the downside of using desalination.

How many plankton, fish eggs and larvae are sucked into and spit out of pipes, for example, as the water is pulled in? What kind of ecosystem damage has already occurred because of unbalanced salt concentrations mixed with chemicals used to treat seawater, and how will that damage increase as more plants are brought online?

What kind of carbon emissions will be pumped into the atmosphere if by 2017 we produce 149.8 billion liters of fresh water using desalination technology as Energy Recovery so enthusiastically predicts?

Water conservation first

Before we throw our weight behind Energy Recovery's advanced pump and turbine technology, doesn't it make sense to first underscore the importance of water conservation, more efficient irrigation, fair distribution of water rights, and better treatment of existing water resources?

Of course it would be criminal to completely abandon desalination where nations have little to no freshwater – like the United Arab Emirates, Saudi Arabia, Qatar and other Gulf countries. Or Jordan and Israel.

But there has to be an even more environmentally honest approach to the technology. Masdar is currently embarking on a project to test renewably-powered desalination, which could drastically reduce energy consumption and carbon emissions. And better uses for the salty brine byproduct also need to be devised.

This infographic is undeniably eye-opening, as it incorporates disturbing facts about water scarcity. But desalination is not as clear cut a solution as this company makes it out to be.

"This Desalination Infographic is Like Taking Climate Change Advice from Shell", 26/03/2013, online at: **http://www.greenprophet.com/2013/03/this-desalination-infographic-is-like-taking-climate-change-advice-from-shell/**

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❖ JD5.5 million project to rehabilitate Karak's water network

AMMAN — The implementation of a JD5.5-million project to construct and rehabilitate water infrastructure in the southern Karak Governorate is under way, a government official said on Saturday.

The project entails installing new water networks and rehabilitating deteriorated ones to improve water management and supply in Karak, the Water Ministry's secretary general and acting secretary general of the Water Authority of Jordan, Basem Tulfah, told The Jordan Times in a phone interview.

"The ministry has awarded a tender for installing and refurbishing the water infrastructure in Al Qaser, Arrabeh and Shihan towns in Karak," Tulfah underscored.

The project, which was first announced in 2010, aims at addressing water loss in Karak, where over half the water is lost due to poor infrastructure. Reservoirs, pumping stations and water networks in the southern region will be revamped and constructed, according to the ministry.

The project is part of a national agenda designed to rehabilitate water networks across Jordan and upgrade infrastructure in the south, according to Tulfah, who noted that the project is jointly funded by the government and the German Development Bank, which is contributing 80 per cent of the costs.

"The project is expected to be completed within one year," Tulfah noted.

Water per capita in Karak Governorate stands at 165 litres per day, according to the ministry's spokesperson, Omar Salameh, who said the amount is above the country's average.

Salameh said over the phone that the problem with the water supply in Karak is the deteriorated water networks, conveyance pipes and pumping stations, which lead to the loss of 60 per cent of the supplied water in leakage.

He added that two water projects are currently under construction in Karak Governorate at a total cost of JD9 million, in addition to a JD10 million venture to improve the water supply in the southern governorate.

Karak, located 140 kilometres to the south of Amman, has a population of 170,000 people, according to the Department of Statistics. The governorate is home to several of the country's main wells, streams and dams.

"JD5.5 million project to rehabilitate Karak's water network", Hana Namrouqa, 30/03/2013, online at: http://jordantimes.com/jd55-million-project-to-rehabilitate-karaks-water-network

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❖ Egypt's Water Crisis – Recipe for Disaster

Egypt has been suffering from severe water scarcity in recent years. Uneven water distribution, misuse of water resources and inefficient irrigation techniques are some of the major factors playing havoc with water security in the country. Being more or less an arid country, Egypt is heavily dependent on rain in other countries to support its rapidly growing population and development. The River Nile is the lifeline of the country as it services the country's industrial and agricultural demand and is the primary source of drinking water for the population.

Rising populations and rapid economic development in the countries of the Nile Basin, pollution and environmental degradation are decreasing water availability for Egypt. Egypt is facing an annual water deficit of around 7 billion cubic metres. Infact, United Nations is already warning that Egypt could run out of water by the year 2025.

Let us have a close look at major factors affecting Egypt's water security:

Population Explosion

Egypt's population is mushrooming at an alarming rate and has increased by 41 percent since the early 1990s. Recent reports by the government suggest that around 4,700 newborns are added to the population every week, and future projections say that the population will grow from its current total of 80 million to 98.7 million by the year 2025. The rapid population increase multiplies the stress on Egypt's water supply by more water requirements for domestic consumption and increased irrigation water use to meet higher food demands.

Inefficient Irrigation

Egypt receives less than 80 mm of rainfall a year, and only 6percent of the country is arable and agricultural land, with the rest being desert. This leads to excessive watering and the use of wasteful irrigation techniques such as flood irrigation [an outdated method of irrigation where gallons of water are pumped over the crops]. Nowadays, Egypt's irrigation network draws almost entirely from the Aswan High Dam, which regulates more than 18,000 miles of canals and sub-canals that push out into the country's farmlands adjacent to the river. This system is highly inefficient, losing as much as 3 billion cubic meters of Nile water per year through evaporation and could be detrimental by not only intensifying water and water stress but also creating unemployment. A further decrease in water supply would lead to a decline in arable land available for agriculture, and with agriculture being the biggest employer of youth in Egypt, water scarcity could lead to increased unemployment levels.

Pollution

Agricultural runoffs, industrial effluents and municipal sewage are being recklessly dumped into the Nile River, gradually making its water unfit for human consumption. Sewage water from slums and many other areas in Cairo is discharged into the river untreated due to lack of water treatment plants. Agricultural runoffs frequently contain pollutants from pesticides and herbicides, which have negative effects on the river and the people using it. Industrial effluents are often highly toxic, containing heavy metals that can combine with the suspended solids in domestic wastewater to form muck. All of these factors combine together to make Nile a polluted river which may spell doom for the generations to come.

Regional Upheavals

Egypt controls majority of the water resource extracted from the Nile River due to colonial-era treaty, which guaranteed Egypt 90 percent share of the Nile, and prevented their neighbors from extracting even a single drop from the Nile without permission. However, countries along the Nile such as Burundi, and Ethiopia are taking advantage of the political strife that has engulfed Egypt and are gaining more control over the rights for the Nile. With the Nile supplying 95 percent of Egypt's freshwater, losing some of the water supply can cause additional problems for Egypt.

Conclusions

Water issue in Egypt is rapidly assuming alarming proportion. By the year 2020, Egypt will be consuming 20 percent more water than it has. With its loosening grip on the Nile, water scarcity could endanger the country's stability and regional dominance. It is imperative on the Egyptian government and the entire population of to act swiftly and decisively to mitigate water scarcity, implement water conservation techniques and control water pollution develop plans that would install more efficient irrigation techniques, and control water pollution in order to avoid a disaster.

"Egypt's Water Crisis – Recipe for Disaster", 30/03/2013, online at: **http://www.ecomena.org/egypt-water/**

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❖ Inhospitable Flows the Nile

CAIRO, Mar 29 (IPS) - A 4,200-year-old relief in the Tomb of Mereruka in Sakkara depicts the staggering array of fish that once inhabited the Nile River and its wetlands. Ancient Egyptian fishermen with linen nets haul in their bounty, including the sacred Oxyrhynchus, a snub-nosed fish that was captured and nurtured but never eaten.

Anecdotes from the fishermen who inhabit the banks of the Nile today paint a different picture. Ibrahim Abdallah, a Nubian village elder, says many of the fish he remembers from his childhood have disappeared entirely from the river.

“Many varieties of fish are gone and the few that remain have been overfished,” he says.

Abdallah recalls a pan-sized fish he calls "kawara" that once gathered every summer in the Nile's back eddies and deep pools on their way to spawn.

“We haven’t seen them for many years,” he says. “One summer we found they had all disappeared.”

Almost half of the Nile fish depicted in ancient reliefs are now extinct from Egyptian waters. Researchers comparing historic fish collection records estimate that as many as 35 of these fish species, including the elephant fish, Nile jewel cichlid, and African bony tongue, disappeared from the lower reaches of the Nile in the last 40 years. Dozens more are listed as threatened or endangered.

Justin Grubich, assistant professor of biology at the American University in Cairo, says Nile river fisheries suffered a catastrophic decline following the construction of the Aswan High Dam in the 1960s. The dam acts as a barrier, impeding the reproductive cycle and migratory routes of many fish species, and preventing millions of tonnes of silt and organic matter from reaching the lower Nile.

“The High Dam was built to control the flood season so as to have more consistent agriculture," Grubich explains. "The dam helps regulate water better, but downstream there is no replenishment of soil and nutrients (to support aquatic life)."

The impact is felt over 1,200 kilometres downstream. Without sedimentation, the Nile delta is receding, in some areas by several metres a year.

The coastal erosion has allowed the sea to advance into a series of shallow lakes at the mouth of the Nile, killing freshwater species unable to tolerate the higher salinity. It has also allowed predatory marine fish to invade spawning and nursery areas, devastating fish stocks.

Research conducted in the 1970s found that aquatic biodiversity in the four Nile-fed Delta lakes in Egypt had decreased significantly. Surveys by the National Institute of Oceanography and Fisheries (NIOF) identified 34 species of fish in Lake Manzala, compared to more than 50 recorded half a century earlier. Similar patterns were found in nearby Lake Burullus, which had become exceedingly brackish.

And polluted. Over 4.5 million tonnes of industrial effluent, including 50,000 tonnes of hazardous contaminants, is poured into the lower Nile each year, according to the environment ministry. The pollution, which also includes agricultural runoff and untreated sewage, poisons aquatic life in the river and concentrates in the lakes at its mouth.

Juvenile fish are extremely susceptible to pollution, which can kill them directly, "or create a large volume of decaying organic matter that uses up all the dissolved oxygen that fish need to survive," says Osman El-Rayis, professor of chemistry at Alexandria University.

Lethal levels of water toxins may have already extirpated the jewelfish, which once flourished in the Nile delta and northern lakes. Fishermen say the plump, bottom-scouring moon fish is now rarely seen in the river. And the once ubiquitous Nile minnow, which moved in large schools in the shallows, is now restricted to a few locations near Aswan.

In Lake Nasser, the 5,200 square kilometre reservoir behind the High Dam, populations of many fish species have declined to critical levels, warns Olfat Anwar, fisheries director at the Lake Nasser Development Authority.

"The main reason is the change in environment, because there is almost no nutrient flow within Lake Nasser," she says. "The current ranges from zero to 0.3 metres per second from Sudan until Abu Simbel, then is almost stagnant (further north). So there is no flow from the south to the north, and this affected the species composition of the lake."

The lake has also suffered from decades of neglect and mismanagement that resulted in unsustainable fishing practices, cruise boat pollution, and an underfunded hatchery programme.

Yet a few species of fish have not only survived, they have thrived. Four species of tilapia inhabit the lake and support a healthy commercial fishery. Catfish, Nile perch and tiger fish grow to monstrous size, attracting anglers from around the world.

“The apparent success of a handful of species has distracted people from the plight of others, such as fahaka (Nile pufferfish) and binny (barbel), which are suffering,” Anwar tells IPS. “Because they are not commercial fish, saving them is deemed a low priority.”

But conservation action is desperately needed, says AUC's Grubich. Freshwater bodies are particularly sensitive to ecological changes, and the loss of a seemingly insignificant species can collapse complex food chains.

“All of these species together have been evolving for millions of years and have developed a food web,” Grubich explains. “It’s a delicate balance, and when you take out one of the players… it tends to have a cascading effect.” [END]

“Inhospitable Flows the Nile”, 29/03/2013, online at: http://www.iede.co.uk/news/2013_1437/inhospitable-flows-nile

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❖ Who Owns the Nile? Egypt, Sudan, and Ethiopia's History-Changing Dam

Editor's Note:

Egypt and Sudan are utterly dependent on the waters of the Nile River. Over the past century both of these desert countries have built several dams and reservoirs, hoping to limit the ravages of droughts and floods which have so defined their histories. Now Ethiopia, one of eight upriver states and the source of most of the Nile waters, is building the largest dam in Africa. Located on the Blue Nile twenty five miles from the Ethiopian border with Sudan, the Grand Renaissance Dam begins a new chapter in the long, bellicose history of debate on the ownership of the Nile waters, and its effects for the entire region could be profound.

