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***** Turkey determined to tap into wind

Energy and Natural Resources Minister Taner Yıldız has said that Turkey will increase local and renewable energy resources in line with the energy policies and strategies of Turkey at Turkey's Wind Energy Sector Meeting. Saying that Turkey was undergoing a change in this respect, he noted that they need more coordination and cooperation in order to evolve this change into something bigger. Underlining that the wind energy sector is susceptible to speculation, Yıldız said that such efforts should take the environment into consideration without sacrificing energy resources, as they are both vital for the economy.

According to a report issued by Spain's Royal Birds Protection Society, the number of birds killed by wind energy plants is much less than claimed. He said that about 1 billion birds die in the U.S. because they hit buildings and less than 10,000 birds are killed by wind energy plants. He said that such claims or claims about the environmental effects of wind energy are not realistic. He further highlighted the importance of being fair in the sector and creating a structure from which all parties, technology owners, investors and citizens, will benefit: "We need to establish a structure in which both our citizens and industrialists have access to renewable energy with affordable prices. Wind energy investments repay themselves either in six to seven years or nine to 10 years. Therefore, I believe the price we've stated is fair." He said that the Forestry and Water Affairs Ministry's decