

ORSAM WATER BULLETIN

Weekly Bulletin by ORSAM Water Research Programme

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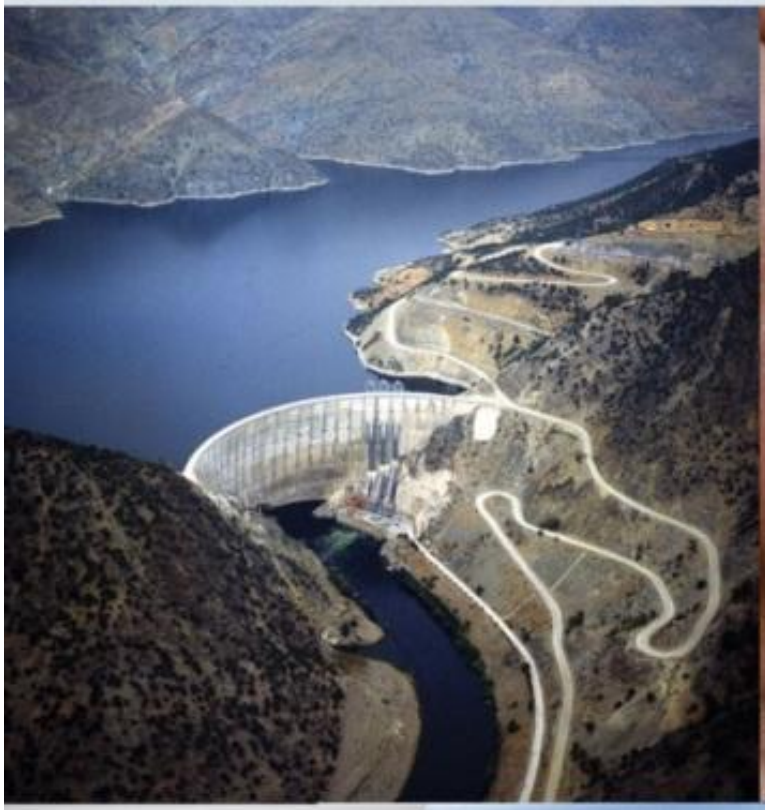



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Mithat Paşa Caddesi 46/4 Kızılay-Ankara TURKEY
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❖ Iraq Water Crisis Could Stir Ethnic Clash

BAGHDAD (UPI) -- Iraq is facing worsening water shortages caused by the failure of successive postwar governments to ensure supplies and extensive dam-building in neighboring states that could trigger sectarian conflict.

"One prediction, which has yet to come true, has been made repeatedly by former U.N. Secretary-General Boutros Boutros-Ghali since 1988: That the Middle East will at some point in the future see war break out over access to water," the Middle East Economic Digest observed.

"Boutros-Ghali thought an interstate war would occur because of disputes over the ownership of the Nile. This has yet to happen.

"But if policymakers in Baghdad do not act soon, water could well be the source of renewed strife, not between Baghdad and its neighbors, but between Iraq's already deeply divided population," the weekly warned.

"If water availability in the country continues to fall and the quality of what is on offer is not increased, the government will have no one to blame but itself."

International aid organizations have been reporting an increase in violent incidents concerning water supply.

This is happening against a worrying backdrop of mounting sectarian violence between Iraq's majority Shiites, who dominate the government and the security forces, and the minority Sunnis who lost power when Saddam Hussein's dictatorship was toppled after the U.S.-invasion of March 2003.

With U.S. forces withdrawn from Iraq, government forces under Prime Minister Nouri al-Maliki haven't been able to contain a wave of bombings and assassinations by Sunni groups, including al-Qaida.

Shiite vengeance on a significant scale may not be long in coming and with it the risk of a sectarian civil war.

Iraq's water comes primarily from the Euphrates and Tigris rivers. Both rise in Turkey, which has constructed a chain of dams over the last decade, with more to come. This has drastically reduced the flow of water into Iraq.

Syria, which has also suffered because of the Turkish dams, and Iran have been building dams too, further cutting the river flows from the north and the east into a country that until the late 1950s was a breadbasket for the Arab world.

Iraqi farmers recently blocked border crossings from Iran east of Baghdad to protest Tehran's diversion of the al-Wind River that irrigates one of Iraq's largest agricultural areas.

"Cutting water is a crime against life," the farmers' leader declared.

"Iran has diverted 15 tributaries to the Tigris since 2006 alone," observed Casey Walther, who, until earlier this month, was UNESCO's American water projects coordinator in Iraq.

Two new Iranian dams could potentially cut off water to two of Iraq's main dams at Haditha in the northwest and Mosul in the north.

"I visited them last summer and were already down to about 50 percent of capacity," said Walther.

Maliki's government, and those that came before under U.S. auspices, have failed dismally in addressing the worsening problem, which has been exacerbated by climate change and poor control over resources.

Officials say accurate data on water aren't available, making water security almost impossible to achieve. Walther says this is a critical failure by the government.

"All the numbers you see are estimates and often outdated," he said. "Iraqi officials cannot negotiate with neighboring Turkey or Syria, which control the flow of the Euphrates and Tigris."

With tension over the dwindling water supply escalating, Walther said he fears the worst.

"I'm concerned that when you look at the hydrological makeup of the country, the water comes from the northwest and travels down to the southeast, which is pretty much the country's ethnic fault lines," he observed.

Authorities in the semi-autonomous Kurdish enclave that spans three provinces in northeastern Iraq are building 11 dams, a move that's likely to inflame ethnic tensions over water.

These have storage capacities that range from 35 million-350 million cubic feet.

"We have studies and designs to build 28 more," Kurdish Regional Government Agriculture Minister Jameel Suleiman announced last March.

Water is a particularly virulent source of tension between Iraq's Kurds and Arab provinces.

In multiethnic Kirkuk province, a flash point in territorial disputes between Arabs and Kurds, Arab farmers complain that Kurdistan shuts them off from the water held by its dams.

"Iraq Water Crisis Could Stir Ethnic Clash", 28/01/2012, online at: http://www.aina.org/news/20120127194213.htm

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❖ Water purification plants coming soon

BAGHDAD, Jan. 26 (AKnews) - The Ministry of Municipalities and Public Works announced Thursday that 12 British companies have agreed to build water purification plants in five Iraqi provinces.

The media adviser in the Ministry Jassim Mohammed told AKnews those provinces the British companies will set up the stations in are Anbar, Diyala, Najaf, Dhiqar and Basra.

"The Ministry of Municipalities is working to expand the entry procedures of foreign companies to ease their entry when working on service projects in the provinces of Iraq."

Iraq experienced widespread protests throughout 2011 as people vented their anger at the poor provision of services including drinking water.

"Water purification plants coming soon", 26/01/2012, online at: http://www.aknews.com/en/aknews/2/286520/

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❖ Exxon moves on Kurdistan despite Baghdad threat

Scouts for housing, office space; considers seismic tender

* France's Total may be next to follow Exxon into Kurdistan

* Acquisitions, relinquishment, consolidation expected

By Jon Hemming

ARBIL, Iraq, Jan 25 (Reuters) - Exxon Mobil, the first oil major to move into Iraqi Kurdistan, is quietly mobilising in Arbil despite strenuous objections from the central government.

Since the bold play came to light in November, the company has kept silent - fueling speculation that it froze the deal and bowed to Baghdad, which has long held that all foreign oil deals signed with the Kurdistan Regional Government (KRG) are illegal.

But Kurdish officials insist that investment is going ahead and movement on the ground supports their claims.

"They (Exxon) are definitely here and they are definitely assessing living and working accommodation," said a Western industry source in Arbil, at the heart of Iraq's northern Kurdish region.

"There are around 10 individuals here at any one time looking at what it takes to fully mobilise here - office space, housing space, these types of things. No oil company comes in in a day."

Exxon executives met the region's Natural Resources Minister Ashti Hawrami last week, sources in Arbil said, and are preparing to issue a tender for seismic work for some, if not all, of the six exploration blocks acquired in October.

The move north sparked fury in Baghdad, which is threatening to take action against Exxon - in charge of developing the supergiant West Qurna-1 oil field in southern Iraq. Exxon has been summoned to the oil ministry for final talks.

It is unclear whether the discussions would take place before the U.S. major's fourth quarter results on Jan. 31 - when it is also expected to go public with its Kurdistan investment.

In the meantime, however, it is business as usual - production at West Qurna-1 has risen to about 390,000 barrels per day and Exxon continues to lead a multi-billion dollar water injection project that is crucial to boosting output in the south.

CONSOLIDATION

Before signing the deal with Kurdistan, Exxon was sure to have weighed any possible legal challenges.

"I'm sure Exxon has more lawyers than probably there are Ministry of Oil officials in Baghdad," said the industry source.

Such calculations are likely to influence other oil majors who may be considering moving into Kurdistan, and the lack of concrete action from Baghdad as yet is sure to reinforce the belief that it could prove a sound investment.

The KRG's Hawrami told Reuters this month the KRG was in talks with other oil majors and he expected further agreements to be signed in the next few months.

Lack of security, political instability, bureaucracy and the relatively unattractive oil deals in the rest of Iraq are driving international oil majors towards following Exxon's lead and signing exploration and production contracts with Kurdistan.

After Exxon snapped up the last unclaimed Kurdish territory, new arrivals will be looking to farm into existing blocs. France's Total is keen to move into the north, sources said, and a link up with Anglo-French explorer Perenco in the Sindi-Amedi block along the Turkish border is one scenario.

Total also has a minority stake in the Halfaya oil field in southern Iraq.

Other names frequently mentioned are Eni and Lukoil - that are also involved in the south of Iraq. Chevron and Conoco Phillips, which have nothing at stake, may also be interested, said the Western industry source.

"Ashti Hawrami was very clever in the way he set up the oil industry here, starting with small companies to get things off the ground," said an Western oil executive who declined to be named. "It was almost designed to lure in the oil majors, and that is what we are seeing now."

With the KRG estimating it has 45 billion barrels of oil reserves, oil executives continue to mill around the luxury five-star Rotana hotel in the Kurdish capital Arbil.

While the calculation and hard-bargaining goes on behind the blast walls of ministries and the smoked glass of swanky hotels, the city of Arbil is showing all the signs of an oil boom town in the making, a far cry from the dusty backwater before 2003.

Now the latest Porsches, Maseratis and Range Rovers jostle with the albeit largely new pick-up trucks preferred by the masses on the still pot-holed roads. Five-star hotels are swiftly springing up and Kurdish shoppers buy designer brands at swish shopping malls with an air of confidence in the future.

“Exxon moves on Kurdistan despite Baghdad threat”, 25/01/2012, online at:
http://www.reuters.com/article/2012/01/25/iraq-kurds-oil-idUSL5E8CP1W320120125

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❖ Q&A: George Soumi, Minister of Irrigation

Syria Today spoke to the Minister of Irrigation about water management and food security in Syria.

Will worsening Syrian-Turkish relations affect the general status of water and its availability in Syria?
Syria shares many watercourses with Turkey, the most important being the Tigris and Euphrates rivers.

The amount of water from the Tigris used on Syrian lands is very limited. Currently, a water pumping plant is being installed on the river in Ein Diwarto which will enable Syria to use part of its total share there, estimated at 1,250bn m3/year, which is regulated by an agreement signed by Syria, Turkey and Iraq.

The number of Turkish facilities for reserving water from the Tigris is relatively small, and not much of Turkey's landmass is irrigated by the river, which limits Turkey's need to control its water. Moreover, Turkey does not have a large agricultural area irrigated by the Tigris River.

Turkey has a number of dams on the Euphrates that enable it to control its water more than that of the Tigris. However, it is not to be expected that the Euphrates' incoming water would be affected. The reason for this is the fact that any reduction in the amount of water passed to Syria will also have a negative effect on Iraq as it is downstream of Syria and so will receive a reduced share of the river's water. Also, limited areas of Turkish agricultural lands are irrigated at the moment by water from the Euphrates, so there is a water surplus in the river basin. In addition, the Turks need to generate cheap electricity via dams constructed on the Euphrates, so they need to let water pass through dams, including the dam near the Syrian borders.

What are the conditions mentioned in the protocol regarding regulation of Syrian-Turkish water relations?
We must also refer to the fact that there is a protocol between Syria and Turkey, signed in 1987, according to which Turkey is committed to allowing a flow of over at least 500 m3 /second from the Euphrates. There is also an agreement between Syria and Iraq, signed in 1989, that regulates the share of the incoming water in Jarabloss at the Turkish border, where 58 percent of it is reserved for Iraq and 42 percent is Syria's share.

2011 measurements of these amounts of water indicate that Turkey has kept its commitment to the above-mentioned protocol. Also, Syria let flow in Abou Kamal at the Iraqi border the 58 percent from the discharge passed in Jarabloss. However, sometimes the amount of water passed to Iraq reaches more than that, i.e. 60-70 percent, sometimes even over 95 percent.

There are a number of joint Syrian-Turkish committees, such as the one for the restoration of Ras Al-En springs, the committee for the protection of water from pollution, and the Iraqi - Syrian - Turkish committee to unify the mechanism of measurement in the Tigris and Al-Khabour rivers.

Turkey mentioned that the water sector is not targeted by the sanctions…
Turkey plans to construct 22 dams in the framework of the GAP project, which is a big project for

the reclamation of land situated in the southeast of Turkey. If the project was fully implemented, Turkey would consume a larger quantity of Euphrates and Tigris river water for irrigation. There is no doubt this will be negatively reflected in the flows of the two rivers, both in quantity and quality.

In this framework both Syria and Iraq seek to reach a final tri-lateral sharing agreement with Turkey for the two rivers' water, binding all the parties according to the former agreements and protocols.

Early last year, Syria and Turkey laid the cornerstone of a 'Friendship Dam' on the Orontes, which contains 1,000m3 of water and irrigates around 13,000 hectares of land.

What are the consequences of suspending this agreement on the agricultural sector in Syria?
The main purpose of this mutual Syrian-Turkish dam on the Orontes is to regulate the riverbed, prevent flooding of the lands at the lower end of the dam, and make use of dammed water to irrigate lands and generate power. However, irrigated lands around the river are limited and partly irrigated by pumping water from the river itself. So there would be no negative consequences on the agricultural sector in Syria if this agreement was suspended.

It's necessary to highlight the fact that the dam project is still being studied and, to date, the amount of water stored in the dam and the level of the storage have not been specified.
There is a red line that cannot be surpassed, i.e. any Turkish actions should not endanger preserving the historical monuments of the Dar Koush region and should not have an impact on the incomings of Ein Al-Zarka spring, which is considered the primary source of drinking water to secure for Idleb governorate.

What measures has the government taken to avoid a food crisis? And what support is the government providing to farmers to maintain agricultural production?
The government is taking all necessary measures. Some of these are securing production requirements for farmers, regardless of their indebtedness, granting loan exemptions from interest, purchasing strategic crops such as barley, wheat, sugar beets, and cotton, at attractive prices which are higher than international ones. Other measures are a fund to fight drought and another for agricultural support (for olives, apples, citrus, potatoes, tomatoes, corn, chick-peas, lentils, and grape crops, and poultry).

The annual irrigation fee for maintenance and operation is SYP 3500 (USD 64) per hectare. However, in some regions that do not need winter irrigation, as well as in the border region, the annual fees range from SYP 600 (USD 11) to SYP 1750 (USD 32) per year. Those fees are subsidised. The amount of SYP 3500 covers only 30-65 percent of the real cost of the maintenance and operation work.

What is the status quo of the drought level in the north-east of Syria?
An evaluation study on the drought situation was carried out. This study included the evaluation of mathematical statistics on rainfall, done for about 45 hydrological years, and for 450 weather stations. Also the line of precipitation levelling was drawn.

It was noticed that the fourth stability region, with precipitation of 200-250 mm/year and a probability of 50 percent, has extended to the second stability region, which partially indicates that

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the general orientation of the precipitation gives indicators of the expansion of the dry areas to the second and third stability region, especially in the north east region.

What is the amount of water available currently in Syria? Will it decrease?
The amount of stored water is slightly more than last year's reserve. Generally, water resources depend on rainfall levels (intensity and duration) that supply dams and rivers. Regarding discharges of springs, they are better than the previous hydrological year and to date they are within acceptable rates and meeting current demands.

"Q&A: George Soumi, Minister of Irrigation" , Abdulhamid Qabbani, 26/01/2012, online at: http://syria-today.com/index.php/component/content/article/833-focus/17956-qaa-george-soumi-minister-of-irrigation-

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❖ Climate Crisis

Global climate change may have a huge impact on the Middle East and North Africa (MENA) countries. New studies show it has already led to significant regional crop reductions: of 30 percent for rice, 47 percent for corn and 20 percent for wheat. Such studies predict that the very shape of the Fertile Crescent, of which Syria is a part, will change, and that it might even vanish completely. It is also expected that the annual flows of the Euphrates and Jordan rivers will decrease by 29-70 percent, which in turn will influence economic growth and make sustainable regional development harder to achieve.

Syria is generally considered a dry and semi-dry area country. The average annual water share per capita is slightly over 1000m3 while the global average is 7500m3. Currently, water resources are greatly and increasingly strained because of continuous drought, population growth and non-rational use of water resources.

Groundwater, an important water source, is increasingly valuable due to successive drought periods, especially as most water landscapes in Syria suffer from water failure. According to studies published in 2009 by GCEA and UNDP, groundwater levels are expected to decline from lack of replenishment which is partially caused by shortening wet periods and a decrease in available water such as snowmelt from high mountains. It is expected that the rate of groundwater replenishment in 2041-2070 will decrease by 30 percent from that of 1961-1990.

Initial data and indicators from the UN 2009 – 2010 drought response plan for Syria show an irregularity in the rainfall system and temperature instability throughout the last five decades.

In the last five years, the average rainfall in the main agricultural areas has declined drastically, which proved especially disastrous during the harvest cycles of 2007-2008 and 2008-2009. Severe, unprecedented declines in rainfall – of 66 percent in Hassakeh, 60 percent in Deir ez-Zor, and 45 percent in Raqqa – resulted in a noticeable decrease in crop production in those governorates. In 2008, average wheat and barley production was only 47 percent and 67 percent respectively of what it had been a year earlier.

According to government and UN data, these drought waves have harmed 1.3m people over the last three years, with 800,000 experiencing serious damage. 95 percent of these live in the three northeastern governorates mentioned above; in 2009, more than 300,000 of these residents left their homes. Meanwhile, as health and education indicators in these areas have decreased, poverty has increased.

The recurrence and increasing intensity of droughts led to a decline in available water sources, and resulted in confused water management across the country. Therefore, most Syrian cities currently suffer from water shortages. Damascus, which used to be famous for its springs, is now one of the thirsty cities in the Middle East. Water scarcity also raises fears about food production and the risks of desertification.

Climate change will probably also cause significant shifts in rainfall and temperature patterns. A decline in overall rainfall and a rise in temperature are expected by 2100 in most parts of Syria,

which will put additional pressure on water resources. If serious measures to manage these valuable resources are not taken, the situation will deteriorate.

Undoubtedly, the decline in groundwater levels is also of great concern for the authorities because of its social, economic and political implications. Climate change will affect land use patterns, accelerate the pace of land degradation, and increase the risks of drought, heat waves and dust storms. Indeed, these have already become a reality for people living in the eastern parts of the country. Low-level areas of the Syrian coast are also expected to be flooded by seawater.

Climate change makes economic sectors more susceptible to damage, which limits the country's ability to achieve balanced economic and social development. This in turn blocks Syria's path to sustainable development.

"Climate Crisis", Yousef Meslman, Syria today, 26/01/2012, online at: http://syria-today.com/index.php/component/content/article/833-focus/17957-climate-crisis

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❖ RusGidro OAO : "Institute Hydroproject" expands cooperation with Syria

The JSC "Institute Hydroproject" (part of "RusHydro" Group) and the Syrian Consulting Company "Arab Quality Makers" (AQM) have signed an agreement on joint participation in the design of a large-scale irrigation complex on the Tigris River in Syria. The customers are the Ministry of Irrigation and a private Syrian company HESCO Engineering & Construction Co.

The irrigation complex in the province Al-Hasaka is intended for irrigation of agricultural areas and it is a strategically important object for the development of the Syrian economy. The complex will include water intake facilities with the total capacity of 110 m3/s, the lower pool (maximum water level mark is 370 m, minimum one is 352.8 m), five penstocks with a diameter about 3 m and length of 300 m. Water for irrigation will be supplied to the upper reception pool to height of 110 m.

The building of a pump station will consist of 20 pumping units with total capacity of 111 m3/s and with the pressure of 115 m. Besides that the complex will be equipped with an irrigation dam and a set of protective impervious structures. This agreement on joint participation was a consequential continuation of the cooperation of the "Institute Hydroproject" and the company AQM. In 2004, "Hydroproject" and AQM signed the Memorandum of Understanding that defines the basic principles of cooperation in power engineering, including the basic conditions of the joint strategy in the Middle East Market.

"The "Institute Hydroproject" became the first foreign organization engaged in mega-projects in the Arab world", said Hassan Humwi, CEO of AQM. - "Hydroproject" is the best known and distinguished foreign company in Syria, and we are eager to participate in joint development of hydropower projects in Sudan, Iraq and other Middle East countries. We have big plans for joint collaboration."

In 70 - 90s of the last century the cooperation of Syria with Russian designers was increasing. On the Syrian Arab Republic territory the Euphrates HPP, Tishrin HPP, Al-Bass hydro unit and other large energy facilities were built upon the projects of the Institute.

"Thanks to the reforms of the national government, the local organizations got the opportunity to work with foreign companies. This will give an additional impact to the Syrian economy", General Director of the JSC "Institute Hydroproject" Paul Shestopalov said. - Today we are ready to intensify cooperation with Syria."

"RusGidro OAO : "Institute Hydroproject" expands cooperation with Syria", 27/01/2012, online at: http://www.4-traders.com/RUSGIDRO-OAO-6727603/news/RUSGIDRO-OAO-Institute-Hydroproject-expands-cooperation-with-Syria-13990075/

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❖ Looking into the Syrian abyss

ANTAKYA, Hatay province southern Turkey - Five weeks before the beginning of Syria's unarmed uprising against the rule of President Bashar al-Assad, Turkish Prime Minister Recip Tayyip Erdogan and his Syrian counterpart Prime Minister Mohammad Naji Otri laid a symbolic cornerstone for the so-called "Friendship Dam" that was to help control the course of the Orontes River (known as the Asi River in Turkey) that flows through what has traditionally been - and is once again - a bitterly divided Levant region.

Otri declared to the state Syrian Arab News Agency that the dam would be "an important symbol on the edifice of the strategic relations" that would revive a long neglected border region that has been littered with land mines for a lengthy party of its post-colonial existence.

Erdogan stated that the dam would help to foster a feeling of lost fraternity between Turkey and the Syrian Arab Republic.

Turkish-Syrian relations have a complicated history, and conflict over the water rights to the Euphrates River led to direct Syrian support of the Kurdistan Workers' Party (PKK) under the regime of Bashar's father, Hafez al-Assad. After a fiery speech by then-Turkish president Suleyman Demirel in Antakya near the end of the 1990s, Demirel gave a stern warning to Damascus to end Syrian irredentist claims on Turkey's Hatay province - once part of the French Mandate of Syria - and to end covert support for the PKK insurgency in Turkey's southeast, lest Syria face the wrath of the Turkish military.

From that point on, Turkish-Syrian relations began to slowly improve and continued apace until the outbreak of hostilities in Syria with the outset of the March 15 uprising last year.

After Ankara and Damascus had eliminated their reciprocal visa regimes for each other's nationals in order to strengthen cross-border trade, relations between the two countries were at a comparative all-time high.

Turkey's membership in the North Atlantic Treaty Organization (NATO) throughout the Cold War and its partnership with Israel pitted it against a Soviet-aligned Syria. Damascus was also locked in an ideological and territorial dispute with the Israelis over the Golan Heights, meaning that Turkey's once Ottoman-era domain to its south became an enemy of sorts for much of the latter 20th century.

With the outbreak of violence in northern Syria's Idlib governorate in the spring and summer of 2011, cross-border Syrian tourist trade in Antakya's "Syria Bazaar" has come to a complete halt. In early December, Damascus suspended its free trade zone agreement with Turkey in reaction to economic and political sanctions announced by Ankara. Picture: Derek Henry Flood

Turkey's Foreign Minister Ahmet Davotglu has been busy implementing his rather idealistic "zero problems" foreign policy agenda in the region aimed at improving Turkish ties with several neighboring states. The rapid deterioration of Turkish-Israeli relations after the lethal 2010 raid by Israeli commandos on the *Mavi Mamara* flotilla that was en route to Gaza, led Turkey seemed to further intensify the concept of renewing stunted relationships in its immediate neighborhood. This resulted in the bilateral Strategic Cooperation Council that was to hail a new era in the region. But when Syria began convulsing in the death throes of Nasserism that rocked the Arab world throughout 2011, Erdogan quickly cooled on Assad by the end of April when it became evident reprisal acts by that regime would not simply let up on their own.

The ongoing crisis in Syria has reignited old feuds. The border has been heavily militarized on the Syrian side since the influx of refugees - including a number of army defectors - from Jisr al-Shigour and the surrounding rural areas of the troubled Idlib governorate since a siege in early June.

As talk of a buffer or security zone has been bandied about in the international community, Assad has been very careful not to let the emergence of a Benghazi-like area along Syria's borders become a political reality. The maintenance of Syria's territorial integrity appears to be of the utmost priority for the regime's survival.

Asia Times Online sat down with a pair of opposition activists near the Syrian border who provided insight into the current situation in the northwestern regions of their country. They described the area along the border with Hatay province as a dead zone with almost no freedom of movement.

Manned by a combination of regular Syrian troops, brutal *shabiha* militiamen, and Syrian intelligence officers bent on protecting the regime, the border has now reportedly become one of the world's most dangerous no-go zones.

Asia Times Online was informed that almost no refugees had crossed into Turkey since high summer due to the presence of snipers dotted along a series of border outposts. The men said they were not yet categorized as refugees under Turkish law so as to keep their presence, along with several high level Syrian army defectors, as depoliticized in the region as possible.

Ankara does not want to be seen as providing a safe haven for Syrian rebels in order to keep cross border tensions at a minimum. But those who spoke to Asia Times Online did not seem too bothered by the predicament they faced under international humanitarian law as they believed they would naturally return to Syria once Assad met his fate one way or another. In that regard, they were fairly optimistic. That optimism, however, does not sync with a dictatorship that currently shows no signs of abandoning power.

The oppositionists described how they are operating a delicate humanitarian corridor along well-worn smuggling tracts to circumvent the rings of heavy security to bring medical supplies, satellite phones and tiny hidden cameras for their countrymen to document atrocities which can then be smuggled back out of Syria and uploaded onto Youtube and other social networking sites.

Though there has been a recent lifting of the ban on international media after pressure from the Arab league, it has mostly resulted in government-minded dog-and-pony show trips with a few exceptions.

The men based in Antakya showed Asia Times Online an array of devices used to clandestinely gather imagery to show the outside world what is taking place in their beleaguered country. They described vehicle mounted mobile technology imported from both Iran and Iraq that is being used to block social media sites and global satellite news networks inside Syria.

They claimed the government of Iraqi Prime Minister Nuri al-Maliki, tilted heavily toward Tehran after the US withdrawal, is fully backing Assad even in the face of a wider Arab consensus that he must leave power.

Shi'ite-majority Iraq has become an outlier in the Arab world in favoring the Iranian position on Syria in opposition to Gulf Cooperation Council (GCC) states led by Qatar which are openly calling for Assad's ouster.

They stated Maliki had even turned over American-designed communications technology that was meant for the Baghdad government to Damascus to aid in its quelling of the rebellion.

Iranian technology has also been offloaded from Iranian naval vessels at the port of Latakia, an Alawite stronghold nearly midway between the Lebanese and Turkish borders.

The Iranians have delivered huge shipments of non-lethal crowd suppressing equipment such as batons, tear

gas and riot gear. In comparison, Muammar Gaddafi was rather isolated as Libya and was flanked by the weak, revolutionary states of Tunisia and Egypt.

Syria borders a newly friendly Iraq devoid of US troops, has the rhetorical backing of Hassan Nasrallah's Hezbollah in Lebanon and is receiving copious amounts of Iranian assistance by many accounts.

There are also Shi'ite fears of what a Sunni-dominated Syria would look like. Following Hafez al-Assad's 1982 scorched earth operation smashing the Muslim Brotherhood revolt in Hama, many Syrians went into exile in Saudi Arabia and other GCC Wahabbi states working as teachers and engineers.

The removal of the Shi'ite-offshoot Alawite government in Damascus could be a blow to the resurgent Shi'ites who have consolidated power in Iraq and Lebanon in the last decade. Maliki has also expressed concern that a Sunni Syria may stoke Sunni nationalism in western Iraq's al-Anbar governorate along the border with Syria's Deir ez-Zor governorate, a hotbed of the rebellion against Assad.

Iraq's Maliki may be supporting Assad in part to prevent the further Balkanization of Iraq. Although allowed for in Iraq's constitution under Article 140, following the threat of creating a Sunni semi-autonomous region comprised of al-Anbar, Salahuddin and Diyala governorates in the autumn of 2011, Maliki insists that Iraq will not be further split along sectarian lines.

In a period of renewed sectarian tensions within Iraq, Maliki likely views key to his own political survival that neighboring Syria not disintegrate along sectarian lines even more complex than Iraq's own when factoring in the Druze and Alawite minorities.

The rather swift, NATO-enabled fall of Gaddafi's Libya will not be repeated in Syria. The ethnic and religious mosaic of Syria coupled with an entirely different geopolitical reality means that without any kind of decisive intervention or overt "foreign conspiracy" as Assad terms it, Syria may be more of a long smolder than a powder keg.

The Arab League monitoring mission was a farce from the start, quickly falling into disarray. Unfortunately for those in the Free Syrian Army who are wishing for a no-fly zone forcing the implementation of a cordon sanitaire, there are both American and French presidential elections on the horizon.

When asked whether it was inevitable that Syria would descend into a sectarian war of which Iraq's Maliki along with a number of Western analysts have warned, the Syrian dissidents stated that this scenario was not a foregone conclusion.

They said that a civil war was sure to come after the eventual fall of the regime but that a conflict of a purely sectarian nature could be avoided while there was still time. The more civilians are killed each day, they said, the more feelings of vengeance are becoming entrenched in the national psyche.

The longer any kind of armed humanitarian intervention is put off while organizations from the GCC to the United Nations to NATO debate about just what to do, the bloodier a Syria after Assad's fall will be. They cited recent shelling in Homs' Bab Tadmour neighborhood in which an estimate 62 civilians were killed and an incident in Hama's Bab Kabli in which another 18 civilians were killed as to the constant veracity of the regime's assaults faced by ordinary Syrians each day.

The sand was running through the hourglass for any kind of peaceful transition of power in this light. The longer the fighting drags on where lightly armed rebels face the regime's heavy weaponry while civilians take the brunt of the casualties, the less likely any kind of negotiated settlement can be reached, according to Asia

Times Online's interviewees.

The "Libyan model" is starting to look more like a one-off operation that was politically acceptable in the West and the GCC but is far too risky in a much more complex Syria, especially in an election year.

Asia Times Online asked about one of Western analysts' justifications for not rushing to the Free Syrian Army's aid in the way it had been done in Libya with the fighters of the National Transitional Council: Syria has no equivalent to Benghazi. The rebels in the Free Syrian Army hold pockets of particular second tier cities and now some smaller towns like Zabadani northwest of the Syrian capital, but skeptics of a nationwide rebellion have pointed to the lack of any kind of sustained uprising in either downtown Damascus or central Aleppo.

