



ORSAM WATER BULLETIN

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ORSAM WATER BULLETIN

23 March 2015 – 29 March 2015

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❖ Red Cross: ISIS cutting off water supply to Christians, Kurds as War Tactic

The International Committee of the Red Cross (ICRC) claims water is being used as a weapon in the Middle East. The report stated the numerous wars and [“aging delivery systems”](#) cut down on clean water in the region.

“Using access to water as a tactic or weapon during conflict, or targeting water or energy facilities, not only violates the laws of armed conflict, it has very harmful effects on the lives of people whose health is already extremely vulnerable,” [stated Robert Mardini, the ICRC’s head of operations for the Middle East.](#)

The Islamic State (ISIS/ISIL) uses water as a weapon against Christians and Kurds in regions they do not control. In July, the terrorist group targeted the [city of Qaraqosh](#), which receives water from the Tigris River. ISIS exploited this link and [cut off the water](#):

As Bloomberg’s Jason Motlagh explains, the tactic has worked, as it is forcing Kurdish administrators in the town to import the water at extremely high prices and begin to dig wells to help better distribute the water. The wells require weeks and months of work to complete, however, and water has to travel 15 miles from other Kurdish controlled areas to reach Qaraqosh. Residents are now paying \$10 a day for emergency water tanks, a fortune to many who live with limited means in the city.

Iraq’s water supply comes mainly from two rivers– the Tigris and Euphrates, between which the ancient civilization of Mesopotamia arose. With ISIS controlling the Tigris water supply, any influence on water from the Euphrates could be pivotal to eradicating Christians and Shi’ites from Iraq. Shi’ites in southern Iraq are in particular danger as, without water from either river being irrigated down, they have no other source of water immediately available.

“Such attacks are particularly harmful because water, sanitation, electrical and energy supplies are intimately interconnected,” [said Mardini.](#) “An attack on an electrical station, for example, could have a very serious impact on sewage treatment, water availability, the quality of water, or the functioning of health facilities. The humanitarian community does not have the capacity to meet the populations’ needs by continually substituting services or by offering quick-fixes.”

In October, ISIS continued to punish those in areas that would not bend to the terrorist group. They placed themselves near the Mosul and Haditha dams so the American airstrikes would hit close to the dams. The [dams](#) water “the country’s vast wheat fields and provide Iraqis with electricity.” If ISIS controlled the dams, then they would be able to control the country’s livelihood.

“ISIS has established a blueprint that can be used by other entities to take advantage of drought and water scarcity,” [a researcher wrote in a report for the Department of Homeland Security](#). “For all the conversation about ISIS taking control of oil refineries, one could argue that their control of water is even more significant, as it deprives the population of a resource necessary for daily sustenance and gives the militant group significant leverage over local governments and populations.”

ISIS and the Syrian civil war have forcibly displaced millions in Syria and Iraq. They enter Jordan or Lebanon, which causes problems on their already weak water systems. In 2013, *Time* [investigated](#) the influx of Syrian refugees into Jordan, which “is one of the most water-stressed countries in the world.” On Tuesday, Russia [agreed](#) to help Jordan build the country’s first nuclear power plant. Jordan [hopes](#) nuclear power will “meet its growing needs and to fire desalination plants to overcome its crippling water shortage.”

The Red Cross delivers clean water to areas with help from other aid organizations. In 2014 alone, the Red Cross [made](#) sure that “9.5 million people received water through emergency repairs of rehabilitation of supply systems.” There is more work to do, but it can be fixed.

“There are reasons to be hopeful,” said Mardini. “This is largely a problem caused by humans and it can be solved by humans. But it depends on the support and concerted efforts of everyone, from the international community to local communities. The problem and the solutions belong to everyone, and we must make sure the water flows for everyone.”

“Red Cross: ISIS cutting off water supply to Christians, Kurds as War Tactic”, 27/03/2015, online at: <http://www.breitbart.com/national-security/2015/03/27/red-cross-isis-cutting-off-water-supply-to-christians-kurds-as-war-tactic/>

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❖ **Global water crisis causing failed harvests, hunger, war and terrorism**

The world is already experiencing water scarcity driven by over-use, poor land management and climate change, writes Nafeez Ahmed. It's one of the causes of wars and terrorism in the Middle East and beyond, and if we fail to respond to the warnings before us, major food and power shortages will soon afflict large parts of the globe fuelling hunger, insecurity and conflict.

The world is already in the throes of an epidemic of local and regional water shortages, and unless this trend is reversed, it will lead to more forced migrations, civil unrest and outbreaks of conflict

Behind the escalating violence in Iraq, Syria and Yemen, as well as the epidemic of civil unrest across the wider region, is a growing shortage of water.

New peer-reviewed research published by the American Water Works Association (AWWA) shows that water scarcity linked to climate change is now a global problem playing a direct role in aggravating major conflicts in the Middle East and North Africa.

Numerous cities in Latin America, Africa, the Middle East, North Africa and South Asia are facing "*short and declining water supplies per capita*", which is impacting "*worldwide*" on food production, urban shortages, and even power generation.

In this month's issue of the *Journal of the AWWA*, US water management expert Roger Patrick assesses the state of the scientific literature on water scarcity in all the world's main regions, finding that local water shortages are now having "*more globalised impacts*".

US still playing catch up with the dry facts

He highlights the examples of "*political instability in the Middle East and the potential for the same in other countries*" as illustrating the increasing "*global interconnectedness*" of water scarcity at local and regional levels.

In 2012, a US intelligence report based on a classified National Intelligence Estimate on water security, commissioned by then Secretary of State Hillary Clinton, concluded that after 2022, droughts, floods and freshwater depletion would increase the likelihood of water being used as a weapon or war, or a tool of terrorism.

The new study published in the *Journal of the AWWA*, however, shows that the US intelligence community is still playing catch-up with facts on the ground.

Countries like Iraq, Syria and Yemen, where US counter-terrorism operations are in full swing, are right now facing accelerating instability from terrorism due to the destabilising impacts of unprecedented water shortages.

The AWWA is an international scientific association founded to improve water quality and supply, whose 50,000 strong membership includes water utilities, scientists, regulators, public health experts, among others. AWWA operates a partnership with the US government's Environment Protection Agency (EPA) for safe water, and has played a key role in developing industry standards.

Study author Robert Patrick, formerly of PriceWaterhouseCooper, is a government consultant and water management specialist who has worked on water scarcity issues in Jordan, Lebanon, New Mexico, California and Australia.

Thirsty people, failing states

The UN defines a region as water stressed if the amount of renewable fresh water available per person per year is below 1,700 cubic metres. Below 1,000, the region is defined as experiencing water scarcity, and below 500 amounts to "*absolute water scarcity*".

According to the AWWA study, countries already experiencing water stress or far worse include Egypt, Jordan, Turkey, Iraq, Israel, Syria, Yemen, India, China, and parts of the United States. Many, though not all, of these countries are experiencing protracted conflicts or civil unrest.

Patrick's *Journal of AWWA* paper explains that the grain price spikes that contributed to Egypt's 2011 uprising, were primarily caused by "*droughts in major grain-exporting countries*" like Australia, triggered by climate change.

He points out that such civil unrest could signal an Egyptian future of continuing unrest and conflict. He highlights the risk of war between Egypt and Ethiopia due to the Grand Ethiopian Renaissance Dam, threatening to restrict Egypt's access to the Nile River, which supplies 98% of Egypt's water supply.

As Egypt's population is forecast to double to 150 million by 2050, this could lead to "*tremendous tension*" between Ethiopia and Egypt over access to the Nile, especially since Ethiopia's dam would reduce the capacity of Egypt's hydroelectric plant at Aswan by 40%.

Water wars and the 'war on terror'

The nexus of countries in the Middle East and North Africa where the United States is currently leading a multi-year military engagement against the 'Islamic State' (IS) all happen to be drought-stricken.

Before Syria erupted into ongoing civil war, Patrick reports, 60% of the country went through a devastating drought that led over a million mostly Sunni farmers to migrate to coastal cities dominated by the ruling Alawite sect, fuelling sectarian tensions that culminated in unrest and a cycle of violence.

A new paper in *Proceedings of the National Academy of Sciences* has provided the most compelling research to date on how climate change amplified Syria's drought conditions, which in turn had a "*catalytic effect*" on civil unrest.

But Patrick's concern is that the Syria crisis could be a taste of things to come. Citing the findings of the Gravity Recovery and Climate Experiment (GRACE) sponsored by NASA and the German Aerospace Centre, he notes that between 2003 and 2009, the Tigris-Euphrates basin comprising Turkey, Syria, Iraq, and western Iran "*lost groundwater faster than any other place in the world except northern India.*"

A total of 117 million acre-feet of stored freshwater was lost due to reduced rainfall and bad water management. If this trend continues, "*trouble may be brewing*" for the region.

Drought fuelling conflict and fundamentalism

Yemen is also consuming water far faster than it is being replenished, Patrick observes, an issue that has been identified by numerous experts as playing a key background role in driving local inter-tribal and sectarian conflicts.

Syria, Iraq and Yemen are currently subjected to ongoing US military operations under the rubric of fighting Islamist terrorists, yet the new AWWA study suggests that the rise of Muslim extremist movements has been indirectly fuelled by regional water crises.

