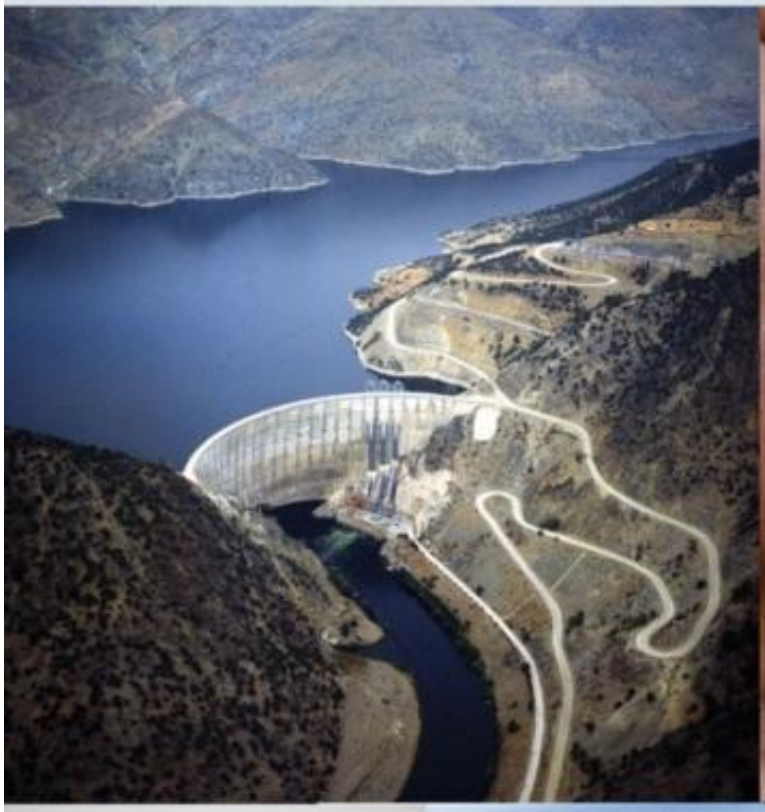


ORSAM WATER BULLETIN

Weekly Bulletin by ORSAM Water Research Programme

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





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Mithat Paşa Caddesi 46/4 Kızılay-Ankara TURKEY
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- **Drought brings saline water deep into Mekong Delta**
- **Thirsty Beijing to raise water prices in conservation push**
- **Mine Waste Transformed to Tap Water for 80,000 Consumers**
- **Will Hong Kong run out of water?**
- **California governor issues second drought emergency proclamation**
- **Shock Doctrine and Water Shortages in Texas**

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❖ Turkey To Partner Nigeria on Dam Construction, Irrigation Facilities

Nigerian Government has expressed willingness to partner with construction companies from Turkey to construct more dams and development of irrigation facilities in Nigeria.

The Minister of Water Resources, Mrs. Sarah Reng Ochekpe made this known over the weekend when she received delegation from Turkey led by the Turkish Ambassador to Nigeria, Mustapha Pulad.

The Minister was responding to the Turkish Ambassador's request who said that the essence of their visit was to explore possibility of partnering with the Federal Ministry of Water Resources in the construction activities in the water sector.

Ochekpe said " let me say that we have more than 200 dams and in the area of irrigation we have been able to develop over 150,000 hectares of land, we still have more that are yet to be developed because the potentials we have for irrigation is over 3million hectares of land, so we are willing if you are ready to partner with us to expand what we have been doing in terms of construction of more dams both for the purposes of water supply, hydropower generation and irrigation to boost our agriculture."

"We commend your advancement in the area of irrigation development and water infrastructure, we want to partner with you, and we want to learn from you. Nigeria is the largest country in Africa, the potential for business is enormous so we want to partner with people who are willing to assist us" she said.

Earlier, the leader of the delegation who is also the Turkish Ambassador, Mr. Mustapha Pulad introduced the delegation as representatives of various reputable construction companies in Turkey who want establish their companies in Nigeria. Their areas of focus according to the Ambassador include dam construction, irrigation, railway station, energy among others.

He solicited for cooperation not only on economic but also in education and health as thousand of Nigerians go to Turkey for studies. "The Presence of Turkish schools in Nigeria, Turkish University and Hospital in Abuja are symbols of our good relationship and cooperation." he said.

"Turkey To Partner Nigeria on Dam Construction, Irrigation Facilities", 29/04/2014, online at:
http://www.promptnewsonline.com/turkey-partners-nigeria-on-construction-of-dams-irrigation-facilities/

BACK TO TOP

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❖ On Eve of Elections, Iraq's Waters Become Weapons of War

The problems faced by Iraqi citizens are increasingly intensifying, as they continue to suffer from government mismanagement and violent terrorist groups that have become prevalent in all parts of the country. In the latest developments, the government and terrorist groups have been using water as a tool in the conflict. Ironically, Baghdad has been divided in two starting a few days ago: One part is suffering from water scarcity, while the other part is flooded.

The idea of a water war started in Anbar, where army operations gradually turned into irregular wars that were not decided in the favor of either side, given the length and type of the ongoing fighting there. Some of the leaders of the military operations in Anbar came up with this idea a month ago, when the army took control of the Haditha Dam (240 kilometers, or 150 miles, west of Baghdad) to flood the areas where the insurgents were present. This flooded some residential areas, while water has been cut off in other areas in Anbar.

This also pushed terrorist groups to use the same tactic. They retaliated in the same way when they closed the Fallujah Barrage in early April to achieve two goals. First, they wanted to flood the areas near Fallujah that were under the army control. Before long, the army was no longer able to advance and continue military operations. Second, they wanted to impose restrictions on the southern Shiite-majority provinces by cutting off water to them. As a result, Najaf province suffered from a great water shortage, which led the local government to take urgent actions to avoid water cuts in the city.

In another development within the same context, two weeks ago some terrorists carried out bomb attacks targeting gas pipelines that are linked to Tikrit city (160 kilometers, or 100 miles, north of Baghdad). This led to heavy contamination of the Tigris River, while large patches of oil were visible on the water surface and large fires broke out on the banks of the river from Tikrit to areas near Baghdad.

When pollution reached the waters of Baghdad, the Secretariat of Baghdad declared on April 23 that it would cut drinking water to the residential areas in Baghdad, because treatment plants were no longer able to filter contaminated water properly. Many eyewitnesses told Al-Monitor about the large spots of oil pollution in different areas of the Tigris.

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Meanwhile, the western areas of Baghdad and its suburbs, such as Abu Ghraib, sank beneath the waves of great floods while terrorists controlled the Fallujah Barrage. This led to the displacement of 700 families, while six villages have been totally flooded.

Members of parliament and local officials issued various estimates regarding the number of victims and the extent of losses, foreboding a great humanitarian disaster. Ten thousand homes were demolished and damaged, and more than 60 schools and 29 polling stations have been totally flooded.

There have been talks about the number of dead and traumatized. However, the exact figures have yet to be announced. Many experts showed great fear about increased losses in the coming days, as floods were likely to reach the regions of Al-Shu'ala, al-A'amiriya and al-Jihad neighborhoods and other regions close to the Baghdad airport during the coming days, unless the Fallujah dam comes under control.

The United Nations declared the Abu Ghraib region a disaster area. The special representative of the UN secretary-general in Iraq, Nikolay Mladenov, said that the UN was fully prepared to provide assistance to the thousands of families that are affected by the floods in Abu Ghraib and Fallujah.

Perhaps the war water is not yet in full swing, since the parties to the conflict have more opportunities to manipulate the health and lives of Iraqi citizens by shutting down or blowing up dams, or even poisoning waters. This will further complicate the conflict, pushing away rational solutions and leading to greater losses.

"On Eve of Elections, Iraq's Waters Become Weapons of War", 01/05/2014, online at: http://www.aina.org/news/20140501141657.htm

BACK TO TOP

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❖ Militant move in Iraq forces civilians to flee homes

New reports indicate that at least 1700 Iraqi families have fled their homes in Fallujah's Abu Gharib district, in the Anbar province.

Residents fled after the al-Qaeda-linked group known as the Islamic State of Iraq and the Levant opened floodgates to a local dam, and immersed the area in water. The Ministry of Migration and Displaced Persons has registered 700 families from the Abu Gharib district whose homes have been completely submerged. Meanwhile, a 1,000 more Iraqis who fled to neighboring areas, are being registered as well, most of whom are said to have fled to the capital Baghdad. The Fallujah dam was recently seized by ISIL militants in the restive Anbar province, and according to the provincial authority, the militants had closed off the dam for days, temporarily halting the water supply to most southern provinces. The lack of water also resulted in extreme power cuts. Essentially the dam is being opened and closed at the will of the al-Qaeda-linked militants and at the expense of Iraqis. The UN says death and destruction in Iraq's Anbar province has already forced over 400,000 people to flee their homes. The war being waged by the al-Qaeda-linked militant group, the Islamic State of Iraq and the Levant, against the Iraqi army and Sunni tribesmen, who've been trying to protect their land from insurgents, has also led to the closure of all schools in the Falujah district. These attacks by the ISIL are seen as a way to stop voting in the province as the parliamentary elections for next Wednesday draw near.

"Militant move in Iraq forces civilians to flee homes", 28/04/2014, online at:
http://www.presstv.ir/detail/2014/04/28/360460/militant-move-in-iraq-forces-civilians-to-flee-homes/

BACK TO TOP

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❖ Syrian regime air attack cuts off Aleppo's water supply

ALEPPO - A Syrian Army plane launched an air offensive on the main water pipeline to the city of Aleppo Saturday, damaging it in an attempt to block the flow of drinking water into the city.

Mustafa Sultan, a local activist, told Anadolu Agency that the attack caused heavy damage to the water supply line of Syria's largest city and the streets have been flooded since leaving the city without water.

He added that the civil defense teams and the city council are striving to fix the pipeline amid ongoing clashes in the region between Assad's regime forces and the Free Syrian Army.

Meanwhile, a mortar shelling on a coach in the capital Damascus left four people dead and four wounded, according to the Syrian state news agency, SANA.

There are also reports of air-supported attacks by Syrian army forces on the Armenian-populated town, Kasab.

Local sources said Assad's regime forces are firing shells and missiles on the hills as they attempt to take back the strategic region currently under the control of opposition forces.

With the Syrian civil war now well into its fourth year, airstrikes, often including the use of so-called barrel bombs, are targeting populated areas all over the country.

More than 100,000 people have been killed during the ongoing conflict, which has also internally displaced more than 6.5 million people, according to the UN. Over two million are now registered as refugees in neighboring Turkey, Lebanon and Iraq.

"Syrian regime air attack cuts off Aleppo's water supply", 03/05/2014, online at:
http://www.turkishpress.com/news/403965/

BACK TO TOP

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❖ Iran sinks in water crisis

Over the past few months, Iranian officials and experts have underlined the gravity of the water shortage in the country. Last year, Al-Monitor looked at the social backlash related to the scarcity of water resources in the country, but this article focuses on the root causes of the problem and what could be done to limit the depth of the crisis.

In December 2013, Hamid Chitchian — head of the Ministry of Energy, which is in charge of regulating the water sector — stated that the sector's situation had reached "critical levels." Chitchian correctly established that past approaches, which mainly focused on constructing dams and trying to increase the storage capacity, would no longer be appropriate remedies. In fact, total storage capacity behind the country's many dams amounts to 68 billion cubic meters, whereas the water potential of the country's rivers totals 46 billion cubic meters per annum.

More recently, former Minister of Agriculture Issa Kalantari said at a gathering in Ardabil that water shortage was "a major threat to the country" and that careless past consumption had depleted the country's water resources.

The fact is, a significant section of the country's water shortage could be resolved through improved water management schemes. Presently, 92% of the country's water resources are used for agricultural purposes. In many cases, water resources fit for residential or industrial use are utilized in the agricultural sector, which is inefficient. Evidently, even a 5% improvement of water utilization efficiency would explode the amounts of reserves available for residential and industrial use.

Challenges to increasing efficiency in the agricultural sector include the presence of too many decision-making bodies and a lack of strategy. The critical situation in Lake Urmia is a reminder of how mismanagement and inappropriate policies can lead to disasters with regional and national implications. I discussed the need for reform in the agricultural sectoron Al-Monitor before, but the water and wastewater sector is also in need of reform and new approaches to improve the situation in the country.

Incidentally, water management affairs inside the Ministry of Energy can be considered one of the better managed entities within the country's executive branch. However, the ministry and its efforts in the water sector are heavily overshadowed by the stakeholders in the agricultural sector. Over the

past decade, the institutional arrangements within the Ministry of Energy have been driven by the desire to increase decentralization, yet it is not clear whether decentralization has helped improve the overall performance.

At the central level, besides regulatory policies designed by the ministry and other governmental offices, technical issues are attended to by the National Water and Wastewater Engineering Company (NWWEC). At the regional level, there are water boards responsible for capturing and transmitting raw water that is then treated and distributed by provincial or city water and wastewater companies. The municipality or state-owned water and wastewater companies are able to manage their day-to-day operations with a measure of autonomy, however, they do not control their own investment programs and, therefore, have limited scope to improve investment and operating efficiency and the level and quality of service. Moreover, the water and wastewater companies have to follow an organizational model developed by the NWWEC and cannot select a model that would be more appropriate for their particular situation.

Consequently, most towns and cities end up utilizing the prevalent models from large cities and provincial capitals even though the situations are very different due to geographical and social realities. Furthermore, the overlap of interests between the agricultural sector, municipalities and industries creates a unique situation in each region that requires tailor-made approaches.

As such, the success of water resource management in individual provinces and cities fully depends on the relative power of the local water and wastewater companies; their ability to mobilize funds for investments; and its bargaining power in diverse sectors (industry, agriculture and municipalities). Some regions are overwhelmed by the challenges of capturing and treating water resources, whereas other regions are in a much better position.

Increasing the complexity of the current situation is the negative impact of agricultural, industrial and residential wastewater on the country's primary resources. According to Mansour Ghotbi Sarabi, water expert in the Ministry of Agricultural Jihad, 75% of the country's drinking water is derived from underground resources, however, "these underground waters are subject to heavy pollution by agricultural, industrial, medical (hospital) and residential wastewater."

Evidently, the high level of pollution increases either health risks or the cost of treatment, as most cities endeavor to provide piped drinking water for Iranian households. Notwithstanding, considering

the disparate financial resources of different water and wastewater companies, one can imagine that water quality would suffer in many regions. Consequently, in terms of water quality (similar to other development indicators) Iran is faced with an unjust distribution of resources.

Experts such as Ghotbi Sarabi believe that the only remedy for the current crisis is to create an integrated water management system and to put one entity in charge of managing the country's resources. He sees the core problem in the traditional approach to water management, stating: "Deploying the traditional system converts about 50% of the urban and rural drinking waters to wastewater." He defines a modern integrated management system as a process that "considers all underground and surface waters from their origin to their point of utilization quantitatively and qualitatively and engages all consumers, producers and stakeholders in an integrated manner."

The above outline indicates the complexity of the situation. Iran needs to move toward decentralization to be able to take regional, geographical and social conditions into account. Alternately, there is a need for integrated water management as the actions of each stakeholder have direct and indirect impacts on the other players. Clearly, there is a serious need for a comprehensive strategy, not just on how to use water resources, but also on the needed institutional structures.

Some experts argue that the country should start bottling drinking water and reducing the quality of piped water to "hygienic" water, which could change the cost structure for water and wastewater companies. Others focus on improved wastewater systems and utilization, for example, in the agricultural sector. However, the disparate quality of wastewater treatment has damaged agricultural production in some regions.

Whatever the Iranian decision-makers come up with, the top priority is to create a balance between consumption patterns and resources available. Otherwise, the country will sink deeper into a water crisis in the next few years. Maybe a segment of the effort that has been adopted to increase energy efficiency through subsidy reforms and other initiatives should be diverted to water consumption. Certainly a major effort will be needed to draft the appropriate strategy in managing the water sector, both in institutional as well as in political terms.

"Iran sinks in water crisis", 03/05/2014, online at: http://www.al-monitor.com/pulse/originals/2014/05/iran-water-crisis.html#

BACK TO TOP

❖ Iran operates water, power projects in 40 states

Chitchian added that 46 Iranian companies are building hydraulic thermal and hydraulic power plants, constructing water and wastewater treatment facilities in 40 countries, the Petroenergy news network SHANA reported on Saturday.

Chitchian said that Iran has already built a big power plant in Tajikistan, adding: "We are building two dams and a power plant in Sri Lanka and we are present in Africa too."

He said Iranian contractors are also building power plants in Iraq, Syria and Oman.

"The Islamic Republic is also contributing to the reconstruction of power plants in Indonesia, Syria and Pakistan," he said.

Chitchian said Iran exported 11 billion kilowatts/hour of electricity to Iraq, Pakistan, Afghanistan and Turkey in the last calendar year to March.

He said that Iran is set to become the "energy hub" in the region.

"Iran operates water, power projects in 40 states", 03/05/2014, online at:
http://www.irna.ir/en/News/2684342/Economic/Iran_operates_water,_power_projects_in_40_states

BACK TO TOP

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❖ Iranian energy minister warns about water shortage crisis

The energy ministry has formed a special committee a couple of months ago in order to monitor the water crisis and take appropriate decisions.

At present, 96 billion cubic meters of the country's total 120 billion cubic meters of renewable water resources is being consumed annually, he said, adding that if 40-60 percent of renewable water resources is consumed in any country, that country is said to be in a critical condition.

During the past decade, precipitations have declined to 242 millimetres from 250 millimetres, he noted.

The water shortage has reached a critical level in Tabriz, Isfahan, Khuzestan, Qum, Mashhad and Hamadan provinces, advisor to Iran's Energy Minister, Hamidrza Janbaz said on Nov.17, MEHR agency reported.

Currently a special programme is being worked out in order to solve the water shortage problem in the next three years, according to Janbaz.

"A drought has being observed in the country for nearly 13 years. The demand for water increases with population growth," Janbaz said.

Iran is located in an arid zone and the country has been repeatedly faced with drought in the past 40 years.

The drought of 1992-2002 caused a major blow to agriculture. There were quotas imposed for fresh water in several cities including Tehran.

"Iranian energy minister warns about water shortage crisis", 29/04/2014, online at: http://ilna.ir/en/news/news.cfm?id=2341

BACK TO TOP

❖ Iran, UNESCO to set up research center for water management

Energy Minister Hamid Chitchian told a joint press conference after a meeting with the UNESCO Director General Irina Bokova that they discussed ways to develop cooperation on water management.

Meanwhile, Bokova said that good talks were held with the Iranian minister on mutual cooperation and the idea of setting up a research center for water management.

She said the UNESCO is active in different parts of the world in various fields and in her visits to Shiraz and Kerman, she held talks with the officials on comprehensive management of water.

"Iran, UNESCO to set up research center for water management", 29/04/2014, online at: http://www.irna.ir/en/News/2684032/Economic/Iran,_UNESCO_to_set_up_research_center_for_water_management

BACK TO TOP

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❖ Dehydration, Iran and liberalism: the biggest threats to the Gulf

Which is a bigger threat confronting the Gulf? Thirst or Iranian domination?" No one likes this kind of hypothetical question, particularly elite officials, politicians and researchers with whom I spent two days discussing what threatens Gulf countries, national and regional questions. The meeting was convened under Bahrain's Center for Strategic, International and Energy studies

Iran, its expansionist aspirations and its desire to interfere and dominate of course came first among the list of threats facing the Gulf. A new threat facing the Gulf is the "unprecedented rift" among Gulf countries - as Prince Turki al-Faisal put it. This rift is about to waste our greatest gains - that is the Gulf Cooperation Council itself. Despite its dereliction, it provided an infrastructure via political and military agreements in its endeavor towards "collective security." Prince Nayef Bin Ahmed Bin Abdulaziz, a strategy and security researcher, addressed this issue in detail during the conference.

The third threat facing the Gulf is "American retreat" or lack of trust in the Americans who are supposed to be allies of the all Gulf states after they signed dozens of security and defense agreements with such states. The participants had a deep feeling that the Americans are one of these threats though an Omani researcher refuted these arguments and mentioned the number of times the U.S. committed to defending Gulf countries.

What if a military confrontation breaks out and Iran, which desires to dominate the region (or another player), targets desalination plants at a time when we are squandering our subterranean water?

Jamal Kashoggi

Overlap in the concept of security beetween different facets of authority may have been a reason to expand the concept of "threats" which even targeted reforms and people's aspirations of freedom and political participation. Chair of the political sciences department at UAE University Dr. Mohammad bin Huwaidin considered the latter as threats because "they threaten the nature of our conservative Gulf system." This suggestion provoked researcher and political sciences lecturer Dr. Abdulkhaleq Abdullah - also a UAE citizen like Huwaidin. Abdullah responded to Huwaidin, saying that reform cannot be threatening and that it actually confronts and ends security threats against the Gulf countries.

Amidst all these political and security threats, the Saudi minister of water and electricity Abdullah al-Hussayen said in his speech that "water security of Gulf countries is considered the biggest of threats and challenges because it represents a domestic challenge." He then detailed the amount of waste of this scarcest and most precious resource in our desert-climate countries. The squander showed that Gulf citizens set high records as the biggest consumers of water - bigger consumers than the Germans or the Canadians who swim in sweet-water lakes.

'Slow suicide'

Researcher Dr. Abdulaziz al-Turbak described the way we deal with the water issue as "slow suicide." What's good is that he's director of the Gulf Cooperation Council's Unified Water Strategy. This means that Gulf countries are concerned with preventing this "slow suicide" on the official and institutional levels. However, it was clear that neither the water minister of the biggest Gulf country nor the strategy director have enough power to impose legislations that limit what was described as "waste that poses the threat of water poverty in GCC countries" - as the minister put it. This means there will come a day when we either die of thirst or leave, like Arab tribes did several times whenever the Arabian Peninsula suffered from drought.

However, this is the 21st century and such migration is longer acceptable. It's also illogical to leave our precious oil behind. It seems the age of our oil is longer than the age of our subterranean waters which reserves took thousands of years to form and which we foolishly consumed within two or three decades of the oil boom.

The irony is that all efforts to raise awareness are directed towards the consumption of water in homes. Hussayen said the consumption of water will not be moderated until citizens pay the real price of water, and he's right. However, in his speech, he also noted that agriculture is what consumes 80 percent of water.

Following his speech sounding the alarm bell, we returned to discussing the Iranian threat, political Islam and American retreat. The minister then headed east of the kingdom to inaugurate a desalination water plant in Ras al-Kheir. The plant is the biggest desalination facility in the world on the production level and the most costly. It joins 17 other plants on Gulf shores and on the coast of

the Red Sea. This plant, along with other desalination plants in the Gulf, is described as a "duck on a lake" to signify their security exposure should a war break out in the region.

Perhaps the security dimension regarding the importance of preserving water in the desert can be further clarified if I rephrase the question I introduced the article with: "What if a military confrontation breaks out and Iran, which desires to dominate the region (or another player), targets desalination plants at a time when we are squandering our subterranean water?"

"Dehydration, Iran and liberalism: the biggest threats to the Gulf", 30/04/2014, online at: http://english.alarabiya.net/en/views/news/middle-east/2014/04/30/Dehydration-Iran-and-liberalism-the-biggest-threats-to-the-Gulf.html

BACK TO TOP

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❖ China to invest $20 billion in Iran's water, power sector

Chinese investors are negotiating with Iran to finance about $20 billion in the country's electricity and water sector projects.

Iranian Deputy Minister of Energy for International Affairs, Esmail Mahsouli said Iran and China have signed 15 contracts, worth $3 billion so far, Iran's Mehr news agency reported on May 2.

The two sides continue negotiations to finalize the remaining contracts, Mahsouli added.

So far five power plant projects, eight hydroelectric dams plan and eight projects on water transmission and drainage have been defined with the Chinese side, the official said.

Iran's $22 billion worth of assets has been frozen in China. The country is not able to transfer its exported oil money into the country due to international sanctions.

Recently, Iran-China trade has grown steadily commensurate with China's growing reliance on foreign energy and Western companies leaving the Iranian market.

Iran exported $7.432 billion worth of non-oil exports including condensate to China during the last Iranian calendar year (ended on March 20), while importing $9.664 billion worth of goods from China.

The figures indicate increase by 34.8 percent and 18.11 percent compared to the preceding year respectively.

"China to invest $20 billion in Iran's water, power sector", 02/05/2014, online at:
http://www.azernews.az/region/66686.html

BACK TO TOP

❖ Israel, Iran and the struggle for water in Africa

The struggle for water in Africa and its motives fuels conflicts between many countries. The conflict between Israel and Iran in this regard indicates the weakness of the African countries on the Red Sea coast and their inability to propose any sort of solution for the problem. Also, this inability to face the issue reflects the bankruptcy of the political path and its high cost in contrast with the attention these countries give to other issues.

If there is a belief that the oil that can be replaced and exchanged for other economic resources has been politicised, then this conviction can clearly be applied to water, making it even more dangerous, as there is no alternative.

Israel's naval strategy

Water conflicts differ when the dispute is between countries in the region and when another country intrudes, such as Israel. In 1948 and 1949, Israel had no access to the Red Sea. This changed when the peace treaties were signed on February 24, 1949, encouraging Israel to head south and take control of the area where Eilat port was established.

After the tripartite aggression against Egypt in 1956, the so-called Suez Crisis, Israel gained the privilege to pass through the Straits of Tiran and the Gulf of Aqaba to gain access to Africa and then through the Indian Ocean to Asia. This helped Israel to develop its political, military and economic relations with a number of African countries.

In 1967, Israel declared war against Egypt and occupied Sinai after President Gamal Abdel Nasser closed the Straits of Tiran. In the 1973 war, Egypt took another measure by closing the Bab el-Mandeb Strait and Israel was forced to adopt a naval strategy in which it deployed a fleet capable of facing up to any new threats to important parts of the Red Sea; in particular the southern access into the Indian Ocean near Djibouti. Israel then sent its submarines through the Suez Canal.

It did not stop there; Israel was involved in a clash of political, strategic and economic interests in the Red Sea with the Unites States, European countries and regional players such as Djibouti and Kenya. This situation lasted for several years until the Camp David Accords were signed in 1978 by Egyptian President Anwar Sadat and Israeli Prime Minister Menachem Begin. The treaty stipulated

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that Israel has the right to pass through the Suez Canal and its access passages in the Gulf of Suez and Mediterranean Sea; the Straits of Tiran and Gulf of Aqaba were designated open international waterways for Israel to use.

This was stated clearly in Major-General Yakob Amidror's report published by the Institute for National Security Studies in 2010. He noted Israel's fear of relationships developing amongst the east African countries such as Ethiopia, Uganda and Kenya, and of them forming a strategic alliance with South Sudan, as well as the fear that Iran's growing role in supporting other countries in the region would see those countries taking action in alignment with Iranian policies.

The strategic importance of this area to Israel is obvious, as is the economic importance; the Red Sea is an important waterway for Israel's trade and international presence. As such, Israel has taken all measures possible to reinforce its security presence in places like Ethiopia, which is considered to be a significant strategic country. Its importance to Israel stems from its geographic proximity to the Arab countries and its position overlooking the route of ships sailing to Eilat and the Suez Canal.

The two countries have a close relationship and Ethiopia allows Israel to maintain a military presence there. The government in Tel Aviv has also improved its relations with Kenya and Djibouti and deployed its naval and air forces in response to Iran's growing presence in east Africa in general, especially in Eritrea.

A confrontation on the water

Due to Africa's strategic significance in the Middle East, the continent remains central to Israeli strategy and diplomacy. Using all the means at its disposal, Israel has been able to create an Arab vacuum in Africa, ironically with the help of the Arabs themselves following the death of Egypt's Nasser and the 1991 Madrid Peace Conference.

Iran, meanwhile, established a footing in Sudan and set its sights on the Red Sea, from Bab el-Mandeb Straits in the south to the Suez Canal in the north. It used the routes under its control to supply aid and arms to the Houthis in pre-revolutionary Yemen. The government in Tehran also used the Gulf of Aden near the Horn of Africa to provide hard-line Islamists in Somalia with arms and military equipment.

It is easy to believe that Iran's penetration of Yemen with rebel support and access to the Somali coast would not have been possible without help from some regional countries, as many across the Horn of Africa are seeking Iranian aid.

The policy followed by Iran is entirely pragmatic. When it aspires to create a strategic outlet for Iranian gas and oil, its inherent ambition is to extend its influence in the Horn of Africa, which is in fact a serious attempt to continue its expansion project in the region which aims mainly to take control of the Red Sea.

Developments in the water conflict

Israel entered Africa through providing aid. Foreign Minister Avigdor Lieberman's visit to several African countries in 2009, including some of the Nile Basin countries which have a dispute with Egypt over the water of the Nile, is viewed as fishing in troubled waters.

In Kenya, Lieberman announced that Israel would be providing aid in irrigation and agriculture. His hosts, of course, did not forget the favours that Israel did in helping them fight terrorism.

In Nigeria, one of Africa's largest, richest and most important countries, Lieberman was able to call on the large group of Israeli businessmen active in the field of agriculture and infrastructure. Nigeria is also considered a prime target for Israeli arms exports. Despite its relative distance from the continent's major fresh water sources, Israel's military and intelligence concentration in Nigeria has been used to surround and enclose the Nile Basin countries.

However, the most dangerous issue pushed by Lieberman during his visit was a proposal for the "internationalisation of common rivers", or the "privatisation of water", for consideration by the United Nations and World Bank under the pretext of preventing water wars.

Ironically, the World Bank, 34 per cent of whose water and sanitation contracts during the years 2000 to 2010 are suffering from severe difficulties, is the party that announced recently its adoption of the recommendation. The irony lies in the fact that it is tasked with resolving the problems in developing countries by providing loans, resources and projects and yet it is adopting a recommendation to privatise water management.

This recommendation seems to have attracted a number of responses from developing countries; however, they appear to hold a complete disregard for the main challenge of addressing the scarcity and pollution of water. It also comes at a time of water conflict, the worst of which is now over the River Nile.

Solutions for past water crises were achieved in the context of peaceful co-existence to ensure the safety of this vital waterway and to seek ways of cooperation rather than conflict and strife. However, involving water in politics has turned the water from a source of life to a motive for death. Dealing with the water crisis now has become one more amongst the many political challenges facing the region. Indeed, the intervention of Israel and Iran and their influence over the African countries, as well as their attempts to control the Nile and the Red Sea waterways, is turning the crisis into a military issue.

It is clear that the water problems in Africa are not only caused by the scarcity of water, because the scarcity is being manufactured for political reasons; it is mainly a security issue. However, we have come to a late realisation that water security does not appear in absolute terms but reflects the international geopolitical competitions raging around them. Water in Africa is not only an international issue but also an intercontinental conflict.

"Israel, Iran and the struggle for water in Africa", 02/05/2014, online at:
https://www.middleeastmonitor.com/articles/middle-east/11246-israel-iran-and-the-struggle-for-water-in-africa

BACK TO TOP

❖ Jerusalem lifts water warning for most of city

Municipality says it's safe to use tap water in all neighborhoods except Abu Tor
A warning against using tap water in nine Jerusalem neighborhoods has been lifted for all areas except Abu Tor, the Jerusalem municipality announced Thursday morning
The warning, in place since Wednesday afternoon due to the possibility of contamination, applied to the Old City, Baka, Abu Tor, Talpiot, Zur Baher, Silwan, Ras al-Amud, Mamilla and Morasha.

The Gihon Water Company and Health Ministry performed tests on the water Wednesday afternoon after it had been discovered that treated wastewater had leaked into the drinking water system, and later discovered that it had been a significant leak.

The municipality set up several stations in these areas for water pickup, and encouraged residents to bring their own bottles to the sites. Parents had been instructed to send their children to school with a bottle of water Thursday morning.

"Jerusalem lifts water warning for most of city", 01/05/2014, online at: http://www.timesofisrael.com/jerusalem-lifts-water-warning-for-most-of-city/

BACK TO TOP

❖ Jordan: Logistical challenges and opportunities for Middle East produce

Some of the challenges of fresh produce growers in the Middle East have to do with water scarcity, which is partly due to the situation in the region. Within this context, the company AgriJordan, based in Amman, has become a pioneer in the promotion of sustainable agricultural practices. The company employs the most updated technologies and strategies in water management, packing, export and marketing.

AgriJordan produces many kinds of fruits and vegetables, including tomatoes, peppers, melons and aubergines and two of its most important destinations are currently Turkey and Eastern Europe, where the produce from the Jordan Valley, shipped in refrigerated trucks, has found some good market opportunities.
The company's logistics strategy, however, has been tremendously affected since Syria's problems started and consequently, attempts have been made to find alternative routes to reach its destinations in the shortest time, striving for the produce to arrive in its freshest state, but without pushing costs to unsustainable levels.

According to Mohammed Bataineh, from AgriJordan, "we have been working with the governments of Turkey and Israel to promote the use of the route via Haifa, despite the fact that it also has some drawbacks, such as some delays and an increase in costs because of border controls."

A lot of the company's produce is shipped to the Gulf market, which only requires two to three days shipping time from Jordan and this gives it an advantage over its competitors in Egypt (and other African countries) and even Israel which cannot ship directly to GCC countries.

The firm has been trying to capitalise on Jordan's stability and security compared to its neighbouring countries, trying to turn the situation into a stepping stone, not only for its agricultural produce, but also to attract others to establish themselves in the country and serve the area from Jordan.

Interest has been growing amongst European producers to expand in countries in the Middle East, like United Arab Emirates, and this is also the case for AgriJordan, which has been gaining market

share in various destinations in the area, including UAE, Qatar, Kuwait and even Saudi Arabia, which had enforced prohibitions on Jordanian products for many years.