Asia Times Online was told that a major factor were the transnational logistics needed to undergird an armed rebellion. Cities and towns near the borders with Jordan, Iraq, Lebanon and Turkey could be supplied with weapons and materiel. Fighters can also use these states as temporary sanctuaries to organize and regroup.

Aleppo and Damascus, the narrative goes, have been largely free of both mass people power movements or armed insurrection because locals know that would be quickly crushed. The only exception in their view was Hama which has maintained a sustained uprising against great odds and paid a correspondingly heavy price. An example of collective punishment is being set in Hama today as it was 30 years ago.

Though Iraq and Syria were furious rivals for decades in the Ba'ath party's schism regarding whether Baghdad or Damascus was the true leader of the Arab world. In the view of the Syrians, the democratization by force of Iraq was far different than the popular unrest in Syria.

The overthrow of Saddam Hussein brought a stifled Shi'ite majority to power. The overthrow of Assad's Alawite regime could remove not only an air and land logistical bridge to arming Hezbollah in Lebanon but would also bring a Sunni majority to power that could very well be hostile to Iran's interests in both Syria and Lebanon.

For Iran to be severed from Hezbollah would be a disaster for the ideologues in the Islamic Revolutionary Guards Corps whose desire to project Iranian power across the region all the way to the Mediterranean is paramount. They see the Iranian agenda as countervailing to broader lurches toward greater freedom across the Arab world that began at the end of 2010 with the self-immolation of an emasculated street vendor in Sidi Bouzid, Tunisia.

In a world where both Iran and Israel need each other as enemies to perpetuate their respective foreign policies, the Syrian uprising turned revolution throws each of these narratives off the rails. The men interviewed claimed that Arabic-speaking Iranian snipers have been helping to train and bolster the shabiha militiamen who are defending Assad's interests all along the lengthy Turkish frontier.

Iran portrays itself as first among equals in the global Palestinian cause and as the primary state actor that defines itself in opposition to Zionism.

The Syrian dissidents also told Asia Times Online that President Mahmud Ahmadinejad's Iran did not want to see a democratic Syria for entirely domestic reasons. Tehran does not want a repeat of the "Green" movement episode in 2009 should ordinary Iranians witness a full-scale revolution in Damascus.

Assad's handling of what began as largely non-violent protests mimicked Ahmadinejad's handling of the call for reform in Iran in June and July of 2009. The "Green" movement in Iran called for reform as the Syrians

had initially with the key difference being that it occurred in isolation.

Protests in the Arab world are components in a larger chain reaction of popular resentment and economic despair. Assad has pledged significant reforms since coming to power after the death of his father in 2000 which have never materialized. His handling of the uprising has morphed it into what is currently a low intensity civil war.

For now it appears Assad will cling to power far longer than some of the other Arab strongmen in part because of his own internal and familial sect driven allegiances. Assad, unlike Gaddafi's weaker African clients, has a host of nearby allies who can and are duly coming to his aide.

"Looking into the Syrian abyss", Derek Henry Flood, 28/01/2012, online at: http://www.atimes.com/atimes/Middle_East/NA28Ak01.html

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❖ Talking water at Davos

Water is playing a major role at the World Economic Forum, in Davos, this week. There is the launch of a new initiative, the Water Resources Group, a public-private partnership tasked with supporting developing countries facing water scarcity with water reforms. The WRG, initiated in 2010, has engaged several countries, including India, Mexico, Jordan, China, and South Africa in a process summed up by the nifty acronym ACT (analysis - convening - transformation). The next step is to analyze the results of these pilots and develop a proof of concept which will be the foundation for a new public-private entity that will support water management reforms in developing countries for the long term.

Members include the World Bank's International Finance Corporation, USAID, McKinsey & Company, and a consortium of business interests, including Nestle, New Holland Agriculture, and Coca-Cola. One could be excused for becoming fearful of water privatization upon glancing at the membership list. And surely this will be an issue moving forward. This angle, of course, is that the WRG represents the unification of multinational corporations in an effort to influence water policy in developing countries to their benefit and at the expense of the local population and environment.

The critics will also decry the difficulty of implementing such an effort. Water issues are highly localized. Developing a model applicable to all situations will be quite a challenge. And let's face it: the corruption plaguing many developing countries will pose a significant obstacle to real, equitable water management reforms at the national level.

On the other hand, the elevation of the water dialogue to this level is clearly warranted and necessary what with the spectre of climate change, rising population, and constrained resources. That business, banks, NGO's, and others are at least talking about water issues at the global level is refreshing. Developing national water plans, as is the goal of the WRB, has the potential to be a useful and revolutionary tool. The US, which has been criticized for not having one, could do well to sit up and listen as well.

The World Economic Forum is taking water seriously. It's initiated the WRG and it's produced two compelling reports: Charting Our Water Future and Water Security: The Water-Food-Energy-Climate Nexus. This is a good thing, despite fears of water privatization, so long as a balance between business, public, and environmental needs are maintained. A glance at the WRG export advisory committee indicates the potential for such a balance. Peter Gleick, a visionary water policy guy from the Pacific Institute, is there, as well as representatives from World Wildlife Fund and the International Water Management Institute.

The results of WRG pilots could certainly serve as a model for national water reforms. This is important and difficult work but someone has to do it. The concept - leveraging the expertise and perspective of a multi-stakeholder platform to help governments implement water reform - is innovative and thoughtful. Of course, questions linger. How will local stakeholders interface with the group? Will business, public, and environmental needs be balanced? Is this a viable model moving forward? Only time will tell.

"Talking water at Davos", 27/01/2012, online at: http://www.earthtimes.org/business/talking-water-davos/1788/

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❖ Water at Davos 2012: launching a new model for partnership

As the issue of freshwater scarcity becomes ever more pressing, a new partnership aims to help governments change their business as usual approach to water management

While much of the focus in Davos is on the macro-economic fault lines that are holding back global growth and job creation and promoting inequality, there is also a green thread addressing sustainability and natural resource issues running through the annual meeting. Indeed, since Davos 2008, the World Economic Forum has sustained a focus on one of the most immediate and pressing natural resource risks to delivering the growth we will need: sustainable access to freshwater.

According to the Water Resources Group (WRG), there may be a 40% gap between the required demand for, and the safe available supply of freshwater, by 2030 under business as usual practices.

The WRG is a pioneering partnership that the World Economic Forum has been helping to develop with the International Finance Corporation for the past two years. The scheme involves development institutions such as the World Bank Group; bilateral development agencies such as USAID, large water using companies from the food, beverage, construction and mining sectors and expert organisations, NGOs and think tanks.

The WRG helps governments of water scarce countries to accelerate their water reform agenda. It does so by bringing together influential people from government, civil society and business with global water experts. The organisation works with these experts to develop water resources analysis in formats that are digestible for politicians and business leaders.

For example, the WRG will help governments to see how, for growth to happen and for enough water to be available to meet society's needs, business as usual water practices in thirsty economic sectors such as agriculture, energy and industry cannot continue. In many cases, agriculture utilises over 70% of the freshwater withdrawals of a country. If food production and energy demands are to increase, then trade-offs must be made to avoid acute water scarcity derailing growth. Adapting to less water under potential climate change scenarios also needs to be factored in.

This sort of national analysis often illustrates to a government that there is a difference between the water that is safely available for a country, and the quantity of water it would need to meet its economic growth aspirations by 2030 under business as usual water management approaches. Consequently, a strategy is required to close this gap.

An important feature in these strategies is often to manage the connections between water, food and energy. Related to the work of the WRG, the World Economic Forum published a book on the Water-Food-Energy-Nexus in 2011. It is safe to say that the nexus has now become a broadly adopted framework for looking at the interconnected natural resource management challenges of food, energy and water.

With government, civil society and business in agreement that an integrated plan is required, cost effective options need to be considered. Key political and economic figures, as well as water

specialists, now recognise that a water reform plan is important to both a country's economic growth and its social and environmental wellbeing.

The WRG has provided support to the governments of Mexico, India (the State Government of Karnataka) and Jordan. Substantive and well supported reform programs have been developed and are underway in each location. The multi-sector expertise on offer from the WRG partnership helps the governments to deliver best practice approaches, drawn from NGO projects, research organisations and business solutions.

Discussions in Davos will hear from the governments who have been engaged in the work so far. A next stage in the development of this new water partnership will also be launched. The International Finance Corporation, on behalf of the World Bank Group, will host the next stage of development of the WRG.

It will become a new global entity aiming to help developing countries who are challenged by water scarcity. Aid agencies and leading global companies are coming together to support it. The ambition is to have the WRG help the governments of eight to 10 developing countries over the next two years, representing a variety of geographies and economic contexts. If successful then this could be a new model for development that can be replicated in other areas.

"Water at Davos 2012: launching a new model for partnership", 26/01/2012, online at: http://www.guardian.co.uk/sustainable-business/davos-water-scarcity?newsfeed=true

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❖ Without water, Palestine can forget about statehood

The recent French report denouncing Israel's water apartheid confirmed what many Palestinians already knew—water resources in the Occupied Territories are controlled by Israel. Palestinians, unlike Israeli settlers, find their access to water severely restricted. Palestinians discuss life without enough water.

While all the Palestinian communities in the West Bank face water shortages, some are more affected than others. The Bethlehem district – which is comprised of Bethlehem, Beit Jala, Beit Sahour, Ad Doha, Al Khader as well as Aida, Dheisheh and Al-Azza refugee camps – is on the top of the list.

"The summer season is a disaster for us," says Doctor Simon Lagare, the General Director of the Water District in Bethlehem. "This office is constantly overwhelmed by people complaining about the lack of water in their houses and we are helpless. We mutter excuses after excuses but the reality is that we can't give them what they want—water."

Water for the area is distributed by local Palestinian authorities after it is received from the West Bank Water Department (WBWD), which is located in Israeli-controlled Area C, north east of Bethlehem. The WBWD shares its aquifer with Israel's National Water Company Mekorot but, because the Oslo Accords stipulate that the Palestinians can only use water from 130m upwards--and much of the water is found deeper than that--the Palestinian supplier is forced to buy water from the Israeli wells.

It has been estimated that Israel controls around 70% percent of the water resources in the West Bank. While Palestinians are denied access to an equitable share of water and are increasingly affected by the lack of adequate water supplies, Israeli settlers face no such challenges.

"Have you ever been inside an Israeli settlement?" Charlie, a Palestinian who lives in Bethlehem's Old City, asks. "Well, if you have the chance to see one from within, you will see how luxuriously the settlers live. They have flourishing gardens, fully filled swimming pools and surely they don't care about the water they use for washing, cleaning or gardening as much as we do."

The Western aquifer is Palestinians' only remaining resource of water. Israel, on the other hand, has two other main water resources and limits the amount of water available to Palestinians to no more than 20 per cent annually, even though Palestinians constitute a majority of the West Bank's population.

As Charlie says, "If [in the future] the Israeli settlers believe the water at their disposal is not enough, the only thing they have to do is turn off the tap of our supplying well and enjoy our tiny share of water as well."

The hot and dry summer season is a difficult time for Palestinians in regards to water. The whole Bethlehem district is struck by a prolonged shortage of water and, although people react differently according to their financial status and the area they live in, everyone pays a price.

Majdi, who is the owner of a well-known Bedouin shop in the centre of Bethlehem, says that, last summer he had to buy four big tanks from the private Israeli suppliers because his area ran out of water for a month and a half. “Each of those tanks, he says, “costed 300% more than the average price but I had no choice.”

The internal water allocation within Palestinian areas is also a point of contention. Hotels, restaurants, and some factories depend on water to keep themselves afloat and they do anything they can – including paying exorbitant amounts of money to private suppliers – to take a chunk of the water.

“Bethlehem and Beit Sahour receive much more water than we do,” claims Akram, a young man living in Aida Camp. “In summer Aida Camp receives water just for 12 hours a week.”

Wisam Hasanat of the Ibdaa Centre, which is located in the Dheisheh refugee camp, recalls another internal problem that surfaced in 2009. “The water pumped to our houses was full of faeces and urine,” says Hasanat, “because our old water network – dating back to 1972 – had been built besides the sewage water and from [the latter's] many leaks the two waters were mixing up.”

Only when camp residents became sick after using the dirty water, and protests broke out in the camp, did the Palestinian authorities and UNRWA establish a committee to tackle the crisis.

“Eventually, we obtained a brand-new water network,” continues Hasanat, “but until today we haven’t seen any committee analysing the quality of the water we use.” Since the camp relies on the Israeli private suppliers and these suppliers don’t always filter the underground water before selling it, the situation is still far from being solved.

At the end of January, rehabilitation project of the water network in Bethlehem and surroundings will start with the supervision of the French Development Program (FDP). It will establish four water reservoirs and several pumping stations in this area.

“Even if the [new] network [will] work properly,” says Doctor Lagare, “the Israelis won’t give us the amount of water we need and deserve to live adequately."

"If a ‘viable state’ comprises security, borders and resources," he adds, "well, without water Palestine can forget [about becoming one].”

“Without water, Palestine can forget about statehood”, 26/01/2012, online at: http://www.alternativenews.org/english/index.php/component/content/article/33-west-bank/4094-without-water-palestine-can-forget-about-statehood

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❖ UfM discusses Gaza Water Desalination project with financing institutions in the Gulf

A Delegation headed by Union for the Mediterranean (UfM) Deputy Secretary General Rafiq Husseini, in charge of Water and Environment portfolio, visited Kuwait and Saudi Arabia last week to present the Gaza water desalination project to financing institutions and funds.

A press release said the UfM Delegation held meetings with the President of the Islamic Development Bank, HE Mr Ahmed Ali Mohamed, with the Vice-Chairman and Director General of the Saudi Fund for Development, HE Mr Youssef Al-Bassam, as well as with the Director of Operation of the Kuwait Fund, Mr Fawzi Al-Hunaif, and senior officials from the Arab Fund for Economic and Social Development.

Commenting on the successful visit to the Gulf, Dr. Husseini said "through cooperation between the South and the North of the Mediterranean, we are moving fast towards achieving what was a dream a few years ago, which is – by far – the largest single infrastructural project in Palestine".

Discussions focused on the water problem in Gaza and the need to build a large-scale desalination plant, which is the only long-term solution to address the water deficit in Gaza. The construction of a desalination facility is expected to alleviate the over pumping of groundwater from the coastal aquifer which underlies the Gaza Strip, hence stabilising and regenerating the only fresh water resources in Gaza. It is also expected to have a substantial impact in improving public health.

The UfM visit was very positively welcomed by the Arab financing institutions and funds which encouraged the Secretariat in its endeavours to promote this vital project. The UfM is providing support to the promoter of the project, the Palestinian Water Authority, in raising the resources required to finance the project and which could amount to US$450 million. Detailed estimations are expected to be provided through the update of the Gaza desalination feasibility study, currently undertaken by the European Investment Bank (EIB).

The Gaza Desalination project was the very first project to be labelled by the UfM, with a unanimous decision of the 43 UfM countries. This landmark operation consists of the construction of a 100 million cubic metre desalination facility and distribution system in the Gaza strip over two phases. The labelling of this large-scale project, is an acknowledgement that the project is capable of delivering concrete benefits for 1.6 million impoverished Palestinian citizens living on the southern shores of the Mediterranean, not only from humanitarian and health perspectives, but also contributing to job creation and future economic and sustainable development in this highly populated region of the Mediterranean.

In March 2009, more than 25 countries had pledged to provide more than €2.5 billion for the reconstruction of Gaza at the Sharm El-Sheikh Conference, where the Arab countries pledged more than half the amount. (ENPI Info Centre)

"UfM discusses Gaza Water Desalination project with financing institutions in the Gulf",20/01/2012,online at: http://mideastenvironment.apps01.yorku.ca/?p=4173

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❖ Water network connecting Dura communities to a better future

"The United States is helping improve water conditions in the West Bank, and is addressing one of our most pressing needs," says Hebron's Governor Kamel Hmeid about the USAID-funded Dura Cluster Water Storage and Distribution System. "The project is a step in the right direction to deal with the water shortages the community is facing on a daily basis."