The ravaging impact of climate change in these countries has devastated local agriculture, heightened community tensions, and stoked already entrenched political grievances. With huge quantities of money pouring into the region to Islamist militant networks from the Gulf states, this is an ideal recipe for violent radicalisation.

As US meteorologist Eric Holthaus points out, the rapid rise of the 'Islamic State' (IS) last year coincided with a period of unprecedented heat in Iraq, recognised as being the warmest on record to date, from March to May 2014.

Recurrent droughts and heavy rainstorms have also played havoc with Iraq's agriculture. With water supplies dwindling, and agriculture waning, Iraq's US-backed Shiite-dominated government has largely failed to address these burgeoning challenges - even as IS has moved quickly to exploit these failures, for instance by using dams as a weapon of war.

Gaza soon 'unlivable' as groundwater depletes

But water scarcity does not make conflict inevitable. While water has played a role in Israel's conflicts with its neighbours in the past, Patrick argues that through a combination of efficient water management methods and desalination technologies, Israel has been able to successfully cooperate with Jordan on their shared water resources for many years.

This is, of course, a one-sided picture. While Israel does not want for water, the UN has warned that Gaza could become "*unlivable*" due to its worsening water crisis. Ongoing water shortages throughout the Occupied Territories are rooted in discriminatory policies of resource theft by the occupying power, including Israel's effective forced privatisation of the Palestinian water supply.

These disparate cases show that while, theoretically, efficient water management and distribution methods can offset crises and continue to meet local needs, government mismanagement combined with regional power inequalities and repressive policies can be a precursor to social breakdown and violent conflict.

The AWWA study's findings have been backed up by other recent studies. One from this January in *Global Affairs*, the journal of the European International Studies Association, argues that all four of the world's most significant hotspot regions for major conflicts - the Sahel, the Middle East, Central Asia, the coastal zones of East, South and Southeast Asia - are increasingly unstable due to constellations of "*water scarcity; loss of land; and food insecurity.*"

The paper, which calls for greater European support to these regions to mitigate trends of environmental degradation, is authored by Hartmut Behrend, a climatologist with the German military's Agency for Geo-information.

Agriculture and power generation get ever more thirsty - and now fracking!

The symbiotic link between modern agriculture and water consumption poses the biggest global risk, according to Roger Patrick. Water scarcity is driven predominantly by the increasing use of groundwater in agriculture.

Yet across most of the world's major food basket regions, including the Central Valley in California, northern China and the Upper Ganges in India and Pakistan, "*demand exceeds their aquifers' sustainable yields*" by some estimates 3 and a half times as much.

By 2035, global water consumption is predicted to increase by 85%. Much of this growth will be driven not just by agricultural expansion, but also by greater demand for energy. Biofuels are particularly water intensive, but hydraulic fracturing - 'fracking' - for unconventional oil and gas also uses large amounts of water.

That need for water is "*already constraining such energy production in locations such as Australia, Bulgaria, Canada, France, and the United States.*" In especially water scarce parts of China, India and the US, as well as Canada and Iraq, this threatens to seriously undermine power generation in the long-term.

It also raises the question of whether the developed world has sufficient resilience to avoid the sort of instability that is now plaguing large swathes of the Middle East and North Africa.

Another scientific study just out this month in *Environmental Science: Water Research and Technology*, published by the Royal Society of Chemistry, similarly concludes that due to our dependence on water-intensive fossil fuel and nuclear energy sources, the global water footprint will only continue to increase in tandem with population growth and demand.

Ironically, the expansion of such traditional energy sources, by escalating the demand for water, will only worsen the prospects for stable power generation. The most effective way to address this challenge, the study finds, is a shift to "*greater shares of wind, PV, and geothermal energy.*"

A global crisis looms

Although less developed regions are most vulnerable to the impacts of climate-induced water scarcity, richer Western countries and emerging industrial economies are increasingly feeling the heat.

California's record 15-year drought, the AWWA study shows, has been accompanied by the depletion of 41 acre-feet of groundwater and 12 million acre-feet of surface water. When the groundwater runs dry, and if the drought persists, US farming will collapse. The potential onset of an El Nino might lead to a return of rain that could alleviate this problem, at least temporarily, but even so, the long-term trend looks grim.

But it is not just the US, India, and Pakistan's collective water footprint from pumping water in the Upper Ganges basin is 54 times the area of the aquifer itself. In India, a major regional power and emerging economy, at current rates of consumption, 60% of the country's aquifers will be in "*critical condition*" in just two decades.

Given that consumption is pitched to increase driven by economic and demographic growth, this could happen much earlier. This could be a risk not just to the internal social cohesion of both India and Pakistan, both of which already face significant tensions along ethno-religious lines, but to their considerably strained diplomatic relations.

China also faces a serious water crisis, according to the AWWA study. Although half its population and two-thirds of its farmland are in the north, 80% of the country's water is in the south. The 70% of groundwater in the north is too unfit for human contact, let alone use in agriculture or industry.

Yet half the country's wheat for domestic consumption is produced in the north. In just five years, an estimated 30 million people in China will be displaced due to water stress.

Defence analysts believe that regional water scarcity could increase the risk of conflict between India and China. In the US, the drought-ridden Colorado River basin is shared by seven US states and Mexico - rivalry over control of water is largely political for now, but this could change.

In 2008, a report by the US Army War College's Strategic Studies Institute suggested that the US military must prepare for a "*violent, strategic dislocation inside the United States*" due to a "*loss of functioning political and legal order*" - triggered potentially by environmental, energy or economic shocks.

This "*bleak future*" is not inherently inevitable - but it is on our current path.

"Global water crisis causing failed harvests, hunger, war and terrorism", 27/03/2015, online at:
http://www.theecologist.org/News/news_analysis/2803979/global_water_crisis_causing_failed_harvests_hunger_war_and_terrorism.html

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❖ **Palestinians out of water**

On March 22, the United Nations marked its 22nd annual World Water Day. This year, the organization chose to focus on sustainable development. There is no question that water is essential for humans, and is particularly important in our region. It is a well-known fact that our region suffers from a severe shortage of drinking water. It is also well known that Israel is a leader in water desalination, water recycling in agriculture and providing water to our neighbors in Jordan and the Palestinian Authority since the Oslo Accords.

But over the last few years, nongovernmental organizations like the Coalition of Women for Peace, Who Profits, the Badil Resource Center for Palestinian Residency and Refugee Rights, Al-Haq, the Palestinian Center for Human Rights and EWASH Emergency Water Sanitation and Hygiene in the Occupied Palestinian Territory have been waging an international campaign against Israel under the catchy headline "water apartheid." Israel is being accused of withholding fair access to water from Palestinians, generating a "water crisis" in Gaza, stealing Palestinian water and other outrageous allegations. It was only recently that a new allegation was added: That Israel was flooding Gaza with rainwater. The French news agency that made this libelous allegation has since retracted it.

Ironically, the ones truly preventing Palestinian access to water are the same organizations meant to protect Palestinian human rights. Instead of focusing their efforts on preserving water in the area and benefitting the general population, they are using their resources to sabotage cooperation between Israel and the Palestinian Authority for political reasons, with the exclusive aim of hurting Israel's image in the international arena. Thus EWASH worked to prevent the establishment of a desalination plant in Gaza, arguing that it would provide "legitimacy" for the "Israeli occupation." In doing this, they kept clean water from reaching the population of Gaza.

In another instance, a number of NGOs, led by Al-Haq, the Interchurch Organization for Development and Cooperation, Pax Christi and Cordaid, joined forces in launching a campaign to prevent a Dutch company from building a water plant in the Kidron Valley that was supposed to supply water to east Jerusalem and its environs. The plant was not built due to claims that its construction would be in violation of international law. In reality, not only does international law not forbid the construction of such infrastructure, Israel respects the humanitarian aspect of providing clean water to all its residents. In short, the coalition of organizations trying to sabotage normalization between Israel and the Palestinian Authority on the water issue is actually harming the environment and hurting the Palestinians who would benefit from such a water plant.

Beyond shooting the Palestinians in the foot, these NGOs are spreading false claims against Israel and waging a campaign full of explicit lies. NGO Monitor, a watchdog of international NGOs, recently conducted a study into the issue and refuted dozens of claims being disseminated around the world. One of the main claims is that Israel profits from its control over the Palestinian market. In reality Mekorot, Israel's national water company, provides water to the Palestinians at a loss. While the average Israeli consumer paid 8.89 shekels (\$2.25) per cubic meter of water in 2014, Mekorot sold water to the Palestinians at a rate of 2.85 shekels (\$0.72) per cubic meter that same year.

Another false claim is that Mekorot discriminates in that it doesn't provide enough water to Palestinian communities in Judea and Samaria. This too is a ludicrous allegation because in reality, Israel provides the Palestinian Authority twice the amount of water agreed upon in the Oslo Accords. In numbers, this translates into 57 million cubic meters per year, having pledged to provide only 29 million cubic meters.

Yet another claim accuses Israel of withholding access to clean water from residents of Gaza with its "blockade." The truth is that the maintenance on the Gaza water system is poor and as a result, leaks, pump failures and malfunctions lead to a loss of more than 40% of the clean water in the Strip every year. (In Israel only 3% is lost to malfunctions, while 33% is lost in the Palestinian Authority). Due to internal Palestinian dynamics, the Palestinians refuse to recycle water that has been purified and use clean drinking water in agriculture.

