



ORSAM WATER BULLETIN

Weekly Bulletin by ORSAM Water Research Programme

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



ORSAM WATER BULLETIN

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❖ Turkey's New Cyprus Strategy

It is a tradition for Turkish presidents and prime ministers to pay their first overseas visits to Northern Cyprus and then to Turkic Republics, especially Azerbaijan, once they take the office. Although not very often, the list of visits may include countries such as Kyrgyzstan and Turkmenistan instead of Azerbaijan. These visits, which show Turkey's foreign policy priorities to the public and diplomatic circles, may change with the diversification of Turkey's strategic priorities in the upcoming period. It will not be surprising if the Balkan countries are included in the list of "first countries to be visited."

Recep Tayyip Erdoğan did not break this tradition after he was sworn in as president. Before attending the NATO Summit in Wales, he paid visits to Northern Cyprus and Azerbaijan. Erdoğan's visit to Northern Cyprus carries a lot of weight, as a new era begins in Cyprus, where Turkish and Greek Cypriots resume peace negotiations. The most important reason why I call it a new era is because Turkish Cypriots and Turkey are going through a serious emotional break with the EU. In 2004, Turkish Cypriots, who consented to the Annan plan that suggested a two-state federal structure, were disappointed when Greeks, who objected to this plan, were accepted to the EU. It is possible to say that this disappointment deepened further due to unfair practices and international segregation against Northern Cyprus and Turkey. Worse still, the EU has lost credibility in the eyes of Turkish Cypriots and emotional bridges have been broken down.

This emotional breakaway from the EU can be associated with the economic crisis that the EU undergoes and Southern Cyprus's failure to make the expected move. This, of course, does not prevent Turkish Cypriots from coming to the table with Greeks to initiate negotiations. However, it should be underlined that Greek Cypriots' attempts to postpone the reconciliation are not regarded as a major problem like it was before. This emotional break is also reflected in Turkey's Cyprus policy. Turkey pursues a longer-term investment strategy which will boost mutual interdependence and improve Cyprus's economic and social infrastructure. For example, in the upcoming months, Turkey will start to supply potable water from southern Turkey to Northern Cyprus via a pipeline under the Mediterranean Sea. I do not need to elaborate on the significance

of potable water for an island which is surrounded by salt water and is devoid of sufficient potable water resources. The next step to be taken is about electricity. Once the water supply project is completed, Turkey will start to transfer electricity to Cyprus in a similar way through the Mediterranean Sea. These two vital projects which will connect Turkey and Cyprus more, will be in favor of Turkish Cypriots. The Turkish government suggested that if Greeks Cypriots want it, they can benefit from Northern Cyprus's water and electricity. Turkey wants them to acknowledge that this is a well-intentioned step for peace, although it finds southern Cyprus's unilateral steps taken in oil and natural gas ill-intentioned.

Ankara is in favor of the continuation of peace talks and the idea of a two-state federal structure. However, it thinks that Southern Cyprus procrastinates peace talks to gain time. Everyone should realize that Erdoğan cannot offer such opportunities forever. Nobody has the right to jerk around Turkey and the international community by extending the U.N. process over a period of time. Ankara says they are running out of patience and toleration. This indicates that Turkey has come to a new threshold on the Cyprus issue and is seeking a different formula. Turkey has never argued for a de facto application in Cyprus like Russia's annexation of Crimea, but this does not mean that Ankara will not seek other ways of finding a solution.

“Turkey's New Cyprus Strategy”, 05/09/2014, online
at: http://www.dailysabah.com/columns/yahya_bostan/2014/09/05/turkeys-new-cyprus-strategy

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❖ Turkey-Cyprus water pipeline project 55% complete

The construction of a water pipeline between Turkey and the Turkish Republic of Northern Cyprus (TRNC) has passed the halfway mark, according to authorities.

The pipeline project, which has been named Baris Su - meaning 'Peace Water' - intends to supply the eastern Mediterranean island of Cyprus with fresh water.

Connecting two reservoirs in Turkey and the TRNC, the 80 kilometer pipeline will provide a solution to the island's age-old water crisis.

The pipeline is currently said to be 55% complete, Turkish daily Yeni Safak reported.

Authorities in Turkey have insisted that the Greek Cypriot administration in the south of the island can also benefit from the fresh water pipeline, which could prove to be a catalyst in the ongoing Cyprus peace talks.

“Turkey-Cyprus water pipeline project 55% complete”, 04/09/2014, online at:

<http://www.worldbulletin.net/news/143726/turkey-cyprus-water-pipeline-project-55-complete>

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❖ **US strikes Islamic State militants at Iraq's Haditha dam**

The US has carried out a series of air strikes on Islamic State militants close to the vital Haditha dam in Iraq's western Anbar province.

The US strikes, the first in the area, were to protect the Iraqi forces and Sunni tribesmen in control of the dam.

The governor of Anbar has been lightly wounded in fighting in the province, the army has said.

Separately, US President Barack Obama said he would set out a plan of action against IS in a speech on Wednesday.

Mr Obama had been much criticised for saying "we don't have a strategy yet" when asked about IS during a press conference last month.

Analysis: Jim Muir, BBC News, northern Iraq

The American air attacks, the first of their kind in Anbar province, signal that Washington has crossed a line that it itself drew.

It has long had a standing request from the outgoing Iraqi government to use its air power against IS in all areas. But until recently, it made it clear it would only do that once a new, inclusive government is formed in Baghdad, with full Sunni representation.

That hasn't yet happened, though intensive efforts are under way to produce a new cabinet in the coming days.

The US has carried out more than 130 air strikes since early August to support Iraqi and Kurdish forces fighting IS in northern Iraq, but these were the first in Anbar.

A US official said: "At the request of the Iraqi government and in keeping with our mission to protect US personnel and facilities, US military planes have begun striking Isil terrorists near the Haditha dam."

The Pentagon's press secretary, Rear Admiral John Kirby, later said: "We conducted these strikes to prevent terrorists from further threatening the security of the dam, which remains under control of Iraqi security forces, with support from Sunni tribes."

The Iraqi army said a mortar round had lightly wounded Governor Ahmed al-Dulaimi in the town of Barwana shortly after it was retaken from IS on Sunday. He was hit in the head by shrapnel.

IS, also often referred to as Isil or Isis, has taken over large swathes of Iraq and Syria in recent months, declaring the land it holds a "caliphate".

Islamic State fighters have targeted a number of dams in their offensive, capturing the facility at Fallujah.

They also took the largest dam, at Mosul, but US air strikes helped force them out.

The group has so far failed in its attempts to capture Haditha dam, on the Euphrates valley in western Anbar province. It is Iraq's second largest dam.

IS militants in August reportedly closed eight of the Fallujah dam's 10 lock gates that control the river flow, flooding land up the Euphrates river and reducing water levels in Iraq's southern provinces, through which the river passes.

Many families were forced from their homes and troops were prevented from deploying, Iraqi security officials said.

IS also controls other key national assets - several oil and gas fields in western Iraq and Syria.

Short battle

Kurdish forces in northern Iraq earlier recaptured the strategically important Mt Zartak, which overlooks a plain that stretches to Mosul, the city seized by IS in June.

The mountain fell to the Islamists last month when they staged a lightning attack on Iraqi Kurdistan.

Since then Kurdish "peshmerga" fighters have been slowly pushing back, assisted by US air power.

The BBC's Jim Muir in Iraq says Mount Zartak was retaken in a short, sharp battle that left more than 30 IS fighters dead.

“US strikes Islamic State militants at Iraq's Haditha dam”, 07/09/2014, online at: <http://www.bbc.com/news/world-middle-east-29098791>

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❖ **Battle for Mosul Dam: a new age of water wars beckons**

Exactly a year ago, the world was wrestling with the possibility of another US-led military assault on an Arab state, following the horrific gas attacks in Damascus, Syria.

When US military action did come in early August this year, it was in northern Iraq against the Islamic State (IS) which evolved out of the Syrian civil war. In the context of the spiralling humanitarian crisis, swift and co-ordinated IS advances, and single acts of astonishing barbarity, ongoing US attacks have become focused on control of a dam. It is the latest and most visible chapter in the world's growing water crisis and confirmation of water's central role in conflicts.

The Mosul Dam blocks the Tigris River south of the Turkish border, forming a reservoir 11 billion cubic metres in volume – the fourth largest in the Middle East. Much of the military rhetoric has focused on the potential for deliberate destruction of the structure, releasing catastrophic flood waves reaching 4.6m high as far downstream as Baghdad, 350km away. But politically and economically it is the control of the dam's hydroelectricity which gives it priority. Engineers, meanwhile, noting the reservoir's unorthodox setting (on water-soluble karstic geology) fear an accidental breach of the dam if vital geotechnical work, including continuous injection of impermeable grout, is not properly maintained.

Water as a weapon

Strategically, the use of the dam to determine water levels and supplies to large parts of the country makes it the largest prize in what security analysts describe as a “battle for control of water” which many observers see as defining IS's aims in Iraq.

This plan was evident as early as June this year, following extensive flooding caused by the deliberate closure of the captured Nuaimiyah Dam west of Baghdad.

But this is not the first time water has been used as a weapon in the “Fertile Crescent” at the confluence of the Tigris and Euphrates rivers. Saddam Hussein targeted water resources during the Iran-Iraq War and his oppression of the Marsh Arabs in southern Iraq during the 1990s centred on the drainage of 6,000 km² of wetlands, destroying a subsistence economy perhaps 10,000 years old. This

was a “war by other means”, according to engineer Azzam Alwash, who won the 2013 Goldman Environmental prize for his post-2003 work to re-establish the marshlands.

The tactical use of water supplies in war dates back almost as far as civilisation itself. Limiting and depleting water supplies has been used as a siege weapon throughout history. The “Dambusters” are even part of the UK’s popular cultural memory of World War Two. But is the current zeitgeist – that this century will be marked by wars dominated by water – representative of a real or imagined threat?

Conflicting opinions

The UN was widely seen to endorse this thesis in its 2009 World Water Development Report. Shortly after, an opinion article in the journal Nature roundly rejected it, claiming instead that “inequitable access to water resources is a result of...broader conflict and power dynamics: it does not itself cause war” and concluding that wars over water are a myth which distract from a globally progressive approach to co-operation in water management. So which position is correct?

Mark Zeitoun, an expert on Middle East water politics, has developed a theory of “hydro-hegemony” in which control over water supplies is an intrinsic component of unequal power relationships. This is perhaps nowhere better illustrated than in relations between Israel and its neighbours which shift constantly and all-too-visibly from armed to unarmed conflicts, encompassing unilateral annexation of both land and water resources as well as uneasy bilateral agreements.

In this view, water is an integral component of all kinds of conflict, from cultural antagonism to military aggression. It follows that as global demand for water grows and areas already experiencing water stress suffer further under predicted climate change, then the importance of water in tensions at all scales will grow proportionally.

A fundamental human need

Water is at the heart of many conflicts worldwide, whether between nations such as Egypt and Ethiopia, where diplomatic tensions are high regarding the construction of the massive Grand Renaissance Dam on the Nile; between developing world communities and multinational corporations, for example Coca-cola in India; or between regions within countries, such as in the western US where various states are in legal battles over the Rio Grande.

We should remain confident that the strong frameworks of national and international law will continue to confine many of these conflicts to council chambers and diplomatic conferences. However, where these mechanisms break down then a shift on the spectrum of conflict towards violent confrontations, shaped by our fundamental human need for water, does seem possible if not inevitable. In the past months in northern Iraq, from an escalating Syrian crisis in which water stress likely played a destabilising part, we may have seen the first shots fired.

“Battle for Mosul Dam: a new age of water wars beckons”, 01/09/2014, online at: <http://theconversation.com/battle-for-mosul-dam-a-new-age-of-water-wars-beckons-31043>

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❖ Other Views: Embattled dam in Iraq highlights vital role of water

Janesville and other Great Lakes communities are well aware of the vital role and complex demands on water resources. Less obvious is the fact that water can put out political fires in the Mideast. Courageous indigenous warriors are making that possible, but the United States must lead.

Kurd forces have retaken the vital Mosul Dam in Iraq from ISIS (Islamic State of Iraq and Greater Syria). They have done so with acknowledged air support from the U.S., and probably also special forces on the ground.

ISIS has so far earned a frightening reputation for brutality and fanaticism. Even extremist al Qaida groups reject their inherently self-defeating murderous tactics.

The Kurds are a distinctive, often-persecuted minority. Their traditional territory spans national boundaries of Iran, Iraq, Syria and Turkey.

Turkey until recent years was a reliable friend as well as formal ally of the United States. The election in 2002 of the Justice and Development Party, which is strongly rooted in the Islamic religion, has greatly complicated relations with the U.S. and also Israel.

Violent Kurd separatists have long threatened Turkey's national unity. The Bush administration's 2003 invasion of Iraq was strongly opposed by Turkey, in part due to concern about instability related to the Kurds.

Turkish government officials in Ankara have proven quite willing to use the leverage provided by water resources. This includes but reaches beyond the Bosphorus Strait, which controls access between the Black Sea and the Mediterranean.

Water leverage was used in the fall of 1998 during a four-week standoff with Syria, where Kurd separatist leader Abdullah Ocalan of the PKK sought sanctuary. After an extended confrontation, Syria expelled him and labeled his PKK a "terrorist organization."

This was a major victory for Turkey. Specific leverage was provided by Ankara's control of Euphrates River water vital to Damascus.

Mideast water has steadily become more important. Since the 1970s, water supplies in various countries have fallen short of demand. This is part of an expanding global problem. The fundamental challenge is not lack of water, but rather of drinkable water.

Desalination can solve this problem but is very expensive. Enormous new cost-lowering investments are underway, including in Abu Dhabi, Dubai and other Emirates, Kuwait, Qatar and Saudi Arabia.

By contrast, the United States draws only about 5 percent of water consumed from desalination plants. However, the U.S. and Israel possess major centers of research and development.

The Obama administration could lead in pressing applied research to lower the relatively high cost of desalination. Essential to this, however, is focused executive discipline and determination.