For more on the recent history of Africa, please see these articles on Politics in Senegal, the Darfur Conflict, Piracy in Somalia, Violence and Politics in Kenya, Women in Zimbabwe, and Sport in South Africa.
On water and environmental issues, readers may also want to see these Origins articles: World Water Crisis; The Changing Arctic; Climate Change and Human Population; Global Food Crisis; and Over-Fishing.

In the fall of 2012 newspapers around the world reported on a Wikileaks document, surreptitiously acquired from Stratfor, the Texas security company, revealing Egyptian and Sudanese plans to build an airstrip for bombing a dam in the Blue Nile River Gorge in Ethiopia. The Egyptian and Sudanese governments denied the reports.
Whether or not there were such plans in 2012, there is a long history of threats and conflicts in the Nile River Basin. Downriver Egypt and Sudan argue that they have historic rights to the water upon which they absolutely depend—and in 1979 Egyptian President Anwar Sadat threatened war on violators of what he saw as his country's rights to Nile waters. Upriver Ethiopia, Kenya, Uganda, Rwanda, Burundi, and Tanzania argue that they too need the water that originates on their lands. Since the twelfth century C.E. Christian Ethiopian kings have warned Muslim Egyptian sultans of their power to divert waters of the Nile, often in response to religious conflicts. But these were hypothetical threats.

Today, however, Ethiopia is building the Grand Renaissance Dam and, with it, Ethiopia will physically control the Blue Nile Gorge—the primary source of most of the Nile waters.

The stakes could not be higher for the new leaders in Egypt and Ethiopia, President Mohamed Morsi and Prime Minister Hailemariam Desalegn, as well as Sudan's long-time President, Omar El Bashir. The stakes are perhaps even higher for the millions of people who owe their livelihood and very existence to the Nile's waters.

Egypt and the Nile

The Nile has been essential for civilization in Egypt and Sudan. Without that water, there would have been no food, no people, no state, and no monuments. As Herodutus famously wrote in the 5th century B.C.E., "Egypt is the gift of the Nile."

For millennia peoples have travelled along the banks of the Nile and its tributaries. Scores of ethnic groups in Egypt, Ethiopia, and Sudan share architecture and engineering, ideas and traditions of religion and political organization, languages and alphabets, food and agricultural practices.

In 3000 B.C.E., when the first Egyptian dynasty unified the lower and upper parts of the Nile River, there were no states in Eastern or Central Africa to challenge Egypt's access to Nile waters.

The Nile was a mysterious god: sometimes beneficent, sometimes vengeful. Floods between June and September, the months of peak flow, could wipe out entire villages, drowning thousands of people. Floods also brought the brown silt that nourished the delta, one of the world's most productive agricultural regions, feeding not only Egypt but many of its neighbors.

The river's central importance to Egyptian life is captured in *A Hymn to the Nile*, recorded in Papyrus Sallier II:

Hail to thee, O Nile, that issues from the earth and comes to keep Egypt alive! …
He that waters the meadows which He created …
He that makes to drink the desert …

He who makes barley and brings emmer into being …
He who brings grass into being for the cattle …
He who makes every beloved tree to grow …
O, Nile, verdant art thou, who makes man and cattle to live.

The Nile's seasonal flooding is a central theme in Egyptian history. The river flow follows regular patterns, increasing between May 17 and July 6, peaking in September, and then receding until the next year. But the river volume is very unpredictable, as documented by nilometers (multi-storied structures built in the river to measure water heights). Successive empires of Pharaohs, Greeks, Romans, Christian Copts, and Muslims celebrated the rising waters of the Nile and dreaded floods or droughts.

Five millennia of Nile history show how years with high water have produced ample food, population growth, and magnificent monuments, as during the first five dynasties from 3050 B.C.E. to 2480 B.C.E. Periods with low water have brought famine and disorder. The Book of *Genesis* describes seven years of famine that historians associate with the drought of 1740 B.C.E. From the time of the Pharaohs until 1800 C.E., Egypt's population rose and fell between 2 to 5 million, due to food availability and epidemics. The irrigation projects of the 19th century Ottoman ruler Mohammad Ali allowed year-around cultivation, causing population growth from 4 to 10 million. Since the opening of the Aswan High Dam in 1971, Egypt's population has increased from about 30 to 83 million.

The Sources of the Nile

Despite the extraordinary importance of the Nile to people downstream, the origin of the great river was a mystery until the middle twentieth century. Herodotus speculated that the Nile arose between the peaks of Crophi and Mophi, south of the first cataract. In 140 C.E. Ptolemy suggested the source was the Mountains of the Moon, in what are now called the Ruwenzori Mountains in Uganda.

The 11th century Arab geographer al-Bakri postulated West African origins, confusing the Niger River, which empties into the Atlantic Ocean, with the Nile River. In 1770 the Scottish explorer

James Bruce claimed his discovery of the source in Ethiopia, while in 1862 John Hanning Speke thought he found it in Lake Victoria and the equatorial lakes.

The river's limited navigability only increased its mystery. The Blue Nile River descends 4501 feet in 560 miles from Lake Tana in the Ethiopian highlands through a deep gorge with crocodiles, hippopotamuses, and bandits to the Sudan border and the savannah. Despite the efforts of scores of intrepid adventurers, the Blue Nile in Ethiopia was not successfully navigated until 1968 by a team of British and Ethiopian soldiers and civilians equipped by the Royal Military College of Science.

Further south up the White Nile in the lakes and rivers of Burundi, Rwanda, Kenya, Tanzania, and Uganda, the Egyptian cultural influence is less pronounced, due to the Sudd, a gigantic and impassable swamp which absorbs waters from the equatorial lake tributaries. The Nile River historian Robert O. Collins reports that "no one passed through this primordial bog" until 1841.

Not until the 20th century did it become clear that the Nile is part of a vast river system with dozens of tributaries, streams, and lakes, stretching from the Mediterranean Sea to the remote mountains of Burundi, in tropical central Africa, and to the highlands of Ethiopia, in the Horn of Africa.

Spanning more than 4,200 miles, it is the longest river in the world. It has also become clear that the volume of water which flows through the Nile is relatively small—a mere two percent in volume of the Amazon's and fifteen percent of the Mississippi—and mostly (86%) from Ethiopia.

Ethiopia, Egypt, and the Historical Struggle for the Nile's Waters

Ethiopia and Egypt have had a long relationship of both harmony and discord, the latter the result of religious issues and access to Nile water, among other factors.

Ethiopia's first well documented government was in Aksum, a city-state that controlled a large empire from the Ethiopian highlands across the Red Sea to Yemen. From 100 until 800 C.E. Aksumites participated in Mediterranean and Indian Ocean trade.

The cultural relationship between Egypt and Ethiopia was institutionalized when the Aksumite King Ezana converted to Christianity in 330 C.E. For 16 centuries (until 1959) the Egyptian bishop of the Ethiopian Orthodox Church was appointed by the Egyptian patriarch in Alexandria, often under the influence of the Egyptian government.

Ethiopians were profoundly influenced by the Middle East, even writing their state and geography into Bible stories. The source of the Blue Nile became the Gihon, one of the four rivers that flowed from the Garden of Eden. The 14th century C.E. myth of national origins connected Ethiopia's rulers to the Old Testament. In this legend the Queen of Sheba (*Mekedda*), journeyed north from Ethiopia to Jerusalem to meet King Solomon in 900 B.C.E. A romantic relationship produced a child, Menelik I, the first in Ethiopia's Solomonic Dynasty.
When Menelik became an adult, despite his father's wish that he become the next King of Israel, he escaped to Ethiopia with the Ark of the Covenant—the cabinet which contained the tablets of the ten commandments given by God to Moses on Mount Sinai. Menelik stored the Ark on an island in Lake Tana—into which the Gihon flows—before it was moved to Aksum, where many Ethiopians believe the Ark remains to this day. Another Ethiopian legend is that Mary and Jesus stayed a night on that same island (Tana Cherquos) during their flight from the Holy Land to Egypt.

The Muslim conquest of Egypt in 640 C.E. put Christian Ethiopia in a defensive position. Because the Ethiopian Orthodox Church remained subordinate to the Orthodox Church in Alexandria, and Egypt had become a Muslim country, Ethiopians became suspicious and resentful of the control Egypt had on the appointment of their Christian bishop (*abun*). Muslim Egyptians also controlled Jerusalem and had the power to expel Ethiopian pilgrims to their holiest of cities.
So Ethiopians began to claim power over Egypt through control of the Nile. During the Crusades the Ethiopian emperor Lalibela (1190-1225)—who built a new Jerusalem in Ethiopia, safe from Muslim occupation in magnificent, underground rock-hewn churches—threatened retribution by diverting the Tekeze River from its pathway north into Sudan (where it becomes the Atbara and then joins the Nile).

The first Egyptian to write about the potential for an Ethiopian diversion of the Nile was the 13th century Coptic scholar Jurjis al-Makin (d. 1273).

Stories about Ethiopia's power over the Nile inspired the 14th century European legend of Prester John, a wealthy Christian Ethiopian priest king. In 1510 the legend returned to Ethiopia with Portuguese explorer Alfonso d' Albuquerque, who considered the possibility of destroying Egypt by diverting the Nile to the Red Sea. In 1513 d'Albuquerque even asked the Portuguese king for workers skilled in digging tunnels. Nothing came of the plan.

But conflict between Egypt and Ethiopia continued, often as proxy wars between Christians and Muslims on Ethiopia's northern or southeastern borderlands. The sixteenth century invasion of Ethiopia by Ahmad Gragn, the Muslim imam from the Adal Sultante, was seen as an Egyptian conflict.

In the nineteenth century Egypt and Ethiopia fought over control of the Red Sea and upper Nile Basin. The climax came in 1876 at the Battle of Gura in present day Eritrea where the Ethiopians delivered a humiliating defeat to the Egyptian army.

Colonial-Era Conflicts over the Nile

The European partition of Africa in the 1880s added huge complexity to this conflict.

Egypt was colonized by England in 1882. Ethiopia defeated the Italians at the Battle of Adwa in 1896 becoming the only African country to retain its independence during the "scramble for Africa." But colonization created many new states in the Nile Basin (Eritrea, Uganda, Rwanda, Burundi, Kenya, and Tanganika) and set off new competition for resources and territory.

Egypt was prized for the Nile Delta, a region of unsurpassed agricultural productivity. After the completion of the Suez Canal in 1869, Egypt also offered access to the Red Sea and the Indian Ocean. For the British control of Egypt meant more profitable trade with India, its richest colony. For the French, the canal offered quicker access to Indochina, its most lucrative colony.

In the late nineteenth century, since controlling Egypt was the key to Asian wealth, and since Egypt depended on the Nile, controlling the source of the Nile became a major colonial goal.

The French-English competition for control of the Nile Basin climaxed in 1898 at Fashoda.

The French conceived of the idea of building a dam on the White Nile, so as to undermine British influence further downriver and establish east-west control of the continent. They organized a stupendous pincer movement with one group of soldiers traveling from East Africa across Ethiopia and the other from West Africa across the Congo.

The British heard of the French expedition, and, having just captured Khartoum ordered a fleet of gun boats and steamers with soldiers under the leadership of General Horatio Herbert Kitchener upriver to Fashoda, the site of the proposed dam. With fewer than 200 men, the French were embarrassed. In 1899 the two colonial powers reached an agreement which designated to France the frontiers of the Congo River and to England the frontiers of the White Nile.

The Fashoda Incident revealed how little Europeans understood about the Nile River. Thinking that most of the Nile waters came from the equatorial lakes (Victoria, Albert, Kyoga, and Edward), the English spent enormous energy on plans to increase White Nile water flows.

First called the Garstin Cut and later the Jonglei Canal, the British intended to create a channel that would maximize water transfer through the great swamp (where half of it evaporated).

One of the most expensive engineering projects in Africa, it was terminated in 1984 by the Sudan People's Liberation Army, because of the severe disruption it brought to the lives of the indigenous upper Nile peoples. If the 300 mile-long Jonglei Canal had been completed, it would have increased water flows by nearly 4 billion cubic meters into the White Nile.

Negotiating the Nile: Treaties and Agreements over the Nile Waters

Treaty negotiations about Nile waters started during the colonial era as England tried to maximize agricultural productivity in the delta.

In 1902 the British secured from the Ethiopian Emperor Menelik II an agreement to consult with them on any Blue Nile water projects, especially on Lake Tana. As the controlling imperial power in East Africa, agreements with Kenya, Tanganika, Sudan, and Uganda were *pro forma*, internal colonial matters.

After achieving its independence in 1922, Egypt negotiated the Nile Waters Agreement of 1929 with the East African British colonies. This accord established Egypt's right to 48 billion cubic meters of water flow, all dry season waters, and veto-power over any upriver water management projects; newly independent Sudan (1956) was accorded rights to 4 billion cubic meters of water. The Ethiopian monarch was not consulted—at least in part because no one understood how much Nile water actually came from Ethiopia.