Once the project is completed in the summer of 2012, the Dura Water System will provide approximately 43,000 Palestinians with reliable access to potable water for the first time. Governor Hmeid sees partnerships like the one with USAID as important for improving living standards for people in the Hebron area, noting that the project will address a major problem for local residents. "I want to steer the people away from the frustration caused by harsh living conditions," he says.

The $17.5 million water project consists of more than 12 kilometers of transmission pipelines, 92 kilometers of distribution networks to rural communities, and the construction of three large, concrete water-storage tanks which have the combined capacity to hold 4,000 cubic meters of water.

74-year-old Zbeideh Awawdeh is one of the residents who will benefit from the project. She lives in the village of Fqeiqees, where the new transmission line can be seen reaching the modest homes of the village. "Look, see the new pipes," Zbeideh points out excitedly. "I will no longer have to walk to the water well, nor drag my ailing body back and forth in the cold weather or summer heat."

Fqeiqees is one of the fourteen local communities that will benefit from the Dura water project. Approximately 25,000 women live in these communities. These women are excited about the prospects for improving hygiene within their homes, washing laundry without having to haul buckets of water, and preparing infant milk in the knowledge that the water they are using is safe and fresh. Local doctors have also noted that clean, piped-in water should help reduce hepatitis cases in the Dura area.

In small villages in Hebron, such as Fqeiqees, residents collect rain water that goes into cisterns. But during the dry season, they are often forced to purchase water from commercial tanker trucks. The average family living in this region spends around $240 monthly to purchase water from these trucks – a large sum given that the average salary per household is less than $500 a month.

Waleed Abu Sharar, Head of the Dura Joint Council for Services Planning, is confident that the project will improve lives for whole communities. "It brings potable water at an affordable cost for people who never had such access – water we need to improve living conditions. The project will create incredible, long-term sustainable benefits." Abu Sharar adds: "This is the best gift ever from the American people to the Palestinian people."
occupied Palestinian territory

"Water network connecting Dura communities to a better future", ReliefWeb, 22/01/2012, online at: http://mideastenvironment.apps01.yorku.ca/?p=4171

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❖ Study finds most Tel Aviv area wells too polluted to draw drinking water

Of 166 wells operating in 1980, only 96 were still in operation as of 2011; contaminants are industrial in origin.

Almost two thirds of drinking-water wells in the greater Tel Aviv area have been declared too contaminated for use, according to a recent study.

The data, collected by the Health Ministry and the Water Authority, show that in 1980 there were 166 wells, fed by the coastal aquifer, which provided a good deal of the drinking water to the big cities in the Tel Aviv area. As of the end of 2011, 96 of them were out of operation, mostly because of contamination. The contaminants are industrial in origin, particularly from armaments production, use of fertilizers and pesticides, and contaminated sludge seeping into the ground.

Another source of pollution is the salination of the water table, which happens when too much sweet water is pumped out and is replaced by sea water. According to the Health Ministry and Water Authority figures, 32 of the wells were declared unfit for use due to a high level of nitrates, which originate in chemical fertilizers, and some of those were also found to contain toxic metals.

Eight other wells were also found to contain toxic metals. Ten wells were disqualified for containing perchlorate, a component of rocket fuel used in military manufacturing, large quantities of which leaked into the ground from the Israel Military Industries site in Ramat Hasharon.

The use of well water was completely stopped in Ramat Hasharon due to perchlorate contamination, and the city now gets its water from the National Water Carrier.

Ramat Hasharon has filed suit against the state due to the expenses it has incurred in building infrastructure to receive water from the National Water Carrier. It is believed that some 600 million cubic meters of water in the Ramat Sharon area are contaminated.

It will have to be pumped and purified, which will take 20 years and cost about half a billion shekels. If this is not done, the contamination will continue to spread, putting more groundwater at risk.

In the industrial zone of Holon, seven wells, producing some 124 million cubic meters of polluted water in an area covering 2.8 square kilometers, have had to be closed due to pollution.

Last year the Water Authority checked seven more wells in Bnei Brak, Tel Aviv and Ramat Gan, and found two of them to be contaminated. The Water Authority plans to rehabilitate the wells in the area of Tel Aviv once occupied by Israel Military Industries.

These plans include, in addition to pumping and purifying water, injecting materials into the aquifer that help dissolve the contaminants more quickly.

Contaminated wells next to 20 gas stations in the area have been cleaned up, and materials speeding up dissolution of contaminants have been injected into a contaminated area on Yigal Alon Street in Tel Aviv, which the Water Authority says has reduced the contamination there.

"Study finds most Tel Aviv area wells too polluted to draw drinking water", Haaretz, 22/01/2012, online at: http://mideastenvironment.apps01.yorku.ca/?p=4159

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❖ City Of Wailing Walls

The most complex word to explain is surely normalcy. The standards of 7,000 years flutter over the beautifully-lit battlements of Jerusalem. The sun sinks; the temperature plummets; the decibels fade: it has become a city of silence. The living trip warily around the dead, who are exalted in prophets' tombs, or massed in graveyards, or echo within memory and prejudice in competitive, combative narratives.

Jerusalem is the theatre of the final judgment for Jews, who will either descend to gehenna (Arabic: jahannum) down the hill, or pass through God's gate of mercy above. Christians lament the betrayal of their saviour, Jesus, not merely by Judas, whose guilt drove him to suicide, but also by Peter, who choked whatever anguish he may have felt. They mourn the crucifixion and celebrate resurrection. Muslims glory in the ascension of Prophet Muhammad to heaven from the rock on the mount at the spot where Solomon built his great temple.

If faith was not enough, Jewish' Crusader and Arab empires have left their mark on stone. Dinner conversation creeps through the intricacies of claim and survival, possession and legitimacy, construction and decay, before it gets lost in the labyrinths of ultra orthodoxy, Salafist exclusion, aggression, response and the diminishing core of secular liberalism.

Fear, pride, bitterness and the excitable phantoms of suspicion hammer away at Jerusalem's humanists. Time has not been kind; it has created new barriers in the city famous for walls. Today's divisions, marked in cement and electricity, cut through emotions like frozen laser beams. Sunrise through a red haze over east Jerusalem brings light, but not much clarity. The horizon is lost in the Judean desert, among the Jordan hills, battlefields of a war in all its creative facets.

Within the city, a turn of a street defines the difference between the first world and third. But the first is not always a modern world. The last time I saw the Wailing Wall of the Temple, devotees mingled; this time they were separated by gender, testimony to the rising grip of ultra orthodox Jews upon the holy city. Their numbers have been estimated at some 2,40,000 in a population of 7,00,000; roughly the same number consider themselves secular Jews. The rest are largely, but not solely, Muslim Palestinians. They live in Jerusalem because they are determined never to leave. They do not, however, participate, awaiting instead another tide to shift the destiny of unborn children. A century is a mere page in a long history.

Palestinians lost their part of Jerusalem in the 1967 war. Since then, the defeated have been in search of alibis and victors have been in search of peace. If the first is delusion, then the second is destabilising. Attrition debilitates one tiny nerve a day, but eventually it leaves both sides unnerved.

Israel might be able to deal with Palestine, but how long can it deal with the world? It can't build electronic walls against London and Paris. I picked up Haaretz, Israel's leading newspaper, established in 1919, just after the Balfour Declaration that set the stage for the creation of Israel in November 1948, on Tuesday, January 17, for breakfast reading. Here is a mix of the day's news. In London, Britain's Deputy Prime Minister Nick Clegg condemned Israeli settlements on Palestinians' land as "deliberate vandalism". In Paris the Foreign Affairs Committee of Parliament had published a report accusing Israel of using water as "a weapon serving the new apartheid". 450,000 Israeli

settlers, it pointed out, used more water than 2.4 million Palestinians. Vandalism. Apartheid. These were words being used not by the Muslim Brotherhood but by friends of Israel.

The enemy, in the meantime, had switched generations. Hackers based in Saudi Arabia, with net names like Group XP and Nightmare Force, had exposed details of thousands of Israeli credit cards, blocked access temporarily to El Al, the national airline, and engineered the crash of the Tel Aviv stock exchange website. The young Arabs behind this technological warfare promised much more, even as Israel's tech-security elite scrambled to build yet more walls, this time in cyberspace. On the edit page of the same day's Haaretz, columnist Yitzhak Laor said all he needed to say in the headline over his short, sharp piece: "Arabs have never been equal under the law". Many would find such news good reason for not reading a newspaper. But there is an uplifting part of the story. Israel has a free press, guarded vigilantly by Israelis with a strong liberal conscience. It is such a welcome fact in a dictator-rich neighbourhood where a whisper has often been the only instance of free media.

Conflict is always dangerous to the survival of a liberal. But it is only when the liberal voice commands that peace will obey.

"City Of Wailing Walls", 25/01/2012, online at: http://news.in.msn.com/exclusives/it/article.aspx?cp-documentid=5785414

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❖ Europe should call Israel's bluff

Stopping the colonialist machine in its tracks will earn struggling EU much-needed Arab goodwill

The figures say it all. Over 1,200 Jewish colonists occupied outposts in the West Bank in 1972; in 2012, over 300,000 live in fortress-like colonies on hilltops overlooking the Jordan Valley, excluding the illegal colonies and gradual annexation of occupied east Jerusalem.

This exponential growth of Jewish colonies has taken place mostly in Area C of the West Bank. There are now twice as many illegal colonists in Area C as there are Palestinians, who have diminished in number due to lack of access to water, building permits, and the occupation itself.

Area C comprises 62 per cent of the West Bank and is under full Israeli security control, as stipulated in the Oslo Accords, signed between the Palestinians and Israel in 1993 and ratified in 1995 to include further Israeli security measures around Jericho and in the Jordan Valley.

Why former leader Yasser Arafat signed away what remained of Palestine at Oslo is another painful question altogether for the Palestinians, but the evidence nearly 20 years later is irrefutable: Israel is carrying out a systematic, and not so subtle, colonisation of Palestine.

Everyone knows this now. It's no secret to any visitor and Europeans are well-placed to see and experience the nitty-gritty details of the Israeli neo-colonial machine. And for those who still believe in a peace settlement, their voices are becoming increasingly critical and unspoken. This was exemplified in the recent report by the European Union Heads of Mission (HoMs) on Area C and Palestinian State-Building, leaked in Brussels early this month, but published in July 2011.

Not since the UN Special Envoy for the Middle East Peace Process, Alvaro de Soto's ‘end of mission report' in May 2007 has there been such explosive material to condemn the illegal Israeli military occupation and militarised Jewish colonisation of Palestinian territory.

Again, the numbers say it all: when the Israeli occupation began in 1967, there were about 250,000 Palestinians in Area C while now there are a little over 50,000. Palestinian construction is prohibited in around 70 per cent of Area C according to the Israeli Civil Administration.

Then there are the Israeli-designated ‘nature reserves', which occupy about 10 per cent of the West Bank. Half of this 10 per cent for the preservation of wildlife and animals overlaps rather inconspicuously with ‘closed military training zones' for the perpetuation of the Israeli occupation. If the trend is not clear by now, here is another basic statistic: a total of 45 cisterns and rainwater structures in Area C of the West Bank have been demolished by the Israeli authorities since 2010, according to the UN Office for the Coordination of Humanitarian Affairs (OCHA).

Why would Israel intentionally destroy Palestinian cisterns? France figured that one out now. In an official report on The Geopolitics of Water, published in December 2011, the French Parliament calls Israel's exploitation of Palestinian water resources, a "new apartheid".

Water politics

What is more revealing still: the 450,000 illegal Jewish colonists on Palestinian land use more water than the 2.3 million Palestinians in the West Bank. Anyone who has seen the sprinkling system of the green-gardened hill-top Jewish fortresses will not be entirely surprised.

Furthermore, the Palestinians have no access to the Jordan River. This severely depleted river is exploited by Israel (60 per cent) and by neighbouring Arab countries (40 per cent), according to the French report — although given the sickly status of the river those percentages hardly seem to matter.

So we have new statistics and new statements, but the solution for peace between Israelis and Palestinians continues to stagnate. The peace process has been on pause for decades but now the perception of who is to blame and what real intentions are is changing. This shift in perception is important. Europe is becoming more vociferous in its 'megaphone diplomacy' and may, one hopes, be moving away from its 'constructive ambiguity'. Nowhere is this more poignant than in the recent reports issued by France and the EU.

There is a tremendous opportunity perceived by more and more European politicians now for better and more constructive relations with a rapidly changing Arab world. This opportunity is based on the promotion of economic cooperation, popular representation and social diversity — much like the European project.

The geographic proximity between Europe and the Arab world is undeniable, particularly around the Mediterranean. While Israel occupies Palestine, Europe is slowly awakening to new realities and the great potential for trade, tourism and technology.

In dire financial straits, Europe needs to recover economically by building stronger ties with its neighbours; and the best path to improving relations with the Arab world at large is to endorse the long overdue Palestinian right to self-determination.

"Europe should call Israel's bluff", 25/01/2012, online at: http://gulfnews.com/opinions/columnists/europe-should-call-israel-s-bluff-1.970615

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❖ The French water report

While the report's basic facts presented appear fair, the conclusion relating caused an uproar in Jerusalem.

On December 13 the Foreign Affairs Committee of the French National Assembly published a monumental, 320-page report on the geopolitics of water, penned by Socialist Member of the National Assembly Jean Glavany.

The report dealt with two current international water conflicts: a conflict between Kazakhstan and Uzbekistan over the Aral Sea Basin in Central Asia, and the case of the Jordan River Basin, involving Israel, Lebanon, Syria, Jordan and the West Bank. In the case of the Jordan River Basin, most of the emphasis is on Israeli-Palestinian relations.

While the basic facts presented in the report appear to be fair, the conclusion relating to Israel caused an uproar in Jerusalem – especially the title of a box within the report: "Water, Revealing a New Apartheid in the Middle East."

After analyzing the history of the term "apartheid" and admitting that "Palestine is not South Africa, and 2010 is not 1990," the report nevertheless accuses Israel of conducting an apartheid policy in the West Bank.

The report is critical of the disparity in water allocation between 450,000 Jewish "colonial settlers" (in the words of the report) and 2.3 million Palestinians. The report also accuses Israel of blocking attempts by the Palestinian Authority to develop its meager water resources, and sealing Palestinian wells and cisterns.

While the report admits that Israel is acting most of the time within the framework of the agreements relating to water resources in the Oslo Accords, it emphasizes the basic injustice of Israel's de facto control of their implementation.

The most worrying aspect of this whole affair is that while Israel knew all along that a report was being prepared by the National Assembly, and although senior Israeli water experts, as well as Minister of Energy and Water Uzi Landau, actually met with MNA Jean Glavany when he visited Israel last May, no one in the Israeli Embassy in Paris bothered to follow up progress on the report, or ask to see a draft before it was published. The report was first seen in the Foreign Ministry on the website of the National Assembly, several days after its publication. Someone in the Israeli Embassy in Paris fell asleep on watch.

IT IS perfectly legitimate to argue that Israel's occupation policy in the West Bank has shifted since 1967 from one of benevolence to daily occurrences of brutality against the background of objective security concerns. But while one could argue that Israel is in breach of the Fourth Geneva Convention relating to occupied territories, the situation is not as black and white as presented in the French report.

In the first place, the term "apartheid" applies when one population group is systematically segregated and discriminated against in a single, sovereign state. As long as the West Bank is not annexed to the State of Israel, the term apartheid simply does not apply, though other strongly critical terms might certainly be applicable when speaking of Israel's conduct vis-à-vis the Palestinians.

Even King Abdullah of Jordan, who recently stated that in the absence of a two-state solution the result will either be with a single democratic state, or a single apartheid state, avoided terming the current situation as apartheid.

But there are additional facts that must be emphasized. The first is that up to the Six Day War Jerusalem and most of the West Bank were connected to running water only two or three days a week, so that the situation today, despite the major increase in the Palestinian population, has unquestionably improved.