Other Views: Embattled dam in Iraq highlights vital role of water - See more at:

http://www.gazettextra.com/20140904/other_views_embattled_dam_in_iraq_highlights_vital_role_of_water#sthash.cchS38yn.dpuf

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❖ **Water scarcity is a crucial issue for Iran: environment chief**

TEHRAN – Head of the Iranian Department of Environment says water scarcity is a “crucial issue” for the country and the prospects of emerging water conflicts have given rise to much concerns.

Writing on her facebook page, Masoumeh Ebtekar said that measures should be taken to train people from all walks of life to change their attitude toward the patterns of water consumption.

Water is not used in a proper and utilized way throughout the country and this attitude must change, she added.

Ebtekar added that friends of the environment have launched various campaigns, calling for measures to save Lake Urmia and Hamoun as well as Zayanderoud and Karun rivers, and other natural reserves, which show the people’s sensitivity toward this problem

“Water scarcity is a crucial issue for Iran: environment chief”, 07/09/2014, online at:

<http://www.tehrantimes.com/politics/118242-water-scarcity-is-a-crucial-issue-for-iran-environment-chief->

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❖ **Water shortage: A food security issue for the region**

Water scarcity is one of the most alarming food security issues for the Middle East and North Africa (MENA). Particularly given that the availability of fresh water is to fall 50% by 2050, according to the Food and Agricultural Organization (FAO).

MENA countries are suffering from extreme water scarcity, with per capital water supply below the 1200 cubic meters per year. Moreover, with the population expected to grow from 300 million today to around 500 million in 2025, per capital availability is expected to halve by 2050.

Most of the nations in the region including Iran have inefficient water management, particularly in the agricultural sector which accounts for more than 85 percent of water use. Furthermore, lack of rainfalls, inefficient agricultural sector and high evaporation of surface water have exacerbated the water crisis in region.

The losses of water reserves are staggering. In seven years, beginning in 2003, parts of Turkey, Syria, Iraq and Iran along the Tigris and Euphrates rivers lost 144 cubic kilometers of stored freshwater – or about the same amount of water in the Dead Sea, according to data compiled by the Grace mission and released last year.

Only a small portion of water loss was due to evaporation of surface water and drought. Majority of water lost, about 60% was due to reductions in the groundwater. During the last 10 years, up to 75 percent of the farmers of the MENA countries have relied on pumped groundwater to water their crops. Hence, given the fact that agricultural sector consumes 85 percent of water in the MENA countries, its inefficiency and the alarming threat of water shortage in the region, governments are in dire need to reform water as well as agricultural policies.

Many mistake the concept of food security with food self-sufficiency, while the two stand at the very opposite ends of the spectrum. This conceptual misunderstanding has also affected the agricultural policy of the nations in the region. Saudi Arabia, with more than 20 years of wheat self sufficiency for example, announced in 2008 that they would be stopping wheat production. The underlying reason was the arid nature of the country, in which there is little farming without irrigation. According to the Water Footprint network, an institution measuring the water footprint in production of various commodities, 1827 litre/kg is the average water footprint in the production of wheat. In a country suffering from water scarcity such policies seem to be only endangering food security.

Hence, given the rising population, water scarcity and economic dependency on the agricultural sector, MENA countries need to reform their strategic food security policies to avoid worsening the currently existing water crisis in the future.

Key Issues

1. Infrastructural efficiency and effective policies: According to the World Bank, leakages in urban systems across the MENA region are often about 40-50 percent. Considering the water footprint in production of agricultural commodities, countries need to adopt efficient policies taking into account their water scarcity. MENA countries would be better off importing commodities such as wheat in comparison to domestic production which could exacerbate water crisis. Furthermore, public investment in infrastructure should help reduce the world record water leakage of 40-50 percent in countries of the region.
2. Agricultural development: Many of the countries in the Middle East and North Africa suffer from high rate of water waste in the agricultural sector. Statistics shows that more than half of water withdrawn for agriculture does not reach the plants as intended. This in particular requires cautious as well as strategic planning by the governments. Agricultural sector remains the leading economic sector in the developing countries, including in the MENA region. Therefore, agricultural reform policies adopted must place particular emphasis on improving water productivity in the agricultural sector, reducing water waste and the introduction of high tech advanced agricultural techniques.
3. Other policies that the World Bank identifies as critical for the countries of the region are:
 - Expanding wastewater collection and treatment services, improving the sanitary conditions of urban areas through the collection and treatment of wastewater.
 - Improving irrigation efficiency, re-use of treated wastewater and other issues

Food security remains a strategic area for most of the nations on Earth. From the European Union to the United States and the nations in the MENA region, all strive to ensure a secure and stable food market for their citizens. However, policies adopted by countries must take into account the availability of their natural resources. Given the water scarcity in the Middle East and North Africa, countries need to reform their agricultural policies towards efficient use of water resources, improvement of infrastructural efficiency and food security rather than food self-sufficiency.

Considering limited natural agricultural resources such as water, emphasis on food security through domestic self sufficiency is not only economically unwise, it would also exacerbate water crisis and undermine food security.

“Water shortage: A food security issue for the region”, 01/07/2014, online at: <http://www.tehrantimes.com/oped/118094-water-shortage-a-food-security-issue-for-the-region>

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❖ Making Every Drop Count: Reducing Water Loss in the Middle East and North Africa Region

HIGHLIGHTS

The problem of water loss has become an even greater challenge for public utilities throughout the Middle East and North Africa region due to climate change, which threatens natural water supplies and increases the cost of new water resources.

Malta, with one of the world's highest population density and lowest renewable water supplies, switched from building more desalination plants to meet rising demand to a more effective strategy focused on water loss.

The World Bank organized a conference that brought representatives from 30 regional utilities to Malta, to learn how the island implemented its successful campaign to lower water loss.

Water loss, and its operational and financial consequences, is a major concern for urban water utilities in the Mediterranean region. Losses, both physical and commercial, are due to leakages and the failure to bill customers for the full amount of water they use. A combination of these two factors puts the financial viability of water utilities at risk.

In countries already coping with water scarcity, the burden of water loss often leads to rationing and intermittent supply. As climate change exacerbates the problem—threatening the supply of renewable water and increasing the cost of new water resources—reducing losses from leaky pipes and under-billing, is becoming a priority for water utilities in the Mediterranean and throughout the Middle East and North Africa (MENA) region.

Malta, situated at the very center of the Mediterranean, provides a remarkable illustration of how major water resources challenges can be successfully overcome. The island has one of the lowest rates of renewable water supplies in the MENA region, at 100 m³ per capita per year. It also stands in the top ten countries with the highest population density, alongside Gaza, Bahrain, Hong Kong and Singapore.

Several decades ago, Malta became one of the first countries in the region to invest in desalination plants but, in the 1990s, as new plants were being built to meet increasing demand, it became clear that demand for water was fast outstripping its supply.

The Water Services Corporation (WSC), Malta's national water utility, turned its attention to water loss instead, initiating an aggressive program that achieved significant results. In addition to state-of-the-art concepts and technology for monitoring and reducing leakages, the WSC also put in place a program to optimize energy consumption at its desalination plants, reducing average energy consumption from 6-7 to 4.5 kWh/m³.

The success of the program allowed the WSC to de commission two desalination plants and reduce the level of water extraction from the island's aquifer to levels not seen since the 1960s. The leakage in the water distribution network "was around 4000m³/hr in 1995, yet [has] decreased to below 450m³/hr today", according to Stephan Riolo, executive director of the network's infrastructure in Malta.

Malta clearly had lessons to share in reducing water losses and operating desalination plants. As part of their program of support for MENA countries, the World Bank therefore organized a conference on the small Mediterranean island that brought together 30 senior officials from major water utilities in Morocco, Tunisia, Libya, Lebanon, the Palestinian Territories and Yemen.

All the countries that participated are facing similar problems and have keen interest in reducing losses and improving the management of their water supply. Most said that in their experience, however, reducing water losses had proved difficult and complex. Malta's case was particularly valuable as it shows that countries can achieve successful water loss reduction, as long as it is part of a comprehensive, well-designed program.

The WSC had applied a structured approach based on four pillars: (i) the acknowledgement of the many components of water loss and the interaction between them, (ii) the need to take into consideration, when setting targets, the economically acceptable level of non-revenue water (water supplied but not billed for), (iii) the need to move away from short-term interventions, and (iv) the recognition that water loss lies at the core of assets management.

Participants agreed that replicating the WSC's success in other MENA countries would require a similarly structured approach, based on long-term strategic planning. This would have to include the following phases: (i) a careful diagnosis of the water loss situation, identifying activities that would generate the largest savings, and setting realistic targets, (ii) a comprehensive program of intervention covering all relevant aspects of water loss (as opposed to "one shot" actions), and (iii) institutional reforms to establish the right framework for maintaining the utility's economic performance.

There was great interest from all participants to move forward with specific technical assistance, with the WSC transferring its knowledge through peer-to-peer exchanges and a twinning approach. It was agreed that twinning activities between the WSC, Tunisia's SONEDE utility, and utilities in Gaza, would be supported, in part through a grant from the Center Mediterranean Integration.

Other participants, such as Morocco's ONEE, Northern Lebanon's water establishment, and utilities from Sana'a and Aden, also expressed their interest in exchanges with the WSC. Based on this, a comprehensive twinning program between the WSC and MENA utilities will be finalized in the next few months, so as to start exchanges in the field before the end of 2014.

"Making Every Drop Count: Reducing Water Loss in the Middle East and North Africa Region", 02/09/2014, online at: <http://www.worldbank.org/en/news/feature/2014/09/02/making-every-drop-count-reducing-water-loss-in-the-middle-east-and-north-africa-region>

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❖ Water: Tunisia's Other Development Challenge

STORY HIGHLIGHTS

Water scarcity has long been a challenge in the Middle East and North Africa region, but climate change combined with rapid urbanization has made the problem even more acute.

A growing urban population, along with demands from industry and agriculture, has put immense pressure on Tunisia's water resources.

The World Bank has supported Tunisian efforts to meet its water challenges with projects to upgrade the distribution infrastructure, rationalize use and better manage resources.

The Middle East and North Africa region has a long history of coping with water scarcity, but the impact of climate change has made the problem even more acute. Balancing growing demand, as a result of the region's rapid rate of urbanization, with diminishing supplies of natural water has made the management of water resources a top priority. Even a country like Tunisia, currently absorbed with managing a delicate political transition and creating an economy in which opportunities are more widely shared, cannot afford to take its eye off water.

Over the last decade, Tunisia has achieved considerable success in expanding access to both water and sanitation services, but challenges remain. According to Mr. Hlali Mesbah, director of the Tunisian National Sanitation Agency (ONAS), the growth of the urban population has put immense pressure on water reserves. In the summer of 2013, the greater Tunis area, with a population of 2.5 million people, witnessed the first cuts in water services due to shortages. Between 2012 and 2013, water use grew by 12 percent, mainly due to the increase of the urban population of Tunis.

Alongside urbanization, there is growing demand for water from industry and agriculture. The increased cumulative demand from all three is a challenge that can only be met through effective management of the country's water supply.

Anything less than a continuous supply is not an option, as water is an engine of development. Industry and agriculture need it to grow, and meeting their needs right now is vital for job creation. A steady and sustainable supply of water is an essential ingredient for sustainable growth.

Tunisia has met the challenge by adopting a set of policies aimed at rationalizing the use of water and modernizing its distribution network. The government and the national water utility, known by the acronym SONEDE, launched the National Water Security Investment Program to ensure uninterrupted water services over the next decade, despite fast growing demand and the negative impact of climate change. With its focus on improving infrastructure and sound management policies, Tunisia has not only achieved one of the highest access rates to water and sanitation services among middle-income countries in the Middle East and North Africa region, but continues to invest and adjust to meet growing demand.

The World Bank has long partnered with Tunisia to support its efforts to preserve and better manage its water resources. The Bank has provided both technical assistance and financial support for a range of water related projects. These include:

The Urban Water Supply Project: The objective of which was to ensure the continuity of water service for the growing population of Greater Tunis and other targeted cities through augmentation, upgrade and renewal of water supply infrastructure.

The Second Water Sector Investment Project: aimed at promoting more efficient management and operation of selected public irrigation schemes; to improve access to and the quality of drinking water for households in rural communities; and to assist the Ministries of Agriculture and Water Resources, Environment and Sustainable Development, and other stakeholders to make better decisions relating to integrated water resources management in Tunisia.

The Northern Tunis Wastewater Project: supported the goals of providing an environmentally safe disposal system for treated wastewater not intended for reuse; while increasing the quantity and quality of treated wastewater available to farmers, to encourage its reuse in agriculture.

“Water: Tunisia’s Other Development Challenge”, 04/09/2014, online at:

<http://www.worldbank.org/en/news/feature/2014/09/04/water-tunisia-s-other-development-challenge>

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❖ **Oman's Haya Water to invest OMR100m annually to build sewage projects**

Muscat: Haya Water will be investing an average of OMR100 million each year on various projects in the next decade, including the construction of sewage network, sea fallout system and sewage treatment plants, according to a senior official at the company.

A budget of around OMR2.2 billion had been envisaged for the implementation of projects between 2002 and 2025, Eng Said Rashid Al Asmi, projects general manager at Haya Water , told the Times of Oman here on Monday.

However, 55 per cent of the budget has not been committed yet, he said on the sidelines of the first annual drainage rehabilitation and flood control conference, which closes today in Golden Tulip Hotel.

Haya Water , which was established in 2002, will be spending OMR100 million every year on its projects in the stated time frame, Al Asmi noted.

The event was attended by over 90 international and regional drainage, sewage, flood control and dam construction experts as well as representatives from Ministry of Regional Municipalities and Water Resources, Muscat Municipality, Haya Water , National Survey Authority of the Ministry of Defence and Oman Water Society.

Commenting on Haya Water 's role in drainage development, he said that the company does not specialises in this field but builds its facilities in such a way that they are not damaged by flood and

storms and has been taking measure to prevent particular areas from being flooded with sewage in case of flood.

"We put the drainage system around the plant and into the wadi areas," he said, adding that the sea outfall system developed in particular areas plays a key role in case of any emergency.

Sea outfall is a pipeline from a sewage treatment plant (STP) into the sea and would prevent the areas from being flooded with sewage in the event of heavy rain, storm, or flood, Al Asmi explained.

According to him, the length of the pipeline varies from 1.8 kilometres to 3 kilometres.