The 1959 Nile Waters Agreement between Egypt and Sudan was completed before all the upriver states achieved independence: Tanganika (1961), Uganda (1962), Rwanda (1962), Burundi (1962), and Kenya (1963).

The signatories of the 1959 Agreement allocated Egypt 55.5 billion cubic meters of water annually while Sudan was allowed 18.5 billion cubic meters. These 79 billion cubic meters represented 99% of the calculated average annual river flow.

The treaty also allowed for the construction of the Aswan High Dam (completed in 1971), the Roseires Dam (completed 1966 on the Blue Nile in Sudan), and the Khashm al-Girba Dam (completed in 1964 on the Atbara River in Sudan).

The treaty so negatively affected the upriver states that it provided the inspiration for the Nyerere Doctrine, named after independent Tanzania's first president, which asserted that former colonies had no obligation to abide by treaties signed for them by Great Britain.

Emperor Haile Selassie was offended by President Nasser's exclusion of Ethiopia in the Nile Waters Agreement and in planning for building the Aswan Dam. He negotiated the 1959 divorce of the Ethiopian Orthodox Church from the Orthodox Church in Alexandria, ending 1600 years of institutional marriage.

He also began planning for several dams on the Blue Nile and its tributaries, contributing $10 million dollars from the Ethiopian treasury towards a study by the U.S. Department of Reclamation resulting

in a seventeen volume report completed in 1964 and titled *Land and Water Resources of the Blue Nile Basin: Ethiopia*.
Nasser responded by encouraging Muslims in Eritrea (reunified with Ethiopia after World War II) to secede from Ethiopia. He also encouraged Muslim Somalis to fight for the liberation of Ethiopia's Ogaden region.

Ethiopia won the war with Somalia in 1977-78 and retained the Ogaden. Its 30 year war with Eritrea, an Egyptian ally, came at a tremendous cost. Haile Selassie was overthrown in 1974, and after 1993 Eritrea won independence and Ethiopia became a landlocked country—although it still possessed the headwaters of the Blue Nile.
In the middle of the 1980s, rains failed in the Ethiopian highlands, causing a serious water crisis upriver and downriver. One million Ethiopians died as a result of drought and famine—made worse by Civil War with Eritrea. Egypt averted disaster but Aswan's turbines were nearly shut down, creating an electric power nightmare; and crops failed in the delta, bringing the real prospect of famine.

As a result, Egyptians came to understand that their great Aswan Dam had not solved their historic dependency on upriver Nile water. In 1987, after years of hostile rhetoric, the Egyptian President Hosni Mubarak and the Ethiopian President Haile Mariam Mengistu replaced the language of threat and confrontation with words of conciliation and cooperation.

Then in the 1990s the Ethiopian rains returned and, remarkably, Hosni Mubarak redoubled efforts begun during the Sadat administration to build the Toshka Canal, one of the world's most expensive and ambitious irrigation projects. This plan would take 10% of waters in Lake Nasser to irrigate Egypt's sandy Western Desert, increasing Egypt's need for Nile water even if they maintained their 1959 treaty share of 55 billion cubic meters.

In anger and disbelief, the Ethiopian Prime Minister Meles Zenawi protested: "While Egypt is taking the Nile water to transform the Sahara Desert into something green, we in Ethiopia—who are the source of 85% of that water—are denied the possibility of using it to feed ourselves."

He then began plans for the Grand Renaissance Dam.

International water law has not resolved differences about ownership of Nile Waters. The Helsinki Agreement of 1966 proposed the idea of "equitable shares"—and the idea was taken up again in the 1997 United Nations Convention on the Law of Non-Navigational Uses of International Watercourses.

A proposal for "equitable shares" was again put forward in the 1999 Nile Basin Initiative, which included all the affected countries. Unfortunately the initiative did not resolve the conflict between Egypt and Sudan's claims of historic rights and the upper river states' claims for equitable shares.

In 2010, six upstream countries (Ethiopia, Kenya, Uganda, Rwanda, Burundi, and Tanzania) signed a Cooperative Framework Agreement seeking more water shares. Egypt and Sudan rejected the agreement because it challenged their historic water rights.

Ethiopia and the Lessons of Dam Building

One lesson from the last century of mega-dam building is that upriver countries have the most power when negotiating water rights. The first of the mega-dams, the Hoover Dam on the Colorado River in the United States, cost Mexico water. The Ataturk Dam in Turkey has had a devastating impact on downriver Syria and Iraq. China and Tibet control waters on multiple rivers flowing downstream to India, Pakistan, Myanmar, Bangladesh, and Vietnam.

Another lesson is that mega-dams have enormous and unanticipated environmental impacts. The Aswan High Dam has disrupted the ecosystems of the river, the delta, and the Mediterranean with results of reduced agricultural productivity and fish stocks. It also caused a series of seismic events due to the extreme weight of the water in Lake Nasser, one of the world's largest reservoirs.

Although late to mega-dam building, Ethiopia is now making up for lost time. One of the tallest dams in the world was completed in 2009 on the Tekeze River in northern Ethiopia. Three major dams on the Omo and Gibe Rivers in southern Ethiopia are either completed or nearly so.

The biggest of Ethiopia's water projects, the Grand Renaissance Dam, will have a reservoir holding 67 billion cubic meters of water—twice the water held in Lake Tana, Ethiopia's largest lake—and is expected to generate 6000 megawatts of electricity.

Ethiopians hope these water projects—which extend to 2035 with other Nile tributaries and river systems—will lift their country out of poverty. Similar large dams have produced economic miracles in the United States, Canada, China, Turkey, India, Brazil, and, of course, Egypt.

Ethiopia's options for economic development are limited. With nearly 90 million people it is the most populous landlocked country in the world. It is also one of the world's poorest countries—174 on the list of 187 countries in the United Nations Human Development Index for 2012. (Sudan is 169 and Egypt 113.) This index rates countries based on life expectancy, education, and income, among other criteria.

Part of Ethiopia's challenge is that 85 percent of the workforce is in agricultural commodities that bring low profits. Ethiopia is already leasing land in its southern regions to Saudi Arabia, India, and China for large irrigated water projects—despite severe land shortage in its northern regions—because it does not have the funds to develop this land on its own.

If Ethiopia cannot use its elevation and seasonal rains for hydro-electric power and irrigation, what is it to do?

The Grand Renaissance Dam

The state-owned Ethiopian Electric Power Corporation optimistically reports that the Grand Renaissance Dam will be completed in 2015 at a cost of nearly 5 billion dollars. As of 2013, the project is 13% complete, suggesting that it may be many years and billions of dollars before the dam is finished. The Tekeze dam was well over its predicted budget and years behind schedule.

The major obstacle to completion is financing.

The World Bank, the European Investment Bank, the Chinese Import-Export Bank, and the African Development Bank provided financing for some of the other dams; but concerns about the environmental and political impact of this latest dam have discouraged lenders.

The International Monetary Fund suggested that Ethiopia put the dam on a slow track, arguing that the project will absorb 10% of Ethiopia's Gross Domestic Product, thus displacing other necessary infrastructure development.

Nevertheless the Ethiopian government insists that it will stick with its schedule and finance the project domestically. It probably will secure more help from China, a loyal ally and the world's major developer of hydroelectric power.

The Ethiopians argue that the Grand Renaissance Dam could be good for everyone. They contend that storing water in the deep Blue Nile Gorge would reduce evaporation, increasing water flows downstream.

The Ethiopians also argue that the new dam will be a source of hydroelectric power for the entire region and will manage flood control at a critical juncture where the Nile Gorge descends from the Ethiopian highlands to the Sahel, thus reducing risk of flooding and siltation, extending the life of the dams below stream.

Egypt and Sudan are understandably concerned about Ethiopia's power over Nile waters. What happens while the reservoir behind the Grand Renaissance Dam is filling up, when water flow may be reduced 25 % for three years or more? After the reservoir is filled what will happen when rains fail in the Ethiopian highlands? Who will get the water first?

If the question of Nile waters was sensitive in the centuries before 1900, when Ethiopia and Egypt each had populations of 10 million or less, what will happen over the next twenty years, as their populations each surpass 100 million and the collective population of the Nile River Basin countries reaches 600 million?

The Grand Renaissance Dam poses a question as basic as water itself: Who owns the Nile? When the Grand Renaissance Dam closes its gates on the Blue Nile River, whether it is in 2015 or 2025, the time for a final reckoning will have arrived.

Ethiopia will then have the power to claim its water shares, with the backing of all the upriver states. Egypt and Sudan's claims to historic water rights will have become merely hypothetical. In the context of a difficult history, violence is a possibility, but good solutions for all can be achieved through diplomacy and leadership.

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❖ Water woes hit Jeddah anew

A shortage of water is hitting several localities in Jeddah where residents are desperately searching for water tankers.

The unprecedented shortage of water has led water tankers being exempted from the traffic ban, yet a scarcity of tankers still prevails.

Several residents, the majority of them Saudi citizens, are waiting in long queues for water tankers at water-filling stations at Makrona Street near to Al-Tahlia.

Families who are willing to buy water at any cost are not able to get a water tanker in time.

Water tankers that are usually delivered within the hour are now taking more than 72 hours to reach residents, with many saying they have resorted to visiting the supply center in Tahlia after losing hope of getting anywhere through call centers.

There is the choice of a 19-ton, 11-ton or 7-ton water tanker size, but Jeddah residents usually prefer having a 19-ton capacity.

A Saudi lady by the name of Umm Salwa told Arab News yesterday that she has been waiting for a water tanker since 9 that morning to no avail after repeatedly asking tanker drivers to deliver a water tanker to her house in the Ruwais area.

An Indian resident of the Sharafia district, Khaja Masud, said that he had waited for nearly four hours yesterday only to return home to continue rationing whatever water he has left. He said that he agreed pay SR 350 for a 19-ton water tanker that actually costs SR 123, yet the driver refused to deliver, saying that the roads in his area were too narrow.

Equally, a Yemeni citizen who wished to remain anonymous, said that he is trying his luck but remains uncertain as to whether he will get anywhere in his search for water.

Residents whose residential buildings having watchmen are tasking them with standing in queues for water while those who do not have that luxury have no choice but to wait for hours and report absent or late at their jobs.

A Pakistani water tanker driver of 14 years has said that he is seeing a water crisis for the first time in Jeddah.

The water crisis had previously been blamed on the traffic ban of heavy vehicles during peak hours in the city. Yet the water shortage crisis still ensues even after Jeddah Governor Prince Meshal Bin Majed exempted water tanks from the heavy vehicles ban.

Engineer Abdullah Al-Assaf, director general of the National Water Company in Jeddah, told Arab News that the problem has persisted due to tanker operations being halved in the wake of the initial ban.

He said that "Tankers that would have previously been available around the clock are now only plying for 14 hours at a time."

He expressed gratitude to Prince Meshal Bin Majed for temporarily exempting water tankers from the ban, further adding that "the Jeddah Governor will re-evaluate the ban in two weeks. Furthermore, discussions are under way with traffic police and authorities to designate a new time-slot for water tankers."

Abdullah Al-Assaf also revealed that "an additional 200,000 cubic meters of water will be provided for the city of Jeddah in two weeks; that should solve the water supply problem. In the past four years, there have been no water-related grievances in Jeddah and tankers would typically deliver water within 15 minutes," he recalled.

Al-Assaf also said that the National Water Company supplies million cubic meters of water to Jeddah from the Tahlia and Shoaiba plants, with 2,000 water tankers operating in 4 water refill stations.

"Water woes hit Jeddah anew", 27/03/2013, online at: http://www.arabnews.com/news/446211

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❖ Awareness Campains Insufficient to Address Yemen's Water Problem

In Sana'a, activities for this past United Nations World Water Day lasted for around a day—including rotating TV and radio statements from influential and famous Yemenis, a bicycle marathon and public speeches from the Ministry of Environment. But what happens after this flurry of activity? Not enough, experts say. Yemen remains a parched, thirsty country, in the midst of a water crisis.

All Gulf countries suffer from a scarcity of water resources, but in Yemen—the poorest country on the peninsula—the need for a viable solution could be the greatest. Yemen faces a severe water shortage, the United Nations Development Program assessed. Available ground water is being depleted at "an alarming rate" and the rate of urbanization has exacerbated the problem.

Part of the issue is that Yemenis are indifference to their country's plight, Tawfeek Al-Sharjabi, the deputy minister of the Ministry of Water and Environment, said.

The campaigns surrounding World Water Day—which sometimes run a day or two before and after March 23—are organized in Sana'a, Taiz and Socotra (smaller campaigns are organized in more rural governorates).

Al-Sharjabi admits: the Water Day campaigns hardly begin to tackle the problem. The Ministry ought to be taking a long-term perspective, he said, but they don't have enough money to do so.

One percent of the total public budget allotted by the state ends up with the Ministry of Environment, Al-Sharjabi said. This amounts to around YR23 billion, around $1.7 million, which he said is not enough.

"We can't achieve this single-handedly," Al-Sharjabi said, hoping that new approaches to Yemen's water crisis will involve broader collaboration between organizations and politicians. "We believe that this is connected to political solutions," he said.

A number of other campaigns are launched periodically, with foreign funds—provided by UNICEF,

USAID and GTZ—but their effects are also short term, Al-Sharjabi said, emerging one year and fading the next.

Outdated schoolbooks perpetuate problem

For Abdulkhaleq Alwan, from the National Water Resources Authority in Sana'a, it all starts with education. Or rather, that's where it goes wrong. In a study released in January, Alwan surveyed the books used in primary and secondary schools in Yemen, looking for mentions of water resources and advice for proper use of this scarce resource.

Alwan found that the most of the information was outdated, at best—or just wrong.

"The majority of the concepts are taught to students [using] boring texts," Alwan said. Worse, "curriculum included false facts and statistics and was taught in [such] a way that indirectly boosts water depletion."

Blatantly untrue statements—claiming that Yemen is a rainy country with plentiful rivers—were found, Alwan said. The Ministry of Education should start working side-by-side with the Minsitry of Environment, Alwan suggested. This might help clear up some of the confusion.

Alwan said that there have been some revisions made in school books, but real, practical methods for water conservation are still lacking.

"Awareness Campains Insufficient to Address Yemen's Water Problem", 28/03/2013, online at: http://www.yementimes.com/en/1663/health/2162/Awareness-campaigns-insufficient-to-address-Yemen%E2%80%99s-water-problem.htm

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❖ China-backed dams escalating ethnic tension in Myanmar

Companies pursuing dam projects on Myanmar's Salween River are failing to learn from painful past experiences

One month after the Chinese government lifted its ban on dams on the upper Salween River (known as the Nu in China), the Burmese government confirmed that it too will allow the construction of Chinese-backed hydropower projects along the lower Salween.

In late February, the deputy minister for electric power told parliament thatsix dams would be built on the Salween to generate electricity, referring to the Kunlong, Tasang, Hat Gyi, Nong Pa (Naungpha), Mantawng and Ywathit dams. While the Myanmar government has yet to reveal the companies involved in the projects, it is no secret that among them are dam-building giants Sinohydro, China Three Gorges Project Corporation and China Southern Power Grid.

In 2010, the Myanmar government signed memorandums of understanding for these hydropower projects, paving the way for various Chinese-Thai-Burmese joint ventures to develop them. According to those agreements, most of the generated power will to go to Thailand or China.

As in the case of the Myitsone dam – a controversial Chinese-funded project on the Irrawaddy River suddenly suspended in 2011 – the proposed Salween schemes highlight the challenges facing Chinese dam developers overseas and their international responsibilities.

In an interview with Chinese state-owned newspaper Global Times, a spokesperson for China's embassy in Myanmar noted that, since the Myitsone dam suspension, it had been "the toughest time for Chinese investment in Myanmar", with some projects mired in controversy and no new investments coming from China.
In response, China Power Investment, the company behind the Myitsone project, has invested significant resources in trying to change Burmese perceptions of the dam – by hosting Burmese media in China, increasing media access to company executives to make their case and leafleting local communities.

It seems that China Power Investment is not the only dam builder learning from Myitsone. Earlier this year, Sinohydro hastily set up over 20 regional new bureaus around the world to focus on communicating the company's brand and project activities more effectively. But International Rivers has seen little evidence of real change in the way Chinese dam builders go about their projects overseas.

Local people say "no" to Chinese dams

Tensions remain high around China's role in developing dams in Myanmar largely due to questions about who will benefit. In a country where energy shortages occur daily and about a third of people live below the poverty line, many criticise the development of natural resources for the sake of providing energy to neighbouring states.
A 2008 report by Earth Rights International identified at least 69 Chinese multinational corporations involved in 90 hydropower, oil and natural gas, mining, jade and other natural resource projects in Myanmar. Critics argue the Salween dam projects will do little more than benefit the Burmese government's cronies, since the projects were initiated by the former military junta, without bringing about the economic prosperity that Myanmar's people need.

In addition, dam building in the region is exacerbating ongoing conflicts in ethnic minority areas, according to a recent briefing by grassroots group Salween Watch. Apart from being one of the richest ecological hotspots in the region, the Salween River is home to at least 13 indigenous groups including the Nu, Lisu, Shan, Karen, Pa-o, Karenni and Mon. Conflicts between the Burmese army and local Shan and Karen people, as well as Kokang Chinese near the China-Myanmar border, have been under way for over two decades.

Local communities and internally displaced persons are concerned that the dam plans will lead to increased militarisation, human rights abuses, environmental destruction and loss of local livelihoods.

During a gathering of 2,000 Karens on the Salween in celebration of the International Day of Action for Rivers in mid March, Paul Sein Twa, director of the Karen Environmental and Social Action

Network (KESAN) said: "Local people do not want any dams on the Salween River, especially in Karen State, without the free, prior and informed consent of impacted communities. The government and the Karen National Union need to broaden the decision making process so that it is transparent, inclusive and democratic."

While the government has struck deals with ethnic groups, the ceasefires have not held and the local situation remains tense. It is clear that any attempts to proceed with these dam projects without full consultation and consent of local people, only threaten to plunge both sides back into intense fighting and conflict.

Increased militarisation around dam sites

The incidence of conflict around large dam projects is not unique to Myanmar. Conflicts over water and dams are probably as old as dam building itself, including documented cases in the United States on the Colorado River and between Syria and Iraq over the Eurphrates. While large dams are not always the root of the conflict, they can exacerbate existing tensions.

In the Salween river basin, dam projects have led to increased militarisation of local areas to safeguard Chinese workers. In 2011, the zone around the Ywathit dam was remilitarised to protect the Chinese and Burmese dam survey team following the deaths of Chinese engineers in 2010 during an ambush by Karenni resistance troops. Today, special security troops still prevent local environmental groups from gaining access to the dam site to collect information from the area.

Troops have also been deployed to provide additional security for the Chinese company developing the Hat Gyi dam, despite the conclusion of an initial ceasefire agreement between the government and the Karen National Army in January 2012. This has led many Karen leaders to question whether the government is more serious about peace or natural resource development. According to local witnesses, there are currently no less than eight army battalions stationed around the Hat Gyi dam site. "Right now, private investors are stifling the hopes of the Karens for a lasting peace," said Paul Sein Twa.

While Chinese-built dams are not the cause of the ethnic conflicts along the Salween River, they are a critical negotiating point. The ceasefire agreement signed by the Karenni National Progressive Party specifically called for greater transparency and disclosure around the proposed Ywathit dam.

Whether Chinese, Thai and Burmese dam builders will respond to the changing political situation and openly engage their key stakeholders or continue to work shielded behind army lines remains to be seen. Unless the dam builders want to risk escalating tensions in the Salween Basin, they must respond to the situation by changing the way they do business. This requires consultation with local people and obtaining their consent for mega-development projects.

In fact, one of the Chinese dam builders, Sinohydro, has already set itself the standard of obtaining the free prior and informed consent of indigenous peoples in its policy framework – in line with international standards. However, it has yet to implement this on the ground.

If dam builders fail to acquire consent, the consequences of proceeding with projects regardless of local realities and without the will of the local people may plunge the region back into the shadow of a decades-old conflict.

"China-backed dams escalating ethnic tension in Myanmar",26/03/2013, online at: http://www.chinadialogue.net/article/show/single/en/5823

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❖ China to spend $16 billion to tackle Beijing pollution crisis

(Reuters) - China will spend 100 billion yuan ($16 billion) over three years to deal with Beijing's pollution, an official newspaper reported on Friday, as the government tries to defuse mounting public anger over environmental degradation.

Beijing's government has pledged to improve sewage disposal, garbage treatment and air quality, as well as crack down on illegal construction, theChina Daily newspaper said, citing a three-year plan released on Thursday.

Air quality in Beijing, a city of around 20 million people, has mostly stayed above "very unhealthy" and "hazardous" levels since the beginning of this year.

Pollution was one of the key themes at the recent National Party Congress, where China's new leaders were confirmed. Many Chinese feel the government lacks bite when it comes to enforcing policies designed to protect the environment.

Beijing's plan includes laying or upgrading 1,290 km (800 miles) of sewage pipeline, building five garbage incineration plants, setting up 47 water recycling plants and upgrading 20 sewage disposal plants, said China Daily.

Beijing Mayor Wang Anshun called on the government to allow the private sector to participate in these investments.

The government also plans to curb illegal construction and land use, and will compile a list of illegal buildings for demolition next year, Beijing Deputy Mayor Wang Wei told China Daily.

Most of China's major cities are plagued by pollution of one sort or another. Earlier this month thousands of dead pigs were found floating in one of Shanghai's main water sources.

($1 = 6.2143 Chinese yuan)

"China to spend $16 billion to tackle Beijing pollution crisis", 29/03/2013, online at: http://www.reuters.com/article/2013/03/29/us-china-pollution-investment-idUSBRE92S01420130329?utm_source=Circle+of+Blue+WaterNews+%26+Alerts&utm_campaign=1289016bfe-RSS_EMAIL_CAMPAIGN&utm_medium=email

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❖ Water wars: India needs an effective hydro-diplomacy

India is facing a serious water resource problem and the country is expected to become 'water stressed' by 2025 and 'water scarce' by 2050. Thus, India will have to balance its growing water needs and larger security concerns with effective 'hydro-diplomacy'.

Water shortages could hit the subcontinent in a few years because growing populations and increasing development are placing rising pressure on the Ganges-Brahamaputra-Meghna (GBM) and Indus Basin. In the last 50 years some 40 conflicts over water with weapons have been recorded. As an active regional player, riparian issues for India will be crucial for settling many of the water-induced conflicts in the region. Both the GBM and the Indus basins account for two-thirds of India's water potential. Further, any water outlook will necessitate interdisciplinary approaches linking together natural sciences, politics and policy.

"The challenge for India will be to imbibe hydro-diplomacy in its overall regional diplomacy; not an easy task as India's diplomacy has traditionally been bilateral rather than multilateral," opine analysts.

According to officials, "Water has been a major issue in India-Bangladesh relations. Nearly 50 rivers flow from India into Bangladesh. Both sides signed the Ganges Water Treaty in 1996. While the treaty has helped them to arrive at a mutually acceptable solution on the sharing of the water of the Ganges; Bangladesh remains apprehensive about India's intentions with regard to several other water-related issues such as the sharing of the Teesta river waters, India's plans for the interlinking of the rivers and the construction of the Tipaimukh dam in the northeast."

Sharing his views with FE on conditions of anonymity, a senior army officer points out the urgency to upholster our northeast region. " We need to prepare for competitive relations in the northeast region on more than one ground and more so water resources."

China has strengthened its political and economic control over Tibet where India and China have a complex, unresolved boundary dispute. Thus, water has assumed higher priority in Sino-Indian relations in recent years. There are widespread fears in India that China's diversion of waters of the Yarlung-Tsangpo, to meet high demand in its arid north, will cause hydrological imbalance in the northeast part of India and shortage in Bangladesh, which in turn will impact riparian relations.

Rivers, a crucial source of water resources, physically link upstream and downstream users. While their flows offer ample opportunity for water harnessing, equally, they create barriers. The

management of rivers does not take place in a vacuum but rather in a complex political and economic framework.

"The implementation of river policies, even when purely design-related to the linking of rivers or constructions of dams and barrages, are undertaken within a political context. Rivers, in effect, can no longer be viewed as a soft component of a country's foreign policy. Rather they are intricately linked to developmental goals and domestic needs and thus impact bilateral relations," experts opine.

"Water wars: India needs an effective hydro-diplomacy", 30/03/2013, online at: http://www.financialexpress.com/news/water-wars-india-needs-an-effective-hydrodiplomacy/1095278

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❖ Water is the elixir of life, let us join hands to conserve it

Cooperation is critical for achieving water access, security and poverty alleviation

The U.N. General Assembly has declared 2013 'International Year for Water Cooperation'. Further, it dedicated the 2013 World Water Day (March 22) to 'Water Cooperation'.

