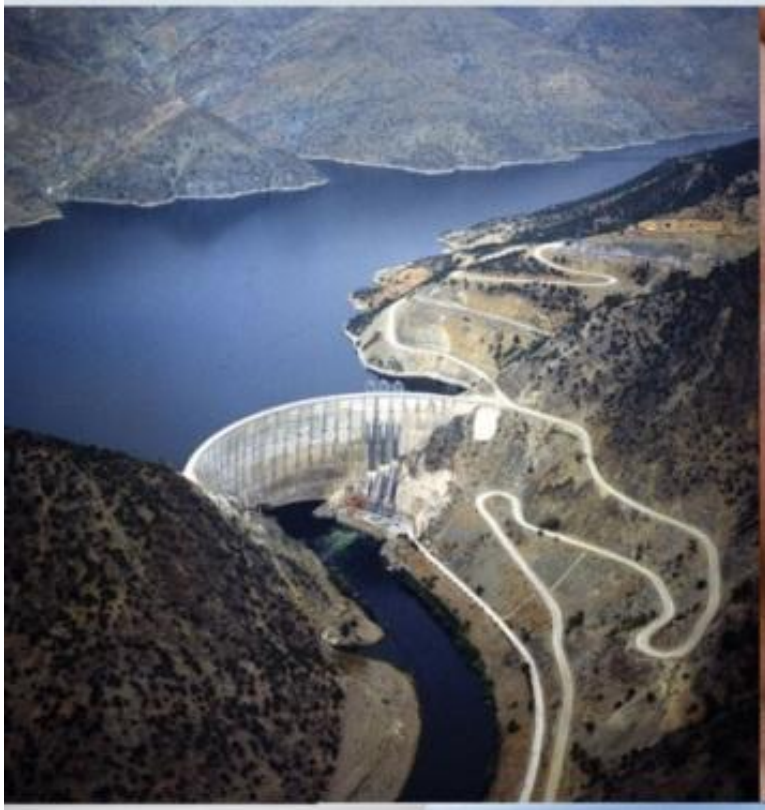


ORSAM WATER BULLETIN

Weekly Bulletin by ORSAM Water Research Programme

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





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31 December 2012 – 06 January 2013

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❖ Özden Bilen, a pioneer of hydropolitics in Turkey, has opened a personal website

Özden Bilen, a pioneer of hydropolitics in Turkey, has opened a personal website. We are glad to announce this news as ORSAM Water Research Programme.

Özden Bilen is familiar with the spheres of water policymaking and academia. He was assigned to the Director General of Sate Hydraulic Works (DSİ) in 1993 after holding several offices in the same organization and retired in 1995.

Website of Özden Bilen includes selected bibliographic list of books, articles, reports related to hydropolitics, water resources development & management which are a part of his private library. Most of his personal publications and presentations could be reached online and downloaded free of charge. Water Resources Archive was classified according to the different subject areas. The purpose of the website is to provide a quick reference for scholars and water-resource planners, particularly on the subject of "transboundary waters".

You can visit Mr. Özden Bilen's personal website through this link:

http://www.ozdenbilen.com

"Özden Bilen, a pioneer of hydropolitics in Turkey, has opened a personal website", ORSAM, 04/01/2013, online at: http://www.orsam.org.tr/en/WaterResources/showAnalysisAgenda.aspx?ID=2044

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❖ China, Turkey Ready for Joint Venture in Iran

TEHRAN (FNA)- China and Turkey have announced their preparedness to jointly invest in an irrigation project in Marand city, Northwestern Iran, an Iranian MP said on Saturday.

"Fortunately, the permission for financing the project has been issued and China and Turkey will invest 25,000bln rials ($1bln) for transferring the water of Aras (river)," member of the parliament's Economy Commission Mohammad Hassannejad told FNA on Saturday.

He said that implementation of the water transfer and channeling project will create 30,000 jobs for the people of Marand and Jolfa cities and will lead to an economic evolution in the region.

China, like Turkey, has consistently opposed the US pressures on Iran and the West's economic sanctions imposed on the Iranian financial sector and petroleum products.

Both countries have refused to comply with US requests to decrease oil imports from Iran and instead have increased their trade with the country

Trade between Iran and China in the past year was estimated at $45 billion.

Also media reports said today that Turkey's oil imports from Iran stood at 100,000 barrels per day in December which showed no change compared with the previous month, November.

"China, Turkey Ready for Joint Venture in Iran", 05/01/2013, online at:
http://english.farsnews.com/newstext.php?nn=9107133185

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❖ Baghdad Mayoralty completes draining of rainwater

Baghdad, Jan 2 (AIN) –The Acting Mayor of Baghdad, Abdul Hussein al-Murshdi, announced completing the draining process of rainwater in all Baghdad's area due to the heavy rainfall that took place in Baghdad a week ago and was estimated the biggest amount of rain falling in Baghdad since 30 years.

Baghdad Mayorship reported in statement received by AIN on Wednesday "Murshdi, and the technical secretary accompanied by director general of media and relation within Baghdad Mayorship, conducted a field tour lasted for hours in which they acquainted with the areas which has been drained of rainwater and the areas that still need more efforts to drain the gathered rainwater in its streets."

"Baghdad Mayoralty completes draining of rainwater", alliraqnews, 02/01/2013, online at: http://www.alliraqnews.com/en/index.php?option=com_content&view=category&layout=blog&id=39&Itemid=48

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❖ Baghdad Governor: 100 billion Iraqi Dinar earmarked to compensate for rain damages

Baghdad Governor, Saleh Abdul Razaq, announced on Sunday December 30, that 100 billion Iraqi Dinars have been earmarked to compensate for people damaged from the heavy rain in the province last week. Committees assigned to assess the damage and indemnify victims have been formed. He also confirmed that indemnities will be paid within the first week of the New Year.

"Authorities in Baghdad province proceeded a week ago to the formation of committees to assess the damage caused by the rain and work on recompensing the damaged by filling forms printed by the province", stated Saleh Abdul Razaq in a press conference held in the Province Hall and attended by Alsumaria. "The province has allotted 100 billion Dinars to this purpose", he clarified.

"The province will definitively recompense the damaged within the first week of the new year due to the difficulty of accurately determining and assessing losses", added Abdul Razaq, stressing that "the province has prepared a hall to shelter the displaced".

Deputy Prime Minister Hussein Al Shahristani considered on Saturday December 29, that heavy rain in Baghdad was "unpredictable" and it was way beyond the sewage network's capacity to contain water. He noted that pumping water and draining streets requires a long time. Baghdad Secretary highlighted the Secretariat's ongoing efforts to finish the water pumping process.

The Ministry of Construction and Housing decided on December 28, to reconstruct the damaged housing units due to the heavy rain in Iraq a few days ago.

"Baghdad Governor: 100 billion Iraqi Dinar earmarked to compensate for rain damages", Alsumaria TV, 02/01/2013, online at: http://www.alsumaria.tv/news/69128/baghdad-governor-100-billion-iraqi-dinar-earmarked/en

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❖ The War Before the Last War

A tiny southern peninsula still bears the wounds of Iran vs. Iraq.

I decided to start in the south, checking the conditions at the river border between Al Faw, Iraq, and the Arab province of Khuzestan, Iran. Al Faw is a tiny teardrop of land between Iran and Kuwait, and its northern border with Iran is the last few miles of the Shatt al-Arab waterway, which demarcates the southernmost border of Iraq and Iran, stretching between Basra and the Persian Gulf. The river is narrow enough that my mobile phone chimed periodically to let me know that I would be charged roaming rates on MCI, the largest Iranian cell-phone network, if I made calls.

Without Al Faw and the nearby port of Umm Qasr, on Iraq's border with Kuwait, Iraq would have no outlet or claim to the sea. So the Shatt al-Arab became the scene of intense fighting in the Iran-Iraq War, with Iran seizing it in 1986 and holding it for another two years. During that time the whole peninsula was militarized and its population sent packing for other Iraqi cities. Some Fawis eventually returned, and other Iraqis were induced to move there to repopulate the place. An Iraqi in the nearby city of Basra told me that the whole peninsula had been battered with artillery during that back-and-forth, so that "not a single square meter was untouched by fire."

On the summer days when I visited, the heat felt like napalm burning the air. The peninsula was quiet, with most everyone inside sleeping through the noonday sun. The only ones outside were the real natives, the fishermen docked across the river from Iran -- them, and the *bushlambo*, a species of Persian Gulf mudskipper that is abundant in Al Faw and flapped merrily around the boats' wooden hulls. The bushlambo presumably had no idea how terribly hot their home was, though the humans had spent enough time in exile that I would have expected them to know better.
"Al Faw was a paradise on Earth," said Musa Yaqub Abdullah al-Rashid, 58, about his home before the war. He had returned two years after the occupation. "There was fishing. There were date farms." Now, he said, the place remained wrecked, not just by the war, which reduced every structure to rubble, but also by the ongoing machinations of the Iranians, whose flag was visible across the water. On the road into Al Faw from Basra, one could see government projects to provide fresh water. Fawis said that the water that once fed the date farms had turned brackish due to Iranians' diverting

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rivers from the area and thereby making the farmland unusable, as if to salt the fields of the conquered, even decades after the conquest.

Jawhar Talib Jawhar, 51, the captain of a boat called the *Ishtar*, said that the waters around Al Faw had once been prime fishing grounds and that in his youth he could slip across the national border to poach fish or even visit the Arab Iranians on the other side. After the war, the border had become fixed and inviolable. That Iranian flag in the distance marked a patrol that would instantly come to intercept him if he chased fish too close to the Iranian side. "They detain us, and they treat us badly," he said, adding that the Kuwaitis were much worse, though their waters were correspondingly richer in fish and therefore worth violating now and then.

In a way, though, the old men of Al Faw had been spared the worst of the war. Their land had received the scorched-earth treatment, and on their return it was essentially a new place, with every vestige of the old removed, and indeed every vestige of the Iranian occupation removed as well. The land is now a palimpsest whose best version has been rubbed out and scribbled over in multiple drafts, leaving little even to remind of the fight that did the initial rubbing and scribbling.

"The War Before the Last War", January/February 2013, online at:
http://www.foreignpolicy.com/articles/2013/01/02/the_war_before_the_last_war

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❖ Iraqi town caught in middle of territory row

AFP - Butcher Sherzad Saleh stands outside his shop in Tuz Khurmatu holding a dead chicken. He has more pressing concerns than a high-level dispute over territory.

"The army comes here, this is my job; the peshmerga come here, this is my job," says Saleh.

He means forces from the federal government and from the autonomous Kurdistan region deployed in disputed areas of north Iraq, including near Tuz Khurmatu, during recent periods of high tension between the two sides.

"I am not with the army or the peshmerga," he says. "We want services, electricity, projects."

But top federal and Kurdish politicians have other priorities.

Whatever people like Saleh may wish for, Tuz Khurmatu, a town of low-rise buildings, palm trees and around 110,000 residents, is in a swathe of territory Kurdistan wants to incorporate into its autonomous region over Baghdad's strong objections.

Diplomats and officials believe this dispute over territory is the greatest threat to Iraq's long-term stability.

The establishment in September of the federal Tigris Operations Command, which covers disputed northern territory, drew an angry response from Kurdish leaders and increased tensions with the federal government.