"We are finding that, despite the risks involved, the boom in the Gulf market provided Jordan with a great chance to explore new opportunities that are currently turning out to be quite lucrative for us," concludes Mohammed Bataineh.

"Jordan: Logistical challenges and opportunities for Middle East produce", 29/04/2014, online at: http://www.freshplaza.com/article/120318/Jordan-Logistical-challenges-and-opportunities-for-Middle-East-produce

BACK TO TOP

❖ IDF gesture will keep carcinogen out of Israeli, Palestinian water supply

The IDF has taken steps to keep a highly dangerous carcinogen from polluting one of Israel's key water sources, the western part of the Mountain Aquifer, according to information published Sunday by Friends of the Earth Middle East.

For the last seven years, the carcinogen chromium III has seeped into one of the largest cross-border streams that originates in the Hebron Hills.

The stream crosses the Green Line and merges with Nahal Beersheba and Nahal Besor before continuing toward the Mediterranean Sea.

"This was a seeping time bomb of chromium into our water," said Friends of the Earth Middle East's Palestinian director Nader Khateeb.

He spoke as he welcomed the news that helps pave the way for the chromium removal plant in the Hebron Industrial Zone to resume operations after almost a decade.

chromium III, or trivalent chromium, is an essential component in the process of transforming animal skins into usable leather, used widely by the 13 Palestinian tanneries in the industrial zone.

Residual chromium from the process that is not absorbed by the leather is released in the tannery effluents and can become highly carcinogenic once released into an open environment, according to FoEME Palestinian project coordinator Malek Abu Alfailat.

In 2005, the Civil Administration banned sulfuric acid – an essential ingredient in the chromium removal plant's operation – because it could also be used as an explosive.

For the last four years, FoEME has lobbied the CA to rescind its ban. Earlier this month the CA notified FoEME it would allow sulfuric acid along with 17 other items into the West Bank as a gesture to support the Palestinian economy.

It stated that, "The expansion of the list will be permitted under tight coordination with the security services and according to a system of supervision regarding the entrance and use of permitted items."

The gesture was made as efforts were under way to extend negotiations with the Palestinians beyond April 29th.

Mira Edelstein, a spokeswoman for FoEME, said she believes the IDF would stick with its decision with regard to sulfuric acid even though talks have broken down.

Khateeb said FoEME had focused attention on the environmental problems related to chromium III.

"Until FoEME started to focus on how to clean up the Hebron Industrial Zone in 2011, the release of chromium into the environment was conveniently ignored," he said.

"Common sense has now prevailed and sulfuric acid will now be allowed for industry under supervision, as had been requested from the outset – and USAID is already working with the tanners to look at their needs to re-operate the small chromium removal plant," said FoEME Israeli director Gidon Bromberg.

The concentration of chromium III in the effluents discharged collectively by the Hebron tanneries amounts to about 5,000 milligrams per liter – which is 1,000 times more than the globally permissible standards, Malek told The Jerusalem Post. About 10 cubic meters of this effluent is being discharged into the Hebron stream each day, Malek said.

Despite the fact that chromium VI – also known widely as hexavalent chromium – is not used in the tanning process, some of the chromium III compounds flowing in the effluents actually are eventually converted into the more carcinogenic, hexavalent chromium. In certain places along the stream, where the effluents seep down into soil layers containing no oxygen, the anaerobic conditions prompt the conversion of the chromium III into VI, Malek explained. The resultant hexavalent chromium is thereby able to spread in the soil as well as into certain portions of the Western Aquifer shared by Palestinians and Israelis.

Both the California Environmental Protection Agency and the United States Environmental Protection Agency have in recent years deemed hexavalent chromium to be carcinogenic through oral ingestion.

In 2007, a cohort of Israeli and Palestinian researchers – from the Arava Institute for Environmental Studies, Tel Aviv University, Ben-Gurion University, the Palestinian House of Water and Environment and the Palestinian Water and Environmental Development Organization – submitted an extensive study on trans-boundary streams to USAID, which included an evaluation of chromium presence.

The study indicates that, although concentrations of chromium and other metals were high at all sites, the most polluted sites were found in the "downstream reach" portions – namely in Hazerim and Ze'elim.

Prof. Alon Tal, who was a co-author on the study, stressed that the Civil Administration's decision is "something of a no-brainer" in the process of rehabilitating Nahal Beersheba, because as much as 70% of the sewage discharged from the Hebron region reaches the area's groundwater.

"Let's hope that the sulfuric acid supply is put to good use and contributes to environmental cooperation and progress rather than violence."

To recover chromium, tanneries first precipitate the chromium from the effluents by adding an alkali – such as magnesium oxide – to the wastewater, Malek said. After several hours, the solution is then transferred to a centrifusion tank, and separates into one layer of high chromium content and a second with less than 5 milligrams of chromium per liter – the latter of which can now be safely pumped out. Sulfuric acid is then able to decrease the pH of the precipitated chromium from about 9 to about 2.4, making the chromium acidic enough for use in the tanning industry, Malek said.

If the tannery owners were to simply precipitate the chromium from the effluents, without adding the sulfuric acid for recovery, they would be left with a toxic waste product that could not be buried in an ordinary landfill, and would need to make an expensive journey to Ramat Hovav, Malek explained. While the sulfuric acid treatment plant costs NIS 95,000 to operate annually, the tannery owners can save NIS 400,000 each year simply by recovering the chromium, he added.

Although Palestinians take their drinking water from a confined section of the Western Aquifer that the chromium cannot reach, the substance is showing up in the shallow sections of the aquifer on

both sides of the Green Line, Malek said. Animals do drink from these portions and then store heavy metals in their fatty acids, which many Arab villagers in turn consume, he explained.

"IDF gesture will keep carcinogen out of Israeli, Palestinian water supply", 01/05/2014, online at: http://mideastenvironment.apps01.yorku.ca/2014/05/idf-gesture-will-keep-carcinogen-out-of-israeli-palestinian-water-supply-jerusalem-post/

BACK TO TOP

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❖ Palestinian Water Shortages Intensify Due To Drought, Aging Infrastructure, Inaction

Bloomberg BNA — The current water shortage in Arab East Jerusalem is only the latest water crisis facing Arab areas of the West Bank and Gaza Strip, representatives from regional security, environmental and human rights organizations told Bloomberg BNA.

Its solution need not wait for progress in the currently stalled Middle East peace talks, they said. Nor should it.

Residents of East Jerusalem neighborhoods, though outside a security fence built by Israel to prevent terrorist infiltration, have had almost no water from the national grid since March 4.

In many parts of the neighborhoods, particularly their suburbs and elevated areas, there is no water at all. In other sections, pressure is very low, preventing pumping above ground level. 'Situation Unbearable.'

"There are elderly, babies and people with disabilities, and the situation has become unbearable," said Jamil Sanduka, chairman of the Ras Hamis Neighborhood Committee. "Anywhere else, if thousands of people were without running water, this problem would have been solved quickly. In our case, the problem is first and foremost that all the responsible parties simply do not care."

The East Jerusalem water shortage stems partly from a winter drought but mainly from crumbling infrastructure, an overwhelming number of illegal hookups to the remaining grid and a lack of coordination among Israeli government authorities. Some even call the neglect intentional, saying it reflects an Israeli desire to limit Arab population growth in the area where residency comes with a highly valued Israeli identity card and the right to freely cross into Israel.

Residents of the neighborhood are waiting to see how the Israeli government will respond to an April 2 order by the Supreme Court, giving it 60 days to propose solutions to the problem. Meanwhile, they bring water from friends and family who still have it, and buy more in bottles and jerry cans from scalpers at rates far above its regulated cost.

Illegal Hookups, Poor Planning

Hagihon, Jerusalem's municipal water company, says there is little it can do. Rapid population growth, lack of urban planning and a proliferation of pirated pipes have overwhelmed the infrastructure, Hagihon Director-General Zohar Yinon told the Knesset (parliamentary) Public Petitions Committee on March 19.

Of the 60,000 to 80,000 residents in the area, barely 3 percent are legally connected to the municipal grid, he said. The rest get their water for free through illegal connections to the system, causing leaks and eliminating water pressure further down the line, he said.

The illegal tapping costs Hagihon about 10 million shekels ($2.9 million) a year, Yinon said, compared to the 100 million shekels ($29 million) needed to inspect, map and repair the system, and to install legal, metered hookups. And that does not factor in the cost of the police escorts needed for work crews to enter the area, he added.

"Unfortunately, this whole burden falls on Hagihon," Yinon said, calling the situation a "national, political problem" that is "beyond our jurisdiction, even though we are the only government body left to deal with it."

Israel's National Water Authority said the problem lies with Hagihon.

"Hagihon is Jerusalem's water supplier and also is responsible for collecting payment for this service," Water Authority spokesman Uri Schor said.

Solution Will Require Funding

Ultimately, the buck will stop at the Finance Ministry, predicted Tamar Feldman, an attorney working with the Association for Civil Rights in Israel, which submitted the Supreme Court petition.

"Implementing any plan will require funding, and that's who has it," she told Bloomberg BNA April 9.

The East Jerusalem shortage will likely be solved in the short term, Feldman said, unlike the chronic shortage suffered by Palestinian residents of Gaza and the West Bank.

Several water officials estimate that Palestinians in Gaza and the West Bank use an average of 70 liters (18 gallons) of water a day, compared with Jewish use of "up to" 260 liters (69 gallons) per day.

Mekorot, Israel's National Water Company, puts the Israeli average at between 100 and 230 liters (26 gallons to 61 gallons) per day. The difference is mainly a result of large-scale Israeli industrial use and agriculture, which barely exist on the Palestinian side.

However, the Palestinian average can also vary widely according to whether a town or village is connected to the national grid. According to the Israel human rights organization B'Tselem, Palestinian water use in the West Bank ranges from 169 liters (45 gallons) per day in Jericho to 38 liters (10 gallons) per day in Jenin.

But while Palestinians largely rely on rainwater and wells drilled into underground aquifers, Israel has supplemented its own water supply in recent years through widespread recycling, sewage treatment and desalination that today account for about 80 percent of domestic consumption.

A 2012 report by Bar Ilan University on freshwater allocation put Israeli per-capita use at 170 cubic meters (44,880 gallons per year, 123 gallons per day) a year and Palestinian use at 129 cubic meters (34,056 gallons a year, 93 gallons a day), which would be in line with the World Health Organization's recommended minimum of 100 liters (26 gallons) per day per person.

Lower per-capita estimates of Palestinian use, Israeli authorities said, come from the use of inflated population estimates, particularly in the West Bank.

Supply Based on International Accords

Under Article 40 of the 1994 Oslo Accords, Israel committed to provide the Palestinian Authority with at least 23.6 million cubic meters (mcm) of fresh water per year, including 5 mcm for Gaza.

The agreement also allowed Palestinians in the West Bank to drill for 28 mcm of water per year on top of the 118 mcm they produced at the time from drilling, agricultural wells, springs and precipitation.

But Oslo was intended to be temporary. Twenty years later, population growth, decreased drilling, aging infrastructure and dropping natural supply have left the area with a water deficit.

According to Water Authority statistics, Israel now supplies more than double the required amount to the Palestinian Authority, or 53 mcm, but even that does not meet the areas' needs.

Today, according to Naama Baumgarten-Sharon, a researcher at B'tselem, Palestinians in the West Bank procure only 100 mcm of water from drilling and buy the additional 53 mcm from Mekorot, the national water company. About 30 percent of the total, however, is lost to leakage from crumbling pipes, she said.

Those connected to the water grid—about 100,000 people are not—keep their water in rooftop tanks. The tanks are filled between once a week and once a month, depending on their location.

The West Bank water problem is threefold, Feldman said. First comes the "outdated and dysfunctional" Oslo framework. Second are the more than 100 "unrecognized" Arab villages in West Bank areas under full Israeli control, which have no access to the national water grid. And third is Israel's refusal to license new Palestinian wells. The military authority destroys wells drilled without a license as well as old water cisterns that have been repaired for use, she said. Gaza Crisis Most Pressing

Gaza's water situation is more critical, most officials agree (2014 WLPM, 2/5/14). The area relies almost entirely on a coastal aquifer for its freshwater, but water from that aquifer is quickly becoming unpotable.

The 1.6 million Gazans living in the densely populated area currently draw water from the aquifer at almost triple its recharge rate, said Nader Khateeb, Palestinian director of Friends of the Earth Middle East (FoEME), a regional NGO that is spearheading a campaign to include a new water agreement in U.S.-backed peace talks.

As groundwater levels decline, seawater from the Mediterranean seeps into the aquifer along with untreated sewage and agricultural runoff. As a result, saline, chloride and nitrate levels in the aquifer have risen well beyond World Health Organization standards for drinking water, he said.

The situation is a "humanitarian crisis," Khateeb said.

"Gaza residents are drinking unhealthy water," he said in a March 21 statement released for World Water Day. "And if no alternative solutions are advanced, they are about to run out of potable water completely. No security fence will hold back people who do not have water for their children and families."

A large desalination plant, which is being built by UNICEF with a grant of 10 million euros ($13.7 million) from the European Union, is scheduled to come online in 2015. The international community has also funded construction of three large regional sewage treatment plants. Yet they all require electricity on a scale still unavailable in Gaza, and so they function intermittently, if at all. Israel Holds Key

Israel, which produces more desalinated water than it needs at a coastal plant just north of Gaza, could provide an interim solution, Gidon Bromberg, FoEME's Israel director, told Bloomberg BNA.

"This isn't far-fetched," he said. "Israel is already selling 4.7 mcm of water to Gaza annually and has committed to supply another 10 mcm."

He said the Israeli government also agreed to sell 20 mcm of purified water to the Palestinian Authority as part of a water-swapping deal signed in December with Jordan and the Palestinians.

"Surpluses of water that are sold or transferred to our neighbors can help strengthen relationships, serve as a gesture to prevent escalation, and a basis for creating mutual interests among Israel and its neighbors," Bromberg said.

Proposed Agreement Sent to Kerry

FoEME recently submitted a proposal to U.S. Secretary of State John Kerry and other representatives to the Middle East peace talks calling for a "final water agreement" to be achieved within three

months of a framework peace agreement. The plan would replace the 1994 Oslo accord and its largely defunct management structure with a new management team, including a third-party representative.

The new body, according to the outline supplied to Bloomberg BNA, would "be based on all sources of shared natural water and be governed by principles of equity, efficiency, environmental sustainability and participatory structures."

The outline also calls for creation of an action plan to address "urgent issues including water supply and sanitation solutions for Gaza and the West Bank," and a trilateral committee of representatives from Israel, the Palestinian Authority and Jordan to rehabilitate the Jordan River and the Dead Sea.

"A final agreement on water between Palestinians and Israelis has been held hostage to the status quo for too long and can no longer wait," Bromberg said. "The current water arrangements are outdated and have been failing the interests of both sides. Palestinians are not receiving sufficient water to meet their basic needs, and sanitation solutions are urgently needed in the West Bank and Gaza to prevent the continuing contamination of shared ground and surface water that threatens the health of both peoples."

Some even say a solution to the region's water problems need not wait for a political agreement.

"We look at this issue from a strategic point of view," said Oded Eran, a senior research fellow at Israel's Institute for National Security Studies, and a former head of Israel's negotiating team with the Palestinians. "We see that water, energy and infrastructure can be a confidence-building measure, and also something that can precede the political peace."

Progress on water issues "can really enhance the negotiations and the process of normalization among Israel and its neighbors," he said.

"Palestinian Water Shortages Intensify Due To Drought, Aging Infrastructure, Inaction" ,Bloomberg, 01/05/2014, online at: http://mideastenvironment.apps01.yorku.ca/2014/05/palestinian-water-shortages-intensify-due-to-drought-aging-infrastructure-inaction-bloomberg/

BACK TO TOP

❖ Israel's Solution to America's Droughts: Seawater

California, I hear, has a big water problem," Israeli Prime Minister Benjamin Netanyahu recently said on Bloomberg Television. "How come we don't have a water problem? Because we use technology to solve it."

The technology is Israeli's four seawater desalination plants. The Middle Eastern nation, which sits on the eastern edge of the Mediterranean Sea, is 60 percent desert and has been struggling with drought for most of its existence. But with a fifth desalination plant set to open this year, Israel doesn't have a water problem anymore. That's because once the new plant comes online, more than 80 percent of Israel's water will come from desalination.

Indeed, the largest users of desalinated water are in the Middle East, which uses about 70 percent of worldwide capacity, according to the U.S. Geological Survey. The desalination process essentially makes seawater drinkable by forcing it through reverse osmosis membranes that filter out salt and other impurities. There are about 300 desalination plants in the U.S. Most of them, however, are used for industrial purposes. Only about 13 percent of America's domestic water supply -- that is, water for drinking, cooking and bathing -- comes from desalination. So why aren't there more desalination plants in the U.S.?

That's essentially what Netanyahu was wondering during his visit to drought-stricken California in March. Currently, the state has 17 proposals for plants but only half a dozen small ones currently operating along the 840-mile coastline. A desalination plant is being built in Carlsbad, Calif., that will wring 50 million gallons of freshwater a day from the sea and serve about 3.1 million people. The $1 billion project is set to open in 2016.