Ongoing projects

Commenting on the sea outfall projects, the official noted that the one in Seeb is about to be completed and phase 1 of the project in Ansab has already been finished.

Now, work is underway on phase 2 of the project in Ansab and the project in Darsait is under construction, he added.

"All these projects will be completed in two or three years from now." Asked about the projects in the tendering process, Al Asmi said, "We are designing Seeb phase 2 STP. We are evaluating the Ansab and Al Misfah STP. The network for Seeb areas is under evaluation, and we have also initiated studies for phase 3" of the project for Seeb area. Haya Water had earlier announced plans to connect 80 per cent of the residents in the wilayat of Muscat to the sewage network by 2020.

The conference on drainage and flood featured presentations from local authorities as well as international experts such as Bahrain's Ministry of Works and Abu Dhabi Municipality.

The event explored several sub-themes which include: analysing the current and future drainage systems and networks, flood control and dam construction projects in Oman, flood risk assessment and identifying potential flooding areas, learning from regional and international best practice case studies on implementing a sustainable drainage infrastructure, understanding the latest flood control techniques and strategies and planning, maintaining and enhancing flood protection systems.

The sponsors and exhibiting companies included ACO International, MHD Project and Building Materials Division, MEA Water Management, Ali Al Aufy Trading, BIRCO Middle East United Gulf Pipe Manufacturing Co LLC and Bernard Ingenieure ZT GmbH.

“Oman's Haya Water to invest OMR100m annually to build sewage projects”,01/09/2014, online at: https://www.zawya.com/story/Omans_Haya_Water_to_invest_OMR100m_annually_to_build_sewage_projects-ZAWYA20140902051800/

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❖ 4 million jobs created in sachet water trade

Water packaging industry is fast becoming the country's main employment provider, creating about four million jobs in the last five years, National Association of Sachet and Packaged Water Producers has said.

This has forced more job seekers to find solace in the sachet and bottling water business that is seen as the fastest growing sector of the economy.

The employment numbers

At the moment the 10 major players in the sachet water business operate in the Accra and Tema region and employ more than two million people directly and indirectly..

Among the big players in sector are Everpure, Standard, Bel Aqua, Voltic, Mobile water and Aqua fill natural mineral water with each averagely employing about 2000 workers including those along the value chain including distributors and retailers..

Accra alone has 3000 more sachet water producers and other 3,000 in parts of the country operating on a smaller scale.

Analysts estimate the number jobs created in the sachet water industry could exceed four million.

Everpure, for instance, which produces an average of 600,000 bags of sachet water every month, is planning to export purified water to the Middle East.

Managing Director of Everpure, Mr Peter Narh plans to capture a sizeable part of the Middle East markets with quality jug and bottled water produced in Ghana.

“We want to start exporting to Dubai and elsewhere with quality drinking water from Ghana with a wide range of products to meet the different tastes in the market,” he said in a telephone interview.

“Our products come in 60cL, 1.5L and 18.9L bottles, as well as in the 500mL sachet, which is a better value proposition”, he said.

Everpure currently has 685 employees on its payroll for both the Kumasi and Tema plants. Both plants have 70 private truck owners who have about 210 people along the value chain.

This works to about 2000 by Everpure alone, which is planning a major expansion of its plant and machinery which means the potential to employ.

The other producers employ more than the 2000 that Everpure employs. Some of them have directly engaged about 100,000 excluding those in the value chain. It is estimated that those in the value chain of mobile water brand exceed 400,000.

Considering the large number of sachet water producers, which is in the region of 3000 for Accra and Tema alone, analysts say the four million figure is underestimated looking at the growing number of sachet water producers.

President of the National Association of Sachet and Packaged Water Producers, Mr Magnus Nunoo is upbeat adding to the 100,000 workforce employed by his company, mobile water.

Mr Nunoo, who is an Economist by training has found value in his industry's waste, and is now a proponent of commercial-scale plastic waste management.

The investment

For Blow-Chem, producers of Bel Aqua Mineral Water, has invested US\$2,300,000 in infrastructure to position the product as bottled water of choice both in terms of competitive pricing and quality.

“Water is essential for life; it is at the core of nutrition and, therefore, health. Bel Aqua Water has developed an outstanding expertise in bottled water. This expertise extends from quality preservation to knowledge on its health benefits to making different formats available that respond to the different hydration needs of consumers,” the company said.

Mr Manoj J. Lakhiani, the Chairman of the company, said, that “it took the management of Blow-Chem a year to come out with Bel Aqua because we didn't want to produce an ordinary bottled water as we know the essence of water to a healthy life; we wanted to be one step ahead in terms of quality, which we have done through teamwork and thorough research”, according to a Daily Graphic report. In that regard, he said, the company had so far spent over \$50,000 on equipment made up of highly sophisticated machines/facilities for its laboratory.

The company said for Bel Aqua, quality could not only rely on the original quality of the water.

“Throughout the entire production chain, from packaging to the finished product, every step is checked by a battery of tests to guarantee that it [the water] conforms to the highest standards before it is sent off to consumers. Our production plant has its own laboratory, which allows them [the workers] to carry out rigorous tests regularly.”

The challenges

But the challenge for the industry is the high tariff charges, which industry captains say makes the playing field uneven.

According to Mr Narh, despite the increasing number of players in the sachet business in the country, water is still imported from elsewhere which does not attract levies as the local water producers.

Country Manager of the International Labour Organisation (ILO) and Head of the Sustaining Responsible and Competitive Enterprise in Ghana, Mr Kwamina Amoasi-Andoh said sachet water producers are playing important roles in complimenting the job creation drive of the government.

“Manufacturing in Ghana is dying and as a government, you can’t help all of them at a go so you find clusters that can export and bring in foreign exchange”, Mr Amoasi-Andoh said.

The ILO country boss identified water processing, pharmaceuticals and Aluminum as the main clusters that can rake in enough foreign exchange for the country.

“If we have five companies and each is exporting five boxes a week and each box is five – six dollars per box, we can imagine the foreign income we will be getting”, he said in an interview.

Mr Amoasi-Andoh whose is assisting small and medium scale enterprises implement that Sustaining Responsible and Competitive Enterprise (SCORE) in Ghana.

The urban areas in the country lag in the provision of piped water to residents living the sachet water producers to fill the gap as an important source of drinking water.

“4 million jobs created in sachet water trade”,02/09/2014, online at: <http://www.citifmonline.com/2014/09/02/4-million-jobs-created-in-sachet-water-trade/>

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❖ Israeli Forces Close Agricultural Roads, Confiscate Water Pipes near Hebron

HEBRON, September 4, 2014 – (Wafa) – Israeli forces closed Thursday agricultural roads in Idhna and confiscated water pipes from al-Baq'a located respectively to the west and east of Hebron, according to municipal sources and witnesses.

Israeli forces closed several agricultural roads in al-Bas springs, al-Khirbi al-Bayda, Khirbet al-Ras, and Khalet Mhareb Road opposite to the section of the Segregation and Annexation Wall to the west of Idhna.

The closure of these roads, the linking point between Idhna and the Palestinian agricultural lands in these areas, has resulted in denying Palestinian farmers access into their land.

Meanwhile, Israeli troops confiscated water pipes from Palestinian agricultural lands in Al-Baq'a to the east of the city.

Troops, accompanied by officers from the so-called Israeli Civil Administration and Israeli water company 'Mekorot', raided the area and confiscated water pipes used by a local Palestinian farmer to irrigate turnip seeds in his 4-dunam-sized land.

Israeli forces frequently target Palestinian farmers in al-Baq'a area, confiscating their irrigation systems and handing them orders prohibiting them from farming their land. Settlers have also frequently sabotaged land and crops in the areas, burning down water tanks and pipes. These Israeli practices are meant to dispossess Palestinians and displace them from the area in order to expand the nearby illegal Israeli settlements of Kiryat Arba and Kharsina.

"Israeli Forces Close Agricultural Roads, Confiscate Water Pipes near Hebron", 04/09/2014, online at: <http://english.wafa.ps/index.php?action=detail&id=26465>

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❖ Gazans dig deep after ceasefire as water shortage bites

After two weeks with no water following Israel's 50-day offensive, Abu Osama took matters into his own hands, and like hundreds of others, sank a well beside his Gaza home.

After nearly two months of Israeli bombardment, power cuts and water shortages, he seized upon the ceasefire to get down to work.

"Water supplied by the municipality had not been arriving for more than two weeks and there were 50 of us in the house, including many children, so I decided to sink a well" to draw water directly, the 45-year-old said.

Water shortages are nothing new for Palestinians in the densely populated Gaza Strip enclave, and more and more people have been digging their own wells since 2006.

Israel imposed a blockade on the territory that year after Gaza militants snatched one of its soldiers.

Since then "more than 10,000 wells have been dug", said Monzer Shoblak, an official in Gaza's water authority.

"All these wells were dug without legal authorisation, but without them many people would not have water throughout the day," he said.

But this direct access to water comes at a cost, and Abu Osama, who did not give his full name, had to shell out 2,000 Jordanian Dinars (\$2,820 or 2,180 euros) to dig and maintain his well.

It is a price that many residents of Gaza, where unemployment is running at around 40 percent, are unable to afford.

Abu Mohammed, who also refused to give his last name, decided to dig a well on his land to ensure that his family had enough water to drink and for washing.

"The water was totally cut and the war complicated our situation further," he said.

Umm Mohammed, his wife, said it was "no longer like living in the 21st century".

"We get our water from the well, and we bake bread on an open fire," she said.

- Water pipes hit -

"I used to have flowers and a beautiful garden, but everything has been scorched by the sun," she said wistfully, gesturing at two parched palm trees withering in dry soil.

During the devastating Israeli bombardment, water pipes were also hit in the only power station serving the Gaza Strip, a sliver of land squeezed between Egypt, Israel and the Mediterranean where 1.8 million people live.

The fighting aggravated already chronic water shortages in the enclave, said Rebhi al-Sheikh, deputy head of the body in charge of the precious resource in Gaza.

"The only reserve available to us is the coastal aquifer we share with Egypt and Israel made up of 55 million cubic metres," he said.

But this is far from sufficient, because for "Gaza alone you need 190 million cubic metres every year".

And the United Nations has warned that Gaza's already short water supplies could be running out.

The aquifer could be unusable by 2016 and the damage it has suffered may be irreversible by 2020, experts believe.

Shoblak said that some 95 percent of Gaza's water is already contaminated.

"The volume of nitrate in the water should not go above 50 milligrams per litre. In Gaza the levels are about 200-250 milligrams," he said.

Chloride, which should be kept to 250 mg per litre, in some areas of Gaza reaches 2,000 mg, Shoblak said.

The authorities in Gaza have already launched several new projects aimed at providing water to those most in need, but these have been suspended at inception because of the blockade that prevents certain construction materials from entering the Strip.

During the ceasefire negotiations, Israel said it would allow the entry of some materials for reconstruction, without specifying what it would permit or when it would cross into Gaza.

But for the moment, no cement, gravel or steel has passed through the border crossings linking Gaza to Israel.

The Jewish state says such materials could be used by Palestinian militants in the territory to make weapons.

“Gazans dig deep after ceasefire as water shortage bites”, 05/09/2014, online at:
<http://www.globalpost.com/dispatch/news/afp/140905/gazans-dig-deep-after-ceasefire-water-shortage-bites>

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❖ **EU source: Gaza reconstruction aid is ‘made in Israel’**

***SPECIAL REPORT:** A row is brewing over claims that Israel is earning millions of euros from a de facto policy of preventing non-Israeli reconstruction aid from entering the Gaza Strip.*

At least 65,000 people in the Gaza Strip [are homeless](#) after the recent seven-week conflict. Infrastructure ranging from water desalination centres to power plants lies in ruins.

No formal Israeli ban prevents the import of reconstruction materials that were not made in Israel, but EU sources speaking on condition of anonymity say that in practice, Israeli security demands present them with a fait accompli.

“If you want aid materials to be permitted to enter, they will almost inevitably come from Israeli sources,” an EU official said. “I don’t think you’ll find it written down anywhere in official policy, but when you get to negotiate with the Israelis, this is what happens. It increases construction and transaction costs, and is a political problem that has to be dealt with.”

As well as Israel’s security restrictions on aid, “it can be very difficult to export materials to Gaza,” the official said. “A lot of goods for a Gaza private sector reconstruction project we had, ended up being held in Ashdod port for very lengthy periods of time – months if not years – so there was de facto no alternative but to use Israeli sources.”

The source added that the policy had benefited Israel’s economy to the tune of millions of euros and was, in his view, deliberate.

The European Commission donates some €300 million in development aid to Gaza and the West Bank every year, and around €200 million in humanitarian aid.

The EU official’s allegation received backing from international agencies canvassed by EurActiv and is broadly in line with findings in a UN report due to be published later today (3 September).

The United Nations Conference on Trade and Development (UNCTAD) study will say that half of all donor assistance to Palestinians in the West Bank and Gaza – who the UN body say constitute a captive market – is spent on servicing a trade deficit to Israel.

‘Dual use items’

Tel Aviv imposed a full blockade on the Gaza Strip in 2007 after the ascent to power of the Islamist Hamas movement, which has used suicide bombing and rocket attack tactics against Israel’s occupation, that have claimed hundreds of civilian lives.

But the UN and international NGOs have protested the blockade’s prevention of free movement and trade for the vast majority of Gazans as a [collective punishment](#).

Building materials such as steel and cement, necessary for the reconstruction of Gaza, have been designated by Israel as ‘dual use’ items - adaptable for munitions - that may only be imported to Gaza by the UN and aid agencies under Israeli supervision.

Mark Regev, a spokesman for the Israeli prime ministers’ office, denied claims that Israel’s entry policy to Gaza prevented non-Israeli-made reconstruction materials from entering the Strip.

“I know that policy, and it is not true,” he told EurActiv over the phone from Jerusalem. He was unable though to give examples of non-Israeli reconstruction materials allowed into Gaza, referring inquiries on to Cogat.

The Israeli body, Cogat, which coordinates the entry of aid into Gaza, did not respond to requests for comment.

But “there are not many choices,” Amir Rotem, the public affairs director for Gisha, an Israeli NGO, told EurActiv. “The Israeli market has a monopoly of cement in just one company, and I don’t know of any Palestinian-made cement in the West Bank, so there’s not much to choose from.”

‘Chutzpah writ large’

International reactions to the EU official’s claims were strong.

“It is outrageous that a country which has just demolished 25,000 houses is demanding that their construction industry benefit from rebuilding them at the expense of the international community,” one Western diplomat told EurActiv.

“Talk about chutzpah writ large!” he said.

Mahmoud el-Khafif, UNCTAD's special coordinator for assistance to the Palestinian people, told EurActiv that he believed the EU official's claims were correct.

“If you look at steel or cement, I think the only source for it would be Israel,” he said. “It is a serious problem in my opinion as an economist. What happened in Gaza and what is happening in the West Bank in terms of controlling Area C is an ongoing process to reduce the ability of the Palestinian economy to produce, and the only alternative is to import from Israel.”

Later today, a new UNCTAD report will say that economic growth (measured by GDP) in the economy of the occupied Palestinian Territories declined from 11% in 2011 to just 1.5% last year, far below the rate of population growth.

‘An unliveable place before 2020’

Even before the recent fighting, unemployment in Gaza was running at 36% and people were [poorer than in the 1990s](#), when the Oslo peace process began.

Rebuilding the battered Strip now will take 20 years under the current regime of restrictions, [according to a report](#) published earlier this week by Shelter Cluster, an NGO chaired by the Norwegian Refugee Council, with the participation of the UNHCR and the International Red Cross.

That could be too late for many Gazans. The UN's relief and works agency (UNRWA) [has previously estimated](#) that Gaza will not be “a liveable place” by 2020 because of population increase and a depletion of fresh water sources by 2016.

“If Gaza was going to be an unliveable place by 2020 - before the latest fighting - it will now be an unliveable place considerably before then,” Christopher Gunness, a spokesman for UNRWA told EurActiv, from the Gaza Strip.

“With at least 20,000 homes damaged or destroyed, with miles of water infrastructure devastated, with millions of gallons of raw sewage flowing into the sea every day, and the corrosive impacts of blockade, the sustainability of Gaza will be even more short lived,” he said.

More than 2,100 Palestinians – mostly civilians – were killed in Israel’s recent Operation Protective Edge, as were 73 Israelis – mostly soldiers.

The international reconstruction effort in Gaza could cost more than \$6 billion, according to the Palestinian deputy prime minister.

“EU source: Gaza reconstruction aid is ‘made in Israel’”, 03/09/2014, online at:

<http://www.euractiv.com/sections/development-aid-under-fire/eu-source-gaza-reconstruction-aid-made-israel-308169>

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❖ Dispute Over Irrigation Water Compounds Tensions Between Daghestan, Azerbaijan

Azerbaijan and Daghestan are at loggerheads over the use of water from the Samur River that in its lower reaches marks the border between Azerbaijan and the Russian Federation. Daghestan's Ecology and Natural Resources Ministry [alleged earlier this week](#) that Azerbaijan is channeling off far more water than it is entitled to under the terms of the border treaty signed four years ago; the Azerbaijani joint stock company responsible for irrigation and water resources [denies this](#).

Meanwhile, thousands of residents of Daghestan's Magerramkent border district are concerned that the reduction in the volume of water in the lower reaches of the river is negatively affecting the region's fragile ecosystem, thereby posing a direct threat to their livelihood, which depends on the sale of agricultural produce. In 2013, Daghestan's Ministry of Water Resources [estimated](#) that some 4,500 hectares of land remain unirrigated most years because of the water shortfall.

The use of the river's water, and the volume each littoral polity is entitled to divert for its own use, is codified in the interstate treaty of September 3, 2010, on the border between Azerbaijan and Russia. Under the terms of that treaty, 30.5 percent of the total volume is designated the environmental norm; the remainder is to be shared equally by the two sides. The flow is currently 14.5 cubic meters per second, of which Azerbaijan and Daghestan are each entitled to 5 cubic meters. But according to Daghestan's First Deputy Ecology and Natural Resources Minister Marat Aliomarov, [Azerbaijan is taking](#) an additional 3 cubic meters.

An unnamed Azerbaijani expert, however, offered a different explanation. [He said](#) the reason why the flow of the river is so low at its lower reaches is that because of this summer's drought, the initial volume has fallen from the usual 60 cubic meters per second to 14.5 cubic meters.

Local villagers have been complaining for several years that the water table in the region is falling. Last fall, they convened a series of [mass protests](#) against plans by the republican government to drill artesian wells to pipe drinking water to the coastal town of Derbent, which has a population of 120,000. Those plans were suspended in the wake of a [session](#) of Daghestan's Public Chamber in February at which Magerramkent residents outlined their concerns, including the threat to the survival of the region's unique tropical liana forest. Federal agencies and the Union of Hydrologists of Russia were co-opted to assess the likely impact of the project and propose alternative options for supplying Derbent with water.

Last month, the administrative heads of five Magerramkent villages [appealed](#) to Russian Prime Minister Dmitry Medvedev (who as Russian president signed the 2010 border treaty) and Daghestani Prime Minister Abdusamad Gamidov to ensure that the river water is shared equally in order to preclude “a conflict situation.”

The dispute over water from the Samur is, furthermore, just one aspect of the long-standing clash of economic, and possibly also geopolitical, interests between Daghestan and Azerbaijan. The two largest ethnic groups in southern Daghestan are the Azerbaijanis and the Lezgins. The latter are a northeastern Caucasian ethnos who claim to be the descendants of the ancient kingdom of Caucasian Albania that fell to Arab conquerors in the 8th century. Their historic homeland is split between Russia and Azerbaijan. Estimates of the number of Lezgins in Azerbaijan vary widely. According to official data, they number only 178,000, while unofficial estimates range from 400,000 to 850,000 (of a total population of 9.42 million).

They have long been regarded with suspicion in light of demands voiced in the 1990s by some Lezgins in Daghestan for the unification of their ethnic group in a separate republic. Several hundred of them were forced to [leave their homes](#) in Azerbaijan and relocate to Daghestan following the signing of the 2010 border treaty.

Today, many of Daghestan’s Lezgins [are convinced](#) that Baku has ambitious plans to expand its presence and influence in southern Daghestan, and that the Daghestani leadership either approves of that expansion or is reluctant, or even powerless, to counter it. Azerbaijan’s Ata Holding [has put up](#) 1 billion rubles (\$27 million) toward the cost of renovating infrastructure and building new sports facilities in Derbent in the run-up to the planned celebrations in 2015 of the 2000th anniversary of its foundation. Some Azerbaijani scholars even claim that Derbent is an Azerbaijani town.

Meanwhile, the administrative head of Derbent Raion, Azerbaijani Kurban Kurbanov, [continues to defy](#) pressure from the Daghestani leadership [to resign that post](#).

“Dispute Over Irrigation Water Compounds Tensions Between Daghestan, Azerbaijan”, 05/09/2014, online at: <http://www.rferl.mobi/a/azerbaijan-daghestan-irrigation-water-tensions/26567147.html>

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❖ Reducing water scarcity possible by 2050

Water scarcity is not a problem just for the developing world. In California, legislators are currently proposing a \$7.5 billion emergency water plan to their voters; and U.S. federal officials last year warned residents of Arizona and Nevada that they could face cuts in Colorado River water deliveries in 2016.

Irrigation techniques, industrial and residential habits combined with climate change lie at the root of the problem. But despite what appears to be an insurmountable problem, according to researchers from McGill and Utrecht University it is possible to turn the situation around and significantly reduce water scarcity in just over 35 years.

In a new paper published in *Nature Geoscience*, the researchers outline strategies in six key areas that they believe can be combined in different ways in different parts of the world in order to effectively reduce water stress. (Water stress occurs in an area where more than 40 percent of the available water from rivers is unavailable because it is already being used – a situation that currently affects about a third of the global population, and may affect as many as half the people in the world by the end of the century if the current pattern of water use continues).

The researchers separate six key strategy areas for reducing water stress into “hard path” measures, involving building more reservoirs and increasing desalination efforts of sea water, and “soft path” measures that focus on reducing water demand rather than increasing water supply thanks to community-scale efforts and decision-making, combining efficient technology and environmental protection. The researchers believe that while there are some economic, cultural and social factors that may make certain of the “soft path” measures such as population control difficult, the “soft path” measures offer the more realistic path forward in terms of reducing water stress.

(The details about each of the six key strategy areas are to be found below.)

“There is no single silver bullet to deal with the problem around the world,” says Prof. Tom Gleeson, of McGill’s Department of Civil Engineering and one of the authors of the paper. “But, by looking at the problem on a global scale, we have calculated that if four of these strategies are applied at the same time we could actually stabilize the number of people in the world who are facing water stress

rather than continue to allow their numbers to grow, which is what will happen if we continue with business as usual.”

"Significant reductions in water-stressed populations are possible by 2050," adds co-author Dr. Yoshihide Wada from the Department of Physical Geography at Utrecht University, "but a strong commitment and strategic efforts are required to make this happen."

Strategies to reduce water stress

“Soft measures”

1. Agricultural water productivity could be improved in stressed basins where agriculture is commonly irrigated. Reducing the fraction of water-stressed population by 2% by the year 2050 could be achieved with the help of new cultivars, or higher efficiency of nutrients application. Concerns include the impacts of genetic modification and eutrophication.

2. Irrigation efficiency could also be improved in irrigated agricultural basins. A switch from flood irrigation to sprinklers or drips could help achieve this goal, but capital costs are significant and soil salinization could ensue.

3. Improvements in domestic and industrial water use could be achieved in water stressed areas through significant domestic or industrial water use reduction, for example, by reducing leakage in the water infrastructure and improving water-recycling facilities.

4. Limiting the rate of population growth could help in all water-stressed areas, but a full water-stress relief would require keeping the population in 2050 below 8.5 billion, for example, through help with family planning and tax incentives. However, this could be difficult to achieve, given current trends.

“Hard measures”

5. Increasing water storage in reservoirs could, in principle, help in all stressed basins with reservoirs. Such a strategy would require an additional 600 km³ of reservoir capacity, for example, by

making existing reservoirs larger, reducing sedimentation or building new ones. This strategy would imply significant capital investment, and could have negative ecological and social impacts.

6. Desalination of seawater could be ramped up in coastal water-stressed basins, by increasing either the number or capacity of desalination plants. A 50-fold increase would be required to make an important difference, which would imply significant capital and energy costs, and it would generate waste water that would need to be disposed of safely.

To read the Nature Geoscience article: http://www.nature.com/ngeo/journal/v7/n9/full/ngeo2241.html?WT.ec_id=NGEO-201409

“Reducing water scarcity possible by 2050”, 29/08/2014, online at:

<http://www.mcgill.ca/newsroom/channels/news/reducing-water-scarcity-possible-2050-238526>

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❖ African malnutrition to surge with erratic rainfall – report

LONDON (Thomson Reuters Foundation) – The number of malnourished people in sub-Saharan Africa could rise 40 percent by mid-century as increasingly erratic rainfall and rising temperatures cause small-scale farmers to lose more crops, a new report says.

Such farmers – who produce around half of sub-Saharan Africa’s food - “risk being overwhelmed by the pace and severity of climate change”, warned the [2014 African Agriculture Status Report](#), released on Tuesday by the Alliance for a Green Revolution in Africa (AGRA), a Nairobi-based organisation focused on African food security.

About 90 percent of Africa’s small-scale farmers – most of whom manage plots of two hectares (five acres) or less – rely entirely on rainfall to grow crops, the report said. As rains become more irregular, harvests of maize, for example, could fall by 18 percent by 2020 in southern Africa, with South Africa and Zimbabwe seeing losses greater than 30 percent, the report warned.

Such losses will come as sub-Saharan Africa’s population continues to surge from approximately 900 billion to an expected 1.5 billion people by mid-century, the report noted, raising the prospect of growing food shortages.

“If these projections are right and nothing is done about it, it is going to have a critical impact on global food security,” David Ameyaw, AGRA’s director of strategy, monitoring and evaluation, said in an interview. “With more failed seasons, what we are going to experience is that most farmers won’t be able to meet their dietary needs.”

What smallholder farmers need to cope with changing climatic conditions is a range of innovations, including seeds to grow drought-resistant crop varieties, new water-harvesting technology and insurance programmes that pay out when crops fail or livestock die, said Ameyaw, managing editor of the report.

Some of those changes are already underway. AGRA, for instance, has released about 420 new “improved” varieties of African crops in recent years, which can better withstand drought and pests,

he said. And the number of African-owned and operated local seed companies has surged to more than 100 over the last seven years, he added.

Insurance programmes and better weather information systems, many using mobile phone technology, also are multiplying in sub-Saharan Africa.

LOW ADOPTION

But these “climate-smart” farm innovations have yet to be widely adopted, Ameyaw said.

Some 25 to 35 percent of sub-Saharan African farmers are now using improved seed varieties, but only around 15 percent have access to a broader range of improved farm technology, he said.

Other key changes that could help farmers survive worsening weather pressures include more secure land rights, especially for women, and better access to early warning systems, as well as more water harvesting and stronger agricultural extension services to give advice on coping with shifting growing conditions to all farmers, Ameyaw said.

“There is urgent and growing need to improve climate risk management capabilities, especially among smallholder farmers,” the report noted. Such changes “should be a matter of urgent priority if smallholder farmers are to remain in agriculture”, it added.

The continent has already seen some areas become temporarily or permanently un-farmable, the report noted. Part of Angola, for instance, can no longer be planted after three years of poor rainfall.

Southern Africa faces the biggest risks from declining rainfall, but southern regions of Sudan, as well as a belt of farmland running from southern Ivory Coast to Nigeria, are also at high risk, it said.

As rainfall patterns change, other areas could see declines in certain crops, with protein-rich beans expected to become harder to grow in East and Central Africa, and banana production set to fall in the Sahel and West Africa, the report said.

Ameyaw said the report aims to spur action by African policymakers and decision makers to address the growing pressures on small-scale farmers in a continent where 65 percent of people make their living from agriculture.

“Helping smallholders adapt to climate challenges today will prepare them for even more serious challenges in the future,” he said. “When farmers are able to employ climate-smart techniques, it makes a huge difference.”