The estimated global population in 2050 is 9 billion, all of which will depend on finite and vulnerable water resources. This indicates that our interdependence on water issues is growing every day. Water issues cannot be solved on their own, or be left to professionals. In reality, every one's water use affects others. We use or waste or pollute the common water resources.

Challenges, concerns

Cooperation is critical for achieving water access/security, poverty alleviation and environmentally sustainable economic development. The growth of agriculture, industry and the service sector depends on water availability. However, various development activities create pressure on the sector through excess demand and disposal. Economic development should plan in harmony with the biophysical limit of the water cycle. In this respect, maintaining the environmental flow in surface water sources, stabilising groundwater stocks and managing water quality are important.

The availability of good quality water in adequate quantities for drinking and other domestic purposes is a criterion for health and social security. In the world of privatisation, water faces the threat of commercialisation; wherever water markets exist, the 'ability to pay' becomes the criterion for access. Hence, the water rights of the poor and vulnerable communities should be safeguarded.

Benefits of water cooperation

Water is a renewable natural resource and public good. But the ownership right on land bestows a private character on water. However, most rivers, ponds, lakes and aquifers are common property. Therefore, water rights (except for private wells) are not clearly defined and the right to using the resources is not protected.

Hence, excluding others from using water is not possible and the results are competition, over-extraction and conflict. However, cooperation has a greater role in achieving social harmony in water allocation and increasing human welfare.

Water cooperation can avoid the costs (tension and disputes) associated with conflicts between neighbours.

Cooperation at the river basin level can promote efficiency in water management through better storage, distribution, and expanding irrigation acreage.

Cooperation between municipalities and private providers can stimulate resource mobilisation. The Tamil Nadu Urban Development Fund developed the Water and Sanitation Pooled Fund, a Rs. 300-million facility generated through bond markets for 14 small municipalities, with a partial credit guarantee from the U.S. Agency for International Development.

Cooperation between the government and industry will succeed in mobilising finance and skills for water supply projects. For example, the Public Private Partnership (PPP)-based Tirupur Area Development Project in Tamil Nadu, at a cost of Rs. 10,230 million, succeeded in transferring 185 mld water from the Cauvery to Tirupur for textile industries and domestic users.

Through cooperation, a decentralised approach and community initiatives can operationalise in the water sector with better social impacts.

The success of pollution management strategies in the industrial (either through effluent treatment plants or cleaner production technologies), domestic (through sewage treatment plants) and agriculture (application of biofertilizer and pesticides and farm management) sectors will depend on the level of cooperation among the stakeholders.

What is required?

Water cooperation requires a multilevel inclusive and innovative approach. Water resources management must be addressed at appropriate geographical levels with multistakeholders' involvement. Further, the government's development policies should be consistent and in accordance with the water policy.

Water cooperation can build mutual respect among users, understanding and trust among countries, and promote peace, security and sustainable economic growth. However, operationalising this philosophy in a developing country like India (that possesses the world's 17.5% of human & 11% of livestock populations, 4.2% of water and 2.4% of land) is an extremely great challenge. But cooperation is the only option available to us. Hence, each of us should be much more tolerant and sacrificial rather than adopting a competing approach.

"Water is the elixir of life, let us join hands to conserve it", 30/03/2013, online at: http://www.thehindu.com/opinion/open-page/water-is-the-elixir-of-life-let-us-join-hands-to-conserve-it/article4564870.ece

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❖ Diversion of forest land for Kalu dam up again before FAC

Activists oppose diversion of forest land citing non compliance of various issues

The Forest Advisory Committee (FAC) of the Union Ministry of Environment and Forests (MoEF) is reconsidering clearance for the controversial Kalu dam in Thane district, even though it had rejected a proposal last year. About 999.328 hectares of forest located in the ecologically sensitive Western Ghats region is up for diversion for a drinking water project for Mumbai and Thane, construction of which began even before all the legal requirements were in place.

Shramik Mukti Sanghatana which filed a case in 2011 against Kalu dam to be built in Kudshet village, Murbad taluka, obtained a stay on the work. Eight villages will be fully submerged and ten partially, affecting a population of over 18,000. In the last hearing, Indavi Tulpule of Shramik Mukti Sanghatana said the MOEF told the Bombay high court that the FAC would reconsider the proposal for diverting the forest land in its meeting on April 3 and 4.

However, Gayatri Singh, lawyer for the Sanghatana, told The Hindu on Saturday that the FAC cannot reconsider a proposal which it has rejected, especially since no new facts have been brought to light. It is neither the question of a revision nor an appeal but since the MoEF had rejected it, an appeal can be filed before the National Green Tribunal.

The Environmental Impact Assessment (EIA) and other studies are not yet done, she pointed out. If the project proponents or the state government had additional facts they could go for a review, but that was not the case here, she explained.

In a letter to the FAC last week, Ms Parineeta Dandekar of the South Asia Network on Dams, Rivers & People (SANDRP), Ms Tulpule and Neema Pathak of Kalpavriksh, Pune have objected to the FAC reconsidering a proposal it had rejected based on a site inspection report by senior forest officials. The activists said they along with many groups across India are shocked to see that forest diversion for Kalu dam, a file that was closed on April 2, 2012, is being reconsidered.

The letter said that forest clearance was rejected after several submissions from project affected groups and civil society organisations, resolutions of gram sabhas to be affected by Kalu dam, and a site inspection report of the Chief Conservator of Forests, Central Zone. In addition, the Maharashtra

forest department said that project will need an Environment Impact Assessment (EIA) and also has to be considered within the framework of the Western Ghat Ecology Expert Panel (WGEEP) report as the region falls in Ecologically Sensitive Zones (ESZ) 1 category.

The Kalu dam documents are not on the website though the site inspection report by J K Tewari, chief conservator of forests (central) is online. In case FAC has received any additional documents from the project proponent, these should have been uploaded on the FAC website at least ten days before the upcoming FAC meeting, according to Central Information Commission (CIC) orders and as promised by the Union environment minister, the letter pointed out. As on the March 25, 2013(the date of the letter), no documents are available on the FAC website.

In the forest that is proposed to be submerged, individual and community rights have not been settled as per the Forest Rights Act (2006) and reconsidering the project in the absence of FRA compliance is illegal, activists said.

Last year, the FAC's rejection was based on the site inspection report which concluded that there is ‘no respect for the laws of the land.' The inspection report said the Konkan Irrigation Development Corporation (KIDC) gave the work order to a contractor in May 2010, but the state government submitted the proposal to MoEF only in August 2011. The FAC had said “it has taken note of the complaints received regarding this dam, and also that the State government hasn't submitted any of the reports requested by the MoEF.”

The Principal Chief Conservator of Forests (PCCF) Maharashtra had at that time, in his recommendations said that on scrutiny of the proposal the extent of the forest area is quite large and the number of trees involved is 148,229. The PCCF had not recommended the project for approval and if at all it was decided to approve the project, then several conditions were to be imposed on it. This included submitting an EIA since the project area fell in the ecologically sensitive area of the Western Ghats, and it also directed project proponents to seek approval from the WGEEP expert panel.

The proposed forest is only seven km from Kalsubai wildlife Sanctuary and already a large number of dams have been constructed here for the Mumbai Metropolitan Region. The inspection report had

recommended a cumulative impact assessment of all existing resources and also a detailed study of flora and fauna. Neither was the settlement under the FRA completed nor was a social impact analysis (SIA) conducted as per provisions of the National Rehabilitation Policy, the report said, adding that starting work in a non forest area without fulfilling legal requirements of FRA and SIA was not justified, specially since the project cannot be implemented without the diversion of the forest area.

"Diversion of forest land for Kalu dam up again before FAC", 31/03/2013, online at: http://www.thehindu.com/news/national/diversion-of-forest-land-for-kalu-dam-up-again-before-fac/article4567087.ece

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❖ Metered water policy of VMC opposed

VADODARA: The decision by the Vadodara Municipal Corporation (VMC) to install water meters on water connections it provides in the city has been flayed by the opposition Congress in the VMC as well as activists. The VMC has been asked to reconsider the decision as it could lead to major problems in the city.

Former opposition leader and Congress councillor Chinnam Gandhi said that the VMC had installed water meters at some locations in the past too. He claimed that there were technical problems with the meters. The meters also got jammed due to deposits on them that came from water. Gandhi said that the process had to be done away with later.

He added that the VMC was once again going back to a system that had not worked in the city in the past. The Vadodara Nagarik Sangharsh Manch has also opposed the move stating that it would lead to privatisation as well as commercialisation of water supply.

The organisation that has activists from the city as its members said that the experiment had been tried in Delhi and water bills were very high. It added that the civic body should provide primary services like water free to citizens.

"Metered water policy of VMC opposed", 28/03/2013, online at: **http://articles.timesofindia.indiatimes.com/2013-03-28/vadodara/38098718_1_vadodara-municipal-corporation-water-meters-chinnam-gandhi**

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❖ J. Carl Ganter: The Biggest Story of Our Lifetime Is Water

For World Water Day 2013, Skoll World Forum and Circle of Blue asked four of the world's leading water experts to weigh in. Here is what J. Carl Ganter, director of Circle of Blue, had to say about water's connection to 21st-century journalism.

In honor of World Water Day 2013, featured below is an adapted version of J. Carl Ganter's keynote address, given on March 19 at the Canadian Water Network annual conference in Ottawa. Ganter is co-founder and managing director of Circle of Blue, as well as vice chairman of the World Economic Forum's Global Agenda Council on Water Security.

The biggest story of our lifetime is water. I'm a journalist and, today, the place to be is right here.

On December 7, 1972, astronauts aboard Apollo 17 took the most famous picture in history — a picture of a vulnerable little blue planet hanging in space. Twenty-five years later, Jerry Linenger launched aboard the Space Shuttle Atlantis. He was headed to the Russian Space Station, Mir, where he would spend spend five months in orbit. Plenty of time to ponder.

"Looking out the window, I would see the great sources of fresh water on the planet," Linenger wrote to me. "Lake Baikal, deeper than deep. The Great Lakes, well-named. The mighty rivers of the world — Nile, Tigris-Euphrates, Amazon — defining civilizations, past and present. But still, when stepping back and looking at the big picture, not so much different than our little orbiting space station, a closed ecosystem. Only so many sources of life-sustaining water. And all the creatures of Earth, just like the three of us circling it, all dependent on water."

In this closed ecosystem, we have systemic failure. A global freshwater crisis. Our blue, our water — in all forms — is in peril.

The U.S. intelligence community tells us that we should be afraid. Global instability. Drought. Disruption. Food and energy insecurity. The competition between water, food, and energy is affecting everything we care about. When there's water scarcity, we can see the trigger: drought pushes up food prices, which causes tensions and — by many indications — violence.

At the same time, there's the mind-numbing statistics we can't ignore: some 800 million people on the planet are without safe drinking water; every day, dirty water kills nearly 5,000 people, mostly children; and where there is water, it's the children who carry it.

Like this four-year-old girl in Ghana who walks six miles a day to fetch water. When these children carry the water, they don't go to school. Their future slips away with every bucket.

And we have a sanitation disaster: nearly 2 billion people don't have a safe place to go to the bathroom. So how do we fix this? We do it by listening better and learning from others; by knowing that there are solutions, sometimes small, sometimes globally transformative; and by understanding that there are real people living the real stories behind these huge challenges.

Let me take you on a quick tour around the world and introduce you to just a few of the people and places that Circle of Blue is finding on the front lines of a global water crisis.

In Tehuacan, Mexico, we found a city drying up. Its rainfall was decreasing. Its giant factory farms were draining the aquifers. Its farmers' wells were dry, and its families were having to buy water for the first time they could remember. But in the dusty village of San Marcos, there was a bright spot…

Francisca Rosas Valencia told us she was planting ancient grains like amaranth that didn't need so much water. Old crops, new thinking in the face of a changing climate. Now there's an entire amaranth business in the villages near Tehuacan.

When we visited, we did what journalists are supposed to do: we listened. Just before we left, I asked Francisca one more question: How was the drought affecting her family? She became uncomfortable and quiet: 15 seconds, 30 seconds, a minute of silence passed. Tears welled in her eyes, and she picked up a picture of her son and held it close.

Where there was no water, there was no future. The future was leaving the village. Her son had left for Mexico City. Headed to the United States, Francisca hadn't heard from him in more than a year; she didn't know if he had made it across the desert to the U.S.

Through Francisca, we felt the tragic implications of drought on families, cultures, and immigration in Mexico and many other parts of the world. But we also learned there may be better things to grow where it's getting dryer.