Part of the reason seawater desalination plants are rare in the U.S. is that the process is energy intensive and, as a result, expensive. Desalinated water can cost two times as much as water currently imported from other sources. The process is more common where energy is cheap, such as the oil-rich Middle East.

But perhaps a bigger reason there aren't many seawater desalination plants in the U.S. is that there "is a risk in building facilities before we need them," says Heather Cooley, water program director for the nonprofit Pacific Institute. She points to the Charles Meyer Desalination Facility in Santa Barbara as a cautionary tale. During the 1987-1992 drought, the coastal Southern California city built a plant as a hedge against an ongoing drought. But as soon as it was completed, the drought ended. Since there were cheaper options available, the city shut the facility down and it remains closed to this day.

Australia had a similar experience. During its Millennium Drought, which lasted more than 10 years starting in 1995, the country built six major seawater desalination plants. Today two of them are still in operation and four of them have been put in standby mode. "This is because, again, there are

cheaper options available," says Cooley. "Yes, we can build them from a technological standpoint, but they are energy intensive and expensive. We need to look at what all of the options are."

Long before Israel built its first desalination plant, it was already a world leader in water conservation. In addition to desalination, Israel reuses treated sewage water for agriculture, runs a public education campaign to conserve water, monitors for leaks in its infrastructure using advanced software and runs computerized deep drip irrigation systems. These areas, Cooley says, are ones that California and the U.S. need to work on.

"Water conservation and efficiency is typically the cheapest, fastest way to reduce demand and essentially develop a new supply," she says. "We've made significant improvements in California, but we still have a long way to go."

"Israel's Solution to America's Droughts: Seawater", 29/04/2014, online at:
http://www.emergencymgmt.com/disaster/Israels-Solution-Americas-Droughts-Seawater.html

BACK TO TOP

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❖ Counting the costs of energy, water and food consumption in the Gulf

The Gulf region is a test case for one of the most serious questions of our time; how can we turn around damaging models of resource use when they are so ingrained in our economies and societies? The six countries of the Gulf Cooperation Council are often painted as a miracle made possible by oil wealth: grand designs and profligate consumers in land scarce in fertile soil and rainfall. But the urban sprawl, leisure developments and industrial complexes that have sprung up in the last 40 years are devouring the resources below ground at an increasing rate.

Plentiful cheap water and energy have underpinned this boom, but resulted in economic and built infrastructures which push demand for depletable resources ever higher. On current trends, Gulf countries will become increasingly dependent on imports, not only of food and so called 'virtual water' embedded therein, but also – with the exception of Qatar – gas. Governments know this is a risky path to tread. It relies on a willingness to pump a growing share of oil revenue into funding the gap between imported product and domestic prices, while burning a hole in the legacy for future generations.

Wasteful practices

Population in the Arab Gulf has doubled in the last 30 years. High birth rates have been boosted by an increase in expatriates who now account for some 90% of residents in Qatar and the United Arab Emirates. With the oil price boom of the last decade influencing energy and water consumption and dietary habits, this has resulted in several unsustainable trends.

Desalination capacity must grow faster as ground water resources are depleted, draining oil and gas and increasing salinity of the Arabian Gulf. In the UAE, non-renewable ground water resources are on track to run out within 50 years. In Saudi Arabia some aquifers are already dangerously low – even the springs of the famous Al-Hasa (Al-Ahsa) Gardens in the Eastern Province have dried up and must now be watered with waste water. Even neighbouring Iran and Iraq expect severe water shortages in the coming decades as a combination of population growth, upstream development, excessive hydro-engineering and climate change take their toll on river flows.

Waste is ubiquitous. According to local sources, as much as 40% of desalinated water supplies can be lost in distribution in Saudi Arabia. Very little water is recycled for secondary usage e.g. for irrigation and washing throughout the region. In Iraq and Iran, both hamstrung by inadequate and inefficient power generation, enough gas was flared in 2012 to supply Poland, Greece and Bulgaria.

In addition to gas, Saudi Arabia – a country with huge solar power potential – burns over half a million barrels of its precious oil a day to produce electricity with more poured into inefficient generation plants to keep buildings cool in the summer months. Food waste is also high; of the 7000 to 8000 tonnes of municipal waste generated every day in Dubai alone, over one third is estimated to be food.

The food-water-energy nexus

These resource trends have intertwined consequences and exemplify the "food-water-energy nexus" which has become a focus for global concern. In Saudi Arabia, for example, large farm subsidies – and low diesel prices – have aided the rapid depletion of Saudi Arabia's once massive groundwater resources, increasing reliance on fossil fuel powered desalination to make seawater drinkable. The sensible move to phase out wheat subsidies is stemming the loss of ground water but with diesel for ground water pumping still amongst the cheapest in the world and water unpriced, some farmers have turned to alfalfa production – an even more water intensive crop – for animal fodder. This is chiefly to feed dairy herds producing milk that is sold at a price far below the value of the quantities of the water and energy that is used to produce it. Experts estimate that it can take 1000 litres of water to produce one litre of milk in the kingdom, yet the price is about $1.

Once demand in one resource exceeds national availability, it can impose costs on other resources. In the UAE for example, rising gas imports are pushing up water production costs. Across the GCC, wasted water is effectively oil and potential food swilled down the drain. And impacts are not only on the public purse but also on health as obesity soars following a dramatic shift over the last 50 years from local grains and vegetables to meat, dairy and high sugar consumption and air pollution rises.

The illusion of plenty

These are global problems in an extreme setting. This means the world should be watching how Gulf countries deal with them. In the case of the GCC countries, the 'illusion of plenty' drives excessive consumption and inefficiency and this is closely connected with prices that reflect neither scarcity nor the negative impacts of use – such as pollution, asset depletion or greenhouse gas (GHG) emissions. It is now more widely understood that people are not even paying the relatively low costs of national production for their power and water. In Saudi Arabia for example, the National Commercial Bank of Saudi Arabia (NCB/Bank Al-Ahali) estimated direct subsidies to consumers of public sector desalinated water at SR5.5billion ($1.5 bn) in 2011. This would be much more if

indirect costs of energy were included. In Kuwait, a 2 fils ($0.01)/kilowatt hour electricity tariff fixed since 1966 means the government pays for over 90% of the costs of production.

Comparatively low fuel costs mean that some countries are making a double loss; in Saudi Arabia and Iraq for example, large volumes of diesel are smuggled over the border to countries with higher prices (Jordan, UAE, Yemen).

Ballooning subsidies, alarming rates of resource depletion and smuggling have prompted some serious efficiency initiatives, with particular focus on upgrading building and appliance standards. Price too is on the agenda. At a petroleum conference in November, the Omani Minister of oil and gas declared "We are wasting too much energy in the region…what is really destroying us right now is subsidies… we simply need to raise the price of petrol and electricity." Many other officials agree in private; electricity and water prices have been raised significantly in Dubai, but the issue of fuel price reform is a sensitive one: why should such large producers of oil make their people pay for fuel? Although average wages in the GCC states are far higher than many countries with higher energy prices, the political context in which leaders aspire to play a providing role makes charging for resources more difficult.

Billions of $ savings at stake

Over the last five years, my colleagues and I at Chatham House have listened to concerns about consumption patterns amongst a wide range of experts in the Gulf. A report based on their work and international experience will next month argue that countries must begin by assessing the costs of current resources. A 'reference' or 'shadow' resource price could allow government planners to measure the savings available from different investments and policy measures to help decide what is worth investing in today to save tomorrow. The economic case is already clear for many.

Calculations we published in August show that with fairly basic efficiency measures, Saudi Arabia could be saving between 1.5 and 2 million barrels of oil equivalent per day by 2025 – a saving of around $36billion a year even at $80/oil and $20/barrel of oil equivalent gas. More detailed studies by authorities in Abu Dhabi show that a comprehensive cooling plan could free up 2 nuclear power stations worth of electricity by 2020.

Reflecting resource value in price

If governments decide to pass on some of the resource costs to consumers, they must research which groups would be adversely affected by higher prices and how a rise in one commodity (say petrol) would affect the price of others (e.g. food). There are also opportunities to consider: How can savings

from reduced support fund development and jobs? And what new private sector investment could higher prices attract? Dubai for example is encouraging a nascent energy services market – only made possible because of the higher electricity and water prices.

Raising prices will create winners and losers, and this raises further questions about the capacity of governments to navigate the political minefield of reform and implement measures effectively and equitably. Public trust in government and administrative effectiveness are key to the design of public spending programmes to manage the transition to higher resource prices.

If people think that they will lose out while government officials partake in graft, then they will object. This may well be the case if the compensatory measures appear too complex. In this case, there is logic in a universal transfer scheme whereby citizens receive an equal share of a percentage of the savings. This is what Iran did in 2010 and there is much to be learned from that case. In the event, cash handouts were set too high with insufficient amounts left to compensate vital industries such as electricity utilities. But people generally accepted the trade-off which, given the violent reactions to fuel price rises in countries such as Nigeria and Bolivia, is no mean feat.

Iraq and Jordan have both accompanied fuel price increases with transfers to poorer households. In both cases, it has been a learning curve. When Iraqi Ministry of Labour officials were found to be helping themselves to the welfare pot, the system was decentralised and computerised to reduce options for fraud. International experience shows that the flexibility to revise and improve a scheme is essential to its success.

Affordability

In the GCC countries, the challenge is more about public perceptions and vested interests than hardship. As the Saudi minister of water and electricity, Abdullah Al-Hussayen, has pointed out, people pay SAR200 ($53) a month for their mobile phone bills, yet less than SAR1.00 ($0.27) a month for their household water. Also, it is the total cost of the household electricity or water bill that really matters to consumers, rather than the cost per kWh or litre. This is something that can be made manageable, especially for low-income families, through the use of ‘life-line’ tariffs (that provide a sufficient supply at an affordable rate, but charge more beyond this) and efficiency investments.

And the cost of mobility would have to rise quite a bit to pinch the average citizen. A back of the envelope calculation shows that 90 litres of petrol (one tank for a typical SUV) at current national prices would amount to less than 1% of average monthly public sector salaries in Bahrain, Qatar, Saudi Arabia and the UAE. This compares with around 3% in the United States and 11% in the UK.

The flip side of this is that moderate price rises may have little impact on personal driving habits without additional regulation and awareness campaigns. Commercial enterprises where energy represents a significant share of the input will be more responsive. Haulage companies and farmers for example pay even less than households for diesel; a gradual rise from say 6 or 8 cents a litre in Saudi Arabia to the UAE price of 65 US cents a litre would be a loud wake up call for more efficient practices.

From waste into jobs

No country in the world values all its vital resources – such as water, food, energy, fresh air and the diversity of our animal and plant life – adequately. This means businesses and governments continue to make ill-judged policy with respect to future generations and increasingly, current ones too. But there is growing recognition globally that we ignore value at our peril.

In the Gulf, current high inefficiencies and waste create a huge financial and job creation opportunity. Our research and conversations with a wide range of local and international experts, policy makers and business people show there are innovative responses available to governments to take a more secure consumption path. Some are embarking on that path and proving valuable examples for their neighbours.

Frankness in discussing food, water and energy subsidies in the region is a welcome development; but the challenge also demands a new narrative based on national interests such as sustainable job creation and care of national assets such as water, oil and gas, clean air and marine life. The starting point is to know how much is being lost, wasted and foregone through current systems of production and use. From here societies can debate how state support might be more fairly spread.

"Counting the costs of energy, water and food consumption in the Gulf" , AFED, 01/05/2014, online at: http://mideastenvironment.apps01.yorku.ca/2014/05/counting-the-costs-of-energy-water-and-food-consumption-in-the-gulf-afed/

BACK TO TOP

❖ FCC studying $3.5 billion deals in Bahrain-Oman

MANAMA: FCC, the citizen services company, is currently evaluating contract offers worth 2.5 billion euros ($3.5bn) in Bahrain and Oman. FCC's chief executive Juan Bejar made the announcement during his trip to Oman and Bahrain this week.

Meeting government officials and business leaders, he said that FCC wants to become a loyal partner in the development of infrastructure in these countries, utilising the company's experience in transport systems and water systems.

Through the offers in Bahrain and Oman, FCC is looking to strengthen its position in the Middle East, where it recently won a contract to build a section of the Doha metro red line in Qatar.

Last month, an FCC-led consortium also commenced work on the Riyadh metro where it is building lines 4, 5 and 6 of the 6bn-euro project.

In Bahrain, Mr Bejar underlined the importance of infrastructure and citizen services such as refuse collection and water management for the kingdom's economy, and highlighted FCC's interest in developing all types of infrastructure.

FCC Aqualia, the company's water division, is bidding for three projects which are currently in the prequalification phase.

Two of these projects are in Bahrain and one in Oman.

In Bahrain, the biggest project FCC Aqualia is bidding for is the design, construction and 10-year operation of the Tubli water treatment plant.

One of the projects in Oman is the design, construction and 20-year operation of a desalination plant in Salalah.

The second project is the five-year operation and maintenance of the smaller Majis desalination plant in Sohar.

In Oman, FCC has already pre-qualified for the Diba-Lima-Khasab highway project, valued at 500-million-euro, in the Straits of Hormuz zone.

In addition, FCC has just formed a consortium with an Indian company and a local Omani company in order to present an expression of interest for the construction of a railway project.

The first 250km section of the project is valued at 720m euros.

FCC has extensive experience in the Middle East.

It has been operating since 2011 in Saudi Arabia, where FCC Aqualia optimised Riyadh's water supply network (6,000km).

This was the first water management contract granted to a Spanish company in the Middle East.

A few months later, FCC Aqualia was awarded another contract, this time to operate and maintain the sewers and sewage treatment system in eastern Abu Dhabi.

FCC also has offices in Qatar, where it is currently building two pedestrian walkways as well as phase II development of the Barzan camp residential area in Al Wajba, 15km from the Doha.

"FCC studying $3.5 billion deals in Bahrain-Oman", 03/05/2014, online at: http://www.gulf-daily-news.com/NewsDetails.aspx?storyid=376093

BACK TO TOP

❖ Ethiopia: Geographically Transferring Ethiopian Waters to GCC countries

Djibouti (HAN) April 30, 2014. According to middle east monitor, the Ethiopian President Mulatu Teshome met this week with Rashad Mustafa Shawa, chairperson of the Swiss water company Mai Resources International, to discuss the mechanisms of exporting his country's Nile water resources to Kuwait. The Ethiopian ENA reported that Kuwait wants to import 66 million gallons of water daily from Ethiopia.

Kuwaiti Ambassador to Ethiopia Rashed Al-Hajri said that importing water from Ethiopia would be easy because geographically it is close to the Middle East and the country has huge water resources. According to sources contacted by Geeska Afrika Online reporter in Addis, idealy and geographically, it could be possible incase Somaliland or Putland route is secure by Ethiopian Authories.

A senior official who attended the meeting between Teshome and Shawa remarked that Ethiopia intends to support Kuwait's efforts to import its water, adding that this will ultimately reinforce investment and cooperation between the two countries.

The news agency also reported that the Swiss company, which focuses on increasing water supplies in countries that are in need, would start transferring the Ethiopian water after it receives all the necessary documents and licenses for the mission.

The Swiss Firm, Mai Resources International specializes in Water Resources Management and supply of potable water around the world through incorporating separate companies in each country, such as Kuwait, GCC counties or in Ethiopia, where it obtains the concession as well as the possibility of joint ventures.

But, Ethiopian diplomat told Geeska Afrika Online, that Egyptians are creating this rumors in order to take military action against Ethiopia. They are telling their people that Ethiopia is building the dam in order to sell the Nile water to Kuwait and dry off Nile. It is just a nasty trick to justify any sort of military or non-military actions they want to take.

"Ethiopia: Geographically Transferring Ethiopian Waters to GCC countries", 30/04/2014, online at: http://www.geeskaafrika.com/ethiopia-geographically-transferring-ethiopian-waters-to-gcc-countries/2747/

BACK TO TOP

❖ Swiss firm plans to transfer Ethiopia water to Djibouti

ADDIS ABABA – A Swiss water company plans to explore the possibilities of developing and transferring groundwater to Djibouti from Eastern Ethiopia.

"The Swiss company and Kuwaiti diplomats have contacted us and they will be visiting Djibouti and hold further discussions," Djiboutian Ambassador to Ethiopia Mohamed Idriss Farah told Anadolu Agency.

A delegation from the Mai Resources International and the Kuwait embassy met with Ethiopian President Mulatu Teshome and Water Minister Alemayehu Tegenu to discuss the project.

"This has nothing to do with the Nile River waters and the proposed project area is in Eastern Ethiopia, 1165km far from the Nile," the Kuwait embassy said in a statement.

The proposed project is planned to be carried out in Adi Ggala town of Ethiopia's Somali Regional State, according to the Djibouti ambassador.

In 2013, Ethiopia and Djibouti agreed to develop the underground water to be exported to Djibouti.