If we go back to the World Water Day and the "sustainable development" -- it is important to point out that NGOs that claim to promote human rights should work to find solutions for the Palestinians in Gaza and the West Bank, especially when it comes to water. It is a shame that instead, many NGOs prefer to wage a political war against Israel, at the Palestinians' expense.

"Palestinians out of water", 26/03/2015, online at: http://www.israelhayom.com/site/newsletter_opinion.php?id=12099

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❖ Israel To Double Water Output To Gaza Strip

In the dicey world of water politics, unusual allegiances sometimes crop up. Just this month, Israeli leaders indicated that they have plans to increase the amount of water they send to the Gaza Strip.

Israel plans to double the amount of water it provides to the region, despite warring with Hamas rulers in the territory last summer, the Associated Press reported this month.

"Maj. Gen. Yoav Mordechai, the commander of Cogat, the defense agency that deals with Gazan civilian affairs, said in published remarks that Israel would increase water supplies from 1.3 billion to 2.6 billion gallons per year to relieve what he called a 'severe water problem because of excessive overuse of groundwater resources,'" the report said.

Gaza regularly experiences water shortages. "We are facing a crisis. If we do not address it now, then Gaza will become unlivable," said Shaddad Attali, minister and head of the Palestinian water authority, earlier this year, per the Guardian.

The added supply from Israel will help, but it will not solve the problem. "The water, if delivered, represents just a fraction of Gaza's water needs. But the water would provide some relief because it is of drinking quality and does not have to be treated," the AP report said.

Despite the plans, there remains a level of suspicion between the parties. "Mordechai said he hopes Hamas 'would not steal water from civilians as they steal construction materials intended for the reconstruction of houses,'" the AP report said.

Israel has attacked its own water troubles by diving headfirst into the desalination market. Since 2005, Israel has built and begun operation of four facilities. A fifth will begin service this year. Around 80 percent of water used in homes in Israel is produced by desalination, McClatchy reported.

"Israel To Double Water Output To Gaza Strip", 27/03/2015, online at: <http://www.wateronline.com/doc/israel-to-double-water-output-gaza-strip-0001>

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❖ **ICRC: Israel offensive has left Gaza water unsafe for drinking**

BETHLEHEM (Ma'an) — Israel's offensive on Gaza last summer caused lasting and extensive damage to water, sanitation, and energy infrastructure in Gaza, according to a recent report by the International Committee of the Red Cross.

Damage caused to water supply systems by successive rounds of fighting have seriously reduced the territory's water storage capacity, primarily in reservoirs and water tanks, and caused significant wastewater leakage, the ICRC report explained.

As a result, Gaza residents face high risks of further contamination of groundwater, the very source of water that Gazans use for domestic and agricultural uses.

The report added that 14 technicians from the water and energy sector were killed during the conflict, at least eight of which were killed while undertaking emergency repairs in conflict areas.

In Beit Hanoun, a town of 50,000 people in northern Gaza, damage to sewage infrastructure and water supply infrastructure poses a serious health risk to residents.

“In the past, we had water for two hours each day,” Mohamed Jarad, a resident of Beit Hanoun, adding that due to electricity cuts of up to six hours, often there is access to water but no electricity to pump it.

“The kids cannot drink or shower. As for the sewage system, the pipelines broke during the war. The sewage flooded, bringing mosquitoes. Our kids cannot sleep at night.”

The lack of wastewater treatment in Gaza is a longstanding factor in the contamination of drinking water.

90-95 percent of Gaza's main water supply was not potable and unsuitable for agricultural use in Sept. 2014, according to Israeli human rights organization B'tselem.

A report by Palestinian water authorities released earlier this week said only 5.8 percent of households in Gaza considered water quality to be good in 2013, compared to 73.5 percent in the West Bank.

Despite a massive outpouring of promises by the international community to rebuild Gaza following the last war, only 5 percent of the \$5.4 billion pledged by international donors had reached Gaza by February 2015, reported humanitarian news service IRIN.

Israeli control of water

While Gazans face major risks to their water supply due to war-damaged infrastructure, availability of usable water for Palestinians is hindered across both the occupied West Bank and Gaza Strip due to Israeli control over water access.

Israeli authorities have controlled all sources of water in the West Bank and Gaza since 1967, and have implemented policies based on discriminatory allocation of water resources in the West Bank ever since, according to Israeli human rights organization B'tselem.

The Palestinian Water Authority and the Palestinian Central Bureau of Statistics released a statement on March 23 in honor of World Water Day condemning Israeli occupation of natural water sources.

“Palestine suffers from the unfair distribution of water sources, which remain under almost full Israeli control. As an evidence to this inequality, the Israeli daily share per capita of water consumption reached seven times higher than the Palestinian’s,” the groups said in a shared statement.

According to international law, which calls for an equitable and reasonable allocation of the region’s shared freshwater resources, Palestinians have a legal right to the three water sources in the area: the groundwater reservoir of the Mountain Aquifer, the Gaza Strip Coastal Aquifer and the Jordan River.

Regardless of this, Palestinians have no control over access to these water sources.

For example, 80 percent of the Mountain Aquifer lies under the West Bank. Despite this, a large portion of the water from the aquifer goes directly to Israelis, serving 50 percent of Israelis' personal water needs, according to Israeli watchdog Who Profits.

Furthermore, Palestinians in the occupied West Bank are forced to buy over 50 percent of their water from the Israeli company Merekot.

In effect, due to Israeli restrictions on Palestinian access to water resources under their own feet, Palestinians are forced to buy their own water back from Israeli companies at marked up prices.

An international boycott of Merekot has been underway for over a year, in effort to influence Israeli policy on natural resource distribution policies.

<http://www.maannews.com/eng/ViewDetails.aspx?ID=760092>

“ICRC: Israel offensive has left Gaza water unsafe for drinking” , Maan, 27/03/2015, online at:

<http://mideastenvironment.apps01.yorku.ca/2015/03/icrc-israel-offensive-has-left-gaza-water-unsafe-for-drinking-maan/>

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❖ Israeli wastewater policy continues to pay off

Israel produces 500 million cubic meters of wastewater every year, more than 90 percent of which reaches the various treatment plants.

Israel continues to be a world leader in the successful exploitation of treated wastewater, and over the past decade it nearly doubled the area in which this water can be used for crop irrigation, according to a comprehensive survey conducted by the state Water Authority.

Although the survey noted an improvement in the quality of the treated water as a result of the increased use of desalinated water, much of the treated water is not yet of a quality suitable for use on all crops.

The survey, which was carried out by employees of the Israel Nature and Parks Authority on behalf of the Water Authority's water quality division, was a comprehensive, nationwide study of 1,400 households, industrial and agricultural producers of wastewater. The survey is carried out every other year; the most recent figures are from 2012.

According to the most recent survey, untreated wastewater is no longer released into the Mediterranean Sea from Israel. Israel produces 500 million cubic meters of wastewater every year, more than 90 percent of which reaches the various treatment plants.

In the territory administered by the Palestinian Authority, in the West Bank – which was included in the survey – the situation is very different. Only one-quarter of the wastewater produced by Palestinian communities in the West Bank is connected to a sewage collection system, and only one-tenth reaches treatment plants.

Of all the wastewater from all of the areas that reaches the treatment plants, 85.6 percent is reused – a worldwide high. Some of this water comes from the Dan Region Wastewater Treatment Plant, or Shafdan, which treats wastewater to a particularly high standard. Most of the treated wastewater is used for crop irrigation, with a smaller amount used for gardens and industry.

The total area of land under cultivation that is approved for irrigation with treated wastewater is 1.3 million dunams (325,000 acres), nearly double the approved acreage a decade ago. Some 50 million cubic meters of treated wastewater are discharged into the environment; one-fifth of that amount is released into the Yarkon River, keeping the river flowing year-round.

While the use of treated wastewater significantly reduces water use from natural sources, it comes at an environmental price, since the treated waster contains relatively high concentrations of salts, which affect certain crops as well as the soil and groundwater. This, in addition to a high concentration of sodium, which affects soil percolation rates and is associated with certain plant diseases.

According to the latest survey, the majority of the treated wastewater still cannot be used without restrictions on all crops. Low to moderate levels of sodium were found in more than half of the wastewater storage reservoirs that were tested, but a clear decrease in salinity levels was found as a result of the growing use of desalinated water in the national water supply system. As a result, the amount of salt in wastewater declined by nearly nine percent in two years.

It should be noted that a few Israeli experts argue that treated wastewater should be desalinated before being used for irrigation, in order to prevent the damage caused by salinity.

A few months ago the results of a study on the effects of irrigation on banana crops conducted by a team from Galilee Technology Center, led by Avner Silber, were published. The researchers concluded that irrigation with desalinated water led to increased crop yield and obviated the need to add additional water in order to reduce soil salinity.

<http://www.haaretz.com/life/nature-environment/.premium-1.648332>

“Israeli wastewater policy continues to pay off”, 27/03/2015, online at:

<http://mideastenvironment.apps01.yorku.ca/2015/03/israeli-wastewater-policy-continues-to-pay-off-haaretz/>

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❖ Israel Orders Demolition of Water Tank near Hebron

HEBRON, March 24, 2015 (Wafa) – The Israeli authorities Tuesday handed a local resident of Um Nir, south of Hebron, an order to demolish his water storage tank, according to local sources.