Then on November 16, a firefight broke out during an attempt by Iraqi forces to arrest a Kurdish man in the town.

One person was killed and others were wounded, further worsening relations between Baghdad and Kurdistan as both sides deployed reinforcements.

The crisis, which Iraq's parliament speaker warned could lead to civil war, has since eased, but the dispute over territory remains unresolved.

For the people of Tuz Khurmatu, simmering tensions between Baghdad and Kurdistan cause fear and are also bad for business.

The "army came, and the peshmerga came; the people are afraid" and business suffered, Saleh says.

"We do not want a war to happen. There is killing in war, it would affect our circumstances... our work would stop," says grocer Hisham Fateh Hamid.

-- Mixed identities --

Tuz Khurmatu is a town of mixed identities, a fact emphasised by its flags -- massive Kurdish flags are emblazoned on hills to its east, Iraqi federal flags fly over official buildings and police checkpoints, and countless banners marking the death of a revered Shiite imam flutter from houses.

Many residents are Turkmen Shiites, hence the banners venerating Imam Ali, but Tuz Khurmatu also has Kurdish and Arab populations.

Despite their mixed ethnicities, the people say the dispute between the Kurdish region and the Arab-dominated government in Baghdad has not caused problems between residents.

"There's no difference between Turkmen or Arabs or Kurds," says Saleh, a Kurd.

Shakir Ahmed, an Arab owner of a grocery shop, agrees, saying that "no tension has occurred between citizens."

But Tuz Khurmatu is caught in the middle anyway: Kurdish peshmerga forces are deployed on the hills east of the town, and Iraqi soldiers man checkpoints and reinforced positions to the south.

Then there is a multiplicity of security forces inside Tuz Khurmatu -- local police, Iraqi federal police, Iraqi soldiers and Kurdish forces.

Territorial tensions are not the only issue in Tuz Khurmatu. There are also seemingly sectarian attacks, part of a broader problem across Iraq, in which Shiites are frequently targeted in bombings by Sunni militants.

On December 17, two car bombs exploded in a Turkmen area of the town, killing five people and wounding 26.

Hamdi Ibrahim Samin's wife was wounded in the head by one of the blasts which also smashed his house.

An entire wall that used to hold a door has also been blown away, and a few meagre belongings including a fan and two worn benches are piled amid the rubble.

"Nothing remains," Samin says, as water from a broken pipe flows down a narrow street past other wrecked buildings near his home.

What Tuz Khurmatu ultimately needs, according to Shalal Baban, the administrative official responsible for the district, is development, not more military men and materiel.

"We currently need projects, construction," he says, noting the lack of even basic services such as clean drinking water.

"We don't need tanks, troop transports, armoured vehicles or planes," Baban says. "We need projects."

"Iraqi town caught in middle of territory row", 02/01/2013, online at: http://www.france24.com/en/20130102-iraqi-town-caught-middle-territory-row

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❖ Dissident Iranians' camp near Baghdad still flooded with rain water

NCRI - According to the spokesman of the People's Mojahedin Organization of Iran (PMOI/MEK), Iranian dissidents' camp near Baghdad continues to be flooded since the rainfall of four days ago which was the worse precipitation in the last 30 years, Arabic language service of Agence France Presse reported on Monday.

Shahriar Kia, the organization's spokesman, announced in a statement that: "Although four days passes since the rainfall, still in many parts of Camp Liberty, especially the southern and southwestern sections, the land is full of water and sludge."

Shahriar Kia added: "Water level is still knee high while the sewage is overflown and mixed with rain water which has polluted the environment, propagating diseases."

Excessive rainfall in Baghdad caused death of 4 people and the capital's residents faced transportation difficulties on Wednesday when the government was officially shut down due to floods in the streets.

Shahria Kia added: "Despite obstacles created by the Iraqi government, Liberty residents were able to empty 9 million liters of water using their limited tankers and rudimentary equipment."

"Dissident Iranians' camp near Baghdad still flooded with rain water", 01/01/2013, online at: http://www.ncr-iran.org/en/news/ashraf/12600-dissident-iranians-camp-near-baghdad-still-flooded-with-rain-water

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❖ IDE Technologies to help build largest U.S. desalination plant

(Reuters) - Israel's IDE Technologies will help construct and run a nearly $1 billion desalination plant along the coast of southern California to help alleviate the region's water shortage.

The facility, expected to begin operations in 2016, will produce 54 million gallons (204,412 cubic meters) of potable water each day, making it the largest sea water desalination plant in the United States, IDE said in a statement on Thursday.

IDE said it signed a contract with Kiewit Shea Desalination to design and supply equipment for the plant to be built near a power station in the city of Carlsbad.

The company also reached a 30-year operation and maintenance agreement with Poseidon Resources, which last week said it had secured $922 million funding for the project.

Poseidon Resources, a subsidiary of Poseidon Water, said the treated water will be delivered into San Diego County's water system.

The plant will use IDE's reverse osmosis technology, which requires less energy and is friendlier to the environment than thermal-based systems. It is part of a plan to have 7 percent of the region's water supply come from desalinated sea water by 2020, the statement said.

IDE is also helping to construct the largest reverse osmosis plant in the world in Israel. The company is jointly owned by Israeli conglomerate Delek Group and Israel Chemicals.

"IDE Technologies to help build largest U.S. desalination plant", 03/01/2013, online at:
http://www.reuters.com/article/2013/01/03/us-ide-technologies-desalination-idUSBRE90208L20130103

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❖ City: No Free Water Deal for Old City Church

Pay your bills as the Kotel and Knesset do, a spokesperson for the Jerusalem Municipality told officials at a major Jerusalem church.

Reports that the government and the Jerusalem municipality were planning to pick up the tab for eight years of water bills unpaid by the Church of the Holy Sepulchre in the Old City were premature, said a member of the City Council.

Jewish Home (Bayit Yehudi) representative David Hadari, who is a member of the Council as well as a Deputy Mayor in the city, said that the Council's finance committee had rejected the deal that would have written off NIS 9 million ($2.3 million) in debt for the Church, on condition that the various factions that claim to control the foundation that runs the Church worked out their grievances when it came to paying the water bill starting in 2013.

A deal was signed between the city and the Church several weeks ago, after intense negotiations between the the municipality, the Gihon Jerusalem water company and the three Catholic bodies that claim to control the Church. The negotiations began after the company threatened to cut off the Church's water supply because it was in such arrears. Under the arrangement, the three bodies that share control of the site - Greek Orthodox, Armenian Apostolic, and Roman Catholic Franciscan Order Churches – will begin paying the Church's bill for part of 2012, and begin paying on time in 2013.

The Church and the water company further discussed the possibility of setting up a fund that would pay for water for poor families belonging to the Church, with contributions from both sides.

A spokesperson for the finance committee dismissed the idea of a bailout for the Church just because it is considered a holy place by Catholics. The spokesperson said that all other important institutions in the city – including the Kotel, Yad Vashem, and Knesset – all paid their bills on time, and with no special arrangements. It would thus be unfair, the spokesperson said, to give preference to the Church, and the city was prepared to deal with international fallout from the case, if such should develop.

Gihon did not indicate when, or if, it would stop supplying water to the Church.

"City: No Free Water Deal for Old City Church", 31/12/2012, online at:
http://www.israelnationalnews.com/News/News.aspx/163707#.UOcxNeS6fIQ

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❖ Ancient Traces of Terrace Farming Found Near Petra

The ancient city of Petra, which was carved into the desert cliffs of modern-day Jordan, might look inhospitably bone-dry today, but new archaeological evidence shows that its first-century inhabitants took advantage of what little water reached the region to farm wheat, grapes and possibly olives just outside the city.

Researchers say extensive terrace farming and dam construction in an agricultural suburb north of Petra began about 2,000 years ago — sometime before the Romans took control of the city from the Nabataeans in A.D. 106. The Nabataeans were a people who wrote using an Aramaic language and controlled caravan trade throughout the region. (A small number of theDead Sea Scrolls were apparently written in Aramaic.)

"No doubt the explosion of agricultural activity in the first century and the increased wealth that resulted from the wine and oil production made Petra an exceptionally attractive prize for Rome," researcher Christian Cloke, a doctoral student at the University of Cincinnati, said in a statement. "The region around Petra not only grew enough food to meet its own needs, but also would have been able to provide olives, olive oil, grapes and wine for trade. This robust agricultural production would have made the region a valuable asset for supplying Roman forces on the empire's eastern frontier."

The researchers involved in the Brown University Petra Archaeological Project (BUPAP) say they found evidence of quite impressive systems to dam riverbeds and redirect rainwater from the region's brief and torrential winter downpours to the hillside farming terraces north of the city. Meanwhile, Petra's inhabitants took advantage of the broad watershed of sandstone hills that naturally guided water to the city center by building a complex system of pipes and channels to direct water to underground cisterns for storage.

"Perhaps most significantly, it's clear that they had considerable knowledge of their surrounding topography and climate," Cloke said. "The Nabataeans differentiated watersheds and the zones of use for water: water collected and stored in the city itself was not cannibalized for agricultural uses. The city's administrators clearly distinguished water serving the city's needs from water to be redirected and accumulated for nurturing crops."

These initial conclusions from the first three seasons of BUPAP fieldwork promise more exciting discoveries about how the inhabitants of Petra cultivated the outlying landscape and supported the city's population, the researchers noted. The presence of highly developed systems of landscape modification and water management at Petra also offer insight into geopolitical changes and Roman imperialism.

"Ancient Traces of Terrace Farming Found Near Petra", 03/01/2013, online at: http://www.livescience.com/25945-ancient-terrace-farming-petra.html?utm_source=Circle+of+Blue+WaterNews+%26+Alerts&utm_campaign=a471749c11-RSS_EMAIL_CAMPAIGN&utm_medium=email

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❖ Pakistan pushes ahead on climate policy but action still lags

ISLAMABAD (AlertNet) - Pakistan faces a range of threatening climate change impacts: changing monsoon patterns, melting glaciers, seasonal flooding, rising sea levels, desertification and increasing water scarcity.

How bad are things? For the past two years, Pakistan has topped the list of the Global Climate Risk Index produced by Germanwatch, a non-governmental organisation that works on global equity issues. In 2010, Pakistan was listed as the number one country in the world affected by climate related disasters; in 2011 it was ranked as number three.

But concrete action to address climate threats has been relatively slow, critics say, and a convoluted process of devolution of power to Pakistan's provinces and then the reorganisation of federal ministries hasn't helped speed up the process – though a new federal Ministry of Climate Change may help change that.

"The time for talking is long past," said Shafqat Kakakhel, a former U.N. Environment Programme official and a member of Pakistan's original task force on climate change set up by the government in 2008. "What we need to see are projects on the ground. Pakistan is lagging far behind other countries in the South Asian region that are already addressing climate change through concrete actions."

POWER TO THE PROVINCES

Pakistan's federal Ministry of Environment, already struggling to address growing climate-related disasters, ran into problems in June 2011, when an amendment to the country's constitution suddenly devolved increased power to provincial governments, despite fears that provincial-level officials might lack the capacity and competency to deal with pressing environmental issues.

The change raised some big questions, including what would happen to the various international environmental agreements to which Pakistan is a signatory, including the U.N. Framework Convention on Climate Change and similar conventions on biological diversity, desertification and wetlands. Who would own the agreements once the Ministry of Environment was no more?