A Chinese Company is now developing the underground water to be used for drinking.

Ethiopian Minister of Finance and Economic Development Sufian Ahmed and his Djiboutian counterpart Ilyas Moussa Dawaleh had signed an agreement to facilitate cooperation on water supply between the two countries.

According to the agreement, Djibouti will install a 70km long water pipeline from the proposed project area, the Ethiopian town of Adi Ggala to the Guelileh border crossing all the way to Djibouti City.

"Swiss firm plans to transfer Ethiopia water to Djibouti", 29/04/2014, online at: http://www.turkishpress.com/news/403553/

BACK TO TOP

❖ Ethiopia: Misplaced opposition to the Grand Ethiopian Renaissance Dam

Misplaced opposition to the Grand Ethiopian Renaissance Dam

By Minga Negash, Seid Hassan and Mammo Muchie

I

The 1929 Nile water allocation agreement that was signed by Egypt and the United Kingdom (which excluded Ethiopia and nearly all other upper basin countries) allocated 48 billion (65%) cubic meters of water per year to Egypt and 4 billion to the Sudan. The 1959 agreement between Egypt and the Sudan raised the share to 55.5 (75%) billion and 18.5 billion cubic meters to Egypt and the Sudan, respectively. This agreement also excluded all the other upper Nile riparian nations. Egypt wants to keep the colonial-era agreements and the 1959 accord. This unfair allocation of the Nile water enabled Egypt to construct the Aswan Dam and the two countries never cared to consult the upper riparian nations. As argued by Badr Abdelatty, a spokesman for Egypt's Foreign Ministry, Egypt wants to keep the status quo because it needs all the "assigned 55 billion cubic meters a year for vital use such as drinking, washing and sanitation needs" by 2020. This clearly indicates Egypt's desire to secure its own Nile water-related benefits intact while at the same time denying other (Sub-Saharan) Nile riparian countries from using their own waters for alleviating poverty and enhancing sustainable development. Contrary to the Nile Basin Initiative (NBI) that was formalized in 1999 that Egypt was a party to, it is now saying that any change to the colonial era agreement would be tantamount to affecting its strategic interests and repeatedly threatens to use all means available if Ethiopia continues to build the Great Ethiopian Renaissance Dam (GERD). Egypt continues to escalate the confrontation despite

Ethiopia's claim that the dam would have no appreciable negative impact on Egypt. Ethiopia, along with the other upper Nile riparian countries object the privileges that Egypt gave itself and consider Egyptian monopoly over the Nile waters as a violation of their sovereignty. In accordance to the 2010 Entebbe Agreement by the upstream countries, which included Ethiopia, Kenya, Uganda, Rwanda and Tanzania, and now effectively Sudan and South Sudan), Ethiopia, therefore, insists on adhering to its plan and is forging ahead on constructing the dam.

In what follows, we use an amalgam of economics, history, law, security and environment factors to examine the Egyptian opposition to the construction of the Grand Ethiopian Renaissance Dam (GERD). We try to triangulate these factors hoping to contribute to the debate and gain insight into the current tension between Egypt and Ethiopia. We attempt to make a dispassionate analysis of the water sharing problem between upstream and downstream countries. Consistent with theory and real life cases, we surmise that water has been and continues to be the cause for conflict in a number of regions in the world and, unfortunately, water wars tend to be irrational, unsustainable and economically and socially destructive. Trans-boundary water sharing and pollution (environmental-ecological) problems are never resolved through hegemonies, militarism and ultra-nationalism.

Dissenting voices against mega projects such as GERD are not new- the criticisms ranging from cost and scheduling overruns (as a recent study by Ansar, Flyvbjerg, Budzier and Lunn of Oxford University shows), to their impacts on population dislocation, corruption, transparency in awarding of contracts, the manner in which such projects are financed, social and environmental impacts in upstream and downstream countries and water security concerns. Hence, Ethiopians may legitimately ask questions and raise concerns about the manner in which the Government of Ethiopia is handling the project. In this article, however, we focus on trans-boundary environmental problems, the fair use of the Nile water and address Egyptian concerns. This is important because the construction of GERD has reignited the long standing explosive issue of the equitable use of Nile waters. We also believe the recent (counterproductive) Egyptian threats of war and various forms of diplomatic offensives require the attentions of scholars of substance and policy makers.

Egyptian worries and aspirations over the Nile River system however is historical and goes back to the days before the formation of the Egyptian nation/state even though the issue began to dominate the country's political landscape with the generation of militarism and ultra-nationalism (from Gamal Abel Nasser to the late President Sadat's 1979 threat of war and to the current leaders of Egypt vowing not to lose a "drop of water)." The recent political instability in Egypt must have made the trans-boundary water sharing problem a point of political opportunism. Reports indicate that Egypt may indeed be laying the ground work to "destroy the dam before Ethiopia starts filling it with water or risk flooding Sudan's flat eastern territories upon its destruction." A WikiLeaks report is also known to have revealed that Egypt, in collaboration with Sudan, had plans "to build an airstrip for bombing a dam in the Blue Nile River Gorge in Ethiopia." In its June 2013 analysis of Egypt's military options, Straighter, a global intelligence organization indicated that the country does have

military options against Ethiopia's dam, but noted that distance will heavily constrain Egypt's ability to demolish the work. The options, however, may include air attack from bases in the Sudan, Djibouti and Eritrea and/or sponsoring present day local "militants" to frustrate the construction of the dam. Obviously, Ethiopia is aware of the Egyptian options and its age-old aspiration to control the sources of the Nile River system. For example, on April 17, 2014, amid reports that Egypt was trying to woo South Sudan towards its dispute over Nile waters, the Voice of America reported that the President of South Sudan assured the Ethiopian authorities that the recently signed military and economic cooperation between Egypt and South Sudan would not allow Egypt to attack Ethiopia or allow subversive activities.

Egypt's policy towards upstream countries is primarily driven by its interest on the water which aims at thriving at the misery of downstream countries, apparently without any form of substantive reciprocity. In contrast to the present day relationship between Egypt and Ethiopia, their ancestors, despite their limited knowledge of geography and hydrology, had a better understanding of the economics of water sharing. As the renowned historian Richard Pankhurst documented, the Turkish Sultan who ruled Egypt before the British, had "paid the ruler of Ethiopia an annual tax of 50,000 gold coins" lest the latter diverts the Nile. Nowadays, and not surprisingly, even the Egyptian Minister of Antiquities is against the GERD. In fact, institutional memories and abundant documents of the last sixty years indicate not only just the inconsistency, but also an immense level of damage that Egyptian foreign policy has done to Ethiopia and the Sudan. Egyptian interference in the two countries' internal affairs has been largely driven by the Ethiopian and the Sudanese use of the Nile waters. For instance, Egypt objected the independence movement in South Sudan but promoted the separation of Eritrea and the creation of one of the most densely populated landlocked countries in the world. The international community is not unaware of these facts but Egypt's strategic location and its pivotal role in the politics of the Middle East did not allow the powers to be to call a spade a spade. As of late, intergovernmental organizations like the African Union which were once mute about the behaviors of successive military rulers of Egypt, who often controlled political and economic power under the cover of phony elections and revolutions, have started to recognize the problems of the Nile River system. Ethiopia's and the other upstream riparian countries' rights to equitably share the waters of Nile is now an African agenda though key members of the Arab League continue to support the position taken by Egypt.

Ethiopia's right to use the water that originates within itself would have included (and, in our view, should include), in addition to power-generating purposes, irrigation, water recreation and navigational services, flood control as well as water storage and supply. It is obvious, therefore, that dams provide valuable economic benefits. Just like any mega project, dams also involve several side-effects, which could be summarized as environmental and ecological, social (forced relocation of locals), economic and even political. Other concerns may include evaluating and managing the risks associated with dam construction as well as asking questions whether the product (GERD in our case) would provide the desired and needed benefits to stakeholders such as access to electricity. A reasonable framework of concern about dam construction, therefore, would include a thorough benefit-cost analysis, not just one-sided focus on the costs. This is our major concern in regards to environmentalists and some of their Ethiopian supporters who campaign against the 6000 MW dam.

The environmentalists refer to the GERD as a "white elephant," despite the fact that the project's leaked document, alleged to be prepared by International Panel of Experts (IPE) showing favorable financial and social benefits to Ethiopia and the Sudan. Environmentalists such as the International Rivers Network (IRN) need to, therefore, quantify the magnitude of the side effects of the project and should not rely on "covert" and "secondary" data. More importantly, rather than being the butterflies of potential conflict in the Eastern Nile region, they need to: (i) acknowledge Ethiopia's sovereign rights to use its own resources in accordance to international law and without hurting downstream countries; (ii) identify mitigation strategies so that genuine concerns are addressed before the construction is finalized; and (iii) propose how the mitigation strategies are going to be financed. In April 2014, the California based environmental pressure group which is against any form of large dam that is proposed to be built in Africa and Asia leaked the 48 pages long confidential document that was prepared by International Panel of Experts (IPE) on Ethiopian Grand Renaissance Dam. Now that the confidential report is in the public domain, it allows everyone to put to test the concerns of both the friends and foes of the GERD.

II

The key features of the IPE's report could be summarized as follows:- (i) unlike the options of smaller dams which would have included potential irrigation projects, GERD is an energy production project and any fear of large and permanent reduction in the flow of freshwater to downstream countries is unfounded; (ii) the filling up of the dam is planned, to be done in stages by taking into account rainfall patterns and the catchment area; (iii) both the financial and social cost-benefit

preliminary analysis of the project on upstream and downstream countries are favorable and the expected damages on downstream countries are not insurmountable; (iv) the preliminary findings about the project's side effects on Egypt is not sufficient and hence there is an information (hydrological) void, and much of the current allegations and threats are based on unfounded Egyptian fears; (v) work has progressed to the extent that, at the time of writing this article, the project has reached a degree of completion rate of 31% and the water diversion has been successfully carried out; (vi) the expected loss of water due to evaporation for the new project is not worse than what Egypt is currently losing from its environmentally unfriendly projects and poor water management; (vii) recent geological and hydrological studies have documented an abundant level of ground water in the Nile basin countries and hence downstream countries will not be thirsty if upstream countries build dams that generate electricity. It is clear, therefore, that Egypt's no dam policy or stance against large energy producing dams in upstream countries is a misplaced opposition and therefore calls for a new thinking in Cairo.

As Professor Aaron Wolf of Oregon State University observes, there are about 261 trans-boundary rivers across the world and unless carefully handled a significant proportion of these rivers could be causes of conflict. Wolf documented that water has been the cause of political tensions between a number of countries, including but not limited to Arabs and Israelis; Indians and Bangladeshis; Americans and Mexicans, the Chinese and other downstream countries, Brazilians and Paraguayans and all the ten riparian states of the Nile River system. He observes that "war over water seems neither strategically rational, nor hydrographically effective nor economically viable." In other words, there is little reason for a "water war" between Egypt and Ethiopia. The two countries can also learn from inter-basin development projects that are successful, such as the Colorado River Basin allocation between the US riparian states and Mexico, the Columbia River Agreement between the US and Canada and the numerous European collaborative projects and integrated river basin managements of the River Rhine. In particular, Egypt and Ethiopia could learn a lot from South Africa paying Lesotho to quench its increasing thirst from the Lesotho Highlands Waters Project. The framework for exploiting the Niger River Basin, the Zambezi River basin and the Nile Basin Initiative itself could serve as useful points of departure for cooperation.

Notwithstanding the above, Egyptian politicians often argue about "historical rights" and connect the water issue with the civilizations of the antiquities on the Nile delta and forget about the history of the formation of nations and states. Evidently this stance is self-serving in that it ignores historical

tensions between black people in the region (present day Sudan, South Sudan, Niger, Eritrea and Ethiopia, among others) and the race controversy in the African origin of humanity and the history of the Nile Valley (see for example Martin Bernal's Black Antenna, 1987; Anta Diop, among others). The politics of the Nile River system thus has an Africa-Arab dimension and hence sensitive to Pan Africanist and Pan Arabism agendas. Hence, if a conflict between Egypt and Ethiopia erupts, it is more than likely to have spillover effects on the rest of Africa.

Like most of the post colony states of Africa, modern and independent Egypt was created out of the ashes of colonialism (see for example Achille Mbembe and Samir Amin, among others). Britain's colonial interest on the Nile dam at Lake Tana (main source of Abay/Blue Nile) is the foundation of Egypt's historical and legal claims to the water. Britain's interest however was primarily driven by its desire to irrigate its large cotton plantations in the Anglo Egyptian colony of the Sudan and supply its factories which were located in the United Kingdom. Modern day cotton plantations in Egypt are entirely dependent on the soil that gets exported by the river primarily from Ethiopian highlands. In a series of short articles, Dr. Yosef Yacob documented the history of colonialism in the region and indicated how Emperor Menelik (1844-1913) and Emperor Haile Selassie (1892-1975) managed to escape Britain's colonial ambitions over the Ethiopian highlands. He also revealed how Emperor Haile Selassie was visionary in that he successfully resisted Britain's encroachments on Lake Tana by hiring an American engineering company to construct the dam and trying to finance the project through the issuance of debt securities in the United States. In other words, had the Emperor's wishes were realized, the GERD would have been built a long time ago. We have yet to see any reasonable criticism of Dr. Yosef Yacob's treatise by those who oppose the construction of the dam.

The next leg of the Egyptian opposition is international law. Here too the argument collapses before it faces the scrutiny of legal scholars. Egyptian officials often refer to the 1929 colonial era agreement and the 1959 agreement signed between Egypt and the Sudan (both former British colonies) that Ethiopia was not party to and had never consented to. First, it is important to note that colonial treaties have no direct relevance for resolving Africa's contemporary problems. The Nile basin countries have already rejected it. Thus, the dominant view is that trans-boundary assets belong to the post-colonial states and the new states have to agree how to share their jointly owned assets. Second, Ethiopia was and is an independent state and it was not a party to the 1929 and 1959 agreements. Historical records also indicate that Britain, Egypt and the Sudan conspired and excluded Ethiopia from the negotiation. In this respect, Wuhibegezer Ferede and Sheferawu Abebe, writing on

the Efficacy of Water Treaties in the Eastern Nile Basin, Africa Spectrum, 49, 1, 55-67 (2014) outline two approaches that evolve from the principles of international law. The authors show the fundamental differences between upstream and downstream countries in that upstream countries (Ethiopia, Uganda, Tanzania, Rwanda, Burundi, Kenya, Democratic Republic of Congo, Eritrea and South Sudan) appear to favor clean slate policy while downstream countries (Sudan and Egypt) favor colonial treaties. Notwithstanding the preference of one or another form of legal principle, Egypt's insistence on colonial treaties collapses simply because Ethiopia was not a colony of Britain or indeed any other European power.

III

Now that we have seen Egypt's historical and legal arguments falling apart, the next step is to examine the third foundation of the Egyptian stance - the environmental aspects of the dam. Previous literature indicated that carbon emissions and contaminations of rivers that cross national boundaries are examples of trans-boundary environmental problems. Hence, policy formation requires enforceable global treaties, sound national policy and the examination of advances in a number of disciplines. Furthermore, investments in big national projects such as stadiums, mineral extraction, oil and gas, canals, big dams, highways, and big architectural projects add behavioral and political dimensions to the science, technology and the economics of such undertakings. Most of the finest buildings and stadiums that host world cup games were and are being constructed in that national pride. And behavioral and emotional factors dominate financial arguments. In other words, national projects by their nature have behavioral dimensions and may not be captured by the paradigms of rationality and net present values. Time will tell whether the Ethiopian dam is different.

The mainstream literature on environmental economics focuses on welfare measurement, sustainability, technological change, externality and green accounting. The world commission on environment and development (aka the Bruntland Commission, 1987), for example, states that "sustainable development is meeting the needs of the present generation without compromising the ability of future generations to meet their own needs". Consistent with this understanding, the Nile River system has both trans-boundary and non-trans-boundary features for the riparian states and hence Egypt, in theory, may have a cause for concern. This concern can nonetheless be resolved through international instruments and institutions and bilateral relations that are based on mutual respect and trust. The international convention on the protection and use of trans-boundary and international lakes which was signed by nearly 40 countries does not provide the base for resolving

disputes, and worse, no country from Africa (including Egypt) has actually ratified it. It nonetheless can be another point of departure. The United Nations Environmental program could also be a facilitator. Furthermore, as noted earlier, Africa has frameworks for inter-basin development. The Nile Basin Initiative (NBI) has been a major institutional development which enables all riparian states to collaborate and act as equal members. Egypt's effort to undermine this agreement is a mistake.