Coordinator of the Anti-Settlement Committee in Hebron, Rateb Jabour, said an Israeli army force broke into the village and handed Mohammad Ali Jabour, a local villager, a notice ordering him to demolish the water reservoir, under the pretext it was constructed without a permit.

The incident came hours after the army demolished a water cistern, uprooted olive trees and handed two demolition orders in the village of Ta‘annak, to the west of Jenin, and al-Kom locality to the southwest of Hebron.

The village of Um Nir is located in Masafer Yatta, a rural congregation south of Hebron consisting of almost 19 hamlets, which rely heavily on animal husbandry as the main source of livelihood.

Located in Area C of the West Bank, under full Israeli administrative and military control, the area has been subject to repeated Israeli violations by settlers and army soldiers targeting their main source of living; livestock.

Operation Colomba – Nonviolent Peace Crops, has reported on a multitude of recurrent violations in the area, including house demolitions, demolition of animal barns and other health facilities.

“Israel Orders Demolition of Water Tank near Hebron” , Wafa, 27/03/2015, online at:

<http://mideastenvironment.apps01.yorku.ca/2015/03/israel-orders-demolition-of-water-tank-near-hebron-wafa/>

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❖ **Warning to high tech West: Your water infrastructure and water quality are in decline**

It was once the standard joke in Britain: everyone talked about the weather, but no one did anything about it.

By the early 21st Century, the weather — “climate change” — had become a political battleground, the religion of the urban agnostic pseudo-sophisticates. In reality, however, it was water which had evolved to be the strategically important issue.

What is critical, at this point, given the declining hydroresilience of modern society, is the reality that the water delivery infrastructure of the industrial world is degrading, particularly in the United States and Europe, and particularly at a time when rapid urbanization is driving increased per capita (and overall) water use. That is the obvious side. What is less obvious is that water quality is eroding in modern societies, with already significant consequences for societal health.

The infrastructure and water quality of the less industrialized world — which is also urbanizing rapidly with the same pressures for increased per capita use — are in even worse shape.

The global increase in average wealth, coupled with urbanization, have escalated potable water volume and quality demands in the past decade or so at a time when existing infrastructure is crumbling and, in any event, inadequate to the task. The search for desalination of sea water, meanwhile, is mired in old technology approaches which do not adequately address health concerns and may actually contribute to a declining (rather than improved) hydration of users.

In many emerging powers, water-related problems appear at a faster rate than planning and technology can address.

If, for example, water quality and delivery issues continue to lag in the People’s Republic of China (PRC), it is likely that the rising of its strategic power will come to a halt. Declining water supplies from traditional aquifers is coupled with extensive pollution of the water table — and therefore the

agricultural viability of much Chinese farmland — contributing to a potential chasm in food production at a time of substantially increased urban demand. The PRC Government itself reported in 2014 that 60 percent of its ground water was polluted, and that in a country where nearly 70 percent of its water is used for agriculture.

Globally, the totality of water engineering and science have been neglected, and nowhere is the resistance to seeking and accepting transformative, disruptive water technology greater than in the U.S.

Nobody can decide whether “water wars” are what is coming, but the existential essence of constant, potable water provision is undeniable.

Break, erode, or deny water infrastructure — natural or manmade — and the potable quality of water, and strategic viability disappears.

It is more important to human society than the provision of electrical power, although a significant companion of it, and more important than agricultural output, although critical to it. It is the fundamental. Indeed, there is a clear relationship between hydroresilience and electroresilience in modern society, and particularly urban society, and it is equally clear that both dependencies are becoming more stark and brittle as urbanization entrenches.

The question of electroresilience, and the increasing vulnerability of modern society to cyber warfare threats and natural disaster dislocations, has been discussed at length. The question of the fragility of water infrastructure and water quality in the face of dramatically escalating potable water demand, however, has been less addressed. The issue is broader than the delivery of potable water. It includes issues of the use of water for agriculture, riverine navigation, and much more. But the matter of potable water delivery is existential to human survival, progress, and strategic power.

As I recently noted: “Winston Churchill once said that we shape our architecture and thereafter it shapes us. Roman roads and city structures still guide us. We are captives of the infrastructure and modalities created in the past, and they keep us stable, but on a narrow path, unable to easily achieve radical twists and surprises to grasp the future.”⁴ Our infrastructure, and particularly our water infrastructure, is what defines us and our potential.

Throughout history there has been an architecture to the energy supply network which has increasingly guided and benchmarked strategic power. The process of energy, and energy-related developments, are now well in the global public domain, and yet it was Britain’s — and then the U.S.’ — dominance of the energy supply chain which gave both states global authority. Underlying this, the water matrix has always been with us, but we are now at a point where dominance of the water science and industry, in all its aspects, could become the next major area of strategic wealth.

That is not to deny the real impetus which water technologies gave to the rise of strategic power, whether in terms of water-driven mills and canals in Industrial Revolution Britain (and elsewhere), or the ability of Rome to build great urban centers throughout its empire because of its aqueducts. It is not that we are unconscious of the historical contribution of water technologies to society, it is that we have not broken out of our 19th and 20th Century technologies at a time when the societal matrix has changed in terms of concentration, per capita demand, and purity requirements.

History has shown that strategic power, wealth, and leadership derives from the creation and dominance of the vital infrastructure of the era.

This began with land power and all that supported it, from the taming and use of horses to the construction — particularly by the Romans — of roads, bridges, and, vitally, aqueducts. Control of the seas, and the infrastructure of sea power and sea transport became critical, particularly for Venice, 15th Century China, the Phœnicians, Britain, and the United States. Within this, coal-fired

power prolonged and expanded the wealth of the British industrial revolution and its sea power, and Britain pioneered the transition into petroleum. Apart from revolutionizing sea power, this enabled the great air infrastructure which followed. And all the while land, sea, and air aspects matured into, for example, railways, and the modern highway systems; the global air transport network; and an electronics and computerization capability which gave the ability to multiply “wealth” at greater speeds.

This, the use of hydrocarbon and later forms of energy extraction, became the impetus for the U.S. to lead the world. U.S. energy-related innovation, and the translation of this into industrial leadership, gave the United States unparalleled global strategic dominance.

Electricity followed, largely under U.S.-based leadership by such figures as Nikola Tesla, and this, more than anything else, compounded growth into the telegraph and the cyber age. Our present existential dependence on electricity, as the pinnacle of all of humanity’s infrastructural architecture, has created global wealth, which has led to and allowed the great proliferation in human numbers, from 2.5 billion in 1950 to more than 7 billion today.

If this wealth and human progress is to continue, we must now enter a new infrastructural age to enable our precarious tower of energy-dependent infrastructure — and the people for whom it was built — to survive. Given the substantial increase in overall as well as per capita demand for water and the corresponding atrophy of existing systems, this must be the infrastructural age of water.⁵ That is, overall demand because of total (global) population growth; and per capita demand because of changing wealth and dietary behavior.

The vast U.S. strategic industrial base, coupled with a now-critical domestic demand to remediate collapsing and inadequate water infrastructure and quality, make the U.S. the logical focus for the creation of a globally dominant strategic water capability. But U.S. response to this situation can by

no means be taken for granted. It is an age in which technology favors the nimble, and the race will not necessarily be to the society which can mobilize the biggest financial base.

U.S. engineering and scientific skills, however, could not only avert the great crises which are about to strike North America and much of the world because of the shortage of potable water; leadership in the comprehension of the hydrological age could be the next great U.S. economic leadership arena. It is possible that, by the mid-21st Century, no infrastructural endeavors will be bigger or more important to the viability and health of life than those linked to the creation and delivery of pure, clean drinking water.

Those engaged in this know that it is not merely as simple as building dams, or digging irrigation channels or building pipelines. It requires radically new technology for desalination of sea water, for ensuring that riverine highways are viable and sustain trade, agriculture, and fisheries while delivering, with the use of technology, water which actually averts society-destroying viral, bacteriological, and mineral contaminants.

The U.S. and its Coalition partners discovered, at great cost, the critical necessity of water to tactical military operations in Iraq and Afghanistan. And this was the Achilles' heel which cost U.S. and Coalition economies their viability, and their forces the conflict mobility required to achieve a real victory.

The U.S. already has significant water knowledge in the military. Arguably, it was the growth of water handling capabilities which led to the U.S. strategic growth, well before the maritime and engineering breakthroughs which led to the rise of its rail, telegraph, and electrical infrastructures. It was water technologies which powered the great rise in wealth in the U.S. gold rushes; it was the management of riverine traffic which powered (and still powers) its ability to deliver goods to

market. The use of canal and riverine power was a global phenomenon, leading to the rise of wealth in 15th Century China and Industrial Revolution Europe.

It is, significantly and in contradistinction, the decline in riverine trade and the chopping up of water use by dam construction on the Niger River which has led to a decline in much of the social, agricultural, and trading viability of six major states which rely on the bounty of the Niger River Basin in West Africa. This, arguably, has been some of the basis for enabling the rise of the Boko Haram insurrection along the Niger Basin.