Eventually, the country's newly developed National Climate Change Policy and its international agreements were handed over to the Ministry of Planning.

Critics like Malik Amin Aslam, the former Minister of State for the Environment, complained that months of uncertainty surrounding the changes meant that "Pakistan has gone into reverse mode on these (environmental) fronts, and at the worst possible time."

Climate change effects, he warned, could cost Pakistan's economy up to $14 billion a year, and needed to be urgently deal with.

"The country cannot run away from the effects of a changing climate," he said, noting that "in the past 40 years, nine out of the top ten natural disasters in Pakistan have been climate-triggered which shows the magnitude of the challenge".

NEW NATIONAL MINISTRIES

Perhaps in response to all the criticism, in October 2011, Prime Minister Yusuf Raza Gilani created four new federal ministries to absorb leftover departments at the federal level after devolution. One was the new Ministry of National Disaster Management.

Chosen to head the ministry was Javed Malik, the former environment secretary. With the support of the U.N. Development Programme, he had initiated Pakistan's National Climate Change Policy, a new umbrella policy for managing a wide range of issues including disasters, human health, water, agriculture and biodiversity.

Two years before record floods hit Pakistan in 2010, the federal government had formed a Presidential Task Force on Climate Change. It warned, prior to the floods, that heavy rains, flash floods, disease outbreaks and rising temperatures were all an inevitable future reality forced upon Pakistan by climate change.

The task force's recommendations led to the creation of the National Climate Change Policy, authored by Qamar-uz-Zaman Chaudhry, a climate adviser to the government and currently vice president of the World Meteorological Organisation.

But the process of putting the policy into place was hugely slowed as a result of the political devolution process, Chaudhry said. It was eventually ratified by the federal cabinet in September 2012.

Other changes were also in process. In April 2012, Pakistan's government elevated the issue of climate change to a cabinet level portfolio by renaming the Ministry of National Disaster Management the Ministry of Climate Change, and tasking it with overseeing research and implement projects to mitigate the effects of climate change and reduce the risks to the country.

Qamar-uz-Zaman praised the move as "a good decision," which gave the ministry a "more appealing" name.

TURNING POLICY INTO PRACTICE?

Now the new Ministry of Climate Change will have to try to turn policy into practice. An action plan is being constructed that will include short-term actions (for the next 2 years), medium-term actions (in 10 years) and long-term actions (in 20 years). Key priorities will include assessing and creating an inventory of water resources, and focusing on disaster risk reduction and adaptation to climate change in the water sector, in agriculture, and in mountain areas, Qamar-uz-Zaman said.

He said there will also be mitigation measures, including "how to reduce emissions from energy production and deforestation."

The changes seem to have re-centralised Pakistan's efforts to deal with climate change, despite the devolution of political power. That's something Qamar-uz-Zaman says just makes sense.

"Climate change is a global issue – not even a regional issue – therefore it has to be tackled at a national level, as a federal subject," he said. But "the (National Climate Change Policy) was formed after extensive consultations with the provinces. Ultimately, it has to be implemented by the provinces – the federal government will only be coordinating on climate change with provinces and the international donors".

One of the goals of the National Climate Change Policy is to enhance awareness, skills and institutional capacity, particularly at the provincial level, on issues such as water and disaster management, and disaster risk reduction.

The provinces are being asked to come up with long-term policy measures to address increases in the intensity of extreme weather events, as well as more erratic monsoon rains. They also have to come up with plans for water conservation and to deal with water losses for irrigation.

The Ministry of Climate Change also plans to help the provincial entities in getting funding and assistance from international donors.

Kakakhel, a member of Pakistan's original task force on climate change, said the need for action is urgent.

India and Bangladesh, for instance, have made more progress addressing climate problems, and Pakistan as of yet does not have a U.N.-approved NAMA (a plan of Nationally Appropriate Mitigation Actions) or NAPA (a National Adaptation Programme of Action), he said.

Pakistan's National Climate Change Policy "is very comprehensive but it is like a long wish list and I still don't see who will implement it," Kakakhel said.

"What we really need is to transform the Ministry of Climate Change into a modern Climate Change Unit which should ideally be placed in the Planning Division with qualified experts and specialists who can deliver projects that can tackle the enormous problems Pakistan is facing with climate change," he said.

"Pakistan pushes ahead on climate policy but action still lags", 04/01/2013, online at: http://www.trust.org/alertnet/news/pakistan-pushes-ahead-on-climate-policy-but-action-still-lags/

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❖ Bangladesh Approves Water Supply Project for 45 Towns, Star Says

Bangladesh authorities have approved a water project designed to supply villagers from 45 communities with hundreds of wells and a safer source of clean drinking water.

The ECNEC executive committee's approval "in the presence of" Bangladesh's prime minister of the $33 million project means the Public Health Engineering Department will set up more than 400 experimental and production tube-wells and pump houses as well as construct 27 water-treatment plants and 755 kilometers (469 miles) of pipeline, 14,000 house pipeline connections and 155 toilets, the Daily Star of Dhaka reported.

The project work is due to start in July and conclude by 2015, it said.

"Bangladesh Approves Water Supply Project for 45 Towns, Star Says", 04/12/2012, online at: http://www.bloomberg.com/news/2013-01-04/bangladesh-approves-water-supply-project-for-45-towns-star-says.html

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❖ Between drought and floods - a year of extremes in Sri Lanka

UDAWALAWE, Sri Lanka, Dic 30 (IPS) - Wild elephants are usually the primary attraction in the remote shrub jungles of Udawalawe, about 180 kilometres southeast of Sri Lanka's capital Colombo. But this Christmas season, the massive Udawalawe dam stole the limelight from the lumbering beasts.

By the end of December, heavy rains had brought water levels in the Udawalawe reservoir close to spilling point, forcing irrigation engineers to open the sluice gates.

Despite these efforts, the massive tank continued to spill over, creating a gigantic flood downstream.

People drove in cars, vans, motorcycles, lorries and even bullock carts to witness the spectacle, which was but a minor footnote compared to the impact of the rains elsewhere in this South Asian island nation.

Between Dec. 17 and 26, cyclone-level rains left 34 dead, nine unaccounted for and 328,000 stranded. Over 8,000 homes were damaged and roughly 4,000 were completely destroyed.

"No one expected this much rain," Lal Kumara, deputy director at the government's Disaster Management Centre (DMC), the main public body tasked with early warnings and post-disaster relief efforts in Sri Lanka, told IPS.

But someone should have expected the rains, based on the extreme weather events that ripped through the country in 2012, forcing Sri Lankans to come face to face with the disastrous impact of changing climate patterns. The end-of-year torrential rains were not the first time the country experienced unexpected floods, nor will it be the last, experts say.

In the first week of November, sudden rains brought on by Cyclone Nisha left over 200,000 people stranded, 15,000 displaced and nine dead. Over 5,000 homes were also destroyed.

Just prior to the November rains, much of the country had been hit by a **10-month-long drought**. Close to a million people were affected, according to the International Federation of Red Cross Societies (IFRC), which recently launched a million-dollar international appeal to assist over 125,000 **drought-affected**people in Sri Lanka.

The drought destroyed 23 percent of the secondary **rice harvest**, the Ministry of Agriculture said, putting thousands of farmers at risk of starvation.

"More and more people are being forced to think about climate change and evaluate the impact," Bob McKerrow, head of the IFRC delegation in Sri Lanka, told IPS.

The Northwestern Puttalam District provides a salient example of the extent of weather fluctuations within a matter of months.

During the December floods, parts of the district were submerged under eight feet of water, forcing 36,000 displaced persons to take shelter in over 60 government camps.

Yet just three months prior to the floods, people in the district were walking miles to dig holes in dried-out tank beds and wait overnight to collect the water.

"Water, the lack of it and too much of it, will be the biggest climate induced (factor) determining the way Sri Lankans live in the future," W L Sumathipala, former head of the climate change unit of the ministry of environment, told IPS.

And though the signs are evident for all to see, hardly any action is being taken to mitigate the likelihood of future intense weather events.

The Meteorological Department still lacks the capacity to provide detailed forecasts, leaving the public to decipher cryptic notices, like the one that appeared on Dec. 20 stating, "There will be showers or thundershowers at times inthe Northern, Eastern, North Central and Uva provinces and in the eastern slopes of the central hills and in the Hambantota district.Fairly heavy falls are also expected in some places.

"Showers or thundershowers will develop (in) several places elsewhere, particularly during the afternoon or evening," the bulletin concluded.

Even officials at the DMC bemoaned the fact that they were not given detailed accounts of how much rain to expect, which would have enabled them to issue more precise warnings.

S H Kariyawasam, director general of the Meteorological Department, told IPS that the department lacked the technical and personnel capacity to give out such forecasts.

Erratic weather also continues to plague the vital paddy sector. In 2011, the country lost close to 17 percent of the total harvest to floods, followed by a bumper harvest the year after. The 2012 drought ignited fears of another lost crop, but heavy rains this month are forcing experts to rethink their forecasts yet again.

Initial reports said the rains had caused substantial damages to paddy storage facilities.

Farmers have yet to change their practices to accommodate the volatile weather, and paddy cultivation continues to follow the traditional cycle of planting and harvesting according to the two monsoons.

"Maybe if this trend continues we will have to think of adjusting the crop cycles," said L Rupasena, additional secretary at the government-run **Hector Kobbekaduwa Agrarian Training Research Institute**.

According to McKerrow, the nature of incremental climate change over decades, and sometimes generations, means people pay less attention to the patterns that they should. "Slow moving disasters are the hardest for people to understand," he said.

But for those who gathered in close proximity to the gushing torrents under the Udawalawe dam, there was no doubt about the need for urgent action.

"Between drought and floods - a year of extremes in Sri Lanka", 30/12/2012, online at: http://www.trust.org/alertnet/news/between-drought-and-floods-a-year-of-extremes-in-sri-lanka/?utm_source=Circle+of+Blue+WaterNews+%26+Alerts&utm_campaign=9761835d2d-RSS_EMAIL_CAMPAIGN&utm_medium=email

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❖ Why India Is Fighting A Losing Battle Against Urbanisation

The Jawaharlal Nehru National Urban Renewal Mission (JNNURM), a Government programme aimed at changing the urban landscape of the country, has come in for criticism from the Comptroller & Auditor General of India, the country's federal auditor.

While the JNNURM's successes are evident in a few states like Gujarat, Maharashtra and in cities like Ahmedabad, Surat, Nagpur and Pune, the programme has not been very effective elsewhere in the country. The JNNURM's implementation hurdles, in some ways, are as staggering as the scope of its ambitions.

For example, Uttar Pradesh, which has seven cities considered for JNNURM projects, has completed just one project in contrast to Gujarat that has completed 38 projects.

Other key CAG findings: Funds released by the government were utilised for other purposes, such as payment of bills and salary to municipal employees; and land acquired for JNNURM projects was diverted and used for other purposes.

IndiaSpend's Prachi Salve looks at CAG's report and the latest report of the Ministry of Urban Development, which is implementing the programme, to find out what is holding back the projects.

JNNURM was launched in December 2005 to develop cities across the country by improving physical infrastructure and local governance.Though the programme was to end in 2012, it has now been extended by two years to 2014.