In Australia's Murray-Darling Basin, we reported on *The Biggest Dry*, one of the world's greatest droughts. The rice industry was collapsing, affecting food prices around the world. The situation was so stressful that some farmers were committing suicide. One radio journalist told us that she was afraid to go on the air with more bad news: another newscast could push another farmer over the edge, she feared.

Flying above Southeastern Australia in a small Cessna, I could see a small puddle of blue in the distance. After we landed, the farmer we met grumbled that he had to drill his well deeper each year so he could grow more rice in the dry lands.

We also found people like Beryl Carmichael, an Aboriginal elder. Sitting out under the stars eating stewed kangaroo, she told us how, for thousands of years, her people had survived the parched outback. She told us about Dreamtime, her connection to water, and her role in passing the spirits from one generation to the next. But gone with the desiccated rivers was her link to Dreamtime and her ancestors. Lost, she feared, forever. An ancient cultural tapestry unraveled.

Two years ago, we began working with the Wilson Center to peel back the complicated layers of China's water and energy challenge. We found that this competition is perhaps the greatest — yet mostly unseen — threat to the country's GDP.

During a frozen December, and while our other members of our team had fanned out across the country, I was dispatched to Inner Mongolia, home to some of China's largest coal mines. Flying into Xilinhot, I could see a tiny farm, a speck of a house off in the distance. The lone taxi at the airport took me there, past the mines and across the frozen grasslands. That's when I met Wu Yun. A shepherd's daughter, she had grown up on the lush, green grasslands. But I learned that the mines are changing her life. Dramatically. Her family's well was dry, and they had to coax an old tractor 15 kilometers to get water for the sheep and horses. The extended drought had hit hard, and the mines are draining what's left.

It's simple math for the world's fastest-growing economy: in China, there just isn't enough water to mine its coal and meet the growing power demands. It's a simple fact of geography and supply. China is dry in the north where the coal is; the majority of the nation's water supplies are in the south.

China is responding to its water problems in only ways a determined nation can — it's doing everything at once.

- China is building a $US 66 billion canal and pipeline system to bring water from the south to the north.
- China is off-shoring its water footprint by investing in coal fields in Australia and food production in Africa.
- China is building dams along its major and minor rivers to reduce reliance on coal. (But in some cases, it's building coal plants near the dams as backup. Just in case the rivers run dry.)

Can they respond fast enough? In September, we were in Urumqi, China, near the Kazakhstan border. It's incredibly dry. Yet giant industrial bases of massive scale are under construction. They will need water for their mills, their power plants and their nearby cotton fields. But the water supply comes from shrinking glaciers, and scientists aren't sure there will be enough water to last into the next few years.

These are decisions worth hundreds of billions of dollars. Decisions that will affect markets, food supplies, energy production, and lives around the world from a distant corner of China. Big decisions that have big consequences.

But what happens when you bring water to a community that never had it? To find out, I spent the night in Cuatro, a shanty town in the Philippine capital of Manila. At about 4 a.m., I heard something I hadn't expected.

It was the clank and bustle of people in the streets setting up shop. They were unlocking doors, unloading fish, and washing vegetables for the morning market.

It's not an easy life in Cuatro. There's raw sewage that runs underfoot and few places to go to the toilet. But a recent partnership with a local water company brought fingerlings of blue plastic pipes

that weave along the warren of pathways between shanties. They carry water to the community for the first time: safe water to drink and to wash with.

Residents who once spent almost half of their income buying water from private tanker trucks could now afford food, medicine, and education. They could open shops and pay the bus fare for jobs in town. And their children wouldn't be chronically ill.

Like 11-year-old Omar. He used to work from sunrise to dusk, begging on the sweltering Manila streets. Now, Omar sells fresh mackerel at the market in the morning and goes to school in the afternoon when the fish are all sold.

But around the world, the complexities are outpacing our abilities to deal, and our future remains in doubt. We face serious enemies. They are ruthless and cold. They have short attention spans. They are not listening.

"The fault, dear Brutus, is not in our stars, but in ourselves."

The water crisis is subtle, not sexy. It's not a mainstream topic. It is slow to unfold, hard to comprehend, and — until the taps run dry and the crops wither — it's not really relevant to the very people who have the most power to avert it.

It's not breaking news.

The answers to the global water crisis are not a click away. They are hidden deep in warrens of urban squalor, lush grasslands, global convenings and small council meetings, remote sensors and orbiting spacecraft, and in the pages of ancient history.

The answers come from listening better, persistently tuning in to the quiet signals, the moments of epiphany.

But we'd better hurry.

From orbit, astronaut Jerry Linenger said he could watch the dust storms of Inner Mongolia blow across the steppes toward Beijing. And if we look at Los Angeles — water, drought, pollution — they don't know political boundaries.

Remember Wu Yun? When I returned to her family's home last September, this is what it looked like. The mines are getting closer. The sheep have less grass. And, like dotted lines on a map, the sand dunes are marching closer.

Originally published by Forbes on March 22, 2013 for World Water Day 2013. This series of articles, a partnership between Skoll World Forum and Circle of Blue, asked four of the world's leading experts and innovators working on issues of water scarcity, security, and cooperation to weigh in to offer solutions and help better the understanding of key challenges and opportunities moving forward. This debate will also inform an upcoming session at this year's Skoll World Forum in Oxford.

"J. Carl Ganter: The Biggest Story of Our Lifetime Is Water", 28/03/2013, online at:
http://www.circleofblue.org/waternews/2013/world/j-carl-ganter-the-biggest-story-of-our-lifetime-is-water/

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❖ The Climate-Water-Energy Security Nexus in Central Asia

As the international community observed the UN World Water Day last Friday, March 22, two Central Asian countries were part of important talks at UN Headquarters in New York concerning water-sharing. Tajikistan and Uzbekistan have been engaged in a dispute over the building of a reservoir-type Rogun hydroelectric power plant in Tajikistan, which Uzbekistan has contended would disrupt flow to downstream countries, including itself. Uzbekistan, a country never absent from important meetings on water issues, proposed an alternative to the Rogun project involving the construction of smaller hydroelectric plants, which would bypass or avoid changes to the stream-flow regime. These talks bring attention to a broader nexus of water, climate and energy security in Central Asia that is worth watching closely by both regional leaders and the international community.

Water security in Central Asia

The uneven distribution of water resources poses serious problems in Central Asia. Although the sources of the largest rivers are formed in Tajikistan and Kyrgyzstan, the flow is significantly weakened by hydroelectric plants as they make their way to the downstream countries of Turkmenistan, Uzbekistan, and Kazakhstan. Accordingly, while the reservoir dam in Tajikistan collects water in summertime, Uzbekistan and Turkmenistan suffer from a lack of water for irrigation purposes, particularly during dry periods – the frequency of which has been rising. The effect on the agricultural economies of downstream countries is worrisome, with water shortages potentially inhibiting future development. Although a due diligence analysis of the project, facilitated by the World Bank, was recently conducted by an expert group, the Uzbek side refrained from supporting their findings. Instead, the Uzbek government points to a potential bias as the process was outsourced by the Tajik government to firms of their choice, without the input of all of interested parties.

The climate change aggravator

Aside from the unequal distribution of water resources, the destabilizing effects of climate change may add an additional layer of insecurity in the region. Tworecent studies of the heat wave in 2010, which significantly impacted agricultural production in Russia, Kazakhstan and Ukraine, have concluded that the event had a 70-80% likelihood of being attributed to a "long-term climatic warming trend." A 2009 report by the Eurasian Development Bank found that the main contributor to climate change in Central Asia has been a significant increase in ground air temperature, with the plains experiencing the highest rates of average annual temperature increases. These climatic changes

may already be aggravating 'compounded crisis risks,' making instances of contemporaneous energy and food shortages more commonplace through simultaneously melting ice caps in the mountains, which feed many of the region's rivers, and exacerbating the desertification process through extended drought. For example, the agricultural sector of Uzbekistan – especially the cotton industry – are dependent on water resources of the Syr Darya River and its tributaries, which are fed by glaciers in the Tian Shan mountains.

Cooperative solutions elusive thus far

In order to minimize the economic impact of water shortages on the economies of the affected countries, a joint effort in implementing adaptation measures, as well as a regulation of balances among the interests of the upstream and downstream country governments, is needed. Efforts undertaken for the development of regional cooperation and reduction of tensions in the region around the problem of access to water and energy resources following the fall of the Soviet Union, resulted in a series of bilateral and multilateral agreementssigned by the five country governments of the region. Unfortunately, due to the inadequate implementation of commitments made, and continuing political disagreements, not a single concluded agreement is currently in full-force. Furthermore, a lack of institutional capacity to develop adaptation programs has led Central Asia towards a reliance on external contributions.

Strategic significance

The intricate fabric of tensions and relationships characteristic to contemporary Central Asia is being unraveled by those taking part in a scramble for influence in the region. The region has long attracted the attention of the international community due to its natural resources, strategic position, and proximity to regions with a high level of conflict. The United States recently offeredUzbekistan some military equipment leftover from the war in Afghanistan. This offer counters Russia's promise of military assistance to Tajikistan and Kyrgyzstan, in an effort to strengthen security in the wake of ISAF's withdrawal from Afghanistan. China is another major investor in Central Asia, particularly due to its interest in further developing economic projects in the region, and ambitions of facilitating regional stability. The European Union is also paying close attention to Central Asia, developing a new regional strategy for 2014-2020. While each power inhabits a different sphere of influence, Russia's role in Central Asian security trumps the efforts of others at establishing themselves as the main player.

Poor governance

Despite all these efforts by external powers, the main culprit of instability in Central Asia remains poor governance and divisive self-sufficiency politics. Central Asia's autocratic regimes are generally more interested in holding on to power than the well-being of their populace, and have expertly played common perceptions and trends to their political advantage. The image of the region as a haven for militant rebel groups is perpetuated by regional regimes that use it to justify their repressions. The question is – will the governments of Central Asian states leverage such overtures to their countries' advantage?

Possible next steps

The countries of Central Asia would benefit from familiarizing themselves with ways of attracting additional financial resources, both from national and international sources, and making use of lessons and practical information on land and water-usage, as well as ecological monitoring, commonplace in developed countries. Mitigation of vulnerability to drought can also be approached through financial risk-management tools such as weather derivative contracts. By transferring weather-related risk to market counterparts, index-based weather derivatives have been used in a number of countries to strengthen agricultural security. The use of the weather market and index-based insurance products can be intermediated by development banks. Furthermore, the Eurasian Bank supports the idea of further integrationin the region, starting with concrete industries and aimed at building more cooperation.

In short, though the region faces myriad risks to food, water and energy security, there are practical steps for enhancing good governance that can help mitigate these risks.

"The Climate-Water-Energy Security Nexus in Central Asia", 28/03/2013, online at: **http://climateandsecurity.org/2013/03/28/the-climate-water-energy-security-nexus-in-central-asia/**

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❖ International water politics: Large dams and the 'risk society'

The ongoing controversy about the social, economic and environmental costs and benefits of building large dams is a sub-set of the even larger debate about how we should move to a sustainable world. A central part of this debate has been the discourse about the development of 'the risk society', one in which policy makers believe they can reliably predict future problems and manage them. The term 'risk society' was popularized by Ulrich Beck in the 1980s. He described the ethos of the state – thinking of governments in western Europe and North America – as animated with confidence that humans could conquer nature in all its manifestations and deal with future hazards by continually assessing potential risk and planning to deal with them. He did not suggest that they would be successful but diagnosed this as the underlying ideology of what is sometimes called the 'modern' state.

A good example of the risk society in action is the climate change debate. In the 1980s and 1990s, through a response that fits with Beck's analysis, you can see a world where governments saw a problem and through arrangements such as the Kyoto Accords started a process to deal with it. Given the confidence and optimism of the Rio Earth Summit in 1992 and the Kyoto Protocol negotiations in 1997 it must have seemed a reasonable prediction that we were heading for a highly planned future. But that international effort has since unravelled in spectacular failure and we are now, according to a recent publication of the World Bank, heading at great speed towards a plus 4C degree with little serious effort to avoid our fate even though we know what it will be. A similar trajectory can be charted for the large dams debate. As with the climate change issue there was a diagnosis of a massive challenge – the negative consequences of a technology that has provided immense material benefits to very large numbers of people – and an attempt to deal with the problem through planning, most notably through enforcement of the recommendations that are the core of the World Commission on Dams report published in 2000. As with the Kyoto Accords that project has also proved abortive. Arguably in both cases, climate change and large dams, there have been significant advances on previous practices and a reduction of some negative impacts, but not in the planned systematic fashion that would be characteristic of a 'risk society'.