The second is that even if Israel were to distribute the available water equally between the Palestinians and the Jewish settlers in the West Bank, and were to agree to share the aquifers more fairly with the Palestinian Authority, the whole area of Mandatory Palestine (Israel, Jordan and the West Bank) suffers from an acute water shortage, which can only be resolved by means of effective regional effluent purification projects, and massive desalination plants along the coast of Israel and the Gaza Strip. This applies no matter what shape the eventual political settlement in our region will take.

One final point ought to be mentioned. All the Israeli Committees of Inquiry that investigated the water crisis in Israel in recent decades, including the most recent National Committee of Inquiry on the Management of the Water Sector, that published its report two years ago, failed to deal with the regional issue, which is considered political, and therefore outside the bounds of a purely professional investigation. This might prove to have been a mistake, at least in terms of Israeli hasbara.

"The French water report", Susan Hattis Rolef, 22/01/2012, online at: http://www.jpost.com/Opinion/Op-EdContributors/Article.aspx?id=254692

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❖ Water for all: The case for a one-state solution

Negotiations over water tend to kill peace talks between Israel and the Palestinians, so why not a one-state solution?

In light of yet another round of negotiations between the Palestinian Authority (PA) and Israeli negotiators (which, it must be said, took place on the heels of an announcement to build more illegal homes in East Jerusalem), questioning the likelihood of negotiations ever resulting in an independent and fully sovereign Palestinian state along the pre-1967 borders is as pressing as ever.

When Prime Minister Netanyahu, during his public scolding of President Obama, referred to the pre-1967 borders as "indefensible" for Israel, he was not expressing a fringe, radical point of view, but rather, frankly articulating what many in Israel's policymaking circles had implicitly recognised decades ago; that a completely sovereign Palestinian state within said borders, in complete control of the natural resources to which it would be entitled, is an unacceptable option.

Some, such as the Ultra-Orthodox Jewish populations that inhabit the illegal Jewish colonies in the West Bank, or the Christian evangelicals in the United States, endorse this view on a religious basis. However, much more strategic and practical considerations such as the issue of water also make the 1967 borders "indefensible". It is on this basis - the basis that Israel cannot accept a sovereign Palestinian state rightfully in control of its water resources - that I argue the need for a paradigm shift in mainstream Palestinian discourse from a two-state solution to a one-state solution.

Facts underground

The one-state option can theoretically take either a unitary or bi-national form, with the latter codifying some form of distinct national identity within the political structure. A bi-national state would help promote minority protection, but might also cement national divisions that might otherwise fade in a generation or two.

Many academics, such as Rashid Khalidi, point to the fact that a *de facto* one-state reality has already emerged, with different classes of citizenship designated for Israeli Jews, Israeli Arabs, and Palestinians; effectively constituting an apartheid system.

However, endorsing a unitary or bi-national state is often seen as a radical or extreme view, as those in power would prefer to restrict the range of discourse and the parameters for seeking a solution to a two-state framework where "nothing is agreed until everything is agreed". This ensures that virtually no progress is made in changing the status quo. And isolating an issue such as water exposes the reality that proponents of the occupation have for decades shaped the facts on the ground to ensure its perpetuity.

Water issues often receive minimal attention as compared with the right of return or the status of Jerusalem. But water security, and more specifically, the policy of consolidating control over the freshwater resources of the occupied Palestinian territories (OPT) has always been a cornerstone of Israel's security policy. The recognition of the need to maximise access to water at the expense of Arab neighbours even predates the creation of the Israeli state, as records show Chaim Weizman

lobbied the British extensively in 1919 to include the Litani within the borders of any future state that was to be designated for the Jews.

Today, Israel's dependence on water that lies within the OPT is high, constituting roughly 60 per cent of the Israeli water supply. The Mountain Aquifer is the most significant shared water resource between the Israelis and Palestinians, with 80 per cent of it located under the West Bank.

Yet, Israel restricts Palestinian use of the Mountain Aquifer to no more than 20 per cent of its annual yield. Since the beginning of the occupation, Israel has enacted legislation [PDF] and imposed other measures to restrict Palestinian use of the freshwater to which they are entitled in order to be able to maximise its availability for Israelis.

There has been a consistent policy of denying Palestinian access to their water achieved through comprehensive measures, such as refusing to grant permits to build or repair water wells in the OPT. In 1989, Israel's Ministry of Agriculture bluntly stated the imperative that, regarding the OPT: "It is difficult to conceive of any political solution consistent with Israel's survival that does not involve complete, continued Israeli control of the water and sewerage systems, and of the associated infrastructure."

Prime Ministers Begin, Barak and Sharon, all considered full and complete Israeli control of Palestinian water use and extraction as a pre-condition to any conceivable Palestinian state. Furthermore, the expropriation of Palestinian water factors largely in the locations of Israel's West Bank colonies, as well as the route of its apartheid wall. And as water scarcity becomes exacerbated by growing populations and climate change, one can only expect these policies to continue.

Reservoirs of tension

Under these conditions, it is clear that any two-state solution granting the Palestinians *complete* sovereignty is a non-starter for the Israelis. Conversely, any solution that might theoretically be acceptable to the Israelis presupposes a Palestine that is not in control of its water resources, and hence is not sovereign.

The context for an independent Palestinian state has always been restricted to the two-dimensional surface, ignoring the three-dimensional nature of the occupation as described by Eyal Weizman in his "Politics of Verticality" concept, whereby Israel retains full control of the airspace above and the resources beneath the ground. Yet, the PA continues to peddle the two-state solution even as it has brought about nothing but the opportunity to consolidate the occupation and increase the likelihood of its permanence.

Pushing for a one-state solution does away with sacrificing basic Palestinian rights and entitlements for the sake of practicality (and the leaked "Palestine Papers" reveal just how extensive such sacrifices would have to be in order to be accepted by Israel). As any political realist can attest to, Israel has everything to gain from continuing perpetual, fruitless negotiations with Palestinians, while it continues to confiscate Palestinian land and resources.

Support for the right-wing Zionist agenda has become structurally embedded in the US political system (a look at the US Congress and the Republican primary elections confirm this fact), and the US continues to be the main broker in Israeli-Palestinian negotiations. The statehood declaration, although bold, achieved little beyond symbolism. In this context, there needs to be a complete paradigm shift on the part of mainstream Palestinian voices to endorse a one-state solution.

As isolating solely the water issue reveals (not to mention other, more divisive issues such as the right of return), expecting a just two-state solution can almost be considered an impossibility. Rejecting the pursuit of a one-state option, the only just possibility, because of its impracticality, does not take into account similar arguments that were made about apartheid South Africa.

Parallels can also be made with Northern Ireland, Belgium, and even Canada. Endorsing such a shift in discourse and advocacy will surely be difficult, as it would require among other things alterations in existing national identities. But such a pursuit has the advantage of having as its end goal a just solution. And surely it can't possibly yield less than the quest for two-states has so far.

"Water for all: The case for a one-state solution", Ramzi El Houry, 26/01/2012, online at: http://www.aljazeera.com/indepth/opinion/2012/01/201211712183641435 4.html

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❖ 'Despite setbacks, Disi project to be completed on schedule'

MUDAWARA/MAAN — Despite several incidents that delayed progress of the Disi Water Conveyance Project, officials on Thursday said the water mega-venture will be completed on its due date early next year.

Seventy-one per cent of the project, designed to provide Amman with 110 million cubic metres (mcm) annually, is completed, according to project officials.

"Overall progress of the Disi project reached 71.7 per cent. The planned progress by this time should have been around 80 per cent, but security issues among other non-project related reasons delayed implementation," said Kevork Msrlian, contact manager at the Sweden-based SWECO company, which is supervising the construction of the project for the Ministry of Water and Irrigation.

He made the remarks during a tour of Disi project work sites on Thursday organised by the Ministry of Water and Irrigation, during which Minister of Water and Irrigation Musa Jamaani and other officials checked on the progress.

Msrlian noted that the overall progress percentage includes completion of engineering blueprints, procurement of materials and construction among other elements.

"Fifty-eight per cent of the project construction has been completed, while the planned percentage by this time should have been 73 per cent. Engineering and procurement measures are progressing according to schedule," Msrlian said.

Work on the Disi project was halted several times last year due to attacks against project workers in the south. Construction of a major part of the project was suspended for over a month after a shooting incident targeted Disi project engineers and vehicles in September last year.

Mechanical and construction work on the project resumed in early December last year after authorities introduced security measures to protect teams operating in the southern region between Al Hassa and Mudawwara on the Jordanian-Saudi border.

"Maintaining a secure site, satisfying the local residents' need for employment, frequent closure of roads leading to work sites due to protests and the complexity of pipe construction in the city section are among the main challenges that necessitate close attention and follow-up by the ministry," Msrlian said.

He noted that 95 patrols from the Royal Badia Forces were deployed for the protection of workers.

Being carried out on a build-operate-transfer basis and implemented by the Turkish company GAMA, the Disi project seeks to provide the capital with much-needed water via pipeline, which starts at the ancient Disi aquifer in southern Jordan and ends in Amman, passing through several water stations in Maan, Tafileh, Karak and Madaba.

Under the Disi project, which started in 2007, 64 wells are being drilled, 55 of which will be used for the generation of water, while nine will serve as piezometer wells to measure the elevation of water.

"The piezometer wells have been drilled, 13 production wells were completed, four wells are nearing completion and another two are under construction," Msrlian noted.

Twenty-five sub-contractors are working on the project, 20 of them local contractors, he said, highlighting that the project's workforce stands at 4,579 personnel, 60 per cent of them Jordanians.

'Despite setbacks, Disi project to be completed on schedule', Jordan Times, 22/01/2012, online at: http://mideastenvironment.apps01.yorku.ca/?p=4167

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❖ Groundwater shortage 'critical'

GROUNDWATER is a key driver of the global economy - but water will be scarce in critical food production regions by 2030 unless urgent steps are taken to protect it from over-extraction and pollution, international water scientists have warned.

A satellite study has proven groundwater tables in the United States, North Africa, India, the Middle East and China, are falling.

Professor Craig Simmons, Director of Australia's National Centre for Groundwater Research and Training (NCGRT) and member of the UNESCO's global groundwater governance program, said global groundwater use had more than doubled between 1960 and 2000 and continued to soar.

"Groundwater currently makes up about 97 per cent of all the available fresh water on the planet and presently accounts for about 40pc of our total water supply," he said.

"Almost everywhere, there is clear evidence that water tables are falling.

"Not many people think of groundwater as a key driver of the global economy - yet it is.

"If it becomes depleted, entire industries may be forced to shut down or move. Whole regions could face acute water scarcity."

Professor Simmons said the groundwater crisis was driven by a competition for increasingly scarce water supplies between "megacities", the energy sector, manufacturing and farming.

"The blunt fact is that most countries and local regions did not know the size of their water resources when then began extracting them, nor how long it took to recharge. In some cases this can take centuries or even millennia.

"As a result they are now extracting their water unsustainably."

Water is emerging as potentially one of the main limits to Chinese economic growth. Groundwater supplies 40pc of China's food and 70pc of its drinking water, yet water levels in aquifers in some regions were sinking by a metre or more a year, with 660 cities approaching a critical situation.

In the Middle East, depleted aquifers have been a major driver of the relocation of agriculture to Africa and the so-called 'land-grab' by wealthy countries, Professor Simmons said.

"Groundwater shortage 'critical'", 23/01/2012, online at: http://sl.farmonline.com.au/news/nationalrural/agribusiness-and-general/general/groundwater-shortage-critical/2424815.aspx

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❖ Sea Water Hydro Pump from Med to Dead Sea Needs Rethink

The Israel Chamber of Commerce recently requested that the government reinvestigate a project to connect the Dead Sea and Mediterranean Sea. In a joint letter to Environmental Protection Minister Gilad Erdan and Energy and Water Minister Uzi Landau, Chamber president Uriel Lynn argued that the project would have multiple benefits. Apart from augmenting water flows to the ever-dwindling Dead Sea, Lynn noted the project would improve the environment, tourism and agriculture and produce energy.

The idea is not new. Known as the "Med-Dead" project, it has been kicked around by engineers and environmental experts for decades. In response to Lynn's letter, Minister Landau wrote that his office had been conducting a feasibility study for a similar project, the "Red-Dead" canal, which would connect the Dead Sea with the Red Sea.

The Israeli government conducted a feasibility study of the Med-Dead Canal in the 1970s and nearly began construction. However, it never went forward due to financial concerns and trans-boundary issues with Jordan – the Dead Sea straddles the Jordanian border.

Ultimately, as noted in Landau's response, the government determined that the Red-Dead project was more promising. A canal beginning at the Red Sea could provide source water for desalination and hydroelectric power in addition to filling the Dead Sea's water deficit.

And now a team of scientists from the World Bank, Israel, Jordan and the Palestinian Authority are determining whether the plan is economically feasible – and if so, at what environmental cost. That long-awaited recommendation may soon be in the hands of the Prime Minister.

Migration impossible, and salt leakage possible

But either plan is fraught with difficulties. For example, saltwater leakage from the canal system could result in groundwater contamination. Construction and maintenance of the project could disturb wildlife – many species are sensitive to noise and dust. And the canal itself will likely obstruct wildlife corridors, making migration for many species nearly impossible. The intake system for the Red-Dead project could disturb sensitive coral communities, which line the seashore in the city of Eilat.

This is to say nothing of the massive untested experiment of taking saltwater from one place and moving it to another. What effect will it have on the water column? Might this canal carry non-native species into the heart of Israel, possibly wreaking havoc on the ecosystems there?

Meanwhile, a Dead Sea Restoration bill floating around the Knesset for some time has died. For the second time, the Cabinet rejected the legislation, which would have funded a comprehensive rehabilitation of the struggling water body. The measure was introduced to maintain water levels in the northern basin, conserve natural resources in the area, and rearrange the system of mineral extraction to ensure the Dead Sea's protection.

Sinkholes good for the environment, one MK claims

According to Environment Minister Erdan's office, Minister Bennie Begin of the Likkud party stated during the cabinet discussion that the Dead Sea was not a "catastrophe" and the sinkholes from receding waters were attracting tourists to the area.

This action came shortly after the Cabinet approved a mining agreement between the Dead Sea Works and the Finance Ministry. Pursuant to that pact, a full salt harvest will occur this year with the company shouldering 80% of the financing and the government receiving 10% royalties.

While the Red-Dead report is dragged out and politicians insist on milking every mineral, the Dead Sea shrivels and buckles. But nobody seems particularly interested in restoring the one Million year old water body to a state anywhere near its historic vigor.

This icon of Israel is visited by tourists the world over. They marvel at its buoyancy and the healing properties of its mud. It is a natural wonder and a unique resource. Perhaps one day the government will understand its worth. But for now, the promise of energy production, desalination and mineral royalties seem to have trumped it.

"Sea Water Hydro Pump from Med to Dead Sea Needs Rethink", 23/01/2012, online at: http://www.greenprophet.com/2012/01/med-dead-red-canal-israel/

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❖ Ground Engineering: A dam good job

When engineers are asked why they chose a career in geotechnics, many will say it was inspired by seeing the construction of an iconic building during their formative years. For Arup associate director Ljiljana Spasic-Gril it was more than just construction that inspired her and shaped her career as a dam engineer – it was more about the idea of being able to improve society.

"I was always fascinated with engineering structures, but not just building – I was interested in how engineering could really help people," she explains. "I did a course on dams as part of my degree and I was struck by the multi-purpose nature of them. They can provide potable and irrigation water, flood control and hydroelectric power – all things that can help people."

This passion clearly still motivates Spasic-Gril and has led her to become one of Arup's leaders in the field of dam engineering having joined the company a year ago. "My whole career has been very focused on dams," she says.

Specialist area

Spasic-Gril gained a scholarship from Energoprojekt in her native Serbia while undertaking her degree civil engineering at the University of Belgrade and then joined the company on graduation. "After my degree I started to work with Energoprojekt's dams group and I have never wanted to alter my career path," she says. "It is a very specialist area."

Spasic-Gril then moved to the UK more than 20 years ago to undertake a master's degree in geotechnics and engineering seismology at Imperial College, but she was soon back working in the dam sector for Jacobs after completing the course.