The mission was initially divided into two sub-missions:

1. Urban Infrastructure and Governance (UIG); and

2. Basic Services to the Urban Poor (BSUP)

Two other components were added later to accommodate more cities and towns:

1. Urban Infrastructure Development for Small and Medium Towns Scheme (UIDSSMT); and

2. Integrated Housing and Slum Development Programme (IHSDP).

The CAG report says the Mission was allocated Rs66,084 crore by the Planning Commission during the Mission period 2005-06 to 2011-12. As against this, Rs45,066 crore was the actual budgetary allocation during the same period. And nearly 90% of the budgetary allocation (Rs 40,584 crore) was released for the various programmes of the Mission.

Financial Management

A total of 79% (i.e. Rs 18,543.66 crore) was released under the UIG component out of the total budgetary allocation of Rs 23,469 crore. And 83.5% (i.e. Rs 7,342.96 crore) funds were released under the UIDSSSMT component of the total budgetary allocation of Rs 8,792.2 crore.

According to the CAG report, funds released were dependent on the condition that reforms would be implemented by the urban local bodies (ULBs). This was not done by most states hence the delay in release of funds to the states. Another reason for the late release of funds was the seeming delays in approval process of the central government and the inability of the state governments to complete the requisite formalities.

Let us now look at the implementation of the projects…

UIG and UIDSSMT

Urban Infrastructure and Governance (UIG) and the Urban Infrastructure Development Scheme for Small & Medium Towns (UIDSSMT)are two key missions under JNNURM. The missions mainly relate to infrastructure projects including urban transport to redevelopment of inner (old) city areas.

While UIG covers nearly 65 mission cities, UIDSSMT will cover cities and towns not covered by UIG.

Not even one project was completed under UIG in states like UP with 7 Mission cities and 33 projects. Similarly, under UIDSSMT, only 121 projects were completed out of 979 approved projects. The Ministry of Urban Development has citied reasons like delays in getting clearances from various authorities and lack of capacity of ULBs for the project delays.

Water Supply Projects Top The List

Water supply projects are among the largest in UIG and UIDSSMT with 157 and 524 projects, respectively. The completion rate for UIG is 42 (26%) and UIDSSMT is 32 (or only 6.1%).

CAG studied 37 water supply-related projects for its audit report. The major reasons highlighted by the report for non-completion of projects is lack of clearance from different authorities, problems related to land acquisition and a slow tendering process.

Even with completed projects,most of them could not meet the benchmarks set by MoUD. Five cities (Kolkata, Asansol, Dhanbad, Greater Mumbai and Patna) were to ensure 24X7 water supply but none of them were able to achieve the target. The efficiency in collection of water charges was the highest in Asansol at 66.9% and the lowest in Kolkata at 56.77%… and the benchmark was 100%collection for water charges.

Sewerage

Sewerage projects are the second highest category in both the sub-Missions with 112 projects sanctioned under UIGand 161 projects under UIDSSMT. And the completion rate is 20 for UIG and 16 projects for UIDSSMT.

The reasons for non-completion include encroachments and land being used for other purposes. A look at the states now: In Gujarat, 4 out of 6 projects in Ahmedabad and 6 out of 9 in Surat were completed. Patna, which was one of the 15 cities targeted for 100% coverage, did not get even one project approved!

Roads

Roads/ flyovers are the third highest projects under JNNURM with UIG accounting for 101 and UIDSSMT for 122 projects. And the number of completed projects is UIG=46 and UIDSSMT=55.

According to the CAG report, road projects faced major delays due to 'undue benefits' to the contractors and hikes in project costs. Contractors in some projects were allowed to take some materials with them even thoughthey had been paid for by the respective departments. In Andhra Pradesh, JNNURM funds were used for paying bills for the Godavari Drinking Water Supply scheme which is a state government run scheme.
Some other irregularities, according to the CAG report, were:

Diversion of funds: Funds released by the government were utilised for other purposes ranging from payment of bills and salary to municipal employees to compensatory forestation, which was not covered under JNNURM. For example, in Jharkhand, JNNURM funds were used to pay salaries to municipal staff.

Diversion of funds for private land acquisition: JNNURM did not provide money for private land acquisition as the burden of this was to be borne out by the state governments and ULBs with the exception of states of J&K, Himachal Pradesh, Uttarakhand, North-Eastern states. In Haryana, the CAG noticed that JNNURM money was used to acquire private land for building collector wells for a price of Rs 203.86 crore.

The JNNURM projects have, in general, exposed the lack of capacity of urban local bodies and the state governments when it comes to implementing projects efficiently, for that matter even getting them off the ground. But worryingly, the data so far not just highlights the administrative challenges

for a host of Government bodies but the larger national challenges of managing urbanization and the inability of infrastructure to keep pace.

"Why India Is Fighting A Losing Battle Against Urbanisation", 28/12/2012, online at: http://www.indiaspend.com/sectors/why-india-is-fighting-a-losing-battle-against-urbanisation

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❖ The risks of increased water efficiency requirements: The carbon disclosure project global water report 2012

This article presents the 2012 report of the CDP water disclosure project initiated by global financial institutions. The project sought to help industries identify water related risks and ideally, work cooperatively to address them.

Background:

Industries are dependent on water for their functioning to varying extents. At the same time, mismanagement of water and the impacts of climate change have increased the insecurity of access to water. Despite this, there are a negligible set of mechanisms that police water use and management. The experiences of the industrial sector in monitoring greenhouse gas emissions suggests that transparency can be a motivational tool.

Goal:

The CDP water disclosure project aims to inject some transparency into water-intensive industries with a view to encouraging strategic management of risk. This industry report examines the risk that companies face due to water uncertainty. The project took the form of a request signed by 470 financial institutions and sent to 318 companies listed on the FTSE Global Equity Index Series (Global 500) . It is a sign of the interest (or lack of interest) that 185 responses were received.

In this report, we learn of the importance of management of water risk through the viewpoints of the project team, investors and strategists. Since many industries depend on water at some point in the production chain, they are vulnerable to water risk. This vulnerability extends to the companies that have invested in them. In order to protect their investments, financial institutions need to ensure that the companies they invest in have strategies to manage this risk. This includes influencing water policies to minimise risk to corporate institutions. Sharing water related information, through platforms like this report, have the potential to encourage collective action among companies.

Observations:

The survey brought out the following trends:

- The response rate has not changed from the last year.
- There is a nearly 40% increase in the number of respondents that are facing water-related costs problems.
- On the other hand water issues, offer business opportunities; an increasing number of companies are aware of these. These include sales of water-related products and services.
- Companies require their suppliers to report on water risk, use and management; but are not as forthcoming in their own boardrooms.

Statistical information presented:

The report also has statistical information on the responses, reported exposure to water related risks, types of water-related risks, time frame of exposure, arranged by industry category. A map showing geographical variation in responses illustrates that European countries do significantly better in terms of reporting and management. Statistics on water management, water risks in both direct operations and in the supply chain, identified opportunities, and action taken are presented for the following sectors:

- Consumer discretionary
- Consumer staples
- Energy
- Health care
- Industrials
- Information technology
- Materials
- Utilities

Collaborative action:

With water risk affecting companies within a sector almost equally, there is an increasing trend to work together to achieve business goals such as improving water access and securing operating licenses, with 74% of the respondents reporting at least one such action.

Given its importance, this report aims to provide guidelines to companies to work collectively between companies as well as with other partners such as local suppliers, NGOs and governments. It also reports on collaborative actions taken by companies to minimize their water risk and understand

future problems. Working with universities to develop water risk assessment tools, working with communities to secure an uninterrupted water supply, and engaging in water quality research with pharmaceuticals all ultimately help companies retain profits. Working with competitors helps the creation of solutions to water risk, as is proven by alliances such as the Sustainable Apparel Coalition and 'Field to Market', International Petroleum Industry Environmental Conservation Association (IPIECA)and the International Council on Mining & Metals.

Unanswered questions: *This report raises and leaves unanswered several questions. If pressure is brought to align water policies to corporate interests, what will become of environmental concerns? Will ensuring that mining companies have adequate water prove detrimental to the concerns of subsistence economies? Will safeguarding investments ultimately prove costly to the earth? The answers to these questions are not within the scope of this report, or even within its world-view. The fact that increased water efficiency requirements are perceived as a risk indicates the focus on the bottom line. While the report is an effective analysis of water risks that may threaten investments, water policies ideally need to keep in mind a world beyond stock markets.*

Download the entire report https://www.cdproject.net/CDPResults/CDP-Water-Disclosure-Global-Report-2012.pdf

"The risks of increased water efficiency requirements: The carbon disclosure project global water report 2012", 31/12/2012, online at: http://www.indiawaterportal.org/node/35178

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❖ Wealthy Gulf Investors Begin To Eye Africa

Africa's vast lands, fast economic growth and a sense of political stability are all attracting regional investors.

Wealthy Gulf Arab companies are boosting their investment in Africa's vast lands and untapped resources, marking a shift for investors who have traditionally directed their money towards assets in the United States and Europe.

One reason for the shift is negative: with government debt problems weighing on US and European markets, those regions no longer look as attractive to some Gulf investors as they did just a few years ago.

But there are also a string of positive motives, including Africa's fast economic growth, the rise of a free-spending African middle class, and a sense that much of the continent is becoming better governed and more stable politically.

Also, Africa has two special attractions for the arid desert countries of the Gulf: it is a source of food and arable land, and it is launching an infrastructure building boom that recalls the Gulf's own construction spree in the past decade. The Gulf's expertise in developing airports, ports and communications networks at breakneck speed can be used in Africa.

The result, corporate executives say, is a flow of Gulf money into Africa that has accelerated over the past year, and which could become an important contributor to African growth.

"I can see Gulf investors warming up to Africa. Any opportunity there grabs their attention," said Ahmed Heikal, chairman of Citadel Capital, one of the Middle East's largest private equity firms with $9.5 billion of assets under management.

"Africa is becoming more interesting because of the natural resources it has, its demographics and better governance."

TIMING

The timing of Africa's economic boom is fortunate for the Gulf: it is occurring just as high oil prices give Gulf countries plenty of money to invest in it.

The Middle East's oil exporters posted a combined surplus in trade in goods and services of about $400 billion last year, the International Monetary Fund estimates. Much of that money is being ploughed back into foreign assets; while the bulk still goes into Western assets such as US Treasury bonds, more is going to emerging markets such as Africa.

Although complete, timely data on Gulf investment in Africa is not available, analysts believe it follows the same general trend as bilateral trade, with a time lag.

Annual trade between the Middle East and Africa has grown fivefold to $49 billion over the past decade, from $10 billion in 2002, according to Standard Chartered Bank.

In the past, most Gulf investment in Africa has been in the north of the continent, because of linguistic, cultural and political ties. For example, Citadel Capital last year put together a $3.7 billion financing package for an Egyptian oil refining project, with Qatar Petroleum International becoming a key shareholder.

Increasingly, however, Gulf investors are venturing into sub-Saharan Africa – in some cases using North Africa as a base to do so.

Private equity firm Abraaj Capital invested $125 million last year in Morocco's Saham Finances, which has interests in insurance operations across Morocco and francophone West Africa. It aims to tap into an anticipated pick-up in demand for insurance in Africa.