For the international public the Three Gorges dam in China was the construction project that highlighted the controversy surrounding large dams. The Three Gorges Dam generates vast amounts of electricity and is supposed to provide large scale flood protection and much improved navigation for southern China. It is also linked to the even larger south-to-north transfer project which is meant to reduce water stress in the Yellow River basin. To achieve improved water security for both north and south China both projects are causing the displacement of large numbers of people and massive environmental impacts. It was its determination to build projects on this scale which caused the Chinese government to pull out of the World Commission on Dams project in the late 1990s.

The saga surrounding the World Commission on Dams report brought together the opposing forces and their arguments in a way that lends itself to an interesting analysis of the key stakeholders and their approaches. The report had its origins in the debate that intensified in the 1990s around projects such as the dams proposed for the Narmada River in India.

Construction of these dams was repeatedly delayed by court action on behalf of the people who were going to be displaced. The anti-dam struggle in India was backed by an intensive international campaign by NGOs. Eventually the World Bank pulled out and funded an independent body, the World Commission on Dams, which was tasked to consult widely and develop guidelines that would take comprehensive account of social and environmental concerns to guide future investment in large dams. The NGO community engaged enthusiastically with the project but the hydropower industry less so. Soon after the project commenced a number of countries with major dam building programs pulled out. The resulting report was widely regarded as a triumph for the critics of large dams but was largely ignored by countries and organisations actively investing in and commissioning them, including the World Bank. Big dam proponents such as the International Hydropower Association subsequently developed their own codes of dam building practice but these have been criticised as too weak and only voluntary. The issue of compliance with the World Commissions' recommendations has been one of the main points of conflict in the international debate ever since.

Looking at the controversy surrounding the report neither side emerges in a particularly favourable light. The anti-dam NGOs were successful in capturing the consultation and report development process in ways that appear very excluding of supporters of big dams and they took little account of the very real benefits that well-built dams provide. On the other hand the pro-dam proponents seem to have continued on, despite the report, building dams with fairly minimal acknowledgement of the immense social and environmental costs highlighted by the anti-dam group.

Since their losses in the policy battles that followed publication of the report, however, the critics of big dams have continued to develop arguments for alternatives on both the demand and supply side of the water security equation. Reducing demand and therefore the need for extra dams – through greater water use efficiency and cooperation through international markets and regional integration to provide food and energy alternatives at lower cost than is possible within a national self-sufficiency framework – has been one approach. At the same time they have investigated alternatives such as run-of-river power generation. On the other side big dam builders have had to work harder to justify their projects and seem to have increased their efforts to improve re-settlement processes. The degree of substantial improvement is hard to assess, however, and some of the dams being proposed are larger and potentially even more disruptive than those that have caused such controversy in the past.

As suggested at the beginning of this essay the debate about large dams contains within it many of the same elements that make the overall discourse about how to move to a more sustainable society

so intractable. Given the centrality of water, and the food and energy that it makes possible, to economic growth it is hard to see ways to ease the pressure to build more dams and satisfy ever increasing demand without a change to the economic paradigm. Although water may be a renewable resource (if managed well) most of the best sites for dams are already taken and in many cases the dams built in the past are in decline in terms of their usefulness. In this sort of situation it is common to point to increasing efficiency as the process that will satisfy all demands but that does not seem to be sufficient.

Further reading

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❖ Water ravenous Middle East and North Africa look to membrane bioreactors, says Frost and Sullivan

The total water consumption of the Middle East is expected to rise to 319 billion cubic meters (BCM) by 2020, with agriculture utilising the bulk. Population and economic growth, paralleled by industrial diversification, is placing immense pressure on water demand.

The suitability of treated wastewater for agricultural irrigation and the increased focus on wastewater reclamation and reuse as a sustainable way to manage diminishing water supplies are set to unfold opportunities for advanced water and wastewater treatment solutions, including membrane bioreactor (MBR) technology.

New analysis from Frost & Sullivan (www.environmental.frost.com), Analysis of the Middle Eastern and North African (MENA) Membrane Bioreactor Market, estimates the market to reach $280.3m in 2015. The research covers municipal, commercial and residential and industrial end-use sectors.

With the business environment becoming transparent and conducive in the Middle East, these 'frontier' economies are expected to infuse funds into the urban water and sanitation infrastructure to achieve Millennium Development Goals, and lessen the reliance and deterioration of dwindling ground water resources. All these point to an uptrend in the use of reclaimed wastewater.

"On an average, 50% of Middle Eastern countries' population is connected to wastewater networks," noted Frost & Sullivan Environmental Industry Manager Sasidhar Chidanamarri. "This creates tremendous opportunities for wastewater treatment and recycling technologies."

The Middle East has been at the forefront of embracing new water and wastewater treatment technologies. In wastewater treatment, the region boasts of large capacity MBR systems that treat domestic and industrial effluents with higher efficiency, ensuring that pollution is minimised. The growth prospects for MBRs in the Middle East are substantial, considering the potential for recycling and reuse of grey water (domestic sewage) and industrial effluents.

However, market penetration will not be easily achievable due to high costs of treatment technology, negative societal perceptions, poor collection and network infrastructure, and lack of a skilled workforce.

"Luring customers with cost-optimisation solutions is an effective means to gain market share," advised Chidanamarri. "Strategic tie-ups with vendors of spares, chemicals, and equipment will allow suppliers offerings to be cost effective. In the long run, associating with original equipment manufacturers will also be of immense value to membrane manufacturers to participate in new MBR projects, as well as address replacement demand successful."

Strategic tie-ups with engineering, procurement, and construction (EPC) companies also represent a strong way to create stable demand for membrane-based products and to promote MBRs, as these EPC companies can recommend various technological options to the end user.

Analysis of the Middle Eastern and North African (MENA) Membrane Bioreactor Market is part of the Environmental Growth Partnership Service programme, which also includes research in the following markets: Water and Wastewater Sector in Saudi Arabia, Water and Wastewater Infrastructure Market in MENA Countries, and Water and Wastewater Sector in the United Arab Emirates. All research included in subscriptions provide detailed market opportunities and industry trends evaluated following extensive interviews with market participants.

"Water ravenous Middle East and North Africa look to membrane bioreactors, says Frost and Sullivan", 26/03/2013, online at: http://www.ameinfo.com/water-ravenous-middle-east-north-africa-334964

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❖ Water Cooperation at the National Level: The Case of Kenya

Dr. Robert Kibugi is a Legal/Institutional Expert for Ministry of Water and Irrigation in Kenya and a lecturer at the Centre for Advanced Studies in Environmental Law and Policy (CASELAP), University of Nairobi.

Legal and institutional changes in the Kenyan water sector are not new; the current water law was enacted in 2002. The law introduced extensive changes and reforms, including a separation between water resource management and water services that allows specialized agencies to perform the tasks. This resulted in creation of the Water Resource Management Authority (WRMA) to manage and regulate water resources, and the Water Services Regulatory Board (WASREB) to regulate water services. The latter regulates the functions of Water Services Boards (WSBs), responsible for developing infrastructure, and those of water service providers (WSPs), which are primarily utilities that purchase water from WSBs and sell to consumers. Beyond water services and resources, the areas of water storage and irrigation, which address harvesting and productive use of water, were not part of the 2002 reforms.

Yet, investment in water storage has been stalled since the mid-1990s and existing capacity has not been adequately maintained, reducing effective storage further. Kenya's total water storage, including hydropower generation, is approximately 4.1 billion m^3 or 103 m^3per capita. Per capita storage drops to 3 m^3 when hydropower generation is excluded, which is dismally low compared to other countries (as a point of comparison, North America has a per capita storage of just under 6,000 m^3 and South Africa, just under 700 m^3). Further, water storage investments are primarily driven by single sector considerations, and growth opportunities from multi-purpose investments are not fully captured.

Upon promulgation of the Constitution of Kenya (CoK) in 2010, the system of national administration was significantly altered, marking a shift from a centralized government, to a system of devolution and decentralization of functions. The CoK created two levels of government: one national, and 47 county governments. Each level of government performs specifically defined functions. The structure of administration is relevant to management of the water sector because: (i) water resources are vested in the national government, but counties have a residual role to implement national policies; (ii) water and sanitation services are the responsibility of county governments. However, because the Constitution has created a basic right to water and sanitation, the fulfillment of

this right implies a significant role for the national government in water services and sanitation; and (iii) complexities surrounding water storage and irrigation have not explicitly been identified as functions of either level of government.

In practical terms, the performance of water storage and irrigation functions will likely include specific activities of county governments, thereby creating a potential overlap. Concurrent jurisdiction requires a system of collaboration to avoid and/or manage conflicts. The Constitution also requires establishment of a system of cooperative governance that will ensure devolution is implemented in a manner that is interdependent, and with mutual consultations.

While the 2002 water sector reforms have not been fully implemented, a process has commenced in earnest to review key water sector laws and policies in order to align with the CoK. The Ministry for Water and Irrigation (MWI) has developed a Water Sector Transition Plan that defines the key activities, milestones and timelines that should be achieved in order for the transition process to finalize promptly and successfully. However, a significant part of the reforms process involves the preparation of laws, policies, and establishment of new institutions.

The Government of Kenya, with the support of the World Bank, has developed the Kenya Water Security and Climate Resilience Program (KWSCRP), with a core objective to (i) increase availability and reliability of water supplies; and (ii) improve investment planning and preparation for water security and climate resilience. This involves supporting activities to enhance water sector reforms, planning and management of the sector. The KWSCRP has been designed to support activities throughout the reform process that will prepare and implement the (i) Water Sector Transition Plan, (ii) legal and institutional reforms highlighted earlier, and (iii) enhancement of capacity of water sector institutions through technical assistance, and training.

Preparation of the KWSCRP, nearly complete, has involved significant consultations with key stakeholders in the water sector in order to identify how best to structure support to the reforms. A key challenge will be how to implement the transfer of water functions and roles from the national government to county governments effectively, and how to ensure smooth performance of concurrent functions.

For this reason, support to activities that will enhance the capacity of institutions and staff to perform their statutory mandates and technical functions is central to the support extended through the KWSCRP. This support is complemented by other elements of the KWSCRP, including activities to support water sector planning and management, which includes activities to build the specialized technical capacity in water sector institutions.

"Water Cooperation at the National Level: The Case of Kenya", 22/03/2013, online at: http://blogs.worldbank.org/water/water-cooperation-at-the-national-level-the-case-of-kenya

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❖ Serious water shortages in the Mekong Delta thirst

An area with numerous rivers and canals running through it has been suffering a severe shortage of fresh water.

Drought and rising salinity levels have caused a permanent situation in Bien Bach Commune, Thoi Binh District, in the coastal province of Ca Mau in the Mekong Delta.

Fresh water for daily use and drinking is supplied by dealers who transport it in from about 10 kilometers outside the locality.

The severe water shortage has affected about half of the 1,800 households, consisting of with 9,000 residents. They live in hamlets 18 and Thanh Tung along the Trem River, whose water is so salty that it is undrinkable.

"Water there is salty. At night the water looks reddish as the result of alum poisoning," said Pham Truong Son, deputy chairman of the commune's People's Committee. "We rely on boats carrying water from the neighboring province of Kien Giang."

Water costs more than rice

A family of four spends on average VND25,000 (US$1.20) on fresh water every day, while the daily cost for rice is just VND15,000, said Mr. Tran Huu Thanh, from hamlet 18.

This is a considerable expense as water normally costs people in the Mekong Delta nothing, since it can be taken from rivers, even for drinking water.

The average price of 800 iters of water, or a jar, is VND50,000 – 60,000 and it is only enough to last a family for two days.

Some families transport water themselves, but the cost of daily labor and fuel is even higher than buying directly from water dealers in the region.

Thanks to this reality, the job of making jars in the area has flourished to meet the increasing demand for storing fresh water.

Salinization

In some areas of Ca Mau, Kien Giang and Soc Trang, salt water has advanced deeply into rice fields that are located 30-40 kilometers from the sea, thanks to the current drought which has left the fresh water level lower than that of sea water.

The salt concentration in the Ganh Hao River in Ca Mau was measured at 2.8 percent three weeks ago, higher than the record level of 2.7 pecent from last year, although the peak of this year's drought is expected to come in a couple of weeks.

Other provinces such as Tien Giang, Ben Tre, and Tra Vinh face similar trouble, though salt levels are lower. This has damaged to tens of thousands of hectares of rice and crops.