Her work has been far from office based – she has travelled extensively on business – and this is something that has clearly added to the enjoyment of her career.

"I have worked on over 200 different projects in 40 different countries," she says. "I have been to all the countries in north Africa, Europe and the former Soviet Union, as well as many countries in the Middle East, including Lebanon, Syria, Turkey, Jordan, Saudi Arabia and Iraq. I have also worked in China and Sri Lanka."

Most impact

Of all these locations, one in particular appears to have made the most impact on Spasic-Gril, not just because of the country itself but also because of the dams involved – the nation in question is the Republic of Tajikistan in central Asia.

"It is a very small country – probably one of the poorest in the world – bordered by Afghanistan, China, Uzbekistan and Kyrgyzstan," says Spasic-Gril. "But there is great potential for hydropower schemes to improve the country's economy through the export of energy. Getting these hydropower projects going will be key to improving the standard of living there."

The country has a shortage of electricity but work is underway to develop schemes that would change this and realise the country's ambition to export power.

Spasic-Gril first visited Tajikistan in 2000, immediately after the end of the civil war, and has worked on five or six dam schemes there.

"Tajikistan holds the record for the tallest man-made dam. Its Nurek Dam is a 300m high embankment structure that was built in the 1970s," she says. "The earth structure was selected for the site because it could cope with the ground conditions and faults that run through the area better than a concrete structure. It's amazing."

Record breaking

The country holds another record for dams – it is also the location of the world's largest natural dam. Surprisingly, the dam that holds back Lake Sarez is twice the height of the Nurek Dam at 600m and Spasic-Gril had the opportunity to see it for herself in 2001.

"The Usoy Dam was formed by a landslide following an earthquake in 1911," she explains. "The 2km³ landslide holds back a 17km³ body of water and I was part of a team that was asked to look at the safety of the structure and assess measures to reduce the risk of failure."

This was no easy task – the dam is at 4,000m elevation with no road access and no villages nearby. The 15-strong team Spasic-Gril worked with was flown to the site by helicopter for the 14-day expedition. "We camped at the site and had to take everything for the trip with us – including a cook to cater for us all," she says. "It was almost like a hiking holiday, but some of the team suffered from altitude sickness, so the work was challenging."

Flood threat

The team was charged with looking at the safety issues related to the formation of the dam. "If the dam were to burst then the consequences would be huge," explains Spasic- Gril. "The flood wave would travel over hundreds and hundreds of kilometres."

The solution proposed after the site visit and subsequent analysis is to build a bypass tunnel to help lower the water level behind the dam to safer levels and to also build a hydropower plant at the site to make use of the impounded water.

Since the site visit, instrumentation has been installed to allow ongoing monitoring, but the project is currently awaiting funding for further works. Until this is secured, detailed design for the project will not start.

Working on these remote schemes has taken Spasic-Gril away from her family for extended periods, which she says has been challenging, but the travel has allowed her to immerse herself in the local culture of the regions she visits. "It is very interesting learning about different cultures and different people – there is always something new to learn," she says.

Remote but amazing

"Often the places I visit are so remote that there are no hotels and I stay with local families. It is amazing to stay somewhere with no running water and no electricity and yet their children are immaculately turned out when they head off to school and they cook amazing food too."

Spasic-Gril's other passion is history and she says that working on dam projects allows her to combine her hobby with her work.

In addition to her engineering skills, Spasic-Gril is also fluent in Russian, French and English, as well as her native Serbian.

Joining Arup, which has an office in Belgrade, has allowed her to work in Serbia for the first time in many years. "I travel back there twice a year to visit my family," she says. "But now I am also going to the office in Belgrade when I go and I am trying to help them move into the hydropower market and gain work in the field."

Tropical climes

Nonetheless, Spasic-Gril's next assignment will take her to more tropical climes – she has just started work on a dam project in Mauritius, which she confesses she is very excited about.

"The project involves raising the height of an existing dam that stores water for irrigation in the region to create more storage," she says. "The embankment dam was built in colonial times – about 100 years ago – and is a similar construction to Victorian dams of the same type in the UK.

"We will be looking at the history of the structure, checking that it was built according to the plans we have and is suitable for raising."

The work is being funded by the World Bank and Spasic-Gril and a team of experts from the UK were due to fly out to the region at the beginning of December to get the scheme underway. "As well as specialists from the UK we will be working with about 20 people from Arup's office in Port Louis," she says. "This is a great opportunity for the local office to gain new skills and knowledge and we will also be providing training for the client."

Design work is expected to take six months and construction will take another year after the contract has been put out to tender.

World Bank and beyond

Spasic-Gril's work with the World Bank extends beyond her responsibilities to Arup though – she is also on the World Bank Panel of Experts for Rogun Dam in Tajikistan, which if built will take the title of world's tallest man-made dam from Nurek.

"The Rogun Dam would be 335m when finished," she says. "It would be located 70km upstream from the Nurek Dam and is based on a Russian design. Construction was actually started in the 1980s but abandoned at an early stage.

"I have learnt to survive on very little sleep"

The scheme I am advising on is looking at the potential to restart work on the dam." The scheme includes a 3,600MW hydropower plant, which would give a significant boost to the country's electricity production and enable it to start exporting power. The consultation process is expected to take 18 months, but Spasic-Gril says the completion date for the project depends on it securing funding.

As if her work for Arup and the World Bank is not enough, Spasic- Gril is also busy preparing a proposal to undertake expert witness work for a case in New Zealand.

"The time difference means working through the night, but I have learnt to survive on very little sleep," she says. "I do it because it is more than just a career – I really enjoy it. Seeing the finished project and getting the support from the local communities during the construction phase really helps make it worth it."

"Ground Engineering: A dam good job", 25/01/2012, online at: http://www.nce.co.uk/features/geotechnical/ground-engineering-a-dam-good-job/8625469.article

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❖ Doha to host Middle East power, water conference next month

Doha will host on February 6-8 the Middle East Electricity and the Water World 2012 conference with the participation of more than 135 members from 20 countries.

The conference will present papers and discuss opportunities and challenges of energy supply and water and sanitation in the Middle East. The conference will also discuss emerging trends in the GCC and Arab market, financing investment, information technology to promote operational flexibility, in addition to topics such as water desalination, facilities management, tariffs, measurement systems and water reuse.

The conference will be accompanied by an exhibition on energy which will display the latest solutions and innovative designs for technologies in the electrical and water industry.

"Doha to host Middle East power, water conference next month", 26/01/2012, online at: http://www.gulf-times.com/site/topics/article.asp?cu_no=2&item_no=483059&version=1&template_id=36&parent_id=16

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❖ Move Beyond "Water Wars" to Fulfill Water's Peacebuilding Potential, Says NCSE Panel

One of the best talks of last week's NCSE Environment and Security Conference was the water security plenary on Friday. Moderator Aaron Salzberg, who is special coordinator for water resources at the Department of State, led with a provocative question: how many in attendance think there will be war over water in the future?

Most of the audience raised their hands. The panelists – as one might expect with a set-up like that – proceeded to explain why they were mistaken.

What Makes a Water War

Carl Bruch, who co-directs international programs at the Environmental Law Institute, started by saying history shows that inter-state "water wars" are "highly unlikely." He pointed to Aaron Wolf's and Peter Gleick's work cataloguing the role of water in conflict throughout human history that shows it is difficult to find even a single conflict that was fought solely over the fundamental resource.

For example, climate change may bring changes in rainfall, and some studies have found a correlation between lack of rainfall and conflict, but there is no causation, said Bruch. "It's a question of governance," he said. If lack of rainfall caused conflict, there would have been war across the Sahel in 2003; instead, it only happened in Darfur, which lacked a government able to deal with the challenge (similar observations have been made about the relationship between drought and famine in the Horn of Africa).

Kent Butts, professor and director of the National Security Issues Group at the U.S. Army War College, said that some things have changed that might make conflict over water more likely in the near future. In light of water's relatively fixed supply, he cited growing human population – the UN median projection is now more than nine billion people by 2050 – and consumption as a key challenge, as well as the uncertain condition of key treaties. The Nile Basin Initiative is on rocky ground – with Ethiopia agitating for a greater share of flow and both Egypt and South Sudan dealing with new governments – and the Himalayan watershed is under stress as demand increases across the region. Butts also pointed to the tremendous number of new dams – many of which no longer need to abide by World Bank conditions as they can get Chinese loans and other bilateral funding – as an emerging challenge that may upend the positive historical trend.

Climate change, too, will likely bring water to the forefront in many areas of the world. "The changing climate changes the dynamics of security in a country," Butts said. How able a country is to

adapt to those changes will quickly expose weak, fragile, or corrupt regimes, threatening stability in some places.

Butts also warned that, though vehemence over water sharing has mainly been confined to rhetoric between countries up until now, that's no reason to give it short shrift – it's possible some countries may become trapped by their own public posturing, narrowing their responses to more bellicose options.

Jaehyang So, manager of the Water and Sanitation Program at the World Bank, pointed out the sheer number of people affected by water issues – nearly one-third of all people on Earth lack access to safe drinking water, she said – as evidence that water should be given more credence as a security issue, if perhaps as human or community security, rather than national or international security.

Similarly, Sandra Ruckstuhl, senior specialist for sustainable development at Group W Inc., said that though it's true that international conflict over water has been rare, "conflict over water at the local level is something that's been going on for a long time and has been a real divisive force."

Coordination Can Create Pathways to Peace

If water can be a contributing factor to conflict in some places, it's also a pathway to peace, the panelists agreed.

"This is a great opportunity," said Bruch. "We see water as incredibly cross-cutting in the peacebuilding process." He pointed to water programs' effects on health, food, energy, gender issues, and economic development as reasons to make them a priority in post-conflict settings.

"The peacebuilding value of water is tremendous," agreed Butts. "Water quality, as opposed to quantity, can be a major peacebuilding issue," he said, as it's a shared benefit.

More than material aid, Salzberg said that people in post-conflict settings most frequently ask the State Department for expertise. Because water issues cut across so many sectors, that's difficult to provide, said Bruch, but the environment and security community needs to find ways to better coordinate. "In post-conflict countries, one of the highest priorities, if not *the* highest priority, is access to clean water," he said.

Paul Faeth, senior fellow at CNA, pointed to the start of funding for the Senator Paul Simon Water for Poor Act, which provides at least $125 million in aid to sub-Saharan Africa alone, as a good policy step towards acknowledging water's role in human security.

Another barrier to sustainable water management, said Jaehyang So, are subsidies: "There is no water

system in the world that doesn't have some subsidy attached to it," she said. This creates incentives for misuse, which – though the human right to water should always be preserved – appropriate pricing schemes for industrial and agricultural use might go a long way towards curbing. (Of course, resolving that tension is easier said than done.) An infamous example is groundwater pumping in Yemen – primarily for the non-food crop, qat – which has gone on unsustainably for years, agitating internal divisions and prompting experts to predict that the country will become the first in the modern world to literally run out of water.

In concluding remarks, Butts called for moving beyond simple labels for conflict to better understand the complexity of water systems, create prosperity and stability, and better advance U.S. interests around the world.

"Move Beyond "Water Wars" to Fulfill Water's Peacebuilding Potential, Says NCSE Panel" , Schuyler Null, 26/01/2012, online at: http://www.newsecuritybeat.org/2012/01/move-beyond-water-wars-to-fulfill.html

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❖ GCC water tariffs should be revised to hammer heavy users, says report

DUBAI, U.A.E., Jan 23, 2012 – Better education will be needed to reform current tariff structures and address water scarcity in the GCC. Furthermore governments should restructure their water tariff structures so that pricing follows usage, with heavy water users paying the most, a new report has recommended.

Findings revealed by Booz & Company in a report entitled 'Fresh Water in the GCC: Addressing the Scarcity Problem' said this sort of pricing would reduce waste.

Subsidies from increased tariffs can then "be directed at guaranteeing potable water for poorer residents, at supporting economic growth and other national priorities," it stated.

The report said that "it is not a given that GCC governments should cover all the costs of delivering and consuming water in their countries; on the contrary, the region's excessive use of water shows the unintended consequences of such generosity".

The recommended "slab" tariff system has been successfully demonstrated in certain countries across the MENA region. In Egypt, the Alexandria Water Company introduced a system whereby the first 10 cubic meters remain at a low price yet usage between 10 and 20 cubic meters is higher. After 30 cubic meters it's double the initial price. Together with a surcharge for wastewater services, the incomes cover the cost of production.

Furthermore, the Dubai Electricity and Water Authority introduced a slab tariff system a few years ago whereby the more people consume, the higher the slab category they fall into. This results in a higher cost for water.

The report concluded: "If GCC countries do not become actively involved in research, enforce water policies and promote sustainability, the consequences will be significant. On the other hand, if they do these things, the payoff will be enormous."

Increasing **water supply tariffs** remain a sensitive issue as they concern basic living standards of the general public and spark conflicts of interests between providers and consumers. A case study was carried out by the World Bank studying tariff adjustment in Chongqing, China.

Conclusions from the World Bank study proved that an increase from 1.20 yuan/m^3 to 2 yuan/m^3 not only meant it was the highest in the nation at the time, but it was also accepted by disadvantaged groups.

Tariffs will continue to prove a controversial topic as **Middle East** nations attempt to increase fees and reduce heavily subsidized water. Last year Yemen put out a tender for a water tariff study consultancy, according to Meed. The study will aim to analyze current tariff systems and suggest "better methodologies to address the needs of the poorest part of the population".

On the broader topic of water scarcity, Booz & Company said that Saudi Arabia and the United Arab Emirates consume, on a per capita basis, 91% and 83% more than the global average, respectively.

It said this is six times more water than the UK and that Qatar and Oman are also considered above the global average for water consumption. The report said that GCC residents and businesses have disregarded the consequences of their water usage to enjoy benefits more common in "countries with ample rain and overflowing aquifers".

"GCC water tariffs should be revised to hammer heavy users, says report", 23/01/2012, online at: http://www.waterworld.com/index/display/article-display/8640292678/articles/waterworld/world-regions/middle-east/2012/01/GCC-water-tariffs-should-be-revised-to-hammer-heavy-users-says-report.html

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❖ Floods in Asia: Lessons to be learned from Thailand

During the last year, many Asian countries have witnessed flooding, including Bangladesh, China, India, Japan, Laos, North Korea, Pakistan, Thailand, the Philippines and Singapore.

The economic damage has varied significantly - minor in Singapore but very substantial in Thailand.

The floods have once again brought the twin issues of disaster management and development to centre stage. With climate change and its effects expected to increase the magnitude of water-related disasters, it is important to rethink why some of the current flood disasters turned out to be unmanageable, with unprecedented human and material losses.

Flooding is older than humankind, and water, whether in excess or in scarcity, has always been of concern to humans, going back to the biblical tale of Noah's Ark.

Important civilisations emerged on the banks of major rivers like the Nile, the Tigris-Euphrates and the Ganges-Brahmaputra, for the availability of water and fertile soils assuring plentiful food. With the Industrial Revolution and urbanisation, the emergence of cities became an important trend. However, living on riverbanks leads to problems. Historically, for Asia, floods have been a regular and integral component in the life. Because Thailand's recent floods inflicted such social, economic and environmental costs, it is necessary to reflect on the problems and lessons learnt, so that the situation is not repeated in Thailand or other Asian countries.

Bangkok is built on the banks of the Chao Phraya, and its existence is intimately linked with the river. The city benefitted from the river, its fertile delta and its port, and has emerged as an important economic and commercial hub. Experience taught the people of Thailand a resilience that should be saluted. Traditional houses were located at the edges of canals and were constructed on wooden stilts. However, new concrete housing abandoned the use of stilts. The casting away of this centuries-old tradition to be replaced by modern construction practices - but without adapting them to local conditions - was the first mistake.

The second mistake was to establish industrial complexes in flood plains and low-lying areas. Flood plains are ideal for agriculture, but industrial complexes should not have been established in flood plains, or they should have received necessary flood protection measures.