“African malnutrition to surge with erratic rainfall – report”, 02/09/2014, online at:

http://www.trust.org/item/20140901153109-vcizk/?source=fiOtherNews2&utm_source=Circle+of+Blue+WaterNews+%26+Alerts&utm_campaign=2a580c1424-RSS_EMAIL_CAMPAIGN&utm_medium=email&utm_term=0_c1265b6ed7-2a580c1424-250657169

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❖ Egypt Says Ethiopia On Board Over River Nile Dam Fears

Egypt's foreign minister returned from Ethiopian capital Addis Ababa confident that the two countries would work together to protect Egypt's water rights as the construction of the Grand Renaissance Dam goes ahead.

Sameh Shoukry said his Ethiopian counterpart showed understanding towards Egypt's concerns about the massive project.

"The basis of our talks was built upon the recognition of Egypt's water rights and needs; those needs cannot be touched because they are related to the Egyptian people's life," said Shoukry, as quoted by Egypt's state news agency MENA.

The two countries have been at odds over the construction of the Grand Renaissance Dam since 2013.

Ethiopia began work on the project to divert the Blue Nile late last year. That river eventually joins with the White Nile at Khartoum in Sudan, where it forms the river Nile and flows on through Sudan and Egypt.

Egypt is concerned the project could damage the flow of water on its stretch of the river Nile. Cairo also claims historic rights to the river, dating back to treaties from 1929 and 1959, which it says give it the right to veto any projects upstream.

Egypt had previously accused its southern neighbour of launching a water war, which could ultimately lead to a nationwide water shortage and crop failures, electricity shortages and political instability.

However, with construction of the dam going ahead, Cairo has struck a more conciliatory tone in recent weeks.

"Egypt Says Ethiopia On Board Over River Nile Dam Fears", 05/09/2014, online at: <http://www.ibtimes.co.uk/egypt-says-ethiopia-board-over-river-nile-dam-fears-1464227>

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❖ Egypt's FM visits Ethiopia for Nile dam talks

September 3, 2014 (ADDIS ABABA) – Egypt's foreign minister, Sameh Shoukry, is due to arrive in the Ethiopian capital Addis Ababa on Thursday for talks over Ethiopia's controversial power plant project which the east African nation is building along the Nile River.

Government sources on Wednesday told *Sudan Tribune* that Shoukry will meet his Ethiopian counterpart, Tedros Adhanom, tomorrow to further discuss on the progress and impacts of the Grand Ethiopian Renaissance Dam of which had been a source of dispute between Addis Ababa and Cairo.

High level discussions between the two sides aim to create mutual understanding and trust among upper and lower riparian countries.

Egypt fears that the construction of the 4.3 billion dollar dam project will diminish its water share which is a source of potable water to millions people of the desert nation.

Shoukry and Adhanom will further discuss on the progress attained during the tripartite Nile talks held in Khartoum last week between Ethiopia Sudan and Egypt.

According to Ethiopian officials, the talks in Khartoum are said to have been successful as the trios managed to narrow to most of their differences in this latest round of talks than those meetings held previously.

Following the two day meeting on August 25 and 26, Egypt's irrigation and water resources minister, Hossam El Moghazy said "Egypt was never and will never be against the development of Nile basin countries"

The International Panel of Experts (IPoE) which had been tasked to study the impact of the dam project, in its final report unveiled that the project will not adversely affect the river's downstream flow.

The report, on the contrary revealed that the dam instead benefits down stream countries by protecting them from over flooding, reduces sedimentation, enables irrigation expansion, boosts water use efficiency and provides them with cheap and clean energy.

Sudan, has accepted the final findings, Egypt however insisted on further technical assessment on the dam project, which Ethiopia says is safe and never meant to harm lower riparian countries (Egypt and Sudan).

Up on completion by 2017, the Grand Ethiopian renaissance dam will have electricity generating capacity of 6,000 megawatt.

Currently the power plant project which will be Africa's largest is 36% completed and will take the east African nation up to six years to fill the dam's 74 billion cubic-metre reservoir.

Ethiopia is executing a number of power mega projects planning to export hydro power processed electricity to neighbouring countries as part of the country's efforts to alleviate poverty and join middle income countries.

According to researchers, Ethiopia could earn up to 2 million Euros every day from power exports when the current power plant projects get completed.

"Egypt's FM visits Ethiopia for Nile dam talks", 03/09/2014, online at:

<http://www.sudantribune.com/spip.php?article52278>

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❖ Water minister to visit Ethiopia mid-September

Minister of Water Resources and Irrigation Hossam El-Moghazy is expected to visit Ethiopia mid-September, according to ministry spokesman Khalid Wasif.

“The visit date isn’t settled yet due to commitments from both sides,” Wasif said.

El-Moghazy will lead a delegation of Egyptian experts to Addis Ababa to discuss the Grand Renaissance Dam (GERD) project.

This visit comes at a time of high-level talks between the two countries, in attempt to reach a common position on GERD, which is currently under construction.

Egyptian Foreign Minister Sameh Shoukry visited Ethiopia on Thursday, and was quoted on state-run MENA as saying that Egypt considers its relations with Ethiopia a key component of its foreign policy.

GERD, which is currently 30% complete, according to Ethiopian Government press statements in February, is a hydroelectric power dam and has raised concerns from the Egyptian government over its share of the Nile River water.

President Abdel Fattah Al-Sisi is expected to hold talks with Ethiopian Prime Minister Hailemariam Desalegn at the UN Headquarters in New York on 16 September. The talks are likely to take place on the sidelines of the 69th session of the United Nations General Assembly.

Ethiopian Minister of Foreign Affairs Dr Tedros Adhanom Ghebreyesus told state-owned MENA that the meeting is of great importance for strengthening bilateral relations between the two countries.

Al-Sisi and Desalegn met in June on the sidelines of the African Union summit in Malabo. The two countries later announced their decision to form a joint committee within three months to streamline discussions on GERD.

Downstream countries Egypt and Sudan together receive the majority of Nile water. As per agreements signed in 1929 and 1959, Egypt annually receives 55.5bn cubic metres of the estimated total 84bn cubic metres of Nile water produced each year and Sudan receives 18.5bn cubic metres.

However, the two water sharing agreements, which guarantee Egypt the lion's share of water, were signed in the absence of Ethiopia.

Last month, the fourth round of tripartite talks was held between Egypt, Ethiopia and Sudan, ending with agreements. Previous tripartite talks had failed.

“Water minister to visit Ethiopia mid-September”, 07/09/2014, online at:
<http://www.dailynewsegypt.com/2014/09/07/water-minister-visit-ethiopia-mid-september/>

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❖ **Ethiopia, Egypt, Sudan advance water, impact studies of 6,000-MW Grand Renaissance hydro Project**

Water ministers of Ethiopia, Egypt and Sudan have agreed to establish a committee to study water resources and socio-environmental effects related to the 6,000-MW Grand Ethiopian Renaissance Dam under construction in Ethiopia.

Ministers meeting Aug. 25-26 agreed to establish a committee to conduct two additional studies recommended by the project's International Panel of Experts. A Tripartite National Committee comprising four experts from each country is to conduct the studies, one a water resources/hydropower system simulation model, and the other a transboundary environmental and socio-economic impact assessment.

The tripartite committee is to begin immediately and complete its work in six months. The studies are to be implemented by international consulting firms according to an agreed timetable. The ministers also agreed on the nomination of international experts to provide technical opinions in case there are disagreements among the ministers over the studies.

During the meeting, Ethiopia's technical team also provided details of updates in dam design to satisfy the downstream states' concerns about the dam's stability. The countries' technical teams agreed to continue consultations on technical matters in the future.

In addition to concerns for dam safety, the downstream states, particularly Egypt, have expressed concerned that they will suffer water shortages as the reservoir of the US\$4.5 billion project is filled.

The project is located along the Blue Nile, which accounts for 85 percent of the Nile River's flow.

"We understand the concerns of the Sudanese and Egyptians," Ethiopia Water Minister Alemayehu Tegenu said, adding there is no reason to stop construction of Grand Renaissance.

Ethiopian officials said in March they expect to be producing at least 750 MW of power from Grand Renaissance within 18 months. The project is reported to be 35 percent complete.

Grand Renaissance -- formerly known as both "Project X" and the "Millennium Project" before Ethiopia's Council of Ministers renamed it in 2011 -- will be owned and operated by the Ethiopian Electric Power Corp.

Alstom last year signed a US\$406.32 million contract with Metals & Engineering Corp. to supply eight 375-MW turbine-generators for the project. Salini Costruttori Spa of Italy received a contract in 2011 to construct the project 40 kilometers from the Sudan border.

“Ethiopia, Egypt, Sudan advance water, impact studies of 6,000-MW Grand Renaissance hydro Project”, 03/09/2014, online at: <http://www.hydroworld.com/articles/2014/09/ethiopia-egypt-sudan-advance-water-impact-studies-of-6-000-mw-grand-rennaissance-hydro-project.html>

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❖ Egypt hopes for 'win-win' outcome to Renaissance Dam dispute

Foreign Minister Sameh Shoukry to visit the Ethiopian capital Thursday to confer with his counterpart and the prime minister of Ethiopia

“We don’t want anyone to suffer; we fully appreciate the development needs of our Ethiopian friends and we are genuinely hoping that they – for their turn – do appreciate our concern over water resources; we could work out a win-win formula if there is serious political will,” argued Mohamed Idris, Egypt’s ambassador to Ethiopia.

Idris spoke ahead of the anticipated visit of Foreign Minister Sameh Shoukry to the Ethiopian capital tomorrow whereby the top Egyptian diplomat is expected to confer with his counterpart and the prime minister of Ethiopia.

Shoukry’s visit comes only a few days after a three-way meeting between Egypt, Ethiopia and North Sudan in Khartoum to discuss the developments and possible side-effects of the Renaissance Dam that Addis Ababa is constructing. Egypt has expressed concern that the dam will have a negative effect on its water share.

The Khartoum meeting, according to Egyptian sources, failed to deliver a breakthrough or change in Addis Ababa’s position on the construction of the dam. Egypt is concerned the dam suffers serious structural deficiencies that could cause it to eventually sustain cracks that will diminish its – already insufficient – share of Nile water.

Addis Ababa, however, in the Khartoum meeting agreed to an Egyptian demand to commission a team of experts to write a report on the design of the dam and ways to ensure that the build-up of the water reserve could be done without resulting in a major reduction in Egypt’s share.

The Ethiopian perspective on the outcome of the Khartoum meeting, as has been reflected in the statements of its press and diplomats, is that the Khartoum meeting resulted in the end of the Egyptian resistance to the construction of the dam, which is almost 30 percent done.

A source at the Egyptian irrigation ministry confirmed that this was “true but with a caveat that we are not forced to suffer serious harm for severe water shortage or to be faced with serious risks of a massive inundation should the dam crack.”

In Addis Ababa tomorrow, Shoukry will try to follow up on the conclusions of the Khartoum meeting.

Shoukry will stress options for cooperation. “We could reach a formula by which the Ethiopians could fill their reserves on a longer than the already suggested six-year term and with an eye to the volume of Nile flow which goes up and down,” said the irrigation ministry source.

Meanwhile, Egypt, according to informed diplomats, has been appealing to concerned world capitals – including Rome where Shoukry attended talks earlier in the week – to provide technical support and diplomatic help to find a happy ending to the otherwise potentially explosive dispute.

“What we really want is cooperation not dispute with Ethiopia as with the other Nile basin countries,” said Idris. He added that high-level talks had so far reflected the potential for cooperation “and we should be seeing more high-level talks between Egypt and Ethiopia in the near future,” he added.

President Abdel-Fattah El-Sisi and Ethiopian Prime Minister Hailemariam Desalgne had met earlier in the summer. The two could be meeting again later this month on the fringe of the UN General Assembly in New York.

In New York too, the delegations of the Nile basin countries might be holding a meeting to discuss the “entire issue of the Nile water shares” and the prospects to reach a comprehensive agreement by which upstream and downstream countries have sufficient shares – “without causing serious harm to one another”.

Tanzania is offering to host a meeting later this year on the same issue to help conclude an agreement that has proven to be hard-to-reach in view of the contradicting views of the upstream and downstream countries.

Ethiopia is the source of over 80 percent of Egypt’s annual share of water. It has managed to develop considerable international support for its wish to build a dam to help generate electricity.

It might be in the coming few months that it would, according to the source at the ministry of irrigation, start cutting down water to fill in the reserve of the dam under construction.

“We are committed to Egypt not suffering major harm but we are also committed to completing the construction of our dam,” said an Ethiopian diplomat. He added that it is not an option for Ethiopia to consider reducing the capacity of the dam.

The Ethiopian argument is that Egypt could do “a lot” to improve its use of water resources by advancing its irrigation methods, altering its agricultural choices and improving the efficiency of its water usage.

According to a government official, President El-Sisi, has already demanded a comprehensive study on the matter and the possible choices for Egypt to be more economic and efficient in managing its water resources as well as on its diplomatic and legal options to “defend Egypt’s water right.”

“The Renaissance Dam is a file that the president is giving utmost attention; he is well aware of what it could mean for Egypt,” said a presidential source.

“Egypt hopes for 'win-win' outcome to Renaissance Dam dispute”, 03/09/2014, online at:

<http://english.ahram.org.eg/NewsContent/1/64/109904/Egypt/Politics-/Egypt-hopes-for-winwin-outcome-to-Renaissance-Dam-.aspx>

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❖ No More Dams on the Mekong

BANGKOK — The Mekong River runs more than 4,000 kilometers, from China into Myanmar and then through Laos, Thailand, Cambodia and Vietnam, where it empties into the sea. Traditionally a major transport route and food source, it is also increasingly becoming a supply of energy — at its own peril and at the cost of instability among states in the region.

Several large dams already straddle the Mekong in China, and construction on more dams downstream is underway. Hydropower is a well-established source of renewable energy, and the countries of the lower Mekong see it as an attractive way to help meet their exploding energy demand while diversifying their energy portfolio. Over 80 percent of Thailand's total energy consumption, for example, is satisfied with fossil fuels.