Other features of the leaked report of the International Panel of Experts covers the main factors of the project. Among other things, it confirms that: (i) GERD is economically feasible; (ii) the design meets international standards, subject to minor "corrections"; (iii) the contractor is reliable and has extensive international expertise and reputation in building large dams; (iv) the environmental impact study within Ethiopia is adequate and the trans-boundary effect on the Sudan is favorable and controls flood; and (v) the section on trans-boundary effect on Egypt requires additional study using complex models and actual data rather than reliance on desk work. In short, the authors of the 48 pages-long confidential report did not say that they expect a catastrophe and the vanishing of the Egyptian nation if the project gets completed. In short, Egypt is not in any imminent danger. This conclusion has ramifications for the multilateral institutions that refused to finance the project. In summary, Egypt's opposition to GERD is indeed misplaced. Its return to the negotiation table and the African Union and the ratification of the Nile River Basin Cooperative Framework and Convention on the Protection and Use of Trans-boundary Watercourses and International Lakes are avenues for resolving the sticky problems of water sharing.

"Ethiopia: Misplaced opposition to the Grand Ethiopian Renaissance Dam", 30/04/2014, online at: http://nazret.com/blog/index.php/2014/04/30/ethiopia-misplaced-opposition-to-the

BACK TO TOP

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❖ Water politics along the Nile

Ethiopia's emperor Haile Selassie once invited Dr Ibrahim Kamel to Addis Ababa and housed him in the Ghion Hotel, which shared a garden wall with the imperial palace. They chatted as the emperor took his morning stroll in the garden with his cheetahs, says Kamel, now 76, an engineer and businessman who between 1990 and 1995 was also a member of the Egyptian parliament and its Parliamentary Economic Committee. Such a garden conversation now would focus on the $4.8bn Grand Ethiopian Renaissance Dam (GERD) on the Blue Nile. Ethiopia sees its construction as an expression of national sovereignty. But Kamel says Egypt "cannot afford to have the Nile run by countries that one day love us, then the next have a bout of sovereignty fever."

Ahmed Abu Zeid, African Affairs advisor to Egypt's foreign ministry agrees that the situation is dangerous, because no technical studies on the GERD have been agreed between the three countries, yet construction of the dam continues, 20km upstream of the Ethiopia-Sudan border. He doesn't rule out any strategy, "political, legal or technical", in regard to Egypt's interests on the Blue Nile. According to Kamel, Egypt is only doing what Haile Selassie did in 1925 when he complained to the League of Nations about agreements between Britain and Italy over Lake Tana, in the Ethiopian Highlands. "We're back in 1891," Kamel says, referring to the Anglo-Italian Protocol between Britain (representing Egypt and Sudan) and Italy (representing Eritrea). Field Marshal Abdel Fattah Sissi is expected to make a statement on the dam during his Egyptian presidential campaign.

Kamel, who has been involved in Nile Basin issues since 1962, says that former president Hosni Mubarak had wanted to do something (until an assassination attempt in Addis Ababa in 1995), "but then decided to give Africa the cold shoulder ... Since the time of the Pharaohs, we know how things are." He also says: "If we have to go to war, we'll go to war — period. Dams are easy to bomb or destroy by missile. Who wants that?" He recounts conversations on Nile issues with heads of state including Uganda's Yoweri Museveni, Libya's Muammar Gaddafi and Congo-Kinshasa's Joseph Kabila.

Before Mubarak, Anwar al-Sadat threatened that Egypt might well go to war with any state that reduced its share of the Nile waters. However, right up to his assassination in 1981, he was too busy

dealing with Middle East events: the Suez crisis in 1956, the October war in 1973 and the Camp David accords in 1978.

Talks grind to a halt

Trilateral meetings on the GERD between Ethiopia, Egypt and Sudan have over the past year come to an acrimonious standstill. Egypt has decided to boycott the process: this April, a secret international experts' report (on which the meetings were based) was leaked and posted online (1), partially confirming the reasons for Cairo's opposition.

Kamel says there has to be interdependence among the African states (Rwanda; Burundi, Tanzania, Kenya and Uganda; the Sudans; Ethiopia; Egypt). But many more powers have a stake in Nile Basin cooperation: the UN Development Programme, the US State Department, the European Commission and European countries (Britain, Italy, Norway, Sweden, Switzerland). Through the Nile Basin Initiative, since 1999, western donors have worked to develop transboundary cooperation between the 10 states that share Nile waters, and lay the foundations for a permanent river basin commission.

The GERD dispute has international dimensions. Italy's ambassador to Egypt, Maurizio Massari, South Africa's state security minister, Siyabonga Cwele, and Turkey's foreign minister, Ahmet Davutoğlu, have all declared an interest in mediating between Egypt and Ethiopia. Their offers didn't come out of the blue. The Milan-based Salini Costruttioriwon a no-bid construction contract for the dam in 2010. The South African electricity public utility Eskom has interests in Congo-Kinshasa's 4,300-megawatt Inga III dam, which would provide hydropower to the Southern African Power Pool (the first formal international power pool in Africa). Turkey is developing economic relations with Africa and wants to share its experience of constructing the Atatürk Dam in Anatolia in the catchments of the Euphrates River (shared with Syria and Iraq) (2).

Egypt has instead sought Gulf mediation under the leadership of Saudi Arabia — a sign of desperation. Egypt's irrigation minister Mohammed Abdel-Muttalib was exceptionally rude about Turkey (its relations with Egypt's military-backed regime were soured by prime minister Recep Tayyip Erdoğan backing the government of Mohammed Morsi). "When Turkey built the Atatürk

Dam, it made the Syrians and the Iraqis thirsty and ignored international agreements," Abdel-Muttalib said in February. "Egypt is not Iraq or Syria, and Ethiopia is not Turkey" (3).

To end the dispute, Kamel proposes arbitration, or war; or an alternative, provided by the late British hydrologist Harold Edwin Hurst, that the whole Nile river basin should be managed as one, with long- and medium-term storage in the African and Ethiopian plateau lakes under the collective sovereignty of all basin countries (using valley reservoirs for annual and excess water storage because there is no way to allocate sovereignty to a single country).

After Egypt's 2011 revolution, Kamel submitted another proposal to the government, and has been "on their backs ever since": all Nile Basin member countries should form a consortium company (and put $20bn at its disposal) with pro-rata percentages of their shares of water, and jointly manage the basin "to make money for everybody". Kamel suggests that in years when there is "over-abundant water that ends up in Egypt's Aswan High Dam, that water can be sold for cash to any member country that wants it." It could be piped across the Red Sea to Saudi Arabia, or piped to Libya, earning foreign currency for basin countries. "If the water came from Ethiopia, that would mean Ethiopia would get a bigger share of foreign currency, and give people an incentive to spend money and improve the system."

CFA threat to Egypt

The dam presents Egypt with a wider legal predicament. The 2010 Nile Basin Cooperative Framework Agreement (CFA), which Ethiopia, Rwanda, Tanzania, Uganda, Kenya and Burundi have already signed, but which Egypt and Sudan have rejected, is a new framework on water resources that will come into effect later this year. The CFA would deprive Egypt of its veto power over any water development project on the Nile. Ana Elisa Cascão, a specialist in basin hydro-politics, says theagreement will challenge the colonial-era arrangements based on "inequitable utilisation" of transboundary resources (as in the 1959 Nile Waters Agreement between Egypt and Sudan). The CFA is inspired by the 1997 UN Convention on the Law of the Non-navigational Uses of International Watercourses, which has not yet been ratified by enough countries to be binding, but

is already the guiding framework for transboundary basin agreements. Ethiopia could be the one of the next countries to ratify it.

Egypt is more concerned about the CFA, which represents what Cascão calls an "epoch shift" in basin geopolitics, than about the GERD. She says it would mean that all the Nile countries would have to operate according to "equitable utilisation", so that not only Egypt and Sudan would have the right to a water allocation. This is altering the dynamics of Egypt-Ethiopia relations, and Egypt's relations with the upstream bloc. Egypt last month signed a military cooperation deal with Salva Kiir's South Sudan (4), but Egyptian leverage there can do little to suspend the epoch shift (5).

Egypt's diplomats are aware of the importance of South Sudan's decision to join the CFA, and want it to halt its ratification. South Sudan says the process is irreversible. The country has been in turmoil since December and understands the benefits of a rapprochement with Egypt. As Ethiopian diplomat Birkuk Mekonnen observes (6), both Sudans rely on the Nile for water, yet when South Sudan became independent in 2011, there was no agreement on its post-independence rights to Nile water. Boutros Boutros-Ghali, former Egyptian minister of state, predicted 30 years ago: "The next war in our region will be over the waters of the Nile, not politics."

"Water politics along the Nile", May 2014, online at: **http://mondediplo.com/2014/05/09egypt**

BACK TO TOP

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❖ Egyptian Satellite to Monitor Construction of Ethiopian Dam

Cairo, May 2 (Prensa Latina) Egyptian authorities will monitor the construction of Ethiopian Renaissance dam through a recently launched satellite to be operated in early June, said authorities here.

Alaa El Din El Nahry, vice president of the Office for Space Science and Remote Sensing, said the satellite, the cost of which was 300 million Egyptian pounds (some $43 million USD), was launched two weeks ago and the information provided by it will outline negotiations with Ethiopia.

The Ethiopian dam is one of the main conflicts between Egypt, which fears a decreased flow of the Nile river, and Ethiopia, which claims its right to use the waters of the Nile river across its territory.

Disagreements between the two countries about the dam will be one of the first problems to be faced by the Egyptian president elect in of May 26 and 27 elections.

"Egyptian Satellite to Monitor Construction of Ethiopian Dam", 02/05/2014, online at: http://www.plenglish.com/index.php?option=com_content&task=view&id=2640201&Itemid=1

BACK TO TOP

❖ Challenges Facing Drinking Water Sector in Sudan

This paper written by M. A. Elraheem and G.M. Abdou, Maha Abd Algaffar Abd Elraheem Water Resources Specialist, Geology Dept. University of Khartoum focuses on the current situation of the drinking water supply sector in Sudan and the constraints that obstructs the sector from achieving the Millennium Development Goals (MDG). Based on the results of recent studies of the Sudan Household Health Survey (SHHS) and the Water Supply and Sanitation in Sudan Turning Finance into Services for 2015 and Beyond Country Status Overview Report, only two thirds of the population has access to safe water within the distance specified by the MDG as 1000 meters from their homes.

Drinking water supply in urban centers is mainly from groundwater supplemented by treated surface water from the two Niles or any other seasonal streams whereas in rural areas groundwater from alluvial or basement complex aquifers could be the only source of drinking water.
In order to accomplish the drinking water development goals, Sudan has to enhance water supply coverage for the remaining one third of the total population with in the coming five years.
However there are many constraints and challenges that have to be overcome to accomplish these goals. Such challenges as administrative or operational are discussed in this paper in some details together with the on going efforts to reverse the current situation. It also suggests recommendations for better performance of water supply sector in Sudan.

Introduction

Sudan's population is around 32 millions. Most of this population lives on just 15% of the country's land which is the area along the two Niles. The rest lives around water wells away from the Niles. The climate is arid to semi arid and characterized by a wide range of rainy seasons. However the need for water is rapidly increasing in the country. Many projects were carried out to provide means to meet with the growing demand for water.
Water is supplied mainly from seasonal or intermittent sources depending on the amount and distribution of the rainfall as well as the perennial sources that comprise the Nile River system. Groundwater is widely used for water supply for both rural and urban dwellings.

The urban population is supplied with surface water from treatment plants. Water Hardness Removal Units are not commonly used at this stage. Water is also supplied from boreholes, where groundwater is directly pumped into network without any treatment or disinfection.

The rural population away from the Niles is served mainly from boreholes and/or Haffirs, these are seasonal rain water and runoff collecting reservoirs. Some of these Haffirs are supplied with gauges to prevent dead animal or big tree lumps from getting to the reservoir. The modified ones are supplied with small sand filters and sedimentation units.
Many rural areas are not connected to the main distribution systems where a user has to get water from a main tap. Some areas are simply not supplied directly at all and people have to transport water from long distance water supplied area. Despite many attempts to improve water supply provision, shortages and cutoffs still exist that can only be related to factors such as the insufficiency of the supply systems, poor network distribution, leaks and random expansions, power supply shortages, inadequate funds and untrained manpower.
It has been estimated in many studies that the total renewable water resources for Sudan as 35 billion cubic meters per year. Therefore, the figures shown in Table1 indicate that the country will experience water shortages for both irrigation and drinking supply purposes. Such challenging situation cause for proper planning and management of water resources includes water conservation and water supply augmentation from many conventional and non conventional sources such as water harvesting and possibly reuse of treated water.

Water Resources Management

Currently water resources management in Sudan, is carried out at different levels. The national level that provides policy guide lines for administrative levels and the regional level that provide guide lines for local water management tasks and plans of action, as shown in Fig.1.and Fig.2.Before this, the draft document of the Sudan National Water Policy divided the development of water policy into two eras: pre-1992 and post-1992.
During the first era the main water regulations were based on the 1951 Regulations which are licensing regulations for pumping water from the Nile according to the Nile Pump Control Act (NPCA) of 1939. This was recently modified in the Water Resources Act of 1995. In addition there

are about ten other pieces of fragmented legislations. There was no policy for selling water in the country.

The second era began with the National Comprehensive Strategy for Development in (1992- 2002). This strategy sets a number of policy objectives and strategies most of them were oriented towards solving the Water Resources problems and developing these resources. At that time the Irrigation and Water Resources Sector was embodied as a sub sector in The Ministry of Agriculture. Then it developed into The Ministry of Irrigation and Water Resources (MIWR), and National Water Corporation (NWC) as part of (MIWR), in the years of 1992 and 1994.

MDG Status

In December 2006 Sudan Household Health Survey was carried out. The indicators used to carry out the (SHHS) survey were as follows:-

1- Use of improved resources for drinking water supply.
2- Methods used to clear turbid water.
3- Time per day consumed to fetch water from the nearest water resource.
4- Family member responsible for fetching water.

Based on the findings of this survey, the (MDG) and Country Status Overview were reported. Accordingly, the result was 65% of Sudan's population (75% urban and 56%rural) has access to a minimum of 20 liters per capita per day within a distance of 1000 meters from their homes, (source Country Status Overview, 2009). In order to achieve the (MDG) for drinking water, the country has to attain 82% access to improved drinking water sources.

"Challenges Facing Drinking Water Sector in Sudan", 29/04/2014, online at: http://news.sudanvisiondaily.com/details.html?rsnpid=235091

BACK TO TOP

❖ Sudan's al-Bashir hails Ethiopia mega projects

Sudanese President Omar al-Bashir on Monday praised a series mega projects being implemented in Ethiopia, saying it would pave the way for "the new Ethiopia."

Addressing Intellectuals' Forum on Ethiopia's Grand Ethiopian Renaissance Dam (GERD) in the lakeside town of Bahir Dar, 578km northwest of Addis Ababa, al-Bashir said Ethiopia's fast-paced development also benefits Sudan, event coordinator Kebede Kassa told Anadolu Agency.

"Ethiopia and Sudan have historical relations that date back to many years and Ethiopia's development is also seen as a step forward for Sudan," he quoted al-Bashir as saying.

The two-day forum brought together local prominent intellectuals and professionals to discuss the legal rights of Ethiopia to use the Nile water.

Ethiopian State Minister for Foreign Affairs Berhane Gebre-Christos, who also attended the forum, said Ethiopia is keen to see active participation of intellectuals in promoting the country's legal rights in Nile water.

Participants include water experts, representatives from all government universities, senior officials of the federal and regional governments, lawmakers, civil activists and political figures, among others.

The event's main theme focuses on how best Ethiopia can maintain sustainable utilization and management of the Nile water, as well as the role of governments, African organizations and scientists of riparian states to deepen Nile riparian cooperation.

The use of Nile water has led to tensions between Ethiopia and Egypt, which fears that the GERD could threaten its share of the Nile River, its main source of water.

Ethiopia, however, says the project is indispensible for its own economic development, asserting the project won't harm Egyptian interests.

When finished in 2017, the dam will have a 6000-megawatt production capacity, according to government sources.

Addis Ababa says the dam will benefit downstream states Sudan and Egypt, both of which will be invited to purchase the electricity thus generated.

"Sudan's al-Bashir hails Ethiopia mega projects", 29/04/2014, online at:
http://www.worldbulletin.net/news/134980/sudans-al-bashir-hails-ethiopia-mega-projects

BACK TO TOP

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❖ How High Will the Price of a Glass of Water in China Go?

Northern China, like the western part of the United States, has been grappling with an ongoing drought for years. It has also been experiencing a population boom in its cities that is unprecedented in human history. The combination has resulted in severe water stress.

The Chinese government, as is its habit, is dealing with the problem by building huge infrastructure projects — in this case, desalination plants that process massive amounts of seawater for use in industry, agriculture and drinking water.

Now officials have announced the construction of a new desalination plant on the coast in the Caofeidian district of Tangshan, about 170 miles east of Beijing, that will be one of the nation's largest. Slated for completion in 2019, according to the *New York Times*, it is intended primarily to process drinking water for the booming capital city, which is home to nearly 22 million people. Beijing's population, which has doubled since 1990, is projected tohit 50 million by 2050.