In November Abu Dhabi-based asset manager Invest AD launched a fixed income fund that will focus on Africa as well as the Middle East. Along with Morocco's Attijariwafabank, it also said it would launch a fund to invest in African companies listed on stock markets.

Some of the Gulf's big infrastructure operators have been players in Africa for years. Dubai port operator DP World, which has had a presence on the continent since 2000, now runs the port of Dakar in Senegal and port operations in Mozambique, Algeria and Djibouti.

In addition to investments in Egypt and Nigeria, the United Arab Emirates' telecommunications giant Etisalat has built sizeable stakes in Atlantique Telecom, which operates in about six countries in West Africa, as well as Tanzania's Zantel and Sudanese fixed line operator Canar.

RISKS

Gulf companies have sometimes overestimated the attractions of doing business in Africa. Etisalat's chief executive Ahmad Julfar said in October that his company had no plans to fully exit any of its foreign markets, but the record of its African investments has not so far been impressive, partly because of fierce competition from other operators.

Excluding Nigeria and Egypt, Etisalat spent around $522 million on its African investments, according to Reuters research, but those operations have made little contribution to its bottom line. They posted revenue of Dhs689 million ($188 million) in the third quarter of last year but generated a net profit of just Dhs4 million – a profit margin of about one per cent, compared to 27 per cent for Etisalat's UAE operations.

Egypt and Nigeria are large, potentially wealthy markets which appear strategically important to the company's long-term growth.

Another major focus of investment for Gulf firms is African agriculture; oil-rich, water-poor Gulf states such as Saudi Arabia and Qatar have been buying large areas of farmland overseas to ensure access to food supplies.

Qatar's Hassad Food, an arm of the country's sovereign wealth fund, agreed in 2009 on a $1 billion farmland development joint venture with the government of Sudan.

Some other agricultural ventures, however, may risk involving Gulf States in the socio-political and water scarcity problems of African countries, if they displace local people from their land or disrupt local farming patterns.

"We are very concerned that the land deals will lead to increased violence at the local level, as we have seen already in several parts of Africa," Henk Hobbelink, coordinator of GRAIN, an international, non-profit organisation which supports small farmers, said last year.

In a research report published in late 2011, Standard Chartered said Gulf countries had tended to focus their agricultural investment on seven countries: Sudan, Mozambique, Ethiopia, Tanzania, Kenya, Mali and Senegal.

But it added that debate in those countries over the role of foreign investors was growing. "Transparency, sustainability, and a meaningful return for local communities will be fundamental elements," it said.

As long as African economies continue to grow considerably faster than much of the rest of the world, however, the trend of increasing Gulf investment in them looks set to persist.

"Investing in Africa is like diving into dark waters. There's an equal chance of finding pearls or getting stuck with empty shells and garbage," said an executive at one of the Gulf's biggest family-owned conglomerates, declining to be named because of the political sensitivity of his remarks.

"But there's also high risk investing in the top European markets these days – so why not go to Africa where the return is higher?"

"Wealthy Gulf Investors Begin To Eye Africa", 03/01/2013, online at: http://gulfbusiness.com/2013/01/wealthy-gulf-investors-begin-to-eye-africa/#.UOXDOrXlWb4

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❖ Sudan launches major dam to boost agricultural production, investment

(Reuters) - Sudan launched a major dam project on Tuesday to boost power supply and agricultural irrigation, a plan officials hope will foster farmland exports and attract more Gulf investment to the African country as it battles an economic crisis.

Faced with the loss of most of its oil reserves with South Sudan's secession in 2011, Sudan plans to increase exports of agricultural goods, such as wheat, fruits, oil seeds and gum arabic. Oil was the primary source of income for the country's budget as well as dollars needed to fund imports.

A Chinese firm, paid by Gulf donors, heightened and expanded the Roseiris dam on the Blue Nile near the southeastern border with Ethiopia for an estimated $441.5 million over four years.

In one of the biggest development projects in the country in recent years, the project added 10 meters in height and expanded it to 25 kilometers from 13 kilometers in length, helping increase storage capacity to 7.4 billion cubic meters and allowing more power generation.

Officials said the dam's power supply will now rise by 50 percent to 1,800 megawatts, feeding power to several Sudanese states - a relief for ordinary people in a country with frequent outages, even in the capital Khartoum.

The dam will also boost power supply at Sudan's second largest dam called Merowe north of Khartoum, as it benefits from higher Nile water levels, first engineer Khidir Qassim as-Said told Reuters.

The expanded Roseiris dam will also provide irrigation for 2 million feddans (acres or hectares) of new farmland in several states which will boost agricultural production, according to Industry Minister Abdul-Wahab Mohammed Osman.

An extra 3 million feddan of existing farmland will now get irrigation for the whole year, not just during the rainy season, he said. A fishery factory is also planned at the dam.

Firms from Gulf countries such as Saudi Arabia and Kuwait have unveiled plans to boost investment in Sudanese farmland, which is prized for its fertile soil.

But many projects such as expanding the production of gum arabic, a stabilizer in fizzy drinks, have been hampered by a lack of rain or irrigation. Analysts also blame mismanagement and corruption for the failure of projects.

Gulf donors vowed more support for Sudan during the expanded dam's opening ceremony in order to develop its agricultural sector and strengthen ties with Arab oil producers.

"Kuwait will give more support to Sudan," Abdelwahab Ahmed al-Badr of Kuwait's state development fund, told the crowd.

FIGHTING PERSISTS

Sudanese officials also hope the heightened Roseiris dam will improve development in Blue Nile state, one of the poorest regions where the army is fighting rebels complaining of marginalization. The local economy has been hit hard by the violence which began in September 2011.

"The sons of Blue Nile state will be the first to benefit from the dam," President Omar Hassan al-Bashir told the ceremony after he opened the dam's gates.

Though the dam, near the state capital of Damazin, is far away from the border region to South Sudan, where fighting is concentrated, authorities took no chances with security.

Hundreds of soldiers lined the streets from the dam to the airport where the government had flown in hundreds of diplomats, journalists, officials and executives to showcase the project.

Military helicopters also circled over the dam during the ceremony.

Authorities relocated 22,000 people to make way for the dam, replacing their old villages with new settlements, according to the government. (Reporting by Ulf Laessing, Khartoum newsroom; editing by Gary Crosse)

"Sudan launches major dam to boost agricultural production, investment", 02/01/2013, online at: http://www.reuters.com/article/2013/01/01/us-sudan-dam-idUSBRE9000B320130101?utm_source=Circle+of+Blue+WaterNews+%26+Alerts&utm_campaign=a471749c11-RSS_EMAIL_CAMPAIGN&utm_medium=email

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❖ Zimbabwe ill-prepared for rainfall extremes, farmers say

BULAWAYO, Zimbabwe (AlertNet) - Thumeliso Matshobana knows what the devastation of too much water looks like.

A smallholder farmer in Zimbabwe's Midlands, he watched helplessly last year as floods destroyed crops, livestock, homes and schools. The heavy rains, he says, came as "a total surprise."

The floods left a trail of destruction in traditionally dry and impoverished rural areas of the Midlands and Matebeleland, and rebuilding has been a slow and painful process.

"We want rain but not the kind that kills us and destroys our livelihoods. But no one ever seems to know exactly the kind of rains we will have," Matshobana lamented.

That "makes it hard for us villagers to make necessary preparations," he said, expressing what has become a common sentiment about unpredictable rain patterns that seem to vex even the country's meteorological services department.

The Met office, as it is known in Zimbabwe, issued a flood advisory in late November, predicting heavy downpours. But because the Met office has been off the mark many times in the past with its weather predictions, which are now questioned by farmers and disaster preparedness organizations, farmers such as Matshobana find themselves with little idea what to expect or what to do to prepare for floods.

Japhet Hadebe, a climate change researcher working with the Zimbabwe Environment Research Organisation (ZERO) says climate change monitoring remains "a complicated issue in Zimbabwe."

"This is the reason why you see that each year flood warnings only come as the phenomenon is already on its way, making it extremely difficult to prevent any losses to life or livestock," Hadebe said.

Zimbabwe "still lacks sophisticated weather tracking systems. That is why many people have lost faith in the Met department," he said.

LOOKING FOR SOLUTIONS

Last year, Zimbabwe's government, in conjunction with the Climate and Development Knowledge Network (CDKN), began researching potential climate change policy responses in Zimbabwe as a result of growing agricultural and economic losses from unpredictable weather. The results are expected to be released soon.

Farmer unions however say they have continued to lose crops to sudden floods that they have not been warned about.

"It has been extremely difficult in the past few years, especially to know the kind of rains to expect. Floods come to us as a total surprise when we had earlier been advised of poor rainfall ahead," said Thokozani Jama, of the Zimbabwe Commercial Farmers Union.

"This has meant that farmers simply follow their own traditional planting patterns even if rainfall is far off. When you plant and the next few weeks there are floods, it means your crop fails despite the plentiful water. Last year, the heavy rains came at a time when many of us were expecting that they we should be harvesting but our crop had already been destroyed by the absence of rain," Jama said.

Experts say climate shifts have been especially troublesome for some African countries such as Zimbabwe where political commitment to climate change research has lagged despite evidence that the countries will be among the most affected by the changes.

Tapuwa Gomo a development expert who has worked along the Zambezi River on international flood relief efforts, says early warning systems could be one way to save lives and property as rainfall becomes more unpredictable.

But "the best form of preparedness is raising awareness among those in the flood-prone areas to take the necessary measures before the floods," he said.

Floods along the Zambezi Valley have become an annual source of human and livestock losses, raising concerns about whether enough is being done to minimise the impact of climatic shifts, he said.

"In my experience working with people along Zambezi River in Namibia, Zambia, Zimbabwe and Mozambique, the question of what needs to be done to help them is a difficult one. The biggest challenge in these areas is that people's livelihoods are knit around the Zambezi River with activities such as fishing and winter season cropping," Gomo said.

Similarly, for farmers like Matshobana who live in Zimbabwe's low rainfall areas, there seems little answer to the problem of getting too little or too much rain, particularly outside the normal rainy season.

"That's what we have come to accept," Matshobana said.

"Zimbabwe ill-prepared for rainfall extremes, farmers say", 27/12/2012, online at: http://www.trust.org/alertnet/news/zimbabwe-ill-prepared-for-rainfall-extremes-farmers-say?utm_source=Circle+of+Blue+WaterNews+%26+Alerts&utm_campaign=9761835d2d-RSS_EMAIL_CAMPAIGN&utm_medium=email

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❖ Middle Eastern Green Traditions Hold Key To Future – A Case Study

What role can traditional knowledge play in climate adaptation in the Arab Region? The Jordanian Royal Society for the Conservation of Nature explores…

From traditional land conservation techniques to water channels reviving arid climates, communities in the Middle East have been creatively tackling environmental problems for centuries now. Whether it was extreme weather events or water scarcity, they have faced climate problems head on and accumulated precious knowledge about how to adapt and survive in the process. So how do we embrace that traditional knowledge and the advice it has to offer a warming world? Well, we start by acknowledging its usefulness and continued relevance. That's exactly what the Jordanian Royal Society for the Conservation of Nature did at the recent 'Hikma Hours' event.
The event brought cases from Jordan, Oman, Bahrain and Qatar, that showcase community adaptation practices and explored the challenges of integrating traditional knowledge with other modern adaptation tools and approaches. The Hikma Hours event was held during the COP18 negotiations which took place in Doha, Qatar.