And so Thai, Malaysian, Chinese and Vietnamese developers and investors in the private sector have set out to build 11 dams on the Mekong's main stem in Laos and Cambodia. Only about one-tenth of the power to be produced will go to the two host countries; the bulk will serve energy-hungry Thailand and Vietnam. Laos, the location of nine of these dams, is tapping the river, one of its few natural resources, to generate needed export revenues.

Energy security and economic development are legitimate goals, of course, but these main-stem dams were conceived with little regard for their environmental consequences and socioeconomic repercussions. The proposed dams will prevent sediment from the upper stretches of the Mekong River from reaching its delta, depriving rice fields in lower Vietnam of essential nutrients. They will also disrupt the migratory patterns of fish, which will endanger the stocks on which Cambodians, especially, rely for much of their protein intake.

Such prospects have already caused tensions, and have even strained relations among some governments in the region. Laos, for example, has proceeded with construction on the Xayaburi dam, the first in the main-stem series, over objections from the governments of Cambodia and Vietnam, which are concerned about the project's impact on the environment and food security.

Formal mechanisms already exist to foster regional cooperation on this issue. The most prominent is the Mekong River Commission, which since 1995 has served as an important forum for the four countries of the lower Mekong to discuss how best to develop the river basin. The organization has

also carried out extensive technical studies to advise policy makers. But with no real enforcement mechanism, it has so far been unable to resolve transboundary disputes, including those over Xayaburi. The commission stands little chance of influencing the other dam projects.

It will not be possible to stop or even slow down construction of these main-stem dams without coming up with alternative sources of energy. Fortunately, there are other, and better, ways to generate power for the region.

Existing dams could be retooled to increase their efficiency and limit their environmental impact. Other options include developing small-scale hydro- power in Vietnam and solar power in Vietnam and Thailand. In fact, according to a recent study by the International Center for Environmental Management, an NGO, developing a thoughtful combination of renewables could supply several times as much energy by 2025 as the amount expected to be generated by the proposed dams. And improving energy efficiency and implementing conservation measures — say, to cut electricity consumption in large commercial buildings throughout Thailand — could mean substantial savings and help curb demand.

Yet innovative energy projects rarely seem attractive, or competitive, against large hydropower projects, partly for lack of substantial financial backing up front. And the mega-dams tend to attract too much support. They are capital-intensive, which means that they boost foreign direct investment and stimulate G.D.P. growth (at least temporarily). They also allow host governments to collect money quickly by granting construction rights to private developers. And in countries where the rule of law is weak, they provide opportunities for skimming and cronyism.

But proponents of large dams almost always underestimate the environmental costs while overestimating the rates of return. And such projects can spur get-developed-quick schemes at the expense of broad social and economic progress.

A better approach — one that recognizes both the legitimate energy needs of the lower Mekong countries and the environmental and social costs of Big Hydro — would be to create an investment fund to finance the large-scale development of alternative forms of energy.

This sustainable-energy fund could be partly modeled after the Global Fund to Fight AIDS, Tuberculosis and Malaria. Like the Global Fund, it would pool resources among governments,

foundations and the private sector. But unlike the Global Fund, which gives grants to various types of actors, this fund would finance only public-private joint ventures. The government partners would grant the necessary concessions and regulatory authorizations; the private partners would handle the implementation of the energy projects, including the construction of infrastructure.

Access to the fund would be conditional on the government partners' willingness to adopt sustainable-development guidelines akin to the Equator Principles. As an incentive for governments to undertake such wide-ranging commitments (and abandon some lucrative deals), the fund should give out major grants; thus it must be endowed with several hundred million dollars. Big start-up grants could also be leveraged by the joint ventures to secure even bigger loans, allowing them to rapidly gain a foothold in the market and so stand a chance against main-stem hydropower projects.

On the other hand, the fund would exist only for a limited time — long enough to set the energy policy of the lower Mekong countries on a more sustainable path, but not so long that its grants would eventually distort the regional market by suppressing the price of certain renewable sources of energy.

Where would the money come from? Potential contributors include multilateral banks like the World Bank or the Asian Development Bank, and the United States, Australia, Japan and major European states. After all, these actors are already spending millions of dollars to mitigate environmental damage and promote resource management in the lower Mekong. Contributions could also come from private actors with a strategic interest in creating new energy markets.

This sustainable-energy fund could be administered by a multilateral bank, such as the A.D.B., which already has expertise and connections to governments. Or, better yet, it could be like the Global Fund, a stand-alone organization whose stakeholders, be they public or private, all share in the decision-making.

The rush to build big dams along the lower Mekong reflects an outdated vision of energy policy; it is a throwback to the environmentally irresponsible hydropower ambitions of the 1960s. Setting up a bold and generous start-up funding mechanism that promotes other ways of meeting the region's energy demand is a much better approach: It would stabilize relations among the states that share the Mekong, even as it protected that mighty river.

David Roberts was regional strategic adviser of USAID-Asia from 2012 to 2014.

Correction: September 4, 2014

Because of an editing error, an earlier version of this article mischaracterized the nature of conflicts that the Mekong River Commission has failed to resolve. They are “transboundary” disputes, not “boundary” disputes.

“No More Dams on the Mekong”, 03/09/2014, online at: http://www.nytimes.com/2014/09/04/opinion/no-more-dams-on-the-mekong.html?_r=0

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❖ Land in Mekong Delta sinks as inhabitants remove water

Land in the Mekong Delta, which is shared by Cambodia and Vietnam, is subsiding by between 1 and 4 cm per year as roughly 20 million inhabitants extract groundwater for drinking, agriculture and industry. That's according to researchers from Stanford University, US, who used calculations and remote sensing to ascertain ground movements across the region.

“We provide the first rates and maps of land subsidence throughout the lower Mekong Delta, a flat landscape, largely within 2 m of sea level,” [Steve Gorelick](#) told [environmentalresearchweb](#). “Flooding by both fresh river water and intrusion of seawater is already a widespread problem for many millions of people living in the Delta. In the future, as the land subsides and sea level rises, flooding impacts will only get worse.” Sea level in the waters off the Delta is rising by about 0.3 cm per year.

There are around one million wells in the Mekong Delta region. As water is extracted from the soil, the pore pressure decreases and the ground compacts. “In many regions, ranging from Venice, Italy to the San Joaquin Valley, California, such extraction has caused severe problems of land subsidence due to sediment compaction,” said Gorelick.

The groundwater level in the Mekong Delta has declined on average by around 0.3 m per year, Gorelick and colleagues Laura Erban and Howard Zebker found by analysing data from 79 monitoring wells at a total of 18 sites. They also constructed a hydrogeomechanical simulation model, which revealed that this drop in groundwater level has created land subsidence at an average rate of 1.6 cm/year, with some areas seeing severe local subsidence.

“By showing the relation between pumping and subsidence, we provide critical information for regional planning,” said Gorelick. “We show that the effect of land subsidence due to groundwater extraction greatly exceeds that of anticipated sea-level rise due to global climate change through mid-century. Of course, sea-level rise could become a greater hazard later in the century.”

Since there are no observations from the ground of land subsidence in the Delta, the researchers turned to satellite-based radar imagery to validate their simulation model. They employed interferometric synthetic aperture radar (InSAR) data from the L-band PALSAR instrument on board ALOS (the Advanced Land Observing Satellite).

Phase changes in the radar backscatter from the ground surface over the period of a year and three days, averaged over 2006–2010, revealed that the land had subsided 1–4 cm per year over thousands of square kilometres. The highest subsidence was along a southwest-northeast axis in the heavily pumped central Delta. Subsidence was less towards the Cambodian border, where groundwater extraction is minimal.

“Using the two approaches, computer simulation and satellite remote sensing, we confirmed that subsidence was indeed related to groundwater pumping,” said Gorelick. “Furthermore, spatial patterns and magnitudes of subsidence determined by each method were in agreement. A more subtle implication is our contribution to applying InSAR to a nearly flat and often flooded landscape. The Mekong Delta is exceedingly difficult to study by this method, due to the effects on radar reflection of a land surface with constantly changing flooding and cropping conditions.”

If pumping continues at current rates, ~0.88 m of land subsidence is expected by 2050, according to the team. At the same time, sea level is likely to rise by around 0.10 m, so parts of the Delta are likely to see around 1 m of additional inundation hazard by mid-century.

“Because current groundwater extraction in the lower Mekong Delta is inducing ~1–4 cm/yr land subsidence over large areas, future management efforts should seek to reduce pumping to halt the subsidence-induced flooding hazard,” said Gorelick. “We continue to work on questions of water supply and groundwater contamination in the Mekong Delta, and hope to pursue the use of InSAR in other regions, particularly those where ground-based land-surface elevation changes are not being monitored.”

Gorelick and colleagues reported their study in [Environmental Research Letters \(ERL\)](#).

“Land in Mekong Delta sinks as inhabitants remove water”, 04/09/2014, online at: <http://environmentalresearchweb.org/cws/article/news/58454>

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❖ Mekong hydropower plants deprive farmers of their livelihood

VietNamNet Bridge – The influences of the hydropower dams on the Mekong River on Vietnamese farmers are becoming more apparent: floods and salinity have penetrated rice fields, aquatic resources have decreased, and alluvium cannot reach the delta.

Farmers attending a seminar held in Can Tho City on August 21-22, on the threshold of consultation among Mekong region countries about the Donsahong hydropower plant on the Mekong's main stream, all expressed their worries about the possible impact of the dam.

“In the past, we could easily predict the weather conditions based on the natural water flow, and cope with natural calamities, including floods. But now we cannot respond to emergencies because the river current has changed a lot,” said Nguyen Van Hiep, a farmer from Tam Nong District in Dong Thap Province.

According to Hiep, farmers now find it hard to draw up their production plans, because floods come in rainy season, while the river gets exhausted in dry season, paving the way for salinity to penetrate more deeply into the mainland.

“The aquatic resources are on the decline, while alluvium has been blocked and cannot go to the delta. As a result, we have to spend more money on fertilizer to enrich the soil,” he said. “The hydropower dams on Mekong River have deprived us of our livelihood.”

Researchers found that Donsahong dam would lead to a 50 percent decrease in the volume of water to be provided to the lowlands in the dry season, because the Mekong overall flow (this comprises 17 branches) collects water for Housahong, which is blocked by Donsahong dam.

Research works have found that 75 percent of the fish on the Mekong's main stream go through Housahong branch as there is no waterfall.

So, when Housahong's current is blocked, the natural migration of the fish would not be possible, which can cause big changes to the region's ecosystem.

According to Dr. Le Anh Tuan from the Climate Change Research Institute of Can Tho University, Donsahong is the second hydropower dam to be built on the Mekong's main stream located in Lao territory.

This would be a hydropower dam with no storage reservoir, 32 meters in height and designed capacity of 260 MW.

Meanwhile, it is expected that another 19 hydropower dams would also be built on the Mekong's main stream. China has four operational, while it is planning to build four more. Laos is building Xayabury and is going to build Donsahong; it is also planning to build seven more. Cambodia is also going to build two dams.

The hydropower potential of the Mekong River, by international scientists' estimates, is about 54,000 MW. However, Tuan said, the hydropower plants on the main stream would lead to the extermination of many catfish and other migrating fish species.

Meanwhile, Dr. Duong Van Ni from Can Tho University fears that in the context of climate change, the hydropower plants on Mekong would also pave the way for salinity to encroach on the delta in the rainy season.

"Mekong hydropower plants deprive farmers of their livelihood", 06/09/2014, online at:

<http://english.vietnamnet.vn/fms/environment/111119/mekong-hydropower-plants-deprive-farmers-of-their-livelihood.html>

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❖ Are dams unsustainable? A case study of the Mekong River

The main issue that we will be exploring during our Amazon boat trip is the regions pursuit to overcome its water and energy challenges, and put Brazil firmly on track to rapid economic growth by increasing the production of dams in the area. Brazilian companies and foreign conglomerates will put up 34 sizeable dams in an effort to increase the country's capacity to produce energy by more than 50%. However, the consequential environmental and social concerns that will result from this direction of development remain a hot debating point.

In this blog we examine a similar economic project in China, along the Mekong River.

The Mekong River is so long that if it were in the US, it would stretch all the way from Los Angeles across to New York.

China has been building dams across the river for the last 20 years. Their 2 newest dams, the Xiaowan, completed nearly four years ago, has a wall almost as high as the Eiffel Tower and a reservoir that can hold 15 billion cubic metres of water. While its newest dam, the Nuozhadu, can store 22.7 billion cubic metres of water. Together, both dams can hold enough water to drown an area the size of London in water 24 metres deep.

There has long now been concerns about the impact the dams are having on the countries further south, in countries such as Thailand, Cambodia, Vietnam, and Laos.

In recent times, the issue of water scarcity has grown into one of the most sensitive global issues around. The UN warns that demand for fresh water is on track to outstrip supply by as much as 40% within 16 years. That means co-operation between countries sharing the same river is likely to become even more imperative.

Because China has nearly 20% of the global population but only 6% of its fresh water, it needs to explore opportunities to maximising its water production. Building hydropower dams across the river hereby appears to be a clear solution to its water challenges, as well overcoming energy scarcity too.

The Mekong, in theory, is a gigantic fish factory and crop irrigator that acts as an economic lifeline for tens of millions of people in the countries that lie below China. People here eat around 46kg of fish a year, nearly double the global average. While half of Vietnam's rice crop comes from the Mekong Delta.

That is why China's dams have been regarded with such concern. Even average sized dams create well-documented problems on a river. They block fish from migrating to their spawning grounds and, by releasing water in bursts, scour riverbeds and disrupt fish breeding patterns.

Additionally, there have been recorded incidents of curious fluctuations in the river's levels in southern countries, including the December 2011 disaster, which caused around \$220,000 of economic damage to the region.

In short some of the key areas of concern that the Chinese dams along the Mekong River are having on its Southern neighbours include:

- *Significant decrease of fish stock availability
- *Decrease in wetlands across the region, which significantly affect crop and agriculture production
- *Newly created hydropower dams in the southern countries will now struggle to generate power
- *An increase in random outbreaks of flooding has been recorded since the creation of the Xiaowan and the Nuozhadu.

Despite these environmental and social problems, there is also an additional argument that large dams have one of the highest cost overruns among all infrastructure assets. For example, Brazil's Itaipu dam, built in the 1970s, suffered a 240% cost overrun that impaired the nation's public finances for three decades. Despite producing much-needed electricity, it is likely it will never pay back the costs incurred to build it.