In the U.S., the U.S. Army Corps of Engineers is not only a font of engineering greatness, but also of infrastructural thinking when it comes to water. Partly as a result of this, U.S. industry is well poised to expand into the new age of water technology, and it will require a totally new scientific and industrial capability. However, neither the U.S. nor any other state can dominate this field by a mere linear extrapolation of the ancient aqueducts and waterwheels.

Certainly, the U.S. will not abandon its great economic enterprises, at home or in the export markets, in the fields of aviation, engineering vehicles, and computerization, but the next great area of dominance — and one which can well employ the large capital formation capabilities of the U.S. — is the creative dominance and leadership of the water infrastructure. It is vital for the U.S., if it is to rebuild its domestic viability. It is vital for the world, where conflict avoidance and stability is possible through the export of more creative ways to find, clean, and deploy water.

The window for achieving dominance in this field, globally, will be contested soon and decisively.

Indeed, given the strong governmental and commercial impetus behind water technology and water-related industry in France and Israel, the U.S. capital formation advantage will face significant competition from those two states (and others) for global dominance in the water business.

What is surprising is that the PRC, which arguably faces the most strategic challenge when it comes to water — and the management of its use — is not already at the forefront of this technology. The water table of its agricultural lands, as noted, is heavily polluted and in need of remediation. The aquifers which have fed inland Chinese agriculture from the snowfalls on the Tien Shan mountain range are drying up. The vaunted Three Gorges Dam has not delivered the water volume or quality needed to sustain agriculture or human hydration needs.

And China has discovered that water needs are increasing, per capita, as urban wealth drives new food and water demand. The new food preferences themselves are all those — such as the production of beef — which require substantially more water to produce than traditional diets of the Chinese people. And urban societies drive up water use per capita because of sanitation and social demands. Rising wealth elsewhere in Asia, as well as in Africa, will equally tax water availability, even if, within a few decades, overall population levels decline.

Israel, which pioneered strong water management and utilization technologies, has let its water innovation leadership dwindle, although it may well be one of the significant repositories of water technologies and water consciousness. Israel has turned to seawater desalination and waste water purification, powered by cheap supplies of natural gas, to end its own water shortage (and has begun to export water to Jordan, the Palestinian West Bank, and the Gaza Strip), but the five major Israeli desalination plants rely on reverse osmosis (RO) technology. RO is an expensive water purification process — despite the gradual recent reduction in costs — but the new plants now provide 35 percent of Israel's potable water needs (anticipated to rise to 70 percent by 2050).

Australia, which had an earlier impetus toward innovative water usage, and which faces its own strategic needs for more and better water strategies as never before, now lags in its potential as a “water power”. Indeed, Australia — surprising for a country in which, like Israel, water is a more

critical element than in, say, most parts of Europe — has been adopting what could only be termed as unimaginative, or reactive, thinking in its major water projects. Three Australian state capitals (Perth, Sydney, and Melbourne) now depend on seawater desalination projects to deliver potable water to their citizens, and all use massively energy-expensive and maintenance-heavy RO systems, a 20th Century technology which had exhausted its viability.

Both the Israeli and Australian projects downplay the real energy costs, as well as the huge capital costs, of their RO facilities.

The Australian desalination projects, now vital to the continued viability of three of its major urban areas, are enormously inefficient and cost-ineffective in light of the possibility for desalination through new technologies which have just been undergoing patent approval in the U.S. This new technology will use very low power and super-refined ultra-filtration technologies to purify ground water, and in the next-generation iteration, desalinate sea water. RO throws back the bulk of the salt water to be refined, into the source waters; the new technology does not. In the case of the Perth desalination project, this churning back of the water coming into the RO plant has meant increasing the salinity of the Cockburn Sound waters to the point where the desalination system has been forced to stop operations from time to time.

The new technology obviates the high capital cost and the even higher through-life costs of RO technology, utilizing very low power (one Watt per U.S. gallon, making it ideal for solar/battery), no filter changes ever, and no wastage, while producing water purified to 0.01 microns, eliminating all viral and bacteriological contaminants. This is the kind of technology which will revolutionize water delivery efficiently and without recourse to major power grids. It adds elasticity back into the hydrological equation. And the technology is capable of extending — in that next-generation

iteration which could be available by late 2015 — to 0.001 microns of refinement, totally replacing the need for RO.

That technology has been developed commercially by Argonaut LLC, and it is scalable from small mobile unit applications up to city-size projects. Most significantly, it offers maintenance-free, stand-alone infrastructure which can be utilized by communities remote from all other support.

Industrially, the U.S. is perhaps best placed to dominate this space as the world faces the alternative: which is that human and scientific growth will be limited, and may reverse, if water infrastructure does not provide the answer to the declining availability of safe and potable water. But France has taken the most significant private sector initiatives in dominating the water space, with two major companies — 24.4 billion euro (sales, 2014) Veolia Environnement and the 14 billion euro (sales, 2014) Suez Environnement — working on vertically-integrated industrial and commercial approaches to water sourcing, processing and distribution, including one other vital sector: waste water recycling.

In the defense domain, the United Kingdom has begun to recognize the reality that water delivery in the military context was one of the great limiting factors in operational viability in the recent Coalition operations in Iraq and Afghanistan. The UK Ministry of Defence has begun a billion-dollar, Defence-wide integrated program to deliver next-generation water solutions to the military, with its Combat Water Supply System (CWSS) project, which is due to go to tender in 2015. But even there, the industry responses have — thus far — been less than the kind of disruptive thinking which is necessary to transform military operations to the degree required in the future climate of economic challenge and conflict-type variability anticipated.

The International Strategic Studies Association (ISSA) has been working extensively over recent years to develop creative approaches to resolving the water challenge, largely as a result of an

examination of lessons learned from the Iraq and Afghanistan conflicts, as well as engagement in studies seeking to understand the linkage between water and strategic viability. ISSA was, as a result, involved in the research which led to the technological breakthroughs developed by Argonaut, but is also engaged in understanding the energy-water-urbanization-new conflict framework.

One of the major goals is to re-establish hydro-elasticity into national-level down to village-level civil life and into military options, so that the water equation is not tied so directly to energy-dependent frameworks.

The extent to which civil and military societies can be removed from the fragile and brittle dependency on either electrical (and therefore computer) and water grids will determine a large measure of future viability and strategic capability.

“Warning to high tech West: Your water infrastructure and water quality are in decline”,27/03/2015, online at: <http://www.worldtribune.com/2015/03/27/warning-to-high-tech-west-your-water-infrastructure-and-water-quality-are-in-decline/>

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❖ Envoy shares Israel's experience amid water shortages in Taiwan

Taipei, March 28 (CNA) Rationalizing water prices and promoting education on water conservation may be effective ways to address water shortages in Taiwan, said Israel's top envoy to Taiwan, amid the worst drought to hit Taiwan in over a decade.

"(The) first lesson to learn from Israel might not be so popular -- rationalize water prices," Simona Halperin, head of the Israel Economic and Cultural Office in Taipei, told CNA recently.

"As long as water cost is low, people will not change their attitude to water."

At about NT\$11 (US\$0.35) per cubic meter, the price of water in Taiwan is only one-fifth the world average and has not been raised for 21 years.

The low price has been widely cited for the lack of public awareness and interest in water conservation in Taiwan.

Beyond the water price, Halperin noted the importance of education in promoting water conservation.

"The slogan 'save every drop' is well known to Israelis and huge campaigns took place in the past urging the public to conserve water," she said. "Without the public's engagement, water scarcity in Israel could have been a severe problem."

It's not only the industrial and agricultural sectors, which consume large amounts of water, that need to save water. "Each individual has to be aware and responsible to save water in his own household and workplace," she said.

Also important is to increase water recycling and improve infrastructure, Halperin said, adding that decreasing water losses alone "can save more than 30 percent of Taiwan's water supply."

Smart agriculture irrigation solutions, she said, can help save substantial amounts of water.

Although Israel does not get much rainfall, it has developed advanced technologies to reuse water to meet its people's needs. They include desalination, waste water treatment, smart water management to reduce losses and public education, according to Halperin.

Israel has actively tried to develop cooperative ventures on water technology with Taiwan to address the country's limited water resources and improve water usage.

One of its moves came in November 2014, when the Israel Economic and Cultural Office joined with the Water Resources Agency in co-organizing a seminar in Taipei to explore potential cooperation.

The seminar brought together representatives of seven Israeli water technology companies and Taiwanese officials and businesspeople from the semiconductor, chemical and agriculture sectors, among others.

This has led to discussions between Israeli and Taiwanese companies, and Halperin expressed the hope that the talks will develop into actual projects in the future.

She also hoped Taiwan's government will see Israeli technologies and experience as a relevant model when devising plans to fight water shortages.

Amid the worst drought in Taiwan in over a decade, strict water rationing measures will be implemented in parts of New Taipei and Taoyuan in northern Taiwan beginning April 1.

Under the measure, water supplies to these regions will be suspended for two days a week on a rotating basis.

Water rationing measures continue in southern Taiwan as well. In Kaohsiung, the most populous municipality in the south, the water supply to commercial consumers such as car-washes and spa operators has been cut by 20 percent.