Case Study 1: Jordan's Protected Areas
The Royal Society for Conservation of Nature (RSCN) in Jordan is in charge of eight protected areas in the country. Through four pilot sites in the protected areas of Al Yarmouk and Fifa and two in the Biosphere Reserves of Mujib and Dana. RSCN is conducting climate change adaptation planning oriented at finding ways and implementing measures based on traditional knowledge, to help reduce the uncertainty that climate change poses to natural ecosystems by rendering them more resilient and resistant. This case was presented by Mr Hussien M. Kisswani, National Climate Change Officer of the RSCN, Jordan.

Case Study 2: Oman's Aflaj Water Channels
The Aflaj is a water management system created in many parts of the Arab world and is still active in Oman. Today, the Aflaj system not only brings water to distant areas without power requirement and in a sustainable way, but provides for 36% of water used for agriculture in Oman, a country falling below the water poverty line due to naturally occurring, historical water scarcity. The protection of the Aflaj system and its associated traditional knowledge and institutions is a matter of national relevance in Oman and holds universal value as it has been recognized by the World Heritage Convention. Nevertheless this system and its body of traditional knowledge require further protection and mechanisms to ensure their sustainability. There are 3,017 remaining active Aflaj in Oman. This body of traditional knowledge can be shared with other communities and countries, even distant ones, to help them adapt to climate change, improve agriculture, etc. This case was presented by Dr Saif Ali Al-Hajari of Friends of the Environment Centre.

Case Study 3: Traditional Fishing in Qatar

Fishing traditions have been very important in Qatar. Marine ecosystems across the Gulf region are facing high ecological pressures with consequences on the balance of these natural systems. Ms Kaltham Al Ghanem explained how existing environmentally unsustainable behaviours and the negative impacts of economic activities, as well as social and cultural habits, are affecting terrestrial and marine environments in Qatar. According to Dr Al Ghanem the oil discovery era dissociated people from their natural environment, which contributed to the disappearance of indigenous knowledge. There has been a decline in the use of local natural materials and their associated practices. Furthermore, changes in fishing techniques have had an adverse effect on the marine environment and its fauna in Qatar. This case was presented by Dr Kaltham Al Ghanem, Professor of Sociology at Qatar University.

Mr Hussien M. Kisswani, the lead organiser of the event, explained that the key message from these case studies was that traditional knowledge and practices in the Arab world represent a valuable asset for adaptation to climate change. "There is a need to better explore how to revitalize traditions, and especially how to maintain and revitalize value and ethical systems that were strongly present in Arab cultures but have deteriorated and are rapidly disappearing due to massive and rapid change occurring in Arab societies," he says. Some of the suggestions that the forum came up with include effective law enforcement on matters related to the impact of industrialization on nature, better information sharing and for traditional knowledge to be included in national plans and strategies for mitigation and adaptation to climate change.

"Middle Eastern Green Traditions Hold Key To Future – A Case Study", 31/12/2012, online at: http://www.greenprophet.com/2012/12/middle-eastern-green-traditions/

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❖ GCC: The Middle East's Emerging Watering Hole?

Governments in the GCC have allocated approximately USD100 billion towards implementing better water technologies and energy-efficient desalination. Planned reverse osmosis plant capacities are increasing every quarter as a result, explains Kshitij Nilkanth.

The water sector is witnessing a revolution of sorts with state-of-the-art technology being developed and implemented, especially in the Gulf Cooperative Council (GCC). Several reports and publications have given narrated accounts of water stress and scarcity in the GCC and its short and long-term implications. Some industry reports have also pronounced the 'dire consequences' of water imbalance and risk, going as far as predicting suspected 'water wars' in future. These reports have not gone unnoticed by Governments and policy makers in the GCC and significant measures are now being taken towards sustainable practices.

The GCC countries are taking requisite steps to overcome known challenges of streamlining public-private participation (PPP), utilities in debt, improving accountability and investment framework. Technology is playing a pivotal role in this situation. The use of advanced water technologies is at an all-time high in the GCC. It is also observed that most, if not all, best available water treatment and reuse technologies are being used in this region.

Focus of the water sector in the region is shifting towards sustainable practices, wastewater treatment and recycling, with several utilities and water agencies announcing noticeable projects indicating start of a technological turnaround for the region. Governments in the GCC have allocated approximately USD100 billion towards implementing better water technologies and energy-efficient desalination.

Utilities riding the technology wave

Frost & Sullivan research reveals that urban water supply in the Kingdom of Saudi Arabia (KSA) and the United Arab Emirates (UAE) is already above 90% coverage, with the majority of this water (up to 80%) sourced through desalination. In the next couple of years, it is anticipated that water supply in urban regions will reach 100% coverage in these countries. Utilities such as DEWA (Dubai electricity and Water Supply), are leading by example with Moody's Investors Services upgrading the company's rating to investment grade. This has been a result of operational improvements and a sound financial profile. It will be interesting to see if other utilities emulate these practices.

Investments in the water sector have been on the rise since 2010, with several projects under execution or bidding/tendering stage. These projects are covering all segments of the water sector, including desalination, independent water and power projects (IWPP), water transmission and distribution, repair and replacement of networks, wastewater treatment and produced water treatment. Sustainability drives have also been seen among national water companies. An example is Haya Water, the wastewater company of Oman which is reducing methane emissions by aerobically composting sewage sludge. The end products can be re-used efficiently by the agriculture community as sewage biosolids or compost. In the medium to long-term, technology adoption/upgrade and compelling sustainability targets, together, can help the GCC reduce the demand-supply gap and aid preservation of resources for future.

Desalination will gain more loyalty

Over the past two decades, desalination has become the backbone of water supply and consumption in the entire Middle East and Africa (MEA) region. Investments in desalination have been on a rise and confidence in various technologies is growing. It is interesting to notice that Multi-Stage Flash (MSF) is a dominant technology in the GCC, while reverse osmosis (RO) is more dominant in non-GCC countries. A reason behind this is that the number of large desalination plants (over 100,000 m3/day) in the GCC is high; and at such capacities MSF is a proven technology. Lower primary energy cost in the GCC further supports MSF technology. However, RO technology has established itself as a reliable and efficient technology for desalination.

The planned plant capacities of RO are increasing every quarter in the GCC, thereby exhibiting economies of scale.

RO technology for desalination has overcome the challenges pertaining to pre-treatment of RO feed water, and a number of plants including the new Al Zawrah desalination plant that will utilise Ultrafiltration (UF) membranes supplied by Pentair X-flow. The system will produce 4783 m3/h of pre-treated seawater to feed the RO membrane system. Similarly, Jubail Seawater RO (SWRO) Phase 2 in Saudi Arabia, has a designed capacity of 58,500 m^3/day. The plant has dual membrane system with UF followed by RO. On completion (expected January 2013), this will be the largest UFRO desalination plant in the KSA.

Desalination potential in the GCC is increasingly attracting both domestic and international companies in the bidding process. In 2011, a desalination project contract by the UAE's Federal

Electricity and Water Authority (FEWA) to provide 68,191 m3/day SWRO based desalination facility was one of the most-competitive bids in recent times with as many as 20 bidders, including top international companies.

Increasing numbers of independent water and power projects IWPP's are utilising RO, thus driving the technology market. Several GCC countries have planned IWPPs with their construction scheduled to commence in 2012. These include 10 projects in the UAE worth USD 1.5 billion; 15 projects in KSA worth USD8.8 billion; and 19 projects in Kuwait worth USD 4.2 billion.

Water production activities are increasing in the Gulf but so is the significant need for additional water owing to the growing population. Added to this is the proliferation of industrial and agricultural activities. Implementation of efficient water management is critical to sustain this essential resource for future.

Oil on water

National oil companies in the GCC rank among the world's largest companies. They are also initiating sustainable practices by recognising the influence of water on their business. The oil and gas industry in the Gulf is taking decisive steps in produced water treatment. Produced water is generated in the process of extracting oil and gas. This water brought along the surface during lifting is large in volume, and needs treatment prior to discharge or re-injection.

The Bauer Nimr Produced Water Treatment Facility in Oman, which in 2010-11 treated contaminated produced water using natural reed bed water treatment systems, is a pioneer in this sector. The facility is treating around 46,500 m3 of production water per day and an expansion to 95,000 cubic meters is in progress. This facility has also achieved over 90% recovery of crude oil that was put through the treatment plant along with energy savings, which have reflected both in ecological and environmental performance.

Another recent example of adopting advanced technology solutions is Bahrain Petrochemical Company (BAPCO) which is adopting Membrane Bioreactor System (MBR) for its refinery wastewater treatment plant at Sitra. GE's ZeeWeed technology will be used to handle wastewater flow up to 24,000 m^3/day. More projects are in the pipeline for produced water treatment in the GCC.

Wastewater treatment - the way forward

In municipal wastewater treatment, much needs to be done across the GCC, from collection networks to treatment plants and water reuse. In 2011-2012, several contracts for wastewater treatment and transmission and distribution contracts are expected to be awarded. The next few years will be crucial as much will depend on timely completion of these planned projects and overcoming the challenges of financing and operational delays.

One notable example is the Muharraq Wastewater Treatment Plant in Bahrain. This 100,000 m3/d sewage treatment plant and 15 km deep gravity sewer conveyance system is under a 27-year agreement. The aim of the project is to collect and treat wastewater to a high standard, suitable for treated effluent (TSE) to be reused. It will be constructed on a reclaimed Greenfield site. This is also the first PPP (Public-Private-Partnership) project in the Bahrain wastewater sector.

Major international companies are keeping a close eye on these developments and making inroads in the GCC water market through manufacturing setups, partnerships, and joint ventures.

Some significant moves by companies in recent times indicate how the biggest desalination market in the world is attracting attention. Technology companies not only from Europe, but also from East Asia including Japan and Korea, are probing the Middle East market. Their interests lie in exploring all segments of the ME water sector, including niche products and services. Larger international companies are reinforcing their stance in the region to sustain their position in the increasingly competitive environment.

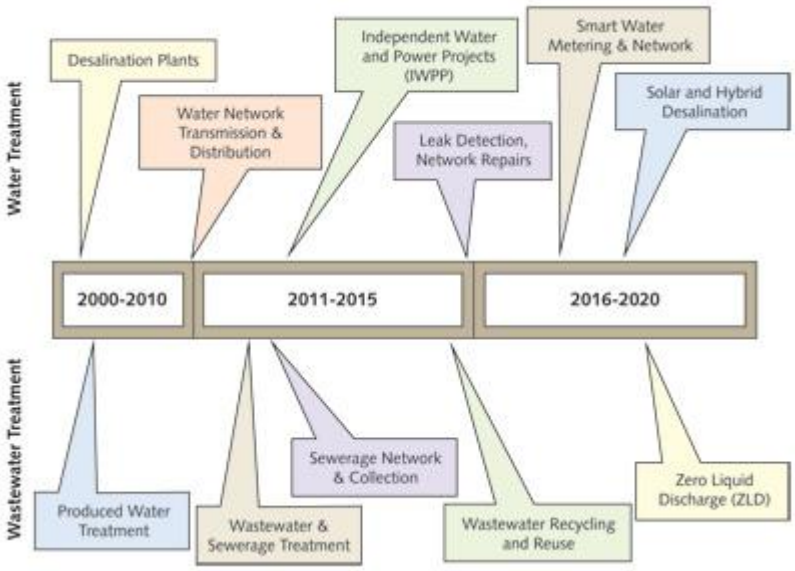
The Dow Chemical Company announced plans for a manufacturing facility in the KSA which will deliver water membrane technologies for desalination and re-use for potable, non-potable and industrial water serving the MEA region and emerging markets worldwide.