Industrial estates in Thailand have been hit the hardest. Over 800 factories in seven estates have been affected. Computer hard disks, a quarter of which are produced in Thailand, are already seeing an increase in price globally. The automobile sector is also witnessing production cuts. The country's economic growth forecast has been reduced from 4.1 per cent to 2.6 per cent by the Bank of Thailand. The cost of the disaster has been conservatively estimated at US$44 billion. It is now estimated that $72 billion will have to be invested for flood protection infrastructure, without which investors are not likely to return because of possible future flood threats and the availability of other investment locations.

It is not just the industrial losses that are worrisome. It is the human dimension of the disaster that will have repercussions for a prolonged period. The flood put 660,000 jobs at risk because of factory closures. Already there is talk of some industries moving to other countries.

The loss in human life went beyond the 500 mark. The tragedy is that development is supposed to be for the benefit of the people; however, people for whom this development was undertaken were left submerged.

The third mistake was thus an unsustainable development model that primarily considered short-term financial benefits but not long-term social and economic costs.

The fourth mistake was the type of research that has been undertaken by institutions and universities. How is it that so many scientists and scholars failed to forecast the arrival of the flood disaster? Is it because they have been constructing and playing with artificial models that have little relevance to reality? Or is it because they knew but did not speak out for various reasons? Either way, it has been an expensive mistake, resulting in serious human costs.

The first lesson from this sad episode is that disasters happen when we do not have enough resilience to absorb the impact of a hazard. Hazards are exogenous but disasters are endogenous. Hence, while flooding is a hazard, our inability to cope with the consequences of floods contribute to a major disaster.

The second lesson is the need to incorporate a holistic perspective in development planning . Land use, urban development, industrial activities and water management must be coordinated. Geographers know that specific terrain is suited for certain activities. Thus, land use plans must be properly prepared and strictly enforced.

The third lesson is the urgent need for institutional reforms. Neither the government nor public could say which institution was ultimately responsible. Various authorities had different views on flood management and took contradictory positions. Contradictory statements came from different institutions, which confused the public. There has to be a consistent and realistic strategy for the Thai authorities to manage floods effectively and promptly.

The fourth lesson is that scientists have been working mostly on theoretical problems, which have little relevance to reality. Scientists have to get out of their air-conditioned offices, look at the real problems and find implementable solutions. Real-life problems cannot always be simulated on computer. Simulating models and publishing research papers that have little relevance indicates a failure from a societal and scientific perspective.

The final lesson is that as Thailand begins its rehabilitation effort, it should not only include reconstruction of infrastructure but also restoration of the trust and confidence of the people. We need to continuously learn from mistakes and prepare for a better future. The fact that Thailand had been able to ward off previous disasters was primarily due to good fortune. The country may not be so fortunate next time.

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"Floods in Asia: Lessons to be learned from Thailand", 25/01/2012, online at: http://www.nationmultimedia.com/opinion/Floods-in-Asia-Lessons-to-be-learned-from-Thailand-30174413.html

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❖ Zambia: Precious Water Flows in Kabushi Township

Despite the challenges associated with efforts to improve sanitation in Zambia, functioning communal toilets and taps are in sight in Ndola's Kabushi Township following the completion of a sanitation project that will enhance hygiene for the residents. The project has brought dignity to the residents whose lives were once at risk of disease. The people can now boast of safe clean water and toilets as **VIOLET MENGO** reports.

IRENE Makoni, a mother of five, lost two of her children to diarrhoea. She attributes the death of her children to poor sanitation in Kabushi Township.

She admits that doctors had advised her to observe hygiene when her children were admitted to the hospital. Their illness was characterized by vomiting, fever and diarrhoea.

Another Kabushi resident, Joseph Nyirongo, has also been a victim of diarrhoea as a result of poor sanitation.

Makoni and Nyirongo are among thousands of Kabushi residents who had been living in poor sanitary conditions. Their communal flash toilets were dilapidated and this forced many family members to wake up at the crack of dawn to fetch water for cleaning their toilets.

Often, residents had to pay K5,000 for a 20-litre container of water, which made it hard for them to meet other basic needs. Most of the residents could not afford even a small amount to pay for water. "We used to spend eight hours a day fetching water for the communal toilets we were using before they were closed," Joseph Nyirongo says.

The communal toilets in Kabushi were closed by health authorities because they posed health hazards. The toilets designed decades ago, had collapsed forcing many residents to answer to the call of nature in nearby bushes.

To some, the only option was to dig pit-latrines which eventually also became full and posed a health hazard.

Dry human waste could be seen at the doorsteps of the communal toilets in the city's high density township.

However, the situation is no longer the same. The National Water and Sanitation Council (NWASCO) through its basket fund-Devolution Trust Fund (DTF)- provided finances for the construction of new toilets in the township.

The project, which is now complete, will help in reducing the disease burden in the area. Approximately K4 billion Kwacha was provided for the construction of the toilets and provision of water supply.

"The lack of sanitation for Kabushi residents was not just uncomfortable – it was dangerous. Without designated toilets and bathing areas, the risk of disease grew as existing water sources and the surrounding environment became contaminated," Gonga says.

The long awaited sanitation project will be commissioned soon. It will allow people access to water supply and clean and safe toilets.

The sanitation project involved the construction of sewerage network, domestic reactors for waste water and treatment and the construction of household toilets.

DTF is Government basket fund that provides money to water utilities across the country to improve their service delivery.

Apart from the sanitation project, people in the community have been educated on hygiene and disease prevention, waste management and general cleanliness.

"We have seen our health and cleanliness improve," says Emmanuel Bwalya. "We are sure that with the opening of the toilets, we will no longer experience diseases as was the case before."
The Government has long recognized the importance of this basic human right and its direct impact on the quality of life. Through DTF, Government has invested huge amounts of money to better sanitation conditions in Zambia.

The lack of sanitation has a serious impact on health and social development, especially for children. "By improving access to safe water and sanitation, the project will improve the lives of thousands and help reduce poverty levels and medical expenses," Kafubu Water and Sewerage Company managing director Ian Banda says.

Banda says the project will also save women and children from spending much time fetching water. The completion of the sanitation project in Ndola is testimony of Government's efforts to protect people from diseases.

Globally, sanitation still remains a challenge. Of the 2.5 billion people around the globe without access to sanitation, 75 percent live in Asia and Africa.

Health experts say the absence of functioning toilets provides a springboard for the spread of diseases.
The United Nations Development Programme says a staggering two million tonnes of human waste is deposited in water courses each day across the world and half the population of the developing world is exposed to polluted water that causes disease.

It is no secret that investments in sanitation have, for decades, lagged behind investments in water supply.

"Zambia: Precious Water Flows in Kabushi Township**",** Violet Mengo, 27/01/2012, online at: http://waterjournalistsafrica.wordpress.com/2012/01/27/zambia-precious-water-flows-in-kabushi-township/

❖ Mining Groundwater for Profit: The Cadiz Project

A private company, Cadiz Inc. (Cadiz), has revived plans to mine groundwater underlying land in the delicate Eastern Mojave Desert. This project raises fundamental questions about how we manage our precious water resources, and in particular, whether in the 21st century it is appropriate, or even necessary, to use renewable water resources in a nonrenewable and unsustainable way, for short-term profit.

The idea for the Cadiz project is simple: mine groundwater faster than nature refills it and sell it to urban centers in Southern California for profit. The full proposal seems more complicated - the owners might try to temporarily replace the lost groundwater with extra water from the Colorado River, if it is ever available (which is highly unlikely), but they propose to pump out this water and sell it, too, so the economics of the project really just depend on the water removed through unsustainable groundwater mining. Without that water, the project fails economically.

The project is located in the desert of southern California, east of Los Angeles and San Diego, in an area with very low precipitation. The owners intend to remove at least 50,000 acre-feet of water a year (and if they can get away with it, 75,000 acre-feet per year in the early years) for 50 years and sell it to local water agencies, including the Santa Margarita Water Agency (SMWA), Three Valleys Municipal Water District, Suburban Water System, Golden State Water Company, Jurupa Community Services, and California Water Service Company. Scientists estimate that nature, in contrast, only refills the basin with around 5,000 and 32,000 acre-feet per year, with most independent estimates at the very low end. This means the groundwater levels will drop and drop, like taking more water out of a bathtub than you put in. This is, simply, unsustainable.

If there were no adverse consequences of this kind of water mining, and if all that mattered was money, then perhaps using up this stock of water and turning it into a private good would make sense - at least to the project owners. But there ***are*** adverse consequences for other humans and for the local environment. This is cut-and-run water management: take a non-renewable resource that will last a short time, turn it for a profit, and leave a degraded landscape, mimicking the classic boom-and-bust cycles that characterized much of the mining industry in the western U.S. in the 19th and early 20th centuries.

Here are some of the other consequences:

- The water supply is unsustainable - it is not a permanent source of water and new sources would have to be found when it is no longer economical to pump.
- The project produces water that is already more expensive than saving the same amount of water through improving urban conservation and efficiency programs.
- Other local landowners and businesses believe their water availability or quality will be affected by the project in ways neither fully understood nor mitigated by Cadiz.
- There are unresolved questions about the quality of the water and how the project might worsen water quality for other users over time.
- And perhaps most important, water in the desert is a rare thing, and the desert pools, ephemeral seeps, natural springs, and playas support delicate ecosystems dependent on the ability of groundwater to reach the surface. This project would draw down that groundwater, leading to the inevitable disappearance of surface water with highly uncertain, poorly understood, but almost certainly negative ecological consequences. And even the project owners admit in their draft Environmental Impact Report (dEIR) that we don't know enough about the science to fully understand the consequence for centuries to come - long after they've left the scene.

In a mathematical sleight of hand, the project argues that water is "saved" by the project because it might reduce evaporative losses when water ponds on the surface during some wet periods. Yet it is precisely this water that local ecosystems rely upon for survival. Another piece of mathematical magic is their claim that the project is actually sustainable because they assume the project life is 100 years long: thus they pump like mad for the first 50 years and take their money and leave, acknowledging that the groundwater might or might not recharge to its original levels over the next 50 years after pumping stops. That's like saying that fossil fuels are renewable, because nature might make them again in the future. Under the lower (and perhaps more accurate) estimates of natural recharge, there is a real risk of permanent damage to the groundwater basin through subsidence of land or contamination of the aquifer with salts, and it may never fully refill. And the draft environmental impact report says nothing at all about how the real risk of climate change might alter the desert hydrology.

Finally, there are natural springs in nearby valleys that may be connected to the groundwater basin in Cadiz. In a remarkable grammatical sleight-of-hand, the draft environmental impact report states that a field survey done by their consultants concluded that "there is no information demonstrating a physical connection of the identified springs in the local mountains to [Cadiz] groundwater." Note the wording: "there is no information." They use that to discount any risks to local springs. ***But absence of evidence is not the same thing as evidence of absence.*** An honest assessment of the science would conclude that, at best, we don't know if there is a connection. And in fact the hydrologic assessment does show that if there is any connection, the mining of groundwater would ultimately affect the springs, perhaps long after pumping began. This means that if there is a connection, once it is ultimately noticed, it would be too late to prevent the springs from drying up.

We need new thinking about water in California and new innovative solutions. We must modify how we use water, and we must find new sources of supply. But the Cadiz Project is old thinking, based on the pillage-and-run philosophy of the past centuries, where water was seen as a resource to be mined and consumed, not managed in a sustainable way. This project is an insult to the notion of sustainability, to the efforts to protect the Eastern Mojave's beauty and unique nature, and to the idea that resource development should respect more than just narrow economic gain. The good news is there are excellent alternatives, including recycling and reuse of water, improved efficiency of use by our cities and farms, smarter and renewable groundwater use and recharge projects, and even desalination of brackish waters or the ocean if the economics and environmental challenges can be properly overcome. Cadiz might have made some sense a century ago when we didn't know better, but today it is neither appropriate for California nor necessary, and it should be cancelled.

"Mining Groundwater for Profit: The Cadiz Project", Peter H. Gleick, 24/01/2012, online at: http://www.huffingtonpost.com/peter-h-gleick/mining-groundwater-for-pr_b_1228398.html?ref=fb&src=sp&comm_ref=false

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❖ River pollution triggers water panic buying in China

(Reuters) - Residents of a town in southern China have been rushing to buy bottled water after excessive levels of carcinogenic cadmium were found in a river source of drinking water, state media said on Thursday in the latest health scare to hit the country.

Pollution of waterways by toxic run-offs from factories and farms is a pressing issue in China, prompting the authorities to call for policy tightening to cut heavy metal pollution, though the problem shows no sign of going away.

Cadmium levels at the Longjiang River in Guangxi Zhuang Autonomous Region on Wednesday were three times the official limit, Xinhua news agency said, pointing the finger of blame at a mining company.

Excessive levels of cadmium were detected last Sunday, the news agency said, adding that the authorities had injected 80 tonnes of aluminum chloride, a neutralizing agent, into the river in a bid to eliminate the health risk.

China closed a chemical plant in central Hunan province in 2009 after residents protested over cadmium pollution that killed two people and affected hundreds of others.

Despite Beijing's frequent pledges to reduce pollution, local officials often put economic growth, revenue and job creation ahead of environmental concerns.

"River pollution triggers water panic buying in China", 26/01/2012, online at:
http://www.reuters.com/article/2012/01/26/us-china-water-pollution-idUSTRE80P0HV20120126

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❖ Islamists win two-thirds seats in Egypt's parliament; the polices they pursue on the Nile River By Keffyalew Gebremedhin

The election to the new Egyptian parliament is just finalized after three-stage processes that lasted from November 2011 to January 2012. The candidates competed for 332 of the 498 seats in the Lower House and two Islamist parties have captured a total of 232 seats.

Seats were allocated to the winning parties in a complicated manner, mainly pairing ballots to a split of worker/farmer seats. What matters is the that Egyptians have spoken and, therefore, the judgment is that they and the international observers are content with the outcome of the election and it has been found clean, fair and transparent.

On Saturday, the Egyptian Supreme Electoral Commission made public that Islamist parties have taken the most seats, with the Moslem Brotherhood (Freedom Justice Party — FJP) and Salafists Nour Party in a controlling position. The Moslem Brotherhood won 38 percent, i.e., 127 seats and the Nour 29 percent or 96 seats.

This means that the total number of seats under the control of Islamist parties is 223 + plus designation, which means about 70 percent of the total seats.

Over 80 years behind it in politics and mostly kept under the leash by Egypt's rulers, this is the first time in modern Egypt that the Moslem Brotherhood emerges as the dominant power in that country. This victory gives the Brotherhood the post of parliamentary speaker. And it is reported that the party has nominated its secretary-general Mohamed al-Katatni for the post, whose reputation so far is that of a moderate.

Liberal parties not performing well

Trailing far behind are the moderates or non-Islamist parties, with the Wafd party taking 36 seats (11.0 percent), the Egyptian Bloc 33 seats (about 10.0 percent) and the Revolution Continues party 2.0 percent.

Some of the already known parties such as the Free Egyptians, Al-Gad and the Democratic Front did not meet the threshold required for parliamentary representation and did not qualify, when the offshoots of Mubarak's National Democratic Party (NPD) garnered 4 percent of the seats, i.e., 13 seats.

The New York Times sees the two Islamist parties as "rivals rather than collaborators." More importantly, the Moslem Brotherhood party has indicated that it would "respect personal liberties." As far as the party's agenda are concerned, Mohamed Katatni is quoted saying, "The top priorities of the next parliament are social justice, retribution for martyrs, fulfilling goals and demands of the revolution and the advancement of Egypt."

Which way Egypt?

Egyptian policy is likely to be driven by the country's fundamental interests, such as its desire to exercise control over the waters of the Nile, economic growth and regaining its lost leadership in the Arab World. By the faint sign of things so far, Egypt seems interested in revitalizing its activities with Nile upstream states and forging closer relations with Libya and the Sudan. It would not also come as surprise, if Egypt makes gestures toward Iran, while keeping its relations with Israel in the deep freezer.