“Envoy shares Israel's experience amid water shortages in Taiwan”, 28/03/2015, online at:
<http://focustaiwan.tw/news/aip/201503280015.aspx>

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❖ Egypt, Ethiopia, Sudan sign Nile dam agreement

Leaders from Egypt, Sudan and Ethiopia signed a declaration of principles on Monday relating to Ethiopia's Renaissance Dam on a tributary of the River Nile. Leaders of Sudan, Egypt and Ethiopia on Monday signed a declaration of principles on Ethiopia's mega-dam on the Nile River, which Egypt had feared could substantially harm its share of water.

Egyptian President Abdel-Fattah al-Sisi, Ethiopian Prime Minister Hailemariam Desalegn and Sudanese President Omar al-Bashir signed the declaration in Khartoum, under which the three countries asserted their commitment to cooperation and to serve the interests of the three nations.

Speaking on the occasion, Desalegn reassured Egyptians that construction of the dam would not harm their country, reaffirming his country's commitment to preserving the interests of the three countries.

For his part, al-Sisi said the deal was a framework agreement that the three countries would build on, asserting that Egypt was committed to cooperation with Ethiopia and Sudan for the development of the three nations.

He also voiced his keenness on working with Addis Ababa and Khartoum towards "translating the agreement into tangible results."

"We in Egypt have no reservation on Ethiopian development," al-Sisi told the audience, which included African leaders, Arab diplomats and officials from the three nations.

"We wish Ethiopia all the best," he added.

Yet, the Egyptian leader said, the increasing water needs of Egypt, where there is little rain, should be addressed as well.

"We are starting a new era of cooperation, love and trust," al-Sisi said in impromptu remarks after reading his speech.

"We are confident that Ethiopia and Sudan are interested in cooperation," he went on to say.

Sudan's al-Bashir, meanwhile, said that cooperation was key to development in Nile basin nations.

"We are committed to reaching detailed agreements" to finalize all issues related to the dam, the Sudanese leader said.

The deal signing will precede a landmark visit to Ethiopia by al-Sisi, his first ever to the Horn of Africa nation since he assumed office last year.

The Egyptian leader is also expected to address the Ethiopian parliament on Tuesday.

It is also expected that a technical committee will name the winner out of four consulting firms bidding to undertake two studies of the Ethiopian dam, as recommended in 2011 by an international panel of experts.

The two studies recommended are a hydrological simulation model and a trans-boundary economic, social and environmental impact assessment.

Ethiopia's Grand Renaissance Dam has been at the center of a diplomatic row between Cairo and Addis Ababa for several months.

“Egypt, Ethiopia, Sudan sign Nile dam agreement”, 23/03/2015, online at:

<http://www.worldbulletin.net/world/156903/egypt-ethiopia-sudan-sign-nile-dam-agreement>

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❖ Egypt, Sudan and Ethiopia sign initial deal on Nile dam Project

The three leaders of Egypt, Sudan and Ethiopia signed a preliminary deal on Ethiopia's Nile dam project in Sudan's capital Khartoum on Monday.

Egyptian President Abdel Fattah el-Sisi, Ethiopian Prime Minister Hailemariam Desalegn, and Sudanese President Omar al-Bashir all asserted their commitment to cooperation and to serve the interests of the three nations.

The estimated \$4.8bn Grand Renaissance Dam, which Ethiopia views as essential for its economic development, has previously been received by Egypt with apprehension and sparked diplomatic tension between the two countries.

Relations between the two countries have improved, however, since al-Sisi and Desalegn met at an African summit in Equatorial Guinea last summer.

Egypt, which controls 87 percent of the river's flow and has the power to veto upstream projects based on treaties signed from 1929 to 1959, feared that the project will lead to a marked reduction in its supply of Nile water. The country is historically dependent on the Nile for drinking water and agriculture.

Yet the deal signed today was based on a declaration of principles to ensure that the construction of the dam would not harm the other countries and will compensate them should it negatively affect their interests.

Ethiopian Prime Minister Gailemariam Desalegn reassured Egyptians that the construction of the dam would not harm their country, and reaffirmed Ethiopia's commitment to preserving the interests of the three countries.

"I confirm the construction of the Renaissance Dam will not cause any damage to our three states and especially to the Egyptian people," Desalegn said at the signing ceremony.

Egypt's Irrigation Minister Hossam Moghazy said that the deal, which is composed of ten principles, includes "respecting the recommendations of the consulting firm that is undertaking further studies on the fair and equitable use of [Nile] water."

“It also includes a joint mechanism to regulate the initial filling of the dam and its annual operations while restricting the use of the dam to power generation only,” Moghazy added.

Sisi, who is expected to travel to Ethiopia’s capital city Addis Ababa on Tuesday to address the parliament, expressed that the dam project, which will be Africa’s largest upon completion in 2017, will offer Ethiopia great benefits and development.

“We have chosen cooperation, and to trust one another for the sake of development,” he said. “We in Egypt have no reservation on Ethiopian development. We wish Ethiopia all the best.”

The deal, Sisi explained, was a framework agreement that the three countries would build on, adding that Egypt’s water needs would need to be addressed as well. He reiterated Egypt’s commitment to working with Ethiopia and Sudan for the benefit and development of the three countries.

Omar al-Bashir hailed the deal as “historic.”

"We are committed to reaching detailed agreements" to finalize all issues related to the dam, the Sudanese leader said.

“Egypt, Sudan and Ethiopia sign initial deal on Nile dam Project”,23/03/2015, online at:
<http://www.middleeasteye.net/news/egypt-sudan-and-ethiopia-sign-initial-deal-nile-dam-project-1827939942>

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❖ Full text of 'Declaration of Principles' signed by Egypt, Sudan and Ethiopia

Ahram Online publishes a translated version of the "Declaration of Principles" signed by Egypt, Sudan and Ethiopia in a step to put an end to a four-year dispute over Nile water sharing arrangements among Nile Basin countries. Ten principles are outlined in the document signed by the three countries.

Introduction

Valuing the increasing need of the Arab Republic of Egypt, the Federal Democratic Republic of Ethiopia and the Republic of the Sudan for their over-border water sources, and realising the importance of the Nile River as a source of life and a vital source for the development of the people of Egypt, Ethiopia and Sudan, the three countries have committed themselves to the following principles concerning the Grand Ethiopian Renaissance Dam:

1. Principle of cooperation:

- Cooperation based on mutual understanding, common interest, good intentions, benefits for all, and the principles of international law.
- Cooperation in understanding the water needs of upstream and downstream countries across all their lands.

2. Principle of development, regional integration and sustainability:

The purpose of the Renaissance Dam is to generate power, contribute to economic development, promote cooperation beyond borders, and regional integration through generating clean sustainable energy that can be relied on.

3. Principle of not causing significant damage:

- The three countries will take all the necessary procedures to avoid causing significant damage while using the Blue Nile (the Nile's main river).

- In spite of that, in case significant damage is caused to one of these countries, the country causing the damage [...], in the absence of an agreement over that [damaging] action, [is to take] all the necessary procedures to alleviate this damage, and discuss compensation whenever convenient.

4. Principle of fair and appropriate use:

- The three countries will use their common water sources in their provinces in a fair and appropriate manner.

- To ensure fair and appropriate use, the three countries will take into consideration all guiding elements mentioned below:

a. The geographic, the geographic aquatic, the aquatic, the climatical, environmental elements, and the rest of all natural elements.

b. Social and economic needs for the concerned Nile Basin countries.

c. The residents who depend on water sources in each of the Nile Basin countries.

d. The effects of using or the uses of water sources in one of the Nile Basin countries on another Nile Basin country.

e. The current and possible uses of water sources.

f. Elements of preserving, protecting, [and] developing [water sources] and the economics of water sources, and the cost of the procedures taken in this regard.

g. The extent of the availability of alternatives with a comparable value for a planned or a specific use.

h. The extent of contribution from each of the Nile Basin countries in the Nile River system.

i. The extent of the percentage of the Nile Basin's space within the territories of each Nile Basin country.

5. The principle of the dam's storage reservoir first filling, and dam operation policies:

- To apply the recommendations of the international technical experts committee and the results of the final report of the Tripartite National Technical Committee during different stages of the dam project.
- The three countries should cooperate to use the final findings in the studies recommended by the Tripartite National Technical Committee and international technical experts in order to reach:
 - a. An agreement on the guidelines for different scenarios of the first filling of the Grand Ethiopian Renaissance Dam reservoir in parallel with the construction of the dam.
 - b. An agreement on the guidelines and annual operation policies of the Renaissance Dam, which the owners can adjust from time to time.
 - c. To inform downstream countries, Egypt and Sudan, on any urgent circumstances that would call for a change in the operations of the dam, in order to ensure coordination with downstream countries' water reservoirs.
- Accordingly the three countries are to establish a proper mechanism through their ministries of water and irrigation.
- The timeframe for such points mentioned above is 15 months from the start of preparing two studies about the dam by the international technical committee.

6. The principle of building trust:

- Downstream countries will be given priority to purchase energy generated by the Grand Ethiopian Renaissance Dam.

7. The principle of exchange of information and data:

- Egypt, Ethiopia and Sudan will provide the information and data required to conduct the studies of the national experts committees from the three countries in the proper time.

8. The principle of dam security:

- The three countries appreciate all efforts made by Ethiopia up until now to implement the recommendations of the international experts committee regarding the safety of the dam.
- Ethiopia will continue in good will to implement all recommendations related to the dam's security in the reports of the international technical experts.