The capital's water problem is severe. Groundwater and surface water supplies have been severely depleted as the city has mushroomed, and the level of water scarcity, as measured by United Nations standards, is worse than in the arid countries of the Middle East. The city has an annual water demand of 3.6 billion cubic meters, but only 2.1 billion cubic meters are available in the region. The publicationChina Dialogue has quoted water expert Xu Xinyi, director of the Beijing Normal University's College of Water Sciences, as saying that the capital's water situation is a "human disaster."

The government has long hoped to solve the water woes of China's industrial north with the SouthNorth Water Diversion Project, a monumental public works undertaking that moves water from the Yangtze River and other sources in the wet southern part of the country to the dry north. That three-part effort, which has a western, an eastern, and a middle route, has been running over budget — the government has reportedly already spent $79 billion — and behind schedule. Hundreds of thousands of people have had to be relocated to build the hundreds of miles of canals. Pollution problems have also caused delays, and relatively little water is flowing yet.

In comparison, desalination plants are relatively simple. The one just announced, a joint venture between a Norwegian company and a Hong Kong-based state firm, is projected to produce one million tons of freshwater each day.

But desalination plants are also extremely energy intensive, and the resulting water is very expensive. The price for water in Beijing from the new plant, once completed, could betwice what tap water costs today.

Another pressing concern is pollution. China's desalination plants are powered by the same coal that is already choking its cities in smog. "In the long term, the eventual solution is to save and recycle used water at the consumer end," Ma Jun, director of the Institute of Public & Environmental Affairs, told the state-run Global Times. But with an ongoing drought and cities that have been steadily growing at 20 percent per decade, the long run seems very far away.

"How High Will the Price of a Glass of Water in China Go?", 01/05/2014, online at: http://nextcity.org/daily/entry/water-drought-beijing-china-desalination

BACK TO TOP

Mithat Paşa Caddesi 46/4 Kızılay-Ankara TURKEY
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❖ Drought brings saline water deep into Mekong Delta

More than 377,000 people in the Mekong Delta face a fresh-water shortage because of saline water intrusion in the area as a result of a long and severe drought, according to the National Centre for Rural Clean Water Supply and Environmental Sanitation.

The price for fresh clean water has soared. In Kien Giang, Ben Tre and Ca Mau provinces, people have been buying clean water for 25,000-60,000 VND (1.2-2.9 USD) a cubic metre, far higher than the normal price of 7,000-10,000 VND.

Vo Thi Thong, 47, from Hon Dat district's Binh Son commune in Kien Giang, said the bore wells of hundreds of households had been affected by saline water intrusion and acidic soil.

To have potable water, locals have to travel about 10km to the commune's centre to buy clean water, she said.

Saline water intrusion and drought in the delta have affected agricultural production, with salt water concentration increasing to 0.9 percent in several areas in Hau Giang province, Nguyen Van Dong, director of the province's Department of Agriculture and Rural Development, said.

In Ben Tre, Tra Vinh, Ca Mau and Bac Lieu provinces, the water is more saline than last year, officials said.

In Ca Mau province, the salt concentration reached 3 percent. Rice will die when the salt concentration in fields becomes higher than this level.

About 100,000ha of farmland in the delta have been affected by saline water intrusion, according to the Ministry of Agriculture and Rural Development.

This intrusion occurred one month earlier than in the past, and entered 40-50 km deep into river mouths.

In some areas in Soc Trang, Tra Vinh, Ben Tre, Tien Giang and Long An provinces, saline water has intruded 50-60km into rivers.

Since early February, strong winds combined with drought have created favourable conditions for deeper saline water intrusion.

Steps have been taken to provide fresh water to farms.

Hau Giang and Vinh Long provinces have dredged and upgraded dozens of canals to supply irrigation water for 38,000ha of rice and fruit in affected areas.

Tien Giang province has built 173 temporary dams to prevent saline water intrusion and set up 173 sites to pump water into fields.

And Kien Giang province has closed sluice gates along sea at Rach Gia - Ba Hon areas to keep fresh water.

Nguyen Huynh Trung, deputy head of the Kien Giang Irrigation Sub-department, said the water levels of rivers would decline as there would be little rain during the dry season.

"Saline water intrusion will likely continue to enter deeper inland with a higher concentration of salt," he said.

Central region warned of drought

The central region is likely to face water shortage and even drought in May and several months after as rainfall in the region is forecast to be much lower than the average for the same period, according to the National Centre for Hydro-meteorological Forecasting.

However, the situation will not be as severe as last year and is hoped to improve in late August, the centre's experts said.

They also warned of lower water levels in most regional rivers, resulted in the deep intrusion of sea water, while t he rainy season is expected to come late this year.

The region already suffered from water shortage in the first four months of this year, with rainfall levels dropping 50-90 percent this year compared to the first three months of last year. The situation was especially serious in the southern central provinces of Ninh Thuan, Binh Thuan and Central Highlands localities, where many areas saw no rain at all.

Meanwhile, water levels in reservoirs have reached only 60-70 percent of their designed capacity.

The Ministry of Agriculture and Rural Development has asked affected localities to preserve water in reservoirs and dredge rivers, canals and wells to mitigate the impact of drought and saline intrusion.

The ministry has also asked the Prime Minister to order agencies to help the localities affected by drought and saline intrusion.

"Drought brings saline water deep into Mekong Delta", 02/05/2014, online at:
http://english.vietnamnet.vn/fms/environment/101212/drought-brings-saline-water-deep-into-mekong-delta.html

BACK TO TOP

❖ Thirsty Beijing to raise water prices in conservation push

(Reuters) - China's water-stressed capital Beijing will raise water prices from next month with a new tiered pricing system to put more of the burden on heavy business users as it seeks to protect scare resources, state media reported on Tuesday.

While more than 90 percent of households will see prices rise by just 1 yuan ($0.16) percubic metre, from 4 yuan to 5 yuan, there will be a much larger increase for big industrial consumers, Xinhua news agency said.

Major water consumers such as car-washes and bath houses will see prices jump to 160yuan per cubic metre, from the a previous range of between 61.68 yuan and 81.68 yuan, the report said.

Golf courses and ski resorts - many of which rely on artificial snow machines in arid Beijing - will also pay for 160 yuan per cubic meter, it added.

"For those big consumers, we hope the new pricing system will push them to consider upgrading their facilities for water saving and recycling," Xinhua quoted Liu Bin, deputy head of the Beijing Water Authority, as saying.

Beijing's annual water consumption has reached 3.6 billion cubic meters, "which is at a huge environmental cost", Liu added.

The city has only 100 cubic meters of water available per person, just a tenth of the U.N. "danger threshold", Xinhua said.

Underground water levels in Beijing have dropped 12.8 meters since 1998 with some 6.5 billion cubic meters of ground water overpumped, Liu added.

Money raised from the increased charges will be used in a special fund for saving water and be invested in water saving schemes as well as improving public awareness of the issue, Xinhua added.

Situated close to the outlying parts of the Gobi Desert, Beijing can go for months without significant rainfall, especially in the winter, while dramatic summer storms flood the streets and overwhelm drains.

Despite public concern about China's rapidly degrading environment, awareness of water conservation is low in many parts of the country, especially in Beijing, where hosepipes can be left running all day to water gardens and other green spaces. ($1 = 6.2530 Chinese Yuan) (Reporting by Ben Blanchard; Editing by Alison Williams)

"Thirsty Beijing to raise water prices in conservation push", 29/04/2014, online at: http://www.reuters.com/article/2014/04/29/china-environment-water-idUSL3N0NL3ZN20140429?utm_source=Circle+of+Blue+WaterNews+%26+Alerts&utm_campaign=d4c5e79108-RSS_EMAIL_CAMPAIGN&utm_medium=email&utm_term=0_c1265b6ed7-d4c5e79108-250657169

BACK TO TOP

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❖ Mine Waste Transformed to Tap Water for 80,000 Consumers

Anglo American Plc (AAL) was the first company to transform the wastewater from its coal mines into something 80,000 people drink. Now they're seen as a model.

Purifying contaminated waters from three sites in South Africa has proven so successful that Anglo's plant in Witbank is doubling in size and being replicated elsewhere in the country by **BHP Billiton Ltd. (BHP)**, the biggest mining company, and **Glencore Xstrata Plc. (GLEN)**

While the $130 million plant won't upend the $600 billion world water industry, Anglo's treatment center provides as much as 12 percent of the area's municipal drinking supply and serves as a template for how the industry could treat waste in the future. It also shows how companies and municipalities are finding new ways to confront an increasingly water-stressed planet.

Water of a different sort -- sewer water -- is similarly about to be treated, purified and pumped back to residents in Wichita Falls, **Texas**, to augment shortages caused by growth and the area's worst drought on record.

Mines often treat wastewater to some extent yet until the Emalahleni water-reclamation plant, 120 kilometers (75 miles) east of Johannesburg, none was of drinking quality. This plant "is a model," said Marius Keet, acting head of the Department of Water Affairs in the Gauteng region. "It's a very good example of how it should be done."

That said, the technology isn't cheap and the company still must store a leftover brine from the treatment process, a residue that can be toxic.

Juggling Needs

BHP and Glencore are among those following the fifth-largest mining company with similar treatment works as the industry juggles its needs with water scarcity and environmental concerns about coal, the dirtiest **fossil fuel**.

Coal from Anglo and other mining operators provides 40 percent of Earth's energy. Coal consumption from South Africa to India and **China** climbed 54 percent in the 2000-2011 period, increasing the **carbon emissions** that contribute to the record CO2 levels blamed for global warming.

The 30 million liter-a-day (7.9 million gallons) reverse-osmosis plant recovers 99.5 percent of the mine's wastewater, which will increase to 100 percent after the expansion is completed this year. Seawater desalination plants in comparison have recovery rates of 60 percent to 70 percent, said Thubendran Naidu, hydrology manager at Anglo's Emalahleni plant.

Cleaning mine wastewater to a higher quality allows the companies to continue producing coal, keep their water licenses and reduce the acidity that corrodes equipment.

'Something Good'

"The company would have to treat the mining wastewater before draining it into rivers or land anyway so this way they also did something good with it," said Adrian Viljoen, formerly an engineer at Keyplan, now called Aveng Ltd., which built the facility. "The only extra cost was the pipework to deliver the water to the municipality."

Anglo was "brave to try a technology that wasn't tried before" to reclaim its waste, said Anthony Turton, a University of the Free State in **South Africa** professor and trustee at the Water Stewardship Council of Southern Africa.

Much of Anglo and other miners' efforts has been driven by **government regulation** as mines are now required to secure water licenses, and part of the approval includes a water-treatment plan after the mine closes as well as proper handling of the concentrated brine, Turton said.

'Biggest Risk'

"This is probably the biggest risk for the project because they are creating a brine-disposal facility that will ultimately run out of space. That's the long-term challenge."

Anglo's treatment plant covers an area of about four football fields within the Highveld, a plateau of grasslands rich in gold, platinum and coal that encompasses Johannesburg. The surrounding dams, which house wastewater from Anglo's coal mines, cover a further five football pitches.

While Anglo has no immediate plans to build similar plants in its thermal coal business, it's considering water-treatment operations in its platinum and copper businesses, according to Richard Garner, Anglo's water manager. The company is the seventh-largest producer of copper and its platinum unit the biggest producer of the metal.

Glencore is building a water-treatment plant in the Middelburg coal-mining area east of Anglo's with BHP to improve the mine wastewater to an approved level so it can flow into waterways. The plant will be commissioned later this year with a capacity of 20 million liters of water a day, Glencore said. BHP said it's investing in the Middelburg water plant.

Glencore owns a water-treatment plant similar to Anglo's that began operations in 2010 east of Emalahleni with a 15 million liter a day capacity. About 20 percent of the drinking water to Hendrina residents is supplied daily by the facility.

Taste Test

Glencore's building another water-treatment plant as well at Tweefontein, northeast of Emalahleni. The facility will be commissioned next year with a capacity to treat 15 million liters of mine wastewater a day.

Brine-disposal concerns notwithstanding, one downside remains: how the purified water tastes.

"It's tasteless," Turton said. "What gives taste to the water is the minerals in it. This is purified of its minerals so I wouldn't put it in my whisky. But once it's blended into the drinking water supply, it's not noticeable."

"Mine Waste Transformed to Tap Water for 80,000 Consumers", 01/05/2014, online at: http://www.bloomberg.com/news/2014-05-01/mine-waste-transformed-to-tap-water-for-80-000-consumers.html?utm_source=Circle+of+Blue+WaterNews+%26+Alerts&utm_campaign=0d7b92c6be-RSS_EMAIL_CAMPAIGN&utm_medium=email&utm_term=0_c1265b6ed7-0d7b92c6be-250657169

BACK TO TOP

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❖ Will Hong Kong run out of water?

If Hong Kong and water had a relationship status on Facebook, it would be "It's complicated."

On the one hand, Hong Kong has been progressive and forward-thinking with water — it was the first city in the world to use seawater for toilet flushing and one of the earliest adopters of seawater desalination. On the other hand, water experts are now sounding the alarm that Hong Kong is at great risk of running very low on water in the future. Hong Kong's reliance on imported water leaves it vulnerable: 70% to 80% of the city's water comes from the Dongjiang river in the Guangdong province of China. And that early desalination plant? It was dismantled in 1992.

The Dongjiang is quite the popular kid on the block — five major cities surrounding it also rely on it for their water, and in 2010 those cities approached or exceeded their allotments. A Civic Exchange report on Hong Kong's water management system says this foreshadows "a future in which demand will exceed supply" and an increase in competition for water among the cities. HK is not an isolated instance. Water shortages are a rising source of conflict between cities in Brazil, Ethiopia, Jordan, India and the United States. Hong Kong is a harbinger of how other modern cities will find themselves struggling to meet water demands.

"Will Hong Kong run out of water?", 02/05/2014, online at:
http://www.usatoday.com/story/news/world/2014/05/02/ozy-hong-kong-water-problems/8604185/?utm_source=Circle+of+Blue+WaterNews+%26+Alerts&utm_campaign=0d7b92c6be-RSS_EMAIL_CAMPAIGN&utm_medium=email&utm_term=0_c1265b6ed7-0d7b92c6be-250657169

BACK TO TOP

❖ California governor issues second drought emergency proclamation

(Reuters) - California's drought is so severe that the state will roll back some environmental protections and loosen the rules on transferring water to farmers, Governor Jerry Brown said on Friday.

Issuing his second emergency proclamation on the drought in just three month, Brown said the state would redouble its efforts to conserve and distribute water fairly, and called on residents to avoid washing their cars, watering their lawns and even accepting glasses of water in restaurants if they are not thirsty.

"The dry season is upon us," Brown declared at a meeting on environmental sustainability in Los Angeles. "With this proclamation I'm calling upon all Californians, municipal water agencies, and anyone who uses water to do everything possible to conserve."

Brown, who served two terms as governor from 1975 to 1983, during the state's last severe drought, said an executive order issued on Friday would shorten the application process for farmers who need water for their crops, and cut red tape for cities that need to improve or expand their water systems.

It forbids homeowner associations from fining residents who let their lawns go dry.

At the meeting, sponsored by the Los Angeles Business Council and held at the Getty Center in Los Angeles, Brown warned of the impending summer wildfire season, when rain is extremely rare and blazes race through the state's dry, brushy canyons, threatening homes and causing millions of dollars' worth of damage.

He exempted the California Department of Forestry and Fire Protection and other emergency responders from competitive bidding rules when purchasing equipment needed to fight fires or reduce its risk.

Brown linked the drought to global climate change, saying that unless people reduce their dependence on fossil fuels, conditions will continue to worsen.

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"The only way out over the long term is to substitute the fossil fuel with solar, with wind," Brown said. "We are playing Russian roulette with our environment."

"California governor issues second drought emergency proclamation", 28/04/2014, online at: http://www.reuters.com/article/2014/04/28/us-usa-politics-california-idUSKBN0DE0RO20140428?utm_source=Circle+of+Blue+WaterNews+%26+Alerts&utm_campaign=f63000b3c0-RSS_EMAIL_CAMPAIGN&utm_medium=email&utm_term=0_c1265b6ed7-f63000b3c0-250657169

BACK TO TOP

❖ Shock Doctrine and Water Shortages in Texas

Back in 2007, Naomi Klein wrote *The Shock Doctrine: The Rise of Disaster Capitalism*. In her book – some odd reading, since the writing style for the latter half of the book seemed quite different from the first half – Klein argued that "the free market policies of Nobel Laureate Milton Friedman have risen to prominence in some countries because of a deliberate strategy of certain leaders to exploit crises by pushing through controversial, exploitative policies while citizens were too busy emotionally and physically reeling from disasters or upheavals to create an effective resistance."

While I disagree with Klein's politics, a broader interpretation of the shock doctrine thesis is correct; this is a salesmanship technique undoubtedly as old as civilization itself. There are many people all across the political spectrum who follow the shock doctrine manual: create (or exploit) a crisis and profit by the solution to the problem you created (or exploited). Want to see shock doctrine in action? Follow the climate activists.