As far as the Nile issue is concerned, following that country's brief hiatus Egypt's Foreign Minister Mohammad Kamel during the first week of January undertook a tour of six Nile Basin countries: Kenya, Tanzania, Rwanda, Congo, South Sudan and Sudan. Not much has come and achieved by way of outcomes.

Foreign ministry Spokesperson Amr Rushdi simply said on 18 January that the minister was interested in strengthening relations with the Basin countries. A step in that direction is The minister's invitation to his counterparts in the DR Congo, Tanzania, Rwanda and Kenya to visit Cairo. The intention of the visit is made clearer by the remarks of the foreign minister in Juba, South Sudan, where he said, "We realise that our brothers in South Sudan are aware of Egypt's interests and the importance of the Nile water for Egypt."

Perhaps in the minister's calculation is the need to galvanize support and sympathy to Egypt's position on the framework agreement signed by the six upstream states of Burundi, Ethiopia, Kenya, Rwanda, Tanzania and Uganda that is ready to come into effect once the Egyptian government and the parliament manage to pronounce themselves on it.

Its delay and postponement by a year by next May — more likely to be longer than that — is the outcome of the signatories desire to enable the Egyptian government to seize the opportunities and join them. If not, at the latest the agreement may come into effect by 2013. although it is not still clear how much successful it would be without Egypt.

The question now is whether the policies of the new Egypt on the Nile would be any different from the Mubarak era. Certainly, there may be differences of style, more frequent visits and interactions with upstream countries and offer of token Egyptian assistance, since one major accusation against the Mubarak regime was that of ignoring Africa.

Nevertheless, given what some of the candidates in the different parties in Egypt uttered during the campaigns and the so-called think tanks and research centers have been suggesting to formalize that, it is unlikely that there would be any meaningful changes in Egypt's policies regarding the Nile question.

It is possible that Egypt may only bombard upper riparian states of the Nile Basin with a series of new proposals, whose motives may only be to delay the coming to force of the new framework agreement, or if possible, derail its implementation altogether.

Along that line and completely moving away from the principle of equal access to the Nile waters by all states of the Basin, as being advocated now by the upstream states in their framework agreement,

Egypt has started testing the waters with a new notion of packaging projects involving southern African states into a new cooperative framework.

Theoretically, integrated approach to development may have greater benefits where the infrastructures and possibilities exist through efficiencies and economies of scale; but not in conditions where the incremental gains may prove more productive.

In the circumstances, if the idea of project packaging on a wider geographic scale that now is being floated is serious, the burden of another decade-long negotiations would certainly render it a non-starter, much less it being practicable.

Fortunately, eleven years of negotiations with Egypt on the forums of the Nile Basin Initiative (NBI) have equipped upper riparian states with the much-needed ESP (extra-sensory perception) to differentiate between Egypt's serious and clever moves. The first is a reflection of its intentions to attain given objectives, while the latter action taken for mere affects sakes the purpose of which is to bid time.

If Egypt goes via this latter approach its intention is the latter, since what Egypt may want is to prevent implementation of the framework agreement signed by the six upstream states.

Already Egyptian experts have started warning, "Unless there are serious studies on joint or integrated projects in fields like electricity and agriculture followed by implementation of these projects, the water file will be a cause of conflict among Nile Basin states," according to Al Ahram in an article entitled Basin bonding.

"Islamists win two-thirds seats in Egypt's parliament; the polices they pursue on the Nile River By Keffyalew Gebremedhin", 24/01/2012, online at: http://www.abugidainfo.com/index.php/19754/

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❖ Talks over Nile abort after Egypt, Sudan absence

NAIROBI, Kenya, Jan 27 – Plans to have an Extra Ordinary Nile Council of Ministers meeting to discuss the Cooperative Framework Agreement (CFA) aborted on Friday after Egypt and Sudan failed to attend the gathering in Nairobi.

Only ministers drawn from Kenya, Uganda, Tanzania, Rwanda, Burundi, Democratic Republic of Congo and South Sudan attended the meeting.

"The initial plan was to have an Extra Ordinary Nile Council of Ministers meeting to discuss the CFA. However, the meeting would not take place because Egypt and Sudan were not able to attend," Water Minister Charity Ngilu said.

The Cooperative Framework Agreement is intended to transform the Nile Basin Initiative into a Permanent Nile River Commission to manage the water resources on behalf of the Nile Basin states.

It will also replace the colonial Nile agreements of 1929 and 1959 that gave Egypt and Sudan the lions share over the use of the waters without consideration of the riparian countries.

The two countries have vehemently opposed the new deal that would have given other Nile Basin countries equal rights to the river's waters.

Last year, Prime Minister Raila Odinga visited Egypt where he unsuccessfully petitioned the then President Hosni Mubarak to sign the CFA.

Earlier this month, Egyptian Foreign Minister Mohamed Kamal Amr toured Kenya where he met with senior Kenyan officials, including Vice President Kalonzo Musyoka. The CFA is likely to have been raised, although there was no mention from either office that the leaders discussed it.

On Friday, Ngilu informed the meeting that she had an informal meeting with Egyptian Minister for Water resources and irrigation with whom they agreed to explore options on the way forward.

"One of the options I have put on the table is that member countries should draw up long term master plans reflecting their water needs that are anchored within the water resources in the Nile basin region," she said.

"These master plans can be deposited with the relevant international organisations for support," she added.

The minister said this would guarantee water security for Egypt and Sudan.

The visiting Ministers were forced to change the agenda to focus on achievements made by the Nile Equatorial Lake Subsidiary Action Program (NESLAP), which oversees the implementation of jointly identified projects related to the common use of the Nile Basin water resources.

"The NELSAP program has cumulatively managed to leverage investments amounting to $90 million by utilising $70 million in pre-investment financing," said Ngilu who is also the outgoing Chair of the Nile Council of Ministers.

There has been controversy over the use of the Nile waters with Egypt, which is one of the largest beneficiaries of the waters refusing to sign the Cooperative Framework agreement.

The Nile River is the world's longest river flowing 6,700 kilometres through 10 countries – Kenya, Uganda, Tanzania, Rwanda, Burundi, Democratic Republic of Congo, Ethiopia, Eritrea, Sudan and Egypt.

"Talks over Nile abort after Egypt, Sudan absence", 27/01/2012, online at:
http://www.capitalfm.co.ke/news/2012/01/talks-over-nile-abort-after-egypt-sudan-absence/

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❖ Pall wins Qatar water treatment project

Pall Corporation, a global leader in filtration, separation and purification, said it has won a major contract to supply water treatment solutions for Qatar Petroleum's premier Ras Laffan Emergency and Safety College.

The Ras Laffan college, located on approximately 250 acres, was created to serve emergency responders throughout the Mena region.

Managed by the Texas Engineering Extension Services under an agreement with state-owned Qatar Petroleum, the high-profile facility offers training equipment for industrial, HazMat, municipal, rescue and emergency medical services.

The deal was awarded by contractor SEG(Société d'Entreprise & de Gestion) of Qatar, said a senior official.

"Pall is thrilled to be involved in this high-profile project," said Hussein Barazi, director, Pall Middle East.

"Our ability to effectively address the multi-faceted fluid management needs of organizations in the region with advanced solutions is one of the reasons Pall's presence in the Middle East continues to grow."

Pall, he said, provides fluid management solutions and high-quality products for the most demanding applications, from oil and gas and power generation to pharmaceuticals and water treatment.

Pall Aria systems are used for a range of desalination and municipal and industrial water applications. The high-efficiency, low-waste systems are easy to install and operator-friendly, resulting in lower labor and operational costs.

Steve Connor, technical project director at SEG, said "Pall was selected for this project because it offers advanced membrane technology in a very small footprint."

"Equally important was Pall's ability to provide a complete custom water management solution and dedicated engineering support from a local office," he added**.**

"Pall wins Qatar water treatment Project", 28/01/2012, online at: http://www.tradearabia.com/news/ENV_211699.html

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❖ Renewable energy in bridging the water gap in the Arab region

Morocco is expanding its wind energy and solar power capacity. Qatar plan to combine Concentrated Solar Power (CSP) with seawater desalination technologies to meet agricultural water needs.

AWA to highlight the potential for non-conventional Water Resources and Renewable Energy in Bridging the Water Gap in the Arab Region During the 6th World Water Forum.

The Arab Water Academy (AWA) will highlight the potential for non-conventional water resources and renewable energy in bridging the water gap in the Arab region during the 6thWorld Water Forum which will be held in Marseille in March 2012.

Convened every three years, this world's largest meeting around water is organized in 2012 under the theme "Time for Solutions". During the preparation process of the Forum, priorities for water actions were established, translated into measurable targets for which solutions are collected from throughout the globe. The Forum will provide the platform to share best practice and make commitments for the practical implementation of the solutions.

The Arab region will be represented in the 6thWorld Water Forum as one unit through the Arab Countries Cross-Continental Process led by the Arab Ministerial Council for Water within the League of Arab States. The Ministerial Council formed an Arab Preparatory Committee made of several Arab countries and organizations in order to prepare the Arab contribution in the Forum. The Arab region's priorities and targets were established in line with the Strategy for Water Security in the Arab Region adopted in June 2011 by the Ministerial Council for Water.

The Strategy had identified five priority projects for the integrated water resources management in the Arab region that were used to define the Arab region's five targets during the 6th World Water Forum. The Arab Water Academy in Abu Dhabi is charged with the coordination of the Arab region's Target 3: "Develop, in the medium term (by 2020), alternative and practical solutions for using non-conventional water resources with focus on the use of renewable energy in water desalination and water treatment for meeting the increasing water demand in the Arab Region"

According to the Director of the Academy, Dr. Asma El Kasmi, this specific target provides an excellent opportunity to highlight the Arab region's contribution in advancing water solutions at regional and international levels. The Arab region is leading the world in water desalination and is currently boasting more than 60% of the global desalination capacity. This trend is likely to continue in the future as 10 Arab countries (Saudi Arabia, United Arab Emirates, Qatar, Kuwait, Oman, Bahrain, Algeria, Libya, Jordan and Yemen) rank amongst the top 20 countries worldwide for the forecasted desalination capacity during the period 2008-2016. Large growths of desalination capacity

are also expected beyond 2016 for more Arab countries such as Egypt and Iraq. Similarly, some countries in the region retain high rates of treated wastewater reuse. Certain GCC Countries are estimated to maintain a 70% wastewater reuse rate or higher (i.e. Oman, Qatar and UAE), with strong commitment to increase this percentage to 100% in some places such as Abu Dhabi.

"Throughout the region, the use of non-conventional water resources including desalinated and treated wastewater is increasingly considered among the strategic options to close the widening gap between the demand and availability of water" she added.

Dr. El Kasmi noted that "On the other hand, the region's tremendous potential for renewable energy (especially solar energy and wind power) is finding its way into national energy strategies. Morocco is expanding its wind farm and solar power generation capacity and plans to obtain 42% of its electricity from renewable sources by 2020. Even oil rich countries are diversifying their energy sources by increasing the use of renewable energy. Saudi Arabia is planning to use solar energy to generate 10% of its electricity needs by 2020 -a total of 5 gigawatts and the United Arab Emirates launched a solar park that will be worth 1,000 megawatts by 2030.The huge potential for renewable energy in the Arab region could also be harnessed to generate export revenue from green electricity, industrial diversification and new skills creation".

She stressed that "By making the strategic choice to expand the use of renewable energy and non-conventional water resources, Arab countries are opening new possibilities for responding to the region's severe water scarcity while taking into account cost-effectiveness, environment sustainability and energy security."

With 5% of the world's population and only 1% of global freshwater water resources, the Arab region is heavily affected by water scarcity. Most countries in the region are already in water deficit and the gap between the demand and availability of water is widening due to rapidly growing populations, industrialization of the region's economy and the anticipated negative effects of climate change. The collective water shortage of 17 Arab countries is currently estimated to over 30 billion m3 and this deficit is expected to triple by 2030 and increase to over 150 billion m3 by 2050.

Freshwater shortage is a limitation to economic development, food production, human health and environment protection. Most countries in the region augment their water supply by over-exploiting their fossil aquifers, running a high risk of widespread exhaustion and saline intrusion of aquifers. Over-extraction of groundwater is undermining national assets at rates equivalent to 1 to 2% of GDP every year in some Arab countries. The first line of action to reduce the region's water deficit is to increase water use efficiency by improving demand management and reducing losses. Nevertheless, continued demographic and economic growth will also require expanding water supply through alternative water production methods such as water desalination and reuse of treated wastewater. So far, the costliness, energy-intensity and environmental implications of such processes have limited

their expansion across the entire region.

The widespread dissemination of the use of non-conventional water resources is highly dependent on developing local capacity for making the technology affordable and environmentally friendly. Especially for reducing the cost of energy consumption (which accounts for 30-50% of the overall costs of water desalination) and decreasing the adverse effects on the environment in terms of greenhouse gas emissions and discharge of brine and other contaminants. The current heavy reliance on fossil fuels for water desalination is not sustainable (Saudi Arabia alone uses 1.5 million barrels of oil per day in its plants). Many of the problems related to desalination could be reduced by replacing fossil fuels with renewable energy sources.

Pilot projects for using renewable energy in water desalination already exist in some Arab countries. Examples include the solar powered desalination plants for brackish groundwater in the Abu Dhabi Emirate, and the solar energy and wind turbines to desalinate brackish groundwater in Oman. Until recently, most of these initiatives were small scale projects. Broader scale projects will be operational as early as 2013 such as the solar-powered desalination plant in Al-Khafji in Saudi Arabia with a capacity of 30,000 m3/day, and the Qatar National Food Security Program (QNFSP) plan to combine Concentrating Solar Thermal Power (CSP) with seawater desalination technologies to meet agricultural water needs.

The session facilitated by the Arab Water Academy during the 6th World Water Forum will provide the opportunity to highlight these advances in the Arab region and promote experience sharing between Arab countries and with other regions in the world facing similar challenges. The debate will be geared towards efficiency improvement and innovation in technology, policy, capacity development and awareness for managing the water-energy nexus in the Arab region. Representatives from governments, research institutions, private sector, development agencies and civil society will discuss critical questions such as how to up-scale the use of renewable energy for alternative water production at commercial scale, how to develop and apply regulations for the reuse of treated wastewater in different sectors, and how to achieve public acceptability of new resources.

Launched in Abu Dhabi in July 2008, the Arab Water Academy (AWA) is a regional center of excellence for executive education and capacity building in water. The focus of the Academy is on strengthening the knowledge and skills of the Middle East and North Africa's decision-makers to address and manage effectively the region's water challenges. Initiated by the Arab Water Council (AWC), the Arab Water Academy is hosted by the Environment Agency - Abu Dhabi (EAD) in partnership with the International Centre for Biosaline Agriculture (ICBA).

The Academy provides the information, capacity and support needed to catalyze short-term change and high-impact results in the water sector. The programs of the Academy are designed to promote innovative perspectives on making the most of water scarcity in the Arab region. They focus on

demand management, institutional reform, financial and environmental sustainability, water governance and water diplomacy.

In just three years, the AWA has positioned itself as a main actor in the Arab water sector. It has been groundbreaking in regional capacity development and has provided high-quality executive education programs to over 250 senior professionals and decision-makers from 21 Arab countries. The Academy has gained significant political support in the Arab region and established a strong partnership with the Arab Ministerial Council for Water within the League of Arab States.

The AWA learning programs during the period 2009-2011 have covered the most relevant topics for making tangible improvements in water management in the Arab world such as:

Water diplomacy: sharing water, sharing benefits

Water governance and leadership development

Water demand management,

Non-conventional water resources management,

Designing and implementing successful water and sanitation utility reform,

Public private partnerships in water, sanitation and irrigation

Climate change and sustainable land-water management.

Participants in AWA Executive Education Programs during the period 2009-2011

The main financial support for the AWA is provided by the Environment Agency - Abu Dhabi, the World Bank and the Islamic Development Bank. The AWA has also raised funds for the development of its programs and services from regional and international donors.

"Renewable energy in bridging the water gap in the Arab region", 29/01/2012, online at: http://www.evwind.es/noticias.php?id_not=16308

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