“Are dams unsustainable? A case study of the Mekong River”, 04/09/2014, online at:

<http://lead.org/news-and-blog/683-are-dams-unsustainable-a-case-study-of-the-mekong-river>

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❖ **In Jammu and Kashmir floods, current of politics, Omar treads water**

It was 11.30 pm on Thursday, flood waters were climbing dangerously, inundating Barzulla locality in Srinagar, and the anxiety levels of the senior officials with him were rising. But Chief Minister Omar Abdullah stayed put; he would only leave when three-month-old Aiza Faheen, stuck on the second storey of a house along with her grandparents, was rescued.

Omar had run into the parents of the baby at Baghat bridge. The mother was crying. “My wife told the CM our daughter is trapped. He assured her that he would not leave till our baby was rescued.

Finally, after three hours, I along with the officials managed to save her. Omar left only after that,” said father Shabir Gojwari, a businessman.

Elections are only months away, and lugging the weight of an administration seen as unresponsive, and own image of being distant, Omar was not taking any chances.

The CM has personally visited residences submerged under flood waters in Srinagar, a city where his party National Conference’s vote share has been slipping. On Saturday, he was in Jammu, the division worst affected by the floods and which has always left neglected by Kashmir-centric parties.

The fact that Union Home Minister Rajnath Singh was in the state on Friday and Saturday, and that Prime Minister Narendra Modi will be here Sunday, has further stirred political waters. The BJP that fancies its chances in the coming J&K Assembly elections is doing so largely on the strength of its Jammu votes.

Officials said the CM has been monitoring the situation round the clock and receiving regular flood updates.

The Congress’s leader of opposition in the Rajya Sabha Ghulam Nabi Azad also visited the flood-affected regions Saturday, including Srinagar’s hospitals inundated by flood waters.

Ministers Akbar Lone, Hassan Mir, Ghulam Ahmad Mir, Mohammad Ramzan, Sakina Itoo and Mir Saifullah all did their rounds of flood-affected regions, braving public ire at places.

PDP leader Altaf Bukhari has set a helpline, while other senior party leaders have headed out to their constituencies.

The people were happy at the response, though not too impressed. “Natural disasters can happen anytime, but when elections are close, officials and politicians take much interest in solving problems,” said Aleem Farooq, an MBA student from Srinagar’s Bagh e Metab, currently under water

“In Jammu and Kashmir floods, current of politics, Omar treads water”, 07/09/2014, online at:
<http://www.financialexpress.com/news/in-jammu-and-kashmir-floods-current-of-politics-omar-treads-water/1286422>

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❖ Chinese dams on Thanlwin River threaten livelihood of Burmese villages

Yangon (AsiaNews / Agencies) - A group of Chinese, Burmese and Thai scholars currently holding a seminar in Mon State, southern Myanmar, have raised the alarm about plans - under development - to build six dams on the Thanlwin River. Over 200 researchers and academics are attending a seminar at Moulmein University, to share the latest discoveries in the social and environmental impact of mega structures. In particular, attention has focused on the consequences for the inhabitants of the communities living along the river, the longest in Indochina after the Mekong. They also traveled to nearby villages to ask how local residents have been affected by dams already built upstream in China.

The workshop was organized by the *Renewable Energy Association Myanmar*(Ream), the *Mekong Energy and Ecology Network* (Mee Net) and *Towards Ecological Recovery and Regional Alliance* (Terra). The academics said the livelihoods of farmers were being threatened not only by the dams, but also by the chemical industries and hydropower industries developed alongside them.

Meanwhile, the construction of dams in the upper part of the Thanlwin River, in China, has already resulted in a change in the current, which has led to an increase of the salt water in the main river and its tributaries. The increased salinity of the water has caused soil erosion and, over the years, resulted in the disappearance of entire villages and islands in the delta of the Gulf of Martaban, at the mouth of the river (which rises in the highlands of Tibet) in the South Myanmar, together with large tracts of agricultural land.

Min Min Nwe, a coordinator for a Mon development group who helped organize the workshop, notes that waste from chemical industries has seeped into the river, harming fish and prawns while

affecting the growth rate of insects and snails, which are damaging crops. He says "at farms along the Thanlwin River, large snails are destroying the rice paddies".

Of the six dams planned for the river, two would be in Shan State (construction has already begun on one of these), while one would be in Kayah State and three would be in Karen State. Experts say once the Thanlwin river is dammed upstream, the people living downstream, will see a rise in tide and deforestation, while animals like fish and birds will perish. The researchers would like to "avoid" such a scenario and have delivered a comprehensive report to Parliament on the effects of dams.

"Chinese dams on Thanlwin River threaten livelihood of Burmese villages", 06/09/2014, online at:
<http://www.asianews.it/news-en/Chinese-dams-on-Thanlwin-River-threaten-livelihood-of-Burmese-villages-32080.html>

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❖ **Over 40-year career, Holy Cross brother learned necessity of education about food, water**

Dave Andrews "grew up rural," but when it comes to food and water policy, the 70-year-old Holy Cross brother has practically seen it all. Andrews cut his teeth working at the local political level in 1970s upstate New York. He directed the National Catholic Rural Life Conference, an advocacy group dedicated to "the rural church, rural people and their communities." He was a senior adviser to the 63rd General Assembly of the United Nations under the presidency of Miguel d'Escoto Brockmann. For the past six years, he has served as a senior representative to Food & Water Watch, an influential Washington, D.C., consumer rights group that "works to ensure the food, water and fish we consume is safe, accessible and sustainable." All this from a man who "grew up rural."

Earlier this month, Andrews announced his retirement. *NCR* spoke with him about his life and career, what he's seen and learned over the years, and where he sees the fight for clean, accessible water and healthy food heading today.

NCR: Tell me about yourself. Where are you from?

Andrews: I'm from Massachusetts. Southeastern Massachusetts, near Providence, R.I. I'm from an unincorporated village. I grew up in Myricks. I grew up rural. We weren't farmers, but we had neighbors who were farmers, so I knew about rural landscapes, and I knew about the demographics and the tradition of rural life in America growing up in that setting.

When did you enter into religious life?

I entered the Congregation of Holy Cross right after high school in 1953. I'm a Holy Cross brother.

And when did you become the director of the National Catholic Rural Life Conference?

I was director of NCRLC from 19...what? Well, for 13 years, up until 2008. But I started my rural life career in agricultural food policy right here where I live now, in a small town in upstate New York outside Albany. I started my rural life work with the North East Task Force for Food, Farm and Consumer Policy, which was operated under the New York State Assembly.

My mentor and co-worker at that time -- this was 1974 or '75 -- was Mabel Gil. She's the blood sister of Eileen Egan. I don't know if you know that name, Eileen Egan? She was a worker for Catholic Relief Services, and they give out an award every year, the Eileen Egan Award. She's pretty well

known in church circles -- she's now deceased. But Mabel is 91 years old, and Mabel is still active. We keep in touch.

You also worked with the United Nations.

Yes, the United Nations was 2008-09. It was after the National Catholic Rural Life Conference and right when I first started working for Food & Water Watch. I was contacted by Miguel d'Escoto. He asked me to be a senior adviser on food policy and sustainability.

Was that the first time you started working on food and water issues at a global level?

No, with National Catholic Rural Life Conference I worked internationally.

So what do people need to know about food and water at a global level?

They need to know that our water resources are in peril. They're in danger internationally. We waste a lot of water. Increasingly, communities need water because of things like droughts, which are significant here in the U.S., in the Southwest particularly. They need to know that the food that we consume needs to be healthier and that we need to rely less on pesticides and herbicides and more on sustainable systems of production.

We need to make sure to find ways to get sustainable production of food so that more rather than fewer can eat. The food has to be healthy and nourishing. We have to spend more time looking at nutrition. Those are some of the facts of the food system that the public should be aware of globally.

What does the food and water situation look like in America?

The good news in America is that there's an increase in the consumption of organic production, of non-pesticide-use production methods. There's a growth in that, 20 percent every year. So that's good. But you still have the growth of rural demographics, people wanting to move to the countryside -- what we call "amenities seekers" -- people who are looking for a nice landscape, but in doing so use up good productive land for housing. We need to produce good food sustainably in a way that preserves rather than hurts our countryside.

Are the root causes of food and water problems the same in countries like America as they are in more impoverished nations?

They are. They're the same. It's population, migration; it's weather issues, climate change, climate adaptation, the impact of human activity on the climate. We need to look globally at these issues.

Have the issues changed at all over the years?

The issues haven't changed dramatically, but the language and the discussion about them has. In those early days, we talked about "alternative agriculture." We didn't talk about sustainable agriculture. We talked about organic as "alternative." So it was a different nomenclature.

And the language matters.

The language does matter because there are lots of people who want to co-opt the language of sustainability, and they want to call things sustainable that are not. So it does matter, and the nuance matters, and the context matters significantly.

What have you learned about politics over the past 40 years?

Well, that it's easy to be co-opted. There are lots of people who want to take the language of sustainability and use it for things that are not sustainable. Even within the halls of USDA, for example, you have these policies developed that claim to be sustainable -- in terms of the ingredients that go into products or how they're produced -- but they're much more willing to let industrialized systems of agriculture claim the mantle of sustainability when they're not sustainable. From the policy perspective, you have to know your issue and how to nuance it correctly. You have to be willing to help the public see the differences in the methods.

One of the things I've always been happy with is that I taught high school. That helped me shape my language so that I was understandable to a broader public. And that's important in this work because otherwise, people can be fooled. Especially by official organs of the government.

What have you learned about people?

I have learned that people really want to do the right thing. And if you tell them honestly and approach them directly, you'll find that people are basically good-hearted. They want to have healthy,

nutritional food. They want to know the right things to eat and how to prepare them for their families. This is why the president's wife [Michelle Obama] has been so popular in her food policy focus, because she's helping educate the broader public. You see, the proliferation of more organic production around the country is because people want to do the right thing.

What can conscientious people do to help support a healthier system?

They can promote healthy food wherever they are, in whatever system they're in: in their schools, in their place of work, in their businesses. Increasingly, food service can become healthier and communities can become healthier if the consumer will foster that kind of system. And I believe that we can do a better job of talking to our leaders about what it is we really want. It gets down to people calling for a positive and healthy change and doing that wherever they are, including their local communities and their churches. If they do so, the change will come. And I see it increasingly coming, quite honestly.

“Over 40-year career, Holy Cross brother learned necessity of education about food, water”, 05/09/2014, online at:
<http://ncronline.org/blogs/ncr-today/education-about-water-and-food-necessity-us-globally>

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❖ **Business must engage in practical solutions and policy for water security**

At a World Water Week event in Stockholm this week, I was asked a good question: Why does SABMiller join policy discussions, such as seminars on the water-food-energy nexus? Why not put all our energy into purely practical solutions – helping to solve the problems of water scarcity in each location as we encounter it?

We need to do both. The water-food-energy nexus is a priority for SABMiller because it is about the viability of our business. High quality water and agricultural products are vital for a brewing company – and of course are essential for the societies within which we operate. The risk of not properly managing the interconnections between these resources is a risk we share with other businesses and with the rest of society. And we see shared resource risks becoming more acute under changing consumption patterns and demographic pressures worldwide. An additional 3 billion middle class people in the world by 2030 is an example of the rapid pace of progress, but the resulting resource pressures have to be managed carefully.

SABMiller’s starting point on water scarcity was to see how far our engineers and brewery managers could improve our own water efficiency within our operations. We’re proud of the results – this year we hit our target of a 25% reduction in water used to produce each litre of beer, a year ahead of schedule. We will press on with even deeper reductions to help make water go further for everyone. But in most areas, the vast majority of water used is taken up in agriculture – and usually in farms that are not supplying us with crops. We share the risks of water scarcity with those farmers, but it’s not immediately obvious how we can help improve their water efficiency, in the same way as we can within our brewing operations.

The only way of tackling this shared risk is through collaboration with other water users. For example, the Water Futures Partnership, which we developed jointly with WWF and GIZ, seeks to work together with others to put in place water stewardship measures, securing water supplies for the long term for all water users. It is in our business interest to engage in this way “beyond our fence-line”, because it offers a way to help solve a shared water risk that is a threat to our business.

In a more fundamental way, it also helps solve a problem that is holding back the social and economic potential of the societies of which we are a part. Water scarcity undermines livelihood

opportunities and the burden often falls most strongly on women. Changing this is an essential part of enabling societies to become more prosperous – and when societies prosper, SABMiller prospers. This principle is at the heart of the Prosper strategy we launched in July.

The link between prosperity and water security is striking in some of the communities where we work. In Neemrana, Rajasthan, for example, our work with farmers on agricultural productivity is closely connected with solving problems of water scarcity. SABMiller India is enabling small-scale farmers to adopt rainwater harvesting and its efficient use for food production through Community Watershed Management. Over the past three years, our project in Neemrana has helped farmers increase their productivity by over a fifth, increase their water use efficiency by over a third and at the same time raise their disposable incomes by 21%.

The same logic, emerging from the close connection between risks to our company, water insecurity and untapped prosperity, leads us to look beyond these local partnerships and work with others to engage in policy debates. The seminar that prompted the question in Stockholm was exploring the conclusions from a piece of research we commissioned jointly with WWF: The Water-Food-Energy Nexus: Insights into Resilient Development (pdf)

While our two organisations have different starting points on this agenda, we see that even strong local partnerships are missing an important dimension of the way water, food and energy systems are managed. Governments, through regulations, incentives and national development plans, have a strong influence on the resilience of those systems in the face of climate and demographic change.

To tackle everyone's shared water risks, government and business strategies need to give a central place to resilience and water security. And as the Neemrana example shows, this is not just a question of managing future risks: it is also about seizing a more immediate opportunity. Action on water security contributes to building prosperity now, as well as for future generations.

“Business must engage in practical solutions and policy for water security”, 05/09/2014, online at: <http://www.theguardian.com/sustainable-business/2014/sep/05/world-water-week-security-solutions-efficiency-policy>

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❖ Nestlé tackling water issues in Central and West Africa

Water experts are convening in Stockholm on the occasion of World Water Week. Over 200 organisations will take part in the event, which is organised by the Stockholm International Water Institute, to discuss water and development issues.