Every disaster – big or small – is supposedly due to, or exacerbated by, or somehow representative of, or a possible indication of the future impacts of the great evil threatening us all...anthropogenic climate change. And, of course, the activists often offer the solutions: renewable energy, carbon capture and storage, geo-engineering strategies, etc. In a number of cases, those helping fuel the hysteria are the same ones who have private companies that would financially benefit from the solutions they are calling for.

Down in Texas, there has been a drought in recent years. Some climate scientists have blamed the drought on anthropogenic climate change, but the historical data in the region suggests quite the contrary. Some of the journalists reporting on the issue apparently have some problems with basic statistics.

There are water shortages in Texas, but I would argue that the state needs to be careful not to overreact to them and frame bad policy. The George W. Bush Institute in Dallas has come out with some policy recommendations – interestingly, in the Huffington Post, of all outlets – about how Texas can deal with its water woes.

The article – William McKenzie, the editorial director at the George W. Bush Institute – offers some potentially useful paths forward, and it wisely stays away from any climate change discussions. Some climate context needs to be added, however, in order to help Texas make a responsible water policy framework.

McKenzie begins his article with the following:

> Wichita Falls, Texas, is about to run out of drinking water.
>
> You read that right: out of drinking water.
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> The north Texas town may not be a metropolis, but it is a community of about 105,000 people, right along the Red River on the Oklahoma border. For the last three-and-a-half years, the city has been living with its driest conditions since 1897.

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Water is tight in Wichita Falls, no doubt about that, but this doesn't appear to be true: "For the last three-and-a-half years, the city has been living with its driest conditions since 1897."

Since records began in 1898, there is no significant trend in annual precipitation at Wichita Falls. Indeed, there is weak statistical evidence of a modest increase over this timeframe. At the height of the recent drought (2011), it wasn't even close to the driest year on record. In 1909, 1910, 1920, and 1923, the city received far less precipitation (only 2.6 inches in all of 1920) than in 2011 (13.0 inches), and 2012 and 2013 were only the 15th and 25th driest years on record.

The current 36-month (three-year) running total precipitation for Wichita Falls is only the 9th driest on record, not the lowest. And rather than getting drier on a three-year basis, the town is getting much wetter. The 36-month running total precipitation is increasing with high statistical confidence at a rate of over 13 inches per century. Same with the 48-month (four-year) running total precipitation. The current four-year period is only the 10th driest on record, and the trend is increasing (again, with high statistical confidence) at about 20 inches per century.

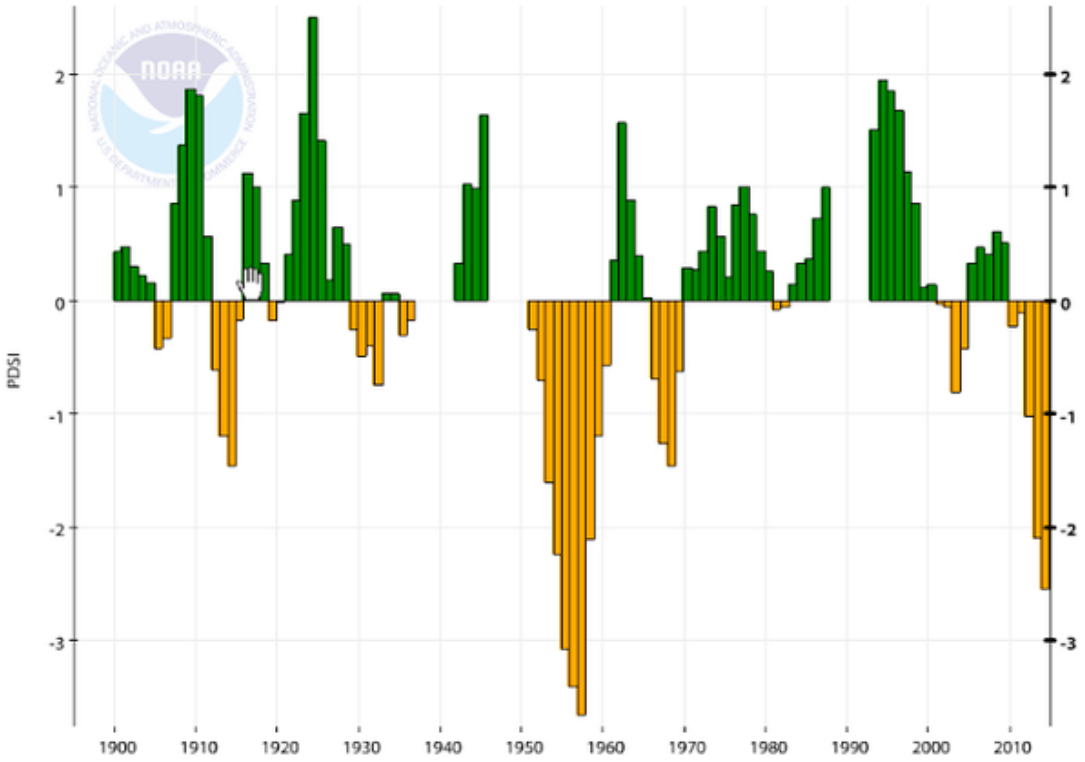
What has changed the most in Wichita Falls over the past 120 years? Not the climate. It is the population, which has grown from just under 2,000 people in 1890 to about 105,000 today. Do the mass balance on the water supply, and you find that per-capita availability of fresh water is declining even though precipitation is increasing.

Granted, the area around Wichita Falls is very dry. As a whole, this low rolling plains district of northern Texas has seen the lowest and 4th lowest precipitation totals since records began for the prior 36-month and 48-month periods, respectively. But the overall precipitation trend in this area since the late 1800s is not one of decline, and is instead probably even a modest increase. Just to the east of Wichita Falls in the north-central climate division, the precipitation trend is increasing rapidly over time. To the west in the northernmost section of the state, the trend is decreasing. Heterogeneity abounds, which is something state policymakers need to keep in mind.

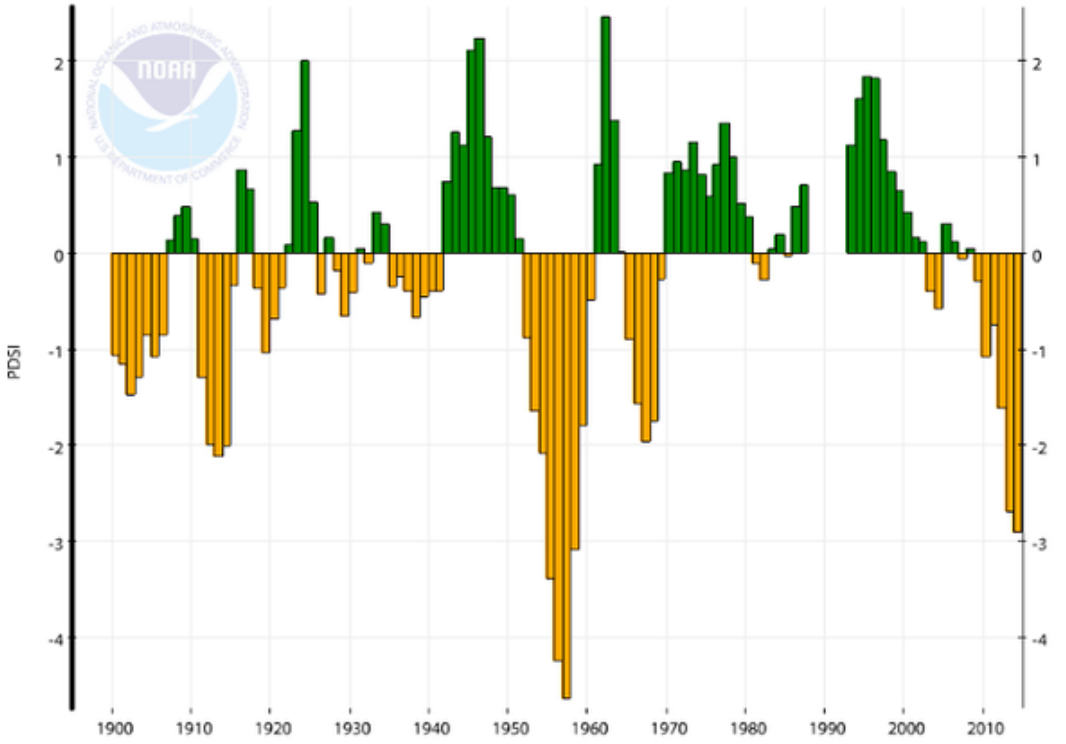
Drought indices tell a similar story. The area around Wichita Falls is in a severe drought, but whether or not it is the worst on record depends on the timeframe you look at. The current 12-month drought index is the 9th lowest since records began, and has eased substantially since the 2011 low point. On a calendar year basis, 2013 was only the 8th worst drought, and while 2011 was the worst on record, it was only slightly worse than 1956.

Shift it out to a two-year basis, and the 2011-2013 period in the low rolling plains climate division that Wichita Falls sits in was the worst drought on record. Over three years, it's also the worst. But then move to the four- and five-year running drought indices, and the periods from 2009/2010-2014 are much less severe than the drought this portion of Texas experienced during the 1950s, as the graph below shows (negative values [yellow] indicate increasingly severe droughts, whereas positive values [green] show increasingly wet/non-drought years). The statewide values are also shown, and they illustrate that the five-year drought conditions in Texas during the 1950s were far worse than anything seen during the past few years.

Texas, Climate Division 2, PDSI, 60-Month Period Ending in March



Texas, PDSI, 60-Month Period Ending in March



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The point of all this data is that we need to be cautious with precipitation and drought statistics in Texas. Anecdotal writing is more popular in the media today than ever. Sometimes this writing style can be useful, but very often it distorts reality by over-generalizing from an isolated case, in shock doctrine style.

Wichita Falls is simply not representative of all of Texas. If you take a tour around the state and look at three-year running precipitation totals within a historical perspective, you find that Abilene saw much worse conditions in the 1950s, 1970s, 1980s, and 2000s; Amarillo and Lubbock are at their lowest points since records began in the 1950s; Austin isn't currently much below the historical average; Brownsville is at its historical average after well above average levels of precipitation for a number of years and a record-high for the 2008-2011 period; Corpus Christi and Dallas are only modestly below average and nowhere near record lows; Del Rio is below average but not remotely close to the record dryness during the 1960s; El Paso is near record lows but still ranks only 5thworst since 1895; Houston is dry but not near record lows; Midland is near record lows; and yet San Antonio is actually above average and has been that way for several years. Once again, heterogeneity abounds.

Statewide, 2013 was an average year for precipitation, yielding 26 inches compared to the 1895-2013 average of 27 inches. Since 1895, there has been no significant trend in Texas's annual precipitation. The correlation is positive but not statistically significant.

The worst drought conditions in the state from a couple years ago are easing. Although east Texas is almost out of drought, everywhere else is still in a significant drought – but if trends continue, the pressure may lift over the next couple years. Now simply isn't the time to create comprehensive and far-reaching water policy in shock doctrine style. Following the advice of Rahm Emanuel to "never let a good crisis go to waste" will not lead Texas in the direction it needs to go, particularly when I see statements by the George W. Bush Institute such as "the trick is finding the right balance between planning and property rights."

Discussions over property rights are never best conducted when a crisis is at hand. Wait until the drought crisis settles down – which it undoubtedly will – and then begin examining proposals over this very contentious topic (especially in Texas, where property rights issues are taken more seriously than almost anywhere else).

Texas does have some tough questions ahead on water policy. Climate change isn't the real issue; population growth is. Between 2002 and 2012, Texas's population grew by over 20 percent, only slightly less than the 22-percent rate during the prior decade. In the half-century from 1913 to 1963, Texas added just under six million residents. During the 50 years since, the population has grown by 16 million. Great for the economy, but it is simple math to determine that the amount of water available per person is on the way down, and fast. Throw in new uses of water, such as fracking (which, as the Bush Institute notes, does compete with domestic and agricultural uses for water access), and the stresses are magnified more than just the population increases would suggest.

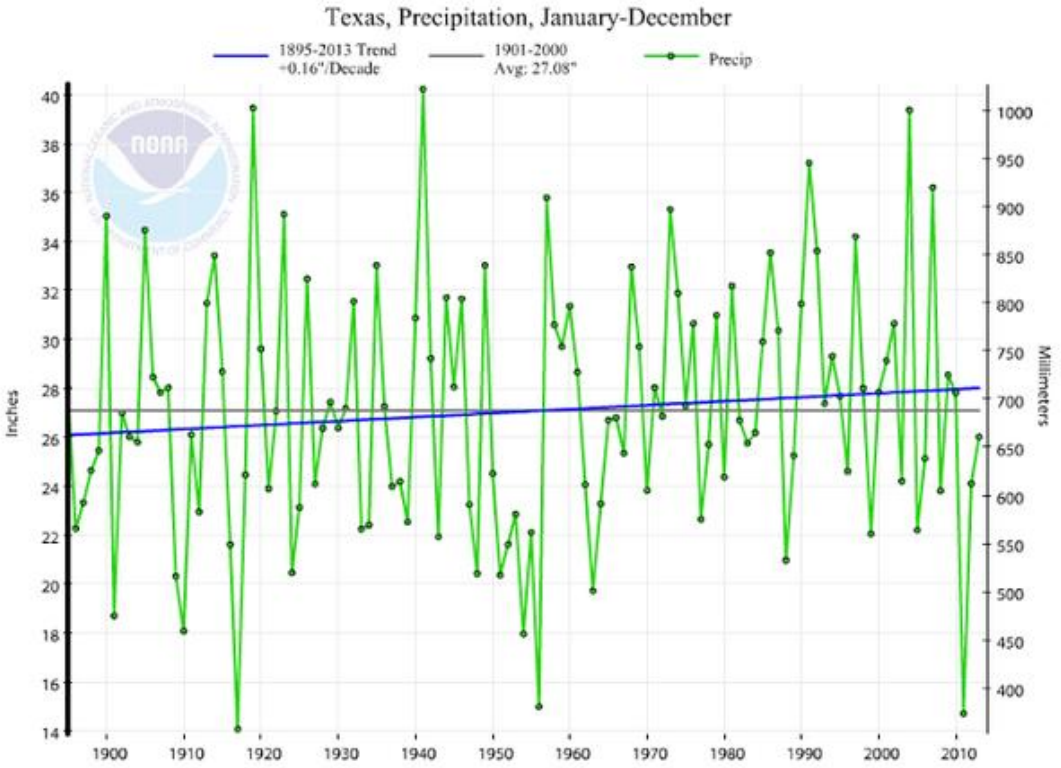
This leads us back to the title of McKenzie's article: "America 2025: How to Start Securing Enough Water." Wouldn't it be great to know how much water Texas would need in more than a decade? Of course, but this requires us to predict population growth, the water intensity of emerging technologies (nobody was seriously predicting the fracking revolution 11 years ago), and all those "unknown

unknowns" Donald Rumsfeld would be warning us about. Knowing how much water you need to secure also requires knowing how much precipitation you will have over this timeframe. Good luck with that prediction.

Apparently "Texas' planning process is now under fire from some who think it undermines private property rights." As it should be. Some of these water planning processes reek of central planning escapades at the state and local levels, and are attractive for wannabe-authoritarian-type bureaucrats. Just look what happened to the EPA and many other government agencies – they started out with reasonably good intentions and have ended up caring more about accruing power and tax revenues than their formal mandates should require.

I watched these types of "water planning" processes and organizations sprout up in southern British Columbia during the mid- to late 1990s through the mid-2000s. What a disaster. The best people weren't brought into the fold, appointments were primarily political rather than merit-based, wild spending was advocated (such as spending upwards of almost $400 million in up-front capital costs alone for water treatment plants in a city of only 100,000), and environmental science was distorted and exaggerated in an attempt to promote entrenched bureaucratic and political interests.

Using less water per capita in some areas of Texas is a laudable goal. In other areas, the concerns may be trivial and can be ignored. But the planning processes should not be crafted during times of crisis, nor should a Frankensteinian water bureaucracy be constructed. As the graph below shows, by 2013, the precipitation in Texas was already effectively back up to the 20th-century average after reaching the second-lowest point in the database during 2011. The same decline-and-rapid-increase pattern is clear repeatedly throughout the historical record.



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The lessons of history for water in Texas are straightforward. Don't panic and make rash decisions, and heed Reagan's wise counsel that also applies to water policy efforts: "A government bureau is the nearest thing to eternal life we'll ever see on this earth." There is often a lag time between when precipitation begins to rebound back up to historical norms and the refill rates of various reservoirs that were drawn down during the worst of the drought. Take the time to wait for this process, which is undeniably underway, before acting. Making water policy during a drought is equivalent to building public infrastructure during an overheated economy, when construction costs are maximized – common sense is absent, and good value for money is not obtained.

Patience needed in the Lone Star State on water policy. Avoid the shock doctirine.

"Shock Doctrine and Water Shortages in Texas", 04/05/2014, online at:
http://www.americanthinker.com/2014/05/shock_doctrine_and_water_shortages_in_texas.html

BACK TO TOP