9. The principle of the sovereignty, unity and territorial integrity of the State:

The three countries cooperate on the basis of equal sovereignty, unity and territorial integrity of the state, mutual benefit and good will, in order to reach the better use and protection of the River Nile.

10. The principle of the peaceful settlement of disputes:

The three countries commit to settle any dispute resulting from the interpretation or application of the declaration of principles through talks or negotiations based on the good will principle. If the parties involved do not succeed in solving the dispute through talks or negotiations, they can ask for mediation or refer the matter to their heads of states or prime ministers.

“Full text of 'Declaration of Principles' signed by Egypt, Sudan and Ethiopia”, 23/03/2015, online at:
<http://english.ahram.org.eg/News/125941.aspx>

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❖ Al-Sisi criticised for waiving Egypt's right over Nile water

Egypt's former Minister of Water Resources and Irrigation has criticised an agreement between the Al-Sisi government and Ethiopia, saying that it waives Egyptians' rights over water from the River Nile. Dr. Mohamed Nasreddin pointed out that Egypt has basically followed Ethiopia's instructions with regards to the controversial "Renaissance" mega-dam on the Nile which Addis Ababa insists is its own sovereign issue.

According to Nasreddin, Ethiopia has won a clear political victory in the absence of any real Egyptian understanding of the implications of the deal for the future of the Egyptian people. Ethiopia, he said, is the only country to benefit from the agreement which is not a "natural development of African relations", but an explicit waiver of Egyptian rights over the Nile. "We hope to have economic cooperation with Ethiopia that does not include a pledge to import electricity generated from the dam," he said.

"The [agreement] document did not mention the Egyptians' rights," added the former minister, "nor did it refer to any of the former agreements signed between the two countries." He mentioned specifically the agreement signed in 1902 in which Ethiopia pledged not to build dams on the Blue Nile and Sobat River without Egypt's and Sudan's approval.

"Ethiopia's Renaissance Dam, according to European, American and Egyptian studies, is overrated and will result in negative impacts on Egypt and Sudan," Nasreddin explained. "Moreover, its efficiency in generating electricity will not exceed 27 per cent compared to the Aswan High Dam, which has an efficiency of 60 per cent."

"Al-Sisi criticised for waiving Egypt's right over Nile water",23/03/2015, online at: <https://www.middleeastmonitor.com/news/africa/17657-al-sisi-criticised-for-waiving-egypts-right-over-nile-water>

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❖ War in the Middle East is pushing vital water plants 'close to the breaking point'

Fighters are increasingly targeting water and sanitation facilities across the Middle East, exacerbating severe shortages for agriculture and households, the International Committee of the Red Cross (ICRC) said on Wednesday.

Consumption of water in the volatile region with rising populations was already at unsustainable levels in many areas hit by record-low rainfall and drought, but wars have pushed systems "close to the breaking point," the aid agency said.

Militants in Syria, Iraq and Gaza have also used access to water and electricity supplies as "tactical weapons or as bargaining chips," the [ICRC said in a report](#).

"Heavy fighting and direct targeting have destroyed water pipes and power lines, leaving this vital resource away from hundreds of millions of people that are at great risk of water-borne diseases," said Robert Mardini, head of ICRC operations for North Africa and the Middle East.

Sanitation often got a low priority during the fighting, the ICRC said.

"It is a 'ticking time bomb' in terms of its impact on the general environment, water resources (surface and groundwater), and by extension, to human health," said Michael Talhami, ICRC regional water and habitat advisor.

Gaza's only power plant was damaged during the 2014 war between Israel and Palestinian militants.

The Gaza Company for Generating Electricity said an Israeli tank shell hit the main fuel tanks, taking out almost all capacity.

In Syria, now in a fifth year of war, drought has greatly reduced wheat production, meaning higher imports, the ICRC said.

Areas around the capital Damascus are hard-hit, with some systems losing more water to leaks than they are able to deliver, the report said.

"The network is severely damaged in every corner of the city, so you have leakages everywhere."

Syria's two main waste-water treatment plants, for Aleppo and Damascus, are virtually destroyed, according to the ICRC which helps disinfect nearly 80 percent of the country's water.

"One of the greatest concerns is that untreated waste-water might seep into local aquifers, thereby contaminating water supplies and leaving an already vulnerable population more susceptible to water-borne diseases," it said.

Water scarcity is a pressing problem in Yemen, the Arab world's poorest country that has descended into civil war, and where the water table is dropping every year, it said.

"In Yemen, it's foreseen that by 2025 Sana'a the capital will have no more water."

"War in the Middle East is pushing vital water plants 'close to the breaking point'", 25/03/2015, online at: <http://www.businessinsider.com/war-in-the-middle-east-is-pushing-vital-water-plants-close-to-the-breaking-point-2015-3>

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❖ Govt to make law to protect Ganga from pollution

New Delhi: The Centre will enact a law for permanent protection of river Ganga from pollution as Prime Minister Narendra Modi today pitched for an "uncompromising mission-mode approach" to stop its further pollution.

The decision to enact the law was taken at a meeting here chaired by the Prime Minister and attended by Bihar Chief Minister Nitish Kumar, Uttarakhand Chief Minister Harish Rawat and Jharkhand Chief Minister Raghubar Das.

However, Uttar Pradesh Chief Minister Akhilesh Yadav and West Bengal Chief Minister Mamata Banerjee, two other states through which Ganga flows, did not attend the meeting of the National Ganga River Basin Authority.

The act is necessary for maintenance of the river after it is made "pollution free", Union Water Resources Minister Uma Bharati told reporters while briefing on the meeting.

"Ganga can be made pollution free with the joint efforts of state governments and the Centre. But, the challenge is maintaining its cleanliness thereafter. The upcoming act will ensure the cleanliness of Ganga," she added.

"We have sought proposals from concerned state governments for the purpose, as water is the state subject," she said, while states have also urged the Prime Minister to send the draft proposal of the proposed law.

Asked about the absence of Yadav and Banerjee, Bharati said the Prime Minister's Office had said that the concerned Chief Ministers can attend or send their notes for the meeting as no other representative on their behalf can participate.

"All are united for any plan for freeing river Ganga from pollution," she added.

At the meeting, Modi described the task of cleaning Ganga as "challenging" and pitched for an "uncompromising mission-mode approach" to stop further pollution of the river which would require the participation of people as well, a statement from the PMO said.

The task of cleaning the Ganga had the potential to generate immense economical activity and bring about a positive attitudinal change in the entire country, he said.

He said it is "our responsibility for future generations" to save the river which is associated with "faith" and "devotion" among millions of Indians, a PMO statement said.

The task at hand cannot be accomplished without "Jan-Bhaagidaari" (people`s participation), Modi said and urged the states to pay special attention to development of towns and villages located on the banks of Ganga, and to ensure sufficient awareness in these areas to stop pollution.

Bharati said Kumar raised some issues that the Centre was already aware of but he did not have any specific reservation.

Bharati said the government has plans to conserve monsoon rain water for river Yamuna which can be released during the non-monsoon period.

At the meeting, Kumar said there is a need to give enough attention to ensure unobstructed flow of the river besides its cleanliness.

"I would like to repeat once again that there is a need to keep a balanced approach on the unobstructed flow of river Ganga along with its cleanliness. A comprehensive policy will have to be adopted to maintain the cleanliness and flow of subsidiary rivers of Ganga in Bihar as well so that the natural flow of Ganga can be restored," Kumar said.

He said the state has been raising the issue of formulating a national silt management policy for last many years and there is a need to give attention to it.

Rawat said he raised the issue about funding patterns of the Ganga cleaning mission as the states have to spend 30 per cent while the rest would be borne by the Centre.

To a question on proposal to enact a law to protect Ganga, he said state governments should be taken into prior consideration before drafting the law.

Das advocated for a single window system for proper coordination among various departments to implement the Ganga Action Plan since different departments have to collectively work under the Ganga Action Plan and coordination between the departments might take time.

For solid waste treatment and construction of toilets, the state government has asked the centre for a special package of Rs 60 crore, he said.

Stressing the need for development and beautification of the river banks, Das said the state government has urged the centre to provide 50 crore under River Front Development (RFT

“Govt to make law to protect Ganga from pollution”, 26/03/2015, online at: http://zeenews.india.com/news/sci-tech/govt-to-make-law-to-protect-ganga-from-pollution_1568421.html

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❖ India turns to 'satellite god' for crop mapping

NEW DELHI (Reuters) - Sher Singh, a farmer from Rajasthan, prays to Varuna, the Hindu god of water, for a bountiful harvest. Now, he is also looking to the heavens for satellite imaging to boost his crop.

Prime Minister Narendra Modi wants to promote a "per drop, more crop" approach to farming to make better use of scarce water, and aims to have a new satellite crop monitoring system working in time for the peak of this year's monsoon in July.

Using remote analysis to assess soil moisture and crop development has the potential to cut input costs and raise yields, say experts, in a country of 1.25 billion where half of workers make a living from agriculture.

Under the scheme, farmers would be able to access advisories on their mobile phones to help them to choose seed varieties, apply the right fertilisers or time irrigation 'shots', though some are sceptical about how effective the plan will be given natural or other obstacles.