The disappearance of thousands of local cajuput forests has exacerbated the salt water invasion. Just in Long An Province, 3,600 hectares of cajuput forests disappeared last year.

"Serious water shortages in the Mekong Delta thirst", 26/03/2013, online at: http://tuoitrenews.vn/features/8203/serious-water-shortages-in-the-mekong-delta-thirst

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❖ Experts Warn Climate Change, Dams Threaten Mekong Region

WASHINGTON — The region of the Mekong Delta faces multiple threats from climate change and impending hydrodams that likely to hurt fisheries, crops and livestock, experts say.

Changes in temperature and rainfall will increasingly threaten agriculture in the region, according an early release of some findings of the USAID-funded "Mekong Adaptation and Resilience to Climate Change."

"The Greater Mekong Subregion is one of the most vulnerable regions in the world with respect to climate change and its effects on agriculture production systems, including fisheries," said Ulrich Apel, an environment researcher for the Global Environment Facility.

Added to the potential threats of climate change are the many dams planned in Mekong countries, experts said.

The impact for 60 million people living on the Mekong River "could be disastrous," said Aviva Imhof, campaigns director for the U.S.-based International Rivers. "By blocking the transport of sediment, the dams will contribute to even greater erosion in the fertile Mekong Delta, which is already threatened by increasing saltwater intrusion as a result of rising sea levels."

The combined threats of dams and climate change could severely damage fish stocks, impacting food security for many people living along the river, particularly Cambodians, according to Zachary Dubel, a researcher at the Stimson Center.

"The Mekong River is the world's most productive freshwater fishery, but it is being stressed by overfishing and fast population growth that looks to increase significantly over the coming decades," he told VOA Khmer.

Cambodia, Laos, Thailand and Vietnam rely heavily on the Mekong River, and these countries spend

millions of dollars annually to protect areas of the river. But experts warn they most find common solutions to the impending problems.

The Global Environment Facility committed $92 million for a four-year project that ends in 2014, aiming to mitigate the impacts of climate change, conserve biodiversity in the region and fight land degradation, Apel said.

But it is up to the Mekong countries themselves to "work together to tackle these issues," he said.

Climate change is a "transboundary" problem that requires a transboundary solution, Dubel said. The Mekong River must be viewed similarly, he said. "As a river that runs through six countries and provides a great number of environmental services to millions of people, it is vital that the river be managed collectively. That includes information sharing, as well as coordinated policies.

He added that currently it is not happening, and a number of dam projects are being developed by various companies with insufficient coordination.

"Lack of cooperation on mainstream hydropower in the present has already created tension between upstream and downstream countries that threatens regional relations at a time when multilateral cooperation on issues, such as adaptation to climate change, is extremely important," he said. "Furthermore, those dams that have been built already require increased coordination between themselves in order to effectively manage flows between them, particularly in light of the increased rainfall the region will receive in the future and threat of floods."

Long-range and comprehensive impact assessments are needed before such dams are built, he said.

International River's Aviva urged Mekong governments to reconsider the dams. Countries of the region need to make sure they are taking on "no-regrets" measures to ensure their economies are "as climate resilient as possible," she said.

"The proposed dams for the Mekong region are also not being designed with climate change in

mind," she said, "with the result that some dams may be uneconomic, as there won't be enough water to generate power, and other dams may be risky, as they will not be built to withstand greater floods and extreme weather events predicted by climate change."

With 11 mainstream dams and scores of tributary dams planned, the impacts of climate change could be greatly increased, she said.

The Mekong adaptation report, whose full results will be issued March 29, found "shocking results," report author Jeremy Carew-Reid said in a statement. "We've found that this region is going to experience climate extremes in temperature and rainfall beyond anything that we expected."

"Experts Warn Climate Change, Dams Threaten Mekong Region", 25/03/2013, online at:
http://www.voanews.com/content/climate-change-dams-threaten-mekong-region-experts-warn/1628527.html

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❖ In Washington, 'Mekong Days' Puts River in Focus

Advocacy groups, environmentalists and policy-makers have wrapped up five days of events surrounding Mekong River issues in Washington.

"Mekong Days," a series of talks, films and other forums that ended Tuesday, highlighted issues in the region, where some 60 million people live.

The Mekong River, a major source of food for many in the region, is currently under increased pressure from hydropower dam projects and the potential impact of climate change. Environmental advocates say the dams could hurt fish stocks in the river, even as temperature and rainfall changes threaten agriculture and livestock.

But with the US diplomatic focus returning to Asia, the Mekong River could become even more important, advocates say. A recent study funded by USAID, "Mekong Adaptation and Resilience to Climate Change," found increasing threats to livestock, fisheries and other agriculture.

All of this makes Washington a good place to discuss the Mekong, said Wilfried Eckstein, director of the Goethe Institute, which helped organize the events. Washington has many foundations that are active and experienced in Southeast Asia, and they can move opinion and policies, he said.

"So I think the Goethe Institute can contribute as a platform to communication about what is going on in the world, first of all, and in this case that is the Mekong River basin in particular," he said.

More than 100 participants took part in the Mekong Days events, which were supported by US and European organizations.

Vathny Say, a Maryland resident who attended a film screening, said Washington was the right place for such discussions. "There are a lot of policymakers and influential people that can speak to the government about the issues," she said. This helps people get a better understanding of people who live along the river, often at subsistence levels, and how they are impacted by developments, including dams, she said.

She would have liked more information on Cambodia, however, she said. "They need to consider more of the people's needs," she said. "If they did that, they would have less problems, but they don't."

Filmmaker Douglas Varchol said he produced "Mekong" to encourage dialogue on the river's issues, which cross national borders and are often politically sensitive.

For viewers like Ellen Notar, of Washingotn, Mekong Days did just that.

"I think the film just made us more aware of the difficulties in a huge region, and so many countries involved, and the life of the Mekong is so critical to these people," she said.

Cambodia filmmaker Chum Sophea, who produced "My River, My Fish, My Life," told VOA Khmer by phone from Phnom Penh that he was happy to have his film screened in Washington, where it won third prize for Southeast Asia. "The Mekong is just like the blood vein of life for people who live along the Mekong River," he said.

Kalyanee Mam, a Cambodian-American filmmaker whose documentary, "A River Changes Course," won a Grand Jury Prize at the Sundance Film Festival this year, said the Mekong is facing a variety of threats, including hydroelectric dams, dynamite fishing methods and other overfishing.

"Our Mekong and Tonle Sap [rivers] have a lot of problems now, because the fish are getting less when they start building dams," she said. That can be devastating for many Cambodians, who rely on river fish as a major source of protein, she said.

At least 11 dams are currently planned for the lower Mekong, a major concern for fish populations that migrate up and down the river. China has built four dams upstream already, and Laos is in the process of building a dam in Xayaburi province, despite objections from Cambodian and Vietnam.

"In Washington, 'Mekong Days' Puts River in Focus", 31/03/2013, online at: http://www.voacambodia.com/content/in-washington-mekong-days-puts-river-in-focus/1630640.html

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❖ The Lower Mekong Dams: A Transboundary Water Crisis

Updated Factsheet

The governments of Laos, Cambodia, Thailand, and Vietnam are planning to build eleven large hydropower dams on the Lower Mekong River. If built, these dams would destroy the river's rich biodiversity and threaten the food security of millions of people.

When the dams were first proposed, there was limited understanding of the ways that people depend on the Mekong River and its ecosystems. Now that the threats posed by the Mekong dams have become clearer, tensions have grown between the people who will profit from the dams and those who will bear the impacts. This factsheet provides an overview of the controversy around the proposed Lower Mekong dams.

A River Shared by Millions

The Mekong River is one of the world's great rivers. Starting on the Tibetan Plateau, the river travels through six countries before it forms the Mekong Delta in Vietnam and empties into the South China Sea. Although China has built several dams on the upper part of the river, the lower stretch—shared by Cambodia, Laos, Thailand, and Vietnam—continues to flow freely. Over 60 million people depend on the Lower Mekong River for food, income, health, and their cultural identity. Yet the four governments have revived plans to build a series of mega-dams across the river to generate electricity, even though better options exist. Plans for a series of dams on the Lower Mekong River date back to the 1950s, but war and instability in the region made these proposals impossible for several decades. This has now changed. In the 1990s, the Chinese government began to build a cascade of large dams on the Upper Mekong. In the mid-2000s, Chinese, Thai, Vietnamese, and Malaysian companies revived plans for eleven large hydropower projects on the Lower Mekong Mainstream. Nine of these proposed dams would be in Laos, and two would be in Cambodia. Most of the electricity would be sold to Thailand and Vietnam. When the dams were first proposed, there was limited understanding of the ways that people depend on the Mekong River and its ecosystems. The dams' economic, social, and environmental risks were poorly understood. Now that the threats posed by the Mekong dams have become clearer, tensions have grown between the people who will profit from the dams and those who will bear the impacts.

"The Lower Mekong Dams: A Transboundary Water Crisis", 25/03/2013, online at:
http://www.internationalrivers.org/resources/the-lower-mekong-dams-a-transboundary-water-crisis-7900

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❖ Gov't policies to blame for water shortages

Conflicting government policies are to blame for the country's water shortages, according to civil society organisations.

"In our opinion, Ghana is not reaping the full benefits of her huge water resource potential because policy contradictions of the government have led to poor water resource management," according to a statement issued by the Centre for Environmental Impact Policy Analysis (CEIA), Wacam, the Gender and Environmental Monitoring Adovcates (GEMA0 and Humanity Focus Foundation (HFF) have argued.

The statement was issued to coicide with World Water Day last Friday.

In it, the groups said government policies interfere with the environment, leading to the destruction of precious water bodies which could be harnessed to provide water for the country.

"The decision of the government to open up forest reserves for mining operations meant the sanctioning of the destruction of watersheds and, by extension, the killing of rivers and water bodies," the report said.

The cited government's granted mining lease to Newmont Gold Ghana Limited's Akyem Mine to undertake surface mining in the Ajuena-Bepo Forest Reserve, which is the watershed for rivers such as Yaayaa, Adenkyensu, Alotosu, Afosu, Aprapon and Owunta.

They said that the current government is responsible for the situation since Ghana has a progressive political system which makes the present administration responsible for the decisions of the past one.

Even so, the groups said it recognises the need for private organisations to work with the government in order to secure the nation against experts' predictions that Ghana will face a severa water crisis by 2025.

Ghana is already facing a severe water shortage due to pollution of water bodies, poor infrastructure and management in the water sector and countrywide power problems.

"Gov't policies to blame for water shortages", 25/03/2013, online at:
http://www.ghanaweb.com/GhanaHomePage/NewsArchive/artikel.php?ID=268908

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❖ Policy contradictions cause of poor water resource management

Civil society groups working on the environment has said that the inconsistency in government policies is responsible for the poor water resource management.

The groups said Ghana is not reaping the full benefits of her huge water resource potential.

"Policy contradictions of the government have led to the poor water resource management," the Centre for Environmental Impact Analysis (CEIA), Wacam, the Gender and Environmental Monitoring Advocates (GEMA) and Humanity Focus Foundation (HFF)" said

A statement released by the groups on Tuesday said the current water situation in Ghana indicates that more needs to be done by all stakeholders to foster a smooth cooperation in water management whilst experts have also predicted that Ghana would face severe water crisis by 2025.

The group said the decision of the Government to open up forest reserves for mining operations meant the sanctioning of the destruction of watersheds and by extension the killing of rivers and water bodies.

The statement noted that for example, the Government has granted mining lease to Newmont Gold Ghana Limited Akyem Mine to undertake surface mining in the Ajenua-Bepo Forest Reserve, which is the watershed for rivers such as Yaayaa; Adenkyensu; Alotosu; Afosu; Aprapon and Owonta.

The group therefore call on the Government to withdraw Environmental Permits it has granted to mining companies to mine in forest reserves of Ghana to demonstrate its commitment to the protection of our water resources.

They also called on the Government as well as Parliament, as a matter of urgency, to pass into law the Polluter Pay Principle and give legal backing to all the Water Quality Guideline Values being used in the country.

It believes that Government by doing that would give meaning to the legislation on polluter pay

principle; deter people from polluting water bodies and reduce the cost of treating polluted water for urban water supply.

The group said there was the need for stakeholders, particularly the Government; civil society; media; academia/research institutions and the country's Development Partners to commit themselves to the imperative of water quality and availability for all citizens of Ghana especially the urban poor by 2015.

"Policy contradictions cause of poor water resource management", 27/03/2013, online at: http://www.ghanaweb.com/GhanaHomePage/NewsArchive/artikel.php?ID=269136

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