In 2012, a joint venture company called Arabian Japanese Membrane Company commenced production of RO membrane elements for seawater desalination at a manufacturing plant in Rabigh City. The JV is an agreement between ACWA Holding of Saudi Arabia, Toyobo Co. and ITOCHU Corporation (Japan).

Arabian family-group companies are also taking heed of situation. Groups with background in engineering solutions, infrastructure, and construction are weighing their options in the GCC water

industry. Some of these group companies are already active in the bidding process. Their domestic setups, know-how of legislative and bureaucratic structure make them potential partners for business.

Figure 1. Water Industry in GCC - Technology Adoption Timeline



Sustained growth of the GCC water market - enough space for everyone

The GCC is leading the MENA bandwagon by taking decisive measures to improve water management. Increasing investments across the value chain imply there is room for both domestic and international companies, including medium-small OEMs (original equipment manufacturer), local fabricators, EPC (Engineering, Procurement and Construction) contractors, design and engineering companies and consultants.

Frost & Sullivan analysis reveals that between 2010 and 2012 the GCC has witnessed growth rates between 14 - 20% across various segments of the water and wastewater industry, including treatment equipment and chemicals.

Growth is expected to remain steady with the industry looking to continue to adopt global best practices in the long term. Moving forward, focus on improving efficiency and creating accountability could lead to the market opening up for integrated services and networks, with opportunities also arising in associated services such as smart metering, leak detection, and integrated solutions.

In the next five years, the GCC can expect numerous technology options for desalination, water and wastewater treatment. However, it will be in the best interest of the governments and water agencies to have a far-sighted approach and assess the situation well, so as to take informed decisions.

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"GCC: The Middle East's Emerging Watering Hole?", January 2013, online at: http://www.waterworld.com/articles/wwi/print/volume-27/issue-5/regulars/creative-finance/gcc-the-middle-easts-emerging-watering-hole.html?cmpid=EnlWaterWorldJanuary32013

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❖ Water diversion project in East China ahead of schedule

The first phase of the eastern route of China's south-north water diversion project is expected to be completed ahead of schedule, authorities said.

With the main part of the first-stage construction to be finished in March, the project will be able to send water in the third quarter of 2013, three months earlier than planned, the South-to-North Water Diversion Office under the State Council said.

By the end of November, about 28.53 billion yuan ($4.54 billion) had been invested in the route's first-stage construction, accounting for 93 percent of the planned investment.

The south-north project, the world's largest of its kind, is designed to take water from China's longest river, the Yangtze, through an eastern, a middle and a western route, to feed excessively dry areas in the north, including Beijing.

The project started with the construction of the eastern route in 2002 and the middle route in 2003, with the western route at the pre-construction stage. The middle route's first phase is expected to start supplying water in 2014.

The major parts of the eastern route are located in the provinces of Jiangsu and Shandong

"Water diversion project in East China ahead of schedule", 03/01/2013, online at: http://www.globaltimes.cn/content/753448.shtml

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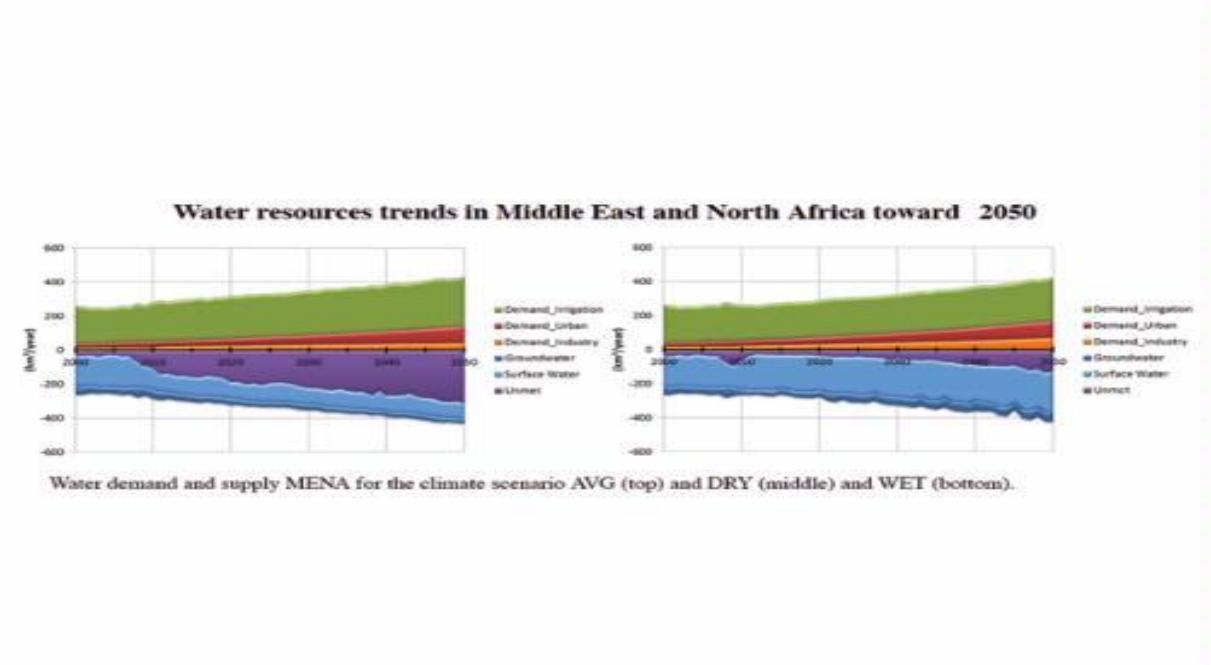
❖ MENA water availability depleting fast



Water demand and supply MENA for the climate scenario AVG (top) and DRY (middle) and WET (bottom).

JEDDAH – The Middle East and North Africa region is the most water-scarce region in the world, and based on current World Bank current estimates, water availability in the region is expected to fall by half by 2025 and will have reached absolute water scarcity by 2050.

According to the Washington-based bank, the region is home to 6.3 percent of the world's population yet it has just 1.4 percent of the world's renewable fresh water.

With rapid urbanization taking place across the Middle East and huge investments being made in infrastructure together with a parallel growth in population, water security has been boosted up the agenda.

About two-thirds of the Middle East and North Africa's water requirements are currently supplied through desalination. This is not an option that can be sustained in the long-term due to a lack of rivers in the region and no existing technologies which meet the region's rising demand for fresh water.

The GCC has become the global leader in desalination, a title that evolved out of necessity due to the region's desert landscape.

To address the issue, the GCC is planning to develop about $100-120 billion-worth of water infrastructure projects, predominantly in Saudi Arabia and the UAE. The amount of investment reflects the importance the region's authorities have placed on the issue. These projects are aimed at increasing desalination capacity by 71 percent by 2016.

"Water resources face serious challenges around the world. By 2025, two-thirds of the world's population may live in areas with moderate to severe water shortages.

Working collaboratively with other businesses, governments and civil society organizations, we believe we can make a positive difference on the world's water challenges.

We hope the International Water Summit will bring to light both the necessity and the solutions to water conservation," said Antoine Tayyar, Public Affairs and Communications Director, Coca-Cola Middle East, ahead of the International Water Summit (IWS) taking place in Abu Dhabi on Jan. 15-17, 2013, in which the Coca-Cola Company will discuss global and regional methods of water footprint reduction.

Coca-Cola will also discuss the various social initiatives it has launched in the Middle East as a response to the serious water challenge the region faces, Tayyar added.

"Coca Cola's global water stewardship goal is to safely return to nature and to communities an amount of water equivalent to what is uses in all its beverages and their production by 2020," he said.

The Coca-Cola system has a series of water targets it hopes to achieve, said Tayyar, including "reducing its water-use ratio to improve water efficiency and recycling water used in its manufacturing processes at all plants by ensuring water is treated and returned to the environment at a level that supports aquatic life."

All six of the main rivers in the Middle East (the Euphrates, the Tigris, the Jordan, the Nile, the Litani and the Orontes) have played crucial roles in the development and sustainability of great civilizations. Each river basin has its own particular characteristics and specific riparian states. Riparian states are states connected by the fact they share a water resource like a river or a groundwater aquifer.

Therefore, it is impossible to approach the Middle East as a whole in terms of hydrology and hydropolitical features.

The overwhelming common denominator in all six basins, however, is the potential of water body management to foster peace and stability in the region. Managing the water supply in the Middle East has always been an integral part of ensuring stability of communities, districts, regions and countries.

For thousands of years, the Middle East has been an arid region, and human survival in a desert environment is only possible if the water supply is guaranteed.

Solving the water scarcity problem lies mainly in managing demand. Most of the water demand comes from irrigated agriculture, which should be heavily reduced or even nullified. This would mean a major shift from subsistence agriculture to a more diversified economy. Experts believe that moving away from agriculture is the only way for Middle Eastern countries to solve their water scarcity and distribution problems. Water currently used in food production could help be used toward restoring the water balance in the region. For this to occur, Middle Eastern nations need to diversify their economies and import more food, growing less of their own wheat thereby utilizing less water resources on agricultural production.

Since 2005, Coca-Cola has been involved with 386 community water projects across 94 countries. In the last five years, the company has invested almost $250 million in community water partnerships with 532 global organizations, including WWF, USAID, The Nature Conservancy, CARE, UNDP.

Examples of some of the community initiatives are watershed protection, expanding community drinking water and sanitation access, water for productive use, agricultural water efficiency as well as

education and awareness programs.

Coca-Cola improved its water efficiency by 19.4 percent between 2004 and 2011. Based on 2010 unit-case volume, Coca-Cola estimates that 35 percent, or 53.3 billion liters, of the water used in its finished beverages has been replenished through the 386 community water projects. — SG/QJM

"MENA water availability depleting fast", 05/01/2013, online at:
http://www.saudigazette.com.sa/index.cfm?method=home.regcon&contentid=20130105148129

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❖ SANITATION: Urban water woes

NEW YORK, 2 January 2013 (IRIN) - In Zimbabwe's capital, Harare (population 3,000,000), a man relieves himself in the dirt next to his tin shack, holding his nose to ward off the stench of a nearby overflowing latrine. In Ramallah (population 300,000) in the occupied Palestinian territory a 14-year-old girl wakes with menstrual cramps - and skips class because her school lacks a washroom where she can clean herself in private. In Bangladesh's mega-capital (population 12 million), a monsoon-season flash flood leaves thousands with cholera.

Different continents, same problem: City populations continue to grow above ground while water resources shrink underfoot, leaving emptying aquifers to sate growing needs, and compounding existing problems with wastewater collection.