"I hope to cut at least a tenth of input cost with the help of the 'satellite god'," said Singh, 55, who farms less than a hectare of rapeseed and hopes to use savings to educate his two grandchildren.

By his own admission, Singh doesn't know how much to water his crops, the right fertiliser mix - or even the right crop to plant given the land's soil type.

After last year's landslide poll victory, Modi's government rolled out a national Soil Health Card scheme modelled on an initiative he launched as chief minister of Gujarat to help farmers plant crops suited to their farmland.

In addition, satellite analysis can assess vegetation cover down to field level, helping to determine how a crop is developing and whether it has been harmed by pests or needs more water.

"The idea is to integrate information under the Soil Health Card with satellite images to raise productivity," said N. Chattopadhyay, a weather department official who is involved in the project.

PRECISION FARMING, INDIAN STYLE

The approach seeks to apply 'precision' farming methods pioneered in North America that use geo-location technology to help farmers micro-manage exactly how much seed, fertiliser or pesticide they apply to their fields.

In countries such as the United States and Canada unmanned aerial vehicles, or drones, are also used to overfly farms to map soil and crops accurately.

The next-best option is satellite analysis, more affordable for India, that uses a method called Normalized Vegetation Difference Index assess how well a crop is developing.

Chattopadhyay said the analysis can be provided to farmers on a near real-time basis and could also be used for impact assessment after natural hazards like floods.

India can use its own geostationary satellites, but some see obstacles to its plans including a need to check findings on the ground or the risk of cloud obscuring images.

"Don't be under any illusion that the remote sensing based crop mapping technique will be a penance for all problems in the farm sector," said B.C. Barah, a New Delhi-based agriculture economist.

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India's top bureaucrat Ajit Seth has urged wider use of remote sensing to benefit farmers, many of whom live a precarious existence on tiny plots of land.

Just over half of India's nearly 200 million hectares of arable land is rainfed, leaving farmers at the mercy of an often uncertain the monsoon.

The remaining arable is under irrigation, which the government plans to expand by a tenth over three years.

The loss of more than half of a crop can trigger government payments to farmers, of \$72 per hectare for rainfed areas and \$144 for irrigated lands.

India is also preparing to use satellite based crop forecasts to develop insurance for farmers. Currently, insurance products cover primarily crop loans and exclude farm activities.

“India turns to 'satellite god' for crop mapping”, 27/03/2015, online at: http://finance.yahoo.com/news/india-turns-satellite-god-crop-041131329.html?utm_source=Circle+of+Blue+WaterNews+%26+Alerts&utm_campaign=6b715165f4-RSS_EMAIL_CAMPAIGN&utm_medium=email&utm_term=0_c1265b6ed7-6b715165f4-250657169

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❖ Centre plans commission status for Ganga authority

NEW DELHI: If the Centre has its way, the National Ganga River Basin Authority (NGRBA) - a key central body which monitors planning and execution of all schemes of Ganga rejuvenation in coordination with five states - will be converted into a commission under Parliament Act so that it can work more effectively.

A proposed law on this matter was discussed in a high-level review meeting here on Ganga cleaning on Thursday where Prime Minister Narendra Modi called for an "uncompromising mission-mode approach" to stop further pollution of the country's national river.

If the NGRBA gets converted into the commission under proposed legislation, the new constitutional body will have more power on affairs of the river. Though 'water' continues to be a state subject, matters relating to Ganga will be transferred to the commission.

"This will, however, happen only after consultation with the states as water is a state subject. A committee, headed by Union water resources secretary, will discuss the issue of a proposed legislation to convert the Authority into Commission with the concerned states and submit its report to the Centre", said an official.

Chairing the fifth meeting of the NGRBA, the Prime Minister said the task of cleaning the river was a challenging one, but had the potential to generate immense economical activity, and bring about a positive attitudinal change in the entire country.

Noting that Ganga is associated with "faith" and "devotion" among millions of Indians, he said the task was to convert these positive sentiments into a feeling of responsibility.

During the meeting, attended by chief ministers of Bihar (Nitish Kumar), Jharkhand (Raghubar Das) and Uttarakhand (Harish Rawat), Modi also emphasized on people's participation - "Jan-Bhaagidaari" - to ensure cleaning of the river. West Bengal and Uttar Pradesh, other two states in the Ganga river basin, were represented by their senior ministers in the meeting.

Modi also urged the states to pay special attention to development of towns and villages, located on the banks of Ganga, and to ensure sufficient awareness in these areas to stop pollution. The states, on their part, asked the Centre to ensure "single-window clearances" of proposals sent by them for all works, relating to rejuvenating the river.

Silt management, assistance for setting up sewage treatment plants and effluent treatment plants were among the other key issues discussed in the meeting.

Referring to the meeting, Uttarakhand chief minister Harish Rawat said, "The Prime Minister assured us that Ganga cleaning will be taken up as public work and there will be no shortage of funds for it".

Union ministers Arun Jaitley, Venkaiah Naidu, Nitin Gadkari, Uma Bharati, Prakash Javadekar and Piyush Goyal and vice chairman of the NITI Aayog Arvind Panagariya were among those who attended the meeting.

No Barrage on Varanasi-Haldea Stretch of Ganga:

Taking a U-turn, shipping minister Nitin Gadkari on Thursday said that no barrage will be built on Ganga for navigation between Varanasi and Hoogly. The minister in June last year had announced barrages would be built at every 100 km soon after chairing the first meeting on Ganga rejuvenation plan. "That was based on some of the reports we had received during that period. But the latest reports suggest that there is no need to build such structures to maintain the depth of the river for navigation. There are some misconception in certain states. So, I am clarifying it," he added. Earlier he had said barrages could be used for transportation across the river.

"Centre plans commission status for Ganga authority", 27/03/2015, online at:
http://timesofindia.indiatimes.com/home/environment/pollution/Centre-plans-commission-status-for-Ganga-authority/articleshow/46709951.cms?utm_source=Circle+of+Blue+WaterNews+%26+Alerts&utm_campaign=9a24395b0d-RSS_EMAIL_CAMPAIGN&utm_medium=email&utm_term=0_c1265b6ed7-9a24395b0d-250657169

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❖ Cholera will plague Haiti until water, sanitation crisis solved: experts

BOGOTA (Thomson Reuters Foundation) - Cholera will continue to kill and infect Haitians as long as they lack access to clean water and sanitation, with a thousand new cases reported each week, health experts say.

Cholera, a water-borne disease caught by drinking and using contaminated water, has killed nearly 9,000 Haitians and infected 732,000 since it broke out in the country in late 2010.

With the lowest levels of access to drinking water and sanitation in the Americas, Haiti is struggling to stamp out cholera, which resurged between October and December last year, said the Pan American Health Organization (PAHO).

During the first two months of this year, cholera cases totaled 7,225, including 86 deaths - higher than recorded during the same period in 2012 and 2014, said PAHO, the regional arm of the World Health Organization.

"We cannot be complacent. We can't take our eyes off the ball," PAHO deputy director Isabella Danel told the Thomson Reuters Foundation in a telephone interview.

"Cholera comes and goes... This will not go away until the real problem of water and sanitation is solved. That will require a scale-up of financing and capacity."

Infectious diseases such as cholera thrive in the overcrowded slums sprawled across the Haitian capital Port-au-Prince. With few toilets there, people are forced to defecate in the open. Cases normally spike during Haiti's rainy season, from September to November.

More prosperous Dominican Republic, which shares the Caribbean island of Hispaniola with Haiti but has a stronger health system, has reported more than 32,000 cholera cases and 480 deaths since 2010, PAHO said.

Cholera causes diarrhea and vomiting that often brings on severe dehydration, which if not treated quickly can be fatal.

Many Haitians blame cholera on U.N. peacekeeping troops from Nepal, who they say introduced the disease to Haiti.

Forty percent of Haiti's population of 10 million do not have access to clean water, while nearly half of the country's hospitals lack either drinking water or sanitation, PAHO says.

Furthermore, 60 percent of Haiti's schools lack toilets, according to Human Rights Watch.

PAHO, the Haitian government and aid agencies have conducted awareness campaigns on the need to wash hands with clean water to stem cholera infection, and water purification programs using chlorine have been set up.

Since 2012, nearly 200,000 Haitians have received an oral vaccine to better protect them against cholera.

While such measures have significantly reduced cholera deaths, the U.N. says 28,000 more Haitians could be infected this year.

The government is unable to cope with peaks in cholera as the country's health sector is still recovering from the massive 2010 earthquake, says medical charity Doctors Without Borders.

In a bid to rid Haiti of cholera, the government launched a 10-year \$2.2 billion appeal in 2013 to provide clean water and sanitation for all Haitians by 2022.

But many donors are focused elsewhere, Danel said.

"It has been a challenge to mobilize the necessary resources owing to the multiple global crises, wars, and conflicts, and more recently the heightened focus on Ebola control and elimination," she said.

“Cholera will plague Haiti until water, sanitation crisis solved: experts”, 26/03/2015, online at:
http://www.reuters.com/article/2015/03/26/us-haiti-cholera-idUSKBN0MM0AN20150326?utm_source=Circle+of+Blue+WaterNews+%26+Alerts&utm_campaign=aebf27a3ac-RSS_EMAIL_CAMPAIGN&utm_medium=email&utm_term=0_c1265b6ed7-aebf27a3ac-250657169

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