Global water scarcity is increasingly threatening food security as two-thirds of all fresh water is being used in agriculture. This demand looks set to rise by 50% by 2030, intensifying the water crisis in Central and West Africa and worldwide.

Nestlé -- the world's leading nutrition, health and wellness company -- is committed to playing a part in addressing the urgent water issue. About 768 million people remain without access to an improved source of drinking water, 40% of them in sub-Saharan Africa.

In this region, only 36% of the population has access to proper sanitation facilities, and women -- who are mostly responsible for supplying their families with water -- are forced to spend hours fetching it.

Nestlé's Commitment on Water Stewardship recognises that everyone has a right to access clean water to meet their basic needs. These are part of the Nestlé in Society report 'Creating Shared Value and meeting our commitments 2013'.

In 2010, Nestlé formally reaffirmed its public support for the human right to water by defining a number of W.A.T.E.R. commitments. Each letter defines what the company aims to do.

Its first commitment is to **Work** to achieve water efficiency across its operations by leading in water resource management, and excelling in the reduction of the direct use of water in its facilities.

Nestlé looks to do this over the next few years by cutting water withdrawals per tonne of product, in every product category, to achieve an overall reduction of 40% since 2005.

Over the past six years, it has already reduced its water consumption by 40% per tonne of product in Central and West Africa while doubling its volume in production.

Secondly, Nestlé intends to advocate for effective water policies and stewardship by engaging in and supporting public policy dialogues at global level. This year it aims to extend the 2030 Water Resources Group, of which Nestlé is a key partner, through public-private partnership to other countries.

Next, it seeks to treat effectively the water its discharges through setting strict targets for returning clean water to the environment. Nestlé will do this by introducing new environmental requirements for water quality and effluent discharge in all its factories by 2016.

In May 2012, a CHF (Swiss francs) 3.2million water treatment plant was built at the Tema factory in Ghana, leading to significant improvements in wastewater quality. An additional CHF 1.1million will be invested this year in a pre-treatment system to ensure that at least 30% of the wastewater is reused for non-core activities.

The company also seeks to engage with suppliers, especially those in agriculture, by helping to improve their water management through focusing on impacts at watershed level.

Finally, Nestlé wants to raise awareness of water access and conservation by engaging employees, communities and consumers.

In Nigeria, the company is implementing Project WET (Water Education for Teachers), a global education programme that promotes water awareness among children and their teachers. In 2013, 3,105 pupils in 25 primary schools in Lagos State were reached and over 80 teachers and educators trained.

“We believe that the responsible management of water by all users is an absolute necessity,” said Kais Marzouki, Market Head for Nestlé Central and West Africa.

“As a company, we work to optimise water management around our operations and to give access to clean water in the communities where we operate,” he added.

Nestlé is working with local partners and non-governmental organisations by contributing funding, operational support and training to community water management schemes.

Since 2007, Nestlé has worked with the International Federation of Red Cross and Red Crescent Societies (IFRC) and the Red Cross Society of Côte d’Ivoire to provide water and sanitation facilities and hygiene training in the country.

The company’s work with the IFRC in Côte d’Ivoire is part of the Nestlé Cocoa Plan, which aims to enable farmers to run profitable farms, eliminate the use of child labour and ensure a sustainable supply of cocoa.

Between 2007 and 2013, 196,546 people from 132 villages and 81 schools benefitted from the project. Since the start of the project, 68 school latrines were constructed or rehabilitated, 4,631 new community latrines were constructed, and 148 water points were repaired. Additionally, 105,088 community members and 58,057 children received hygiene awareness training.

Improving access to clean water and to sanitation facilities is important to address malnutrition, in particular stunting, among children under the age of 5. In Central and West Africa, it is estimated that 39 percent of children under 5 are stunted, a condition that may impact long-term physical and cognitive development

“Nestlé tackling water issues in Central and West Africa”, 05/09/2014, online at:
<http://www.ghanaweb.com/GhanaHomePage/business/artikel.php?ID=324549>

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❖ Preventing crises over shared water resources requires stronger foreign policy engagement

Ukraine, Iraq, Syria, Gaza. With such crises in the headlines, it is easy to forget about the structural challenges that threaten to become the foreign policy crises of the future. Among these, access to fresh water stands out. It is already contributing to many conflicts around the world, and demand is growing fast while supplies are limited (and, in the case of groundwater, being exhausted at unsustainable rates). Simultaneously, about 60 percent of the volume of global river flow is shared by two or more states.

Many shared basins – among them the Nile, the Indus, the Ganges, the Euphrates-Tigris, the Orontes, the Jordan, the Amu Darya and Syr Darya, and the Mekong – overlap with regions characterised by substantial interstate and intrastate tensions. Population and economic growth increase demand for water. Climate change is concurrently leading to changes in regional and seasonal water variability. The resulting scarcity and extreme weather events, both floods and droughts, threaten long-term regional stability.

Yet shared waters do not have to be flashpoints of conflict, and can even build bridges in the midst of conflicts. For example, the 1960 Indus Waters Treaty has survived three wars between India and Pakistan. Water has also served as a crucial means for strengthening cooperation in Southern Africa. And the negotiations over shared waters between Israel and its neighbours have not only come much further than negotiations over other issues, but have also helped to establish informal means of cooperation in an otherwise highly conflictive region.

The risks and opportunities related to transboundary basins beg the question of what the international community should do to prevent conflict and harness water's potential for reaping greater collective benefits. Responding to this question is becoming increasingly urgent as pressures on these water resources grow.

A **new report** by a group of experts on international waters analyses the challenges of transboundary waters and argues that foreign policymakers must do more for and in transboundary basins. Drawing on numerous cases, the report shows how foreign policy engagement – together with continued and

enhanced technical and financial engagement – can resolve existing conflicts, manage resources sustainably to prevent future conflicts, and harvest the benefits of broader cooperation and regional cooperation even beyond water resources.

Realising these ambitions will not be easy. Three challenges stand out: the lack of agency on hydro-diplomacy at the international level; the need for a more coordinated and strategic approach among external actors; and the limited human, institutional and financial capacity in transboundary water cooperation.

First, we need stronger agency on transboundary water cooperation to realise potential synergies between political and technical engagement. Existing institutions at the basin and global levels must be strengthened and, where inexistent, be created. Yet strengthening institutions alone is insufficient because these institutions often lack the political mandate and capital to effectively engage in basin politics. Therefore, additional, diplomatic engagement is necessary, especially when it comes to engaging basin hegemons that are reticent with respect to institutionalised multilateral engagement.

Second, better coordination is needed, both within and between governments. There is scope for much greater synergies between the “low politics” of technical and financial cooperation and the “high politics” of foreign policy. The multiple conflicts in the Sahel region, for example, are closely linked to worsening water scarcity. Sustainable development of water resources is hence pivotal to achieving foreign policy objectives such as fighting terrorism and ensuring regional stability. Simultaneously, foreign policy can help achieve development objectives by securing political support for regional, basin-wide approaches that avoid merely shifting water scarcity and the attendant conflicts. Beyond better cooperation within governments, external actors also need to coordinate between each other, so as to both ensure systematic engagement and avoid opportunities for “forum shopping”, which can result in the parties to the conflict getting stuck in protracted tactical games.

Third, the international community needs to strengthen the diplomatic track of transboundary cooperation by investing more in training and capacity-building, by expanding efforts to build confidence in shared basins, and by improving water-related crisis response and conflict resolution mechanisms. These are shared tasks for the technical, development and foreign policy communities –

tasks that form the basis for political-level engagement and, for their effectiveness, depend on strong and coordinated international agency.

Compared to media headlines about the latest flashpoints, such seemingly abstract tasks may not seem urgent. But urgent matters for today must not crowd out what is pivotal for tomorrow. And water certainly is: the challenges related to scarcer and more vulnerable water resources will play a huge role in determining our future.

Benjamin Pohl is senior project manager with the adelphi thinktank, advising on climate and resource governance as well as their interfaces with foreign, security and development policy.

Susanne Schmeier is the coordinator for transboundary water management with GIZ, the German agency for development cooperation.

“Preventing crises over shared water resources requires stronger foreign policy engagement”, 02/09/2014, online at:
<http://www.trust.org/item/20140902072151-kfplw/?source=fiBlogs>

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❖ California drought: Why doesn't California build big dams any more?

How much money drought-stricken California should spend to build new dams was a big part of the debate over the bill that Gov. Jerry Brown signed last month to put a \$7.5 billion water bond on the November ballot.

Republicans and Central Valley Democrats who pushed hardest for new reservoirs highlighted the fact that California built many of the world's most ambitious dam projects during the 1950s, 1960s and 1970s, but a large state- or federally-funded reservoir hasn't been built in 35 years.

But why did the era of big dams end, when California has built new roads, schools, universities, hospitals and freeways?

Experts say there are a confluence of factors, from environmental laws to funding to a lack of suitable sites. Now supporters of new reservoirs are trying to start a new dam-building era.

"We have lived off the investment and sweat of the World War II generation," said Paul Wenger, president of the California Farm Bureau Federation. "We have done nothing for the future generations but put them in a real bind."

Their argument, with California mired in a third straight year of drought, carried enough weight for lawmakers to include \$2.7 billion for new water storage. Now, voters in November can decide whether the state should start digging again.

The 10 largest reservoirs in California, linchpins of the water system for 38 million people and the nation's largest farm economy, were all built between 1927 and 1979. Shasta Lake, the massive inland sea on the Sacramento River near Redding, was finished in 1945. Oroville, the tallest dam in the United States at 770 feet on the Feather River in Butte County, was started under Gov. Pat Brown's building boom in 1961 and finished in 1968.

The last huge reservoir built in California was New Melones, on the Stanislaus River in Calaveras County. Since the Army Corps of Engineers cut the ribbon on it in 1979, California has grown by 15 million people, the equivalent of adding everyone now living in Washington, Oregon and Nevada to the Golden State.

California's golden dam-building era ended for four reasons, experts say.

First, nearly all of the best sites are already taken. California has more than 1,400 dams. Most of its major rivers, like the Sacramento and San Joaquin, already have dams on them.

Second, environmental laws have made it more difficult to build large projects that tame or conquer nature. When President Nixon signed the Endangered Species Act in 1973, the idea was to save bald eagles and other iconic animals from extinction. But the law also gave opponents of dams a major tool, since dams on rivers kill salmon and other endangered fish. Other laws like the Clean Water Act and the California Environmental Quality Act, signed by Gov. Ronald Reagan in 1968, also made it tougher to pour concrete.

"The 1950s through the 1970s was when a lot of the West was taking off in growth, postwar," said David Freyberg, an associate professor of civil and environmental engineering at Stanford University. "It was viewed as progress, the development of the West. But by the early 1970s, there was a blossoming of the environmental movement and it evolved into a discussion about values."

Third, easy money to build large projects dried up. Not only did California pass Proposition 13 in 1978, requiring a two-thirds majority to raise most taxes, but in 1986, President Reagan changed federal law to require states to pay a greater share of the huge costs of building dams to curb federal spending. Days of congressional leaders approving billion-dollar dams in their districts dried up.

And finally, cities and farms came up with new ways to provide water, from groundwater storage to recycling wastewater to conservation like drip irrigation and more efficient toilets. Today, cities like Los Angeles and San Jose use the same amount of water as they did 30 years ago, despite population growth.

If voters in November approve the water bond, farmers and Republican leaders hope that much of the money set aside for dam construction will be spent on projects such as Sites Reservoir, an off-stream lake proposed for Colusa County, or Temperance Flat, a dam proposed for the San Joaquin River near Sequoia-Kings Canyon National Park.

The bond requires that areas compete for the money, with the California Water Commission handing it out. No more than 50 percent of costs can come from the bond, with users like farmers and cities required to pick up the rest. The money also could fund groundwater storage.

Dam opponents say none of the big projects make economic sense. If the five most often talked-about projects were built, the cost would be \$9 billion and the average annual water yield would be only 400,000 acre feet — 1 percent of California's total annual use — said Ron Stork, with Friends of the River.

"All the good dam sites are taken and the water is already diverted," he said. "Voters are being misled if they think they are going to get a meaningful amount of water out of new dams."

Indeed, California has given out legal rights to five times as much water as rain and snow produce in average years, according to a new study by UC Merced. Since 1914, the state has given out rights to 370 million acre-feet, when a typical year of precipitation only provides about 70 million acre-feet to lakes, streams and rivers.

"We're kind of in big trouble," said Joshua Viers, a UC Merced scientist and co-author of the study.

Bond supporters say that if more water is stored during wet years in new reservoirs, it can provide a cushion during droughts. They cite locally funded efforts like the Contra Costa Water District, which built Los Vaqueros Reservoir in 1997, or the Metropolitan Water District of Southern California, which built Diamond Valley in 1999 in Riverside County. Both regions do not have rationing now, and cite the stored water as a reason.

Other supporters say that some of the water in dams can be released in dry years to help fish, or to recharge overpumped groundwater.

"It is not dams vs. water recycling," said John Laird, California's Secretary of Natural Resources. "The water bond, yes, it has the storage, but it also has recycling, conservation and regional water programs. You do all of the above."

Largest reservoirs in California by year built, with reservoir size, dam height and location:

Shasta: (1945) 4.5 million acre feet — 521 feet — Shasta County

Oroville: (1968) 3.5 million acre feet — 742 feet — Butte County

Trinity: (1962) 2.4 million acre feet — 458 feet — Trinity County

New Melones: (1979) — 2.4 million acre feet — 578 feet — Calaveras County

San Luis: (1967) 2 million acre feet — 305 feet — Merced County

Don Pedro: (1971) 2 million acre feet — 568 feet — Tuolumne County

Berryessa: (1957) 1.6 million acre feet — 255 feet — Napa County

Almanor: (1927) 1.3 million acre feet — 130 feet — Plumas County

New Exchequer: (1967) 1 million acre feet — 479 feet — Mariposa County

Folsom: (1956) 1 million acre feet — 275 feet — Sacramento County

“California drought: Why doesn't California build big dams any more?”, 02/09/2014, online at:

http://www.chicoer.com/news/ci_26454461/california-drought-why-doesnt-california-build-big-dams

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