With water use growing at more than twice the rate of overall population increase (according to the Food and Agriculture Organization), how can authorities ensure that every urban dweller gets 20-50 litres of clean water daily for drinking, cooking and cleaning? How can governments create sanitation systems that do not sicken city dwellers?

Background

Some 3.3 billion people (more than half of the world's population) live in urban areas, a figure which is expected to rise to five billion by 2030. Ninety-five percent of this growth is taking place in countries least able to afford the cost of expansion.

In East Asia alone - in one of the most disaster-stricken areas worldwide - the UN Office for Disaster Risk Reduction (UNISDR) estimates the number of people living in urban flood plains may reach 67 million by 2060.

A Megacity Task Force of the Germany-based International Geographic Union has called the world's 40 or so megacities (concentrations of at least 10 million people) "major global risk areas" prone to natural disaster and supply crises.

"The dimensions of these urban disaster problems are huge," said Robert Piper, UN resident coordinator in Nepal, whose capital, Kathmandu, is consistently ranked as one of the world's most earthquake-prone cities. "And doing something about it on the scale necessary is expensive."

Cities of less than one million residents, such as Ramallah, are now growing at a faster rate than larger urban areas, noted Graham Alabaster, manager of the UN Human Settlements Programme (UN-HABITAT), in Geneva. Like megacities, he said, smaller cities share the same pressing problems: infrastructure too weak to handle ever-more densely packed populations, and understaffing so severe it can put water, sanitation and hygiene (WASH, in aid industry lingo) under the management of less than half as many administrators as is necessary.

Weather extremes

Climate change has not made things any easier. World temperatures will rise by 4 degrees Celsius by the end of the century, predict a joint team of researchers from Germany's Potsdam Institute for Climate Impact and the NGO, also in Germany, Climate Analytics.

"In developing countries, the already-stressed, existing systems were built without climatic change in mind," said Robert Bos, the WASH coordinator for the World Health Organization (WHO) in Geneva.

Water may be delivered in decades-old leaking iron pipes instead of flexible PVC ones that expand and contract in response to temperature fluctuations. Sewage systems may be too small to remove waste, which can ferment and release toxic methane gas created when temperatures reach record highs.

To brace against increasingly volatile weather, cities in arid regions (such as Johannesburg and Dakar) must stockpile water for annual droughts, while those in flood-prone areas (such as Shanghai and Calcutta) must stockpile medicines and recruit additional health staff to prevent and treat water-borne diseases.

The countries at the highest risk of weather-related disasters worldwide, identified in a November 2012 report, are Thailand followed by Cambodia, Pakistan, El Salvador and the Philippines.

As of March 2012, three years ahead of schedule, the world achieved one of its Millennium Development Goals: providing safe drinking water to half of the 2.6 million people who struggled without it in 2000.
Even so, 2.5 billion people in the developing world lack adequate sanitation and 780 million of them lack clean water.

In addition to large-scale efforts organized by national governments, here are five experiments WASH experts are testing to manage water sources in an urbanizing - and increasingly warmer - world.

1) DE-SLUDGING TECHNOLOGY

Latrine pits into which sewage systems drain are the most common way to collect waste in slums in the developing world. But cleaning these pits, which are often uncovered, can pose persistent challenges. Shacks may be so densely packed that vacuum tankers cannot be deployed.

Individual workers may have to clamber into pits and manually clean them, putting themselves - and their families - at risk of disease. Absentee landlords may have little interest in dealing with sewage pits, leaving them neglected to the point where they overflow.

With a US$100,000 grant from the US-based Bill & Melinda Gates Foundation, researchers in Belo Horizonte (the third-largest city in Brazil) are creating biodegradable building blocks that replace conventional cement or brick and allow latrine pits to decompose naturally once they are filled. Another Gates grant of $4.8 million to the London School of Hygiene and Tropical Medicine is funding the design of latrine pits that have an active “bio-filter” of tiger worms and other organisms to break down waste. This technology creates environmentally-friendly sewage that poses few human health risks.

2) UPGRADING SCHOOL SANITATION

Where school toilets and latrines do exist (they are available in only an estimated 37 percent of countries where the UN Children's Fund, UNICEF, is active), long queues snake around school buildings during breaks and after class. "We need to upgrade sanitary facilities for all children, but especially for menstruating girlsso they can continue to attend school and meet their needs for privacy, dignity and cleanliness," said Ania Grobicki, executive secretary of the Stockholm-based Global Water Partnership.

In China, UNICEF and its partners built school hand-washing stations. In Malawi and Kenya, they introduced a new design of urinals for girls. And in Bangladesh and India, they have launched "menstrual hygiene projects" so girls can continue their studies without interruption.

3) PRE-IDENTIFIED WASTE DISPOSAL SITES

When natural disasters strike, they can generate millions of tons of solid and liquid waste that threaten public health and hinder reconstruction. The earthquake that hit Haiti's capital of Port-au-Prince in January 2010 - killing more than 220,000 people, leaving more than 350,000 displaced almost three years later and causing the capital's already-shaky municipal waste collection system to collapse - highlighted the need to select waste-disposal sites pre-disaster.

Garbage towered along remaining roadsides; construction materials were piled up in ravines, drains and other open spaces. Before aid agencies and the government focused on hazardous waste disposal, surgeons tossed body parts into fetid, decaying piles. After the disaster, the Haitian government assigned one municipal landfill to dispose of medical waste. In 2011, the UN releaseddisaster-waste guidelines that outlined dangers of different waste types.

4) TURNING WASTE INTO WATER

In some urban areas in the developing world, more water is lost through leakage and other infrastructure problems than is delivered. "But wastewater collection, recycling, and retreatment can

multiply supplies," said Grobicki from Global Water Partnership.

Cities that are already making wastewater potable include Singapore (where 3 percent of drinking water is recycled) and Perth, Australia (where officials hope 10 percent will soon be so). This microfiltration and chemical treatment technology has also been used in Windhoek, Namibia, (population 300,000) which has been recycling wastewater since 1968, and is holding a meeting in 2013 to evaluate its experience.

5) LOW-COST, HIGH-IMPACT SOLUTIONS

WASH systems do not have to be pricey to be effective, as proven by the shallow, gravity-driven sewers that have long served the `favela' slums of Rio de Janeiro, Brazil's second largest city of some six million people.

"Increasingly, municipal authorities are establishing `low-income customer service units' or LICSUs," said Timeyin Uwejamomere with the London-based NGO WaterAid. "One such programme recently brought sanitation to 150,000 people and clean water to 400,000 in Lilongwe, Malawi."

At King's College London, researchers are examining how to deliver water with segmented flexible rubber hoses. In India, Bangladesh, Kenya, and Uganda, WaterCredit, a programme of the US-based Water.Org, helps households buy drinking water and toilets through micro-financing.

"SANITATION: Urban water woes", 02/01/2013, online at: http://www.irinnews.org/Report/97161/SANITATION-Urban-water-woes

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❖ The Risk of Fracking with Hidden Resources

Hydraulic fracturing ("fracking") has already revolutionized the U.S. oil and gas industry. But shale gas resources are not limited to the U.S.; worldwide, shale gas resources are broadly distributed and extensive–according to the U.S. Energy Information Administration, to the tune of 6,622 trillion cubic feet. In many countries, these resources have yet to be exploited, but fracking technology is slowly making its way to other parts of the globe and will undoubtedly continue to spread.

While this technology enables exploitation of gas reserves previously thought to be unrecoverable, the process uses copious amounts of precious fresh water and could potentially threaten water quality. As fracking technology proliferates worldwide, global freshwater resources will be put at risk if they are not protected and managed.

Groundwater represents a significant amount of the earth's freshwater resources, but, until recently, they were virtually ignored by international water law. In particular, transboundary aquifers–those that span the boundaries of one or more nations–represent one of the largest sources of freshwater. Of the 273 worldwide, almost all of these "hidden resources" lack any system of cooperative management between the countries overlying them. There are a few exceptions, including, for example, the Guarani Aquifer Agreement, governing the aquifer overlying Argentina, Brazil, Paraguay, and Uruguay and the Genevese Aquifer, managed by a 1977 agreement (updated in 2008) between France and Switzerland. These exceptions serve as great examples for what transboundary aquifer management could look like across the world.

Article 3 of the ILC Draft Articles on the Law of Transboundary Aquifers provides that states have sovereignty over the portion of a transboundary aquifer within their territory. While such a claim is relatively easy to conceptualize for the actual geological formation, exerting sovereignty over the (often potable) water the formation contains remains a significantly more difficult task.

The natural recharge of an aquifer is dependent upon gravity and the permeability of the strata between the source of the recharge and the aquifer. The source of recharge may be rain-soaked ground, lakes, streams, or even other aquifers. Because of the transient nature of water particles, the recharge that comes from one nation is almost certainly going to transverse the border into the portion of the transboundary aquifer underlying another nation. The obvious implication is that

sovereignties reliant on aquifers for a source of fresh water are vulnerable to the decisions of other sovereignties with territory that overlies the shared aquifer.

Fracking in an aquifer region therefore poses potential environmental threats not only to the country engaging in the operation, but also to all other countries with territory overlying the aquifer. Fracking in Argentina, for example, was protested because of concerns over the risk the operation posed to the Guarani Aquifer. The Guarani Aquifer Agreement imposes an obligation on all parties to not cause significant harm to either the other parties or the environment. The utility of such an agreement is not so much legal as it is political although the other countries probably couldn't use the agreement to stop the fracking in Argentina, it does at least give them some leverage in starting a conversation about the environmental risks and precautions that should be taken.

The proliferation of fracking technology worldwide makes the establishment of transboundary water management and governance–preferably in the form of transboundary aquifer agreements–even more imperative. Government leaders should work together to manage shared waters and protect them from the potential harms of fracking.

"The Risk of Fracking with Hidden Resources", 02/01/2013, online at: http://www.triplepundit.com/2013/01/risk-fracking-hidden-resources/

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❖ Isabella Dam Modification Project

Now that the environmental impact statement is complete, the public getting a good look at the Isabella Dam safety modification project. The U.S. Army Corp of Engineers just released the video it produced.

"The Corps' preferred plan for Isabella includes raising the height of the main and auxiliary dams, adding filtering and drainage systems, constructing an emergency spillway, lining and treating the existing spillway, realigning the Borel Canal, and relocating portions of Highway 155 and 178."

Lake Isabella Dam is nearly 60 years old and one of the highest-risk dams for catastrophic flooding in the Corps. The video explains the Sacramento District's plan to modernize the dam by raising the main and auxiliary dams 16 feet. It also addresses how it's working with local communities to reduce the impact from construction to their daily life and the environment.

"It's the public's project really. We're doing the work, but the residents certainly and the public, we need their input, they live there. With input from the public, cost, many factors, we then arrive at what we call the preferred alternative, which is the way, in the end, we're going to repair this dam."

The public comment period on anticipated impacts to homes and businesses in the Kern River Valley starts in July.

The dam safety modification project has officially transitioned into the design phase and the team has begun work on several key exploration contracts anticipated to be awarded early this year. Construction isn't expected to start until late 2016 or early 2017 after highways 155 and 178 are moved.

"Isabella Dam Modification Project", 03/01/2013, online at: http://www.kget.com/news/local/story/Isabella-Dam-Modification-Project/uVBhvYa090O0Mlx-SRwWJg.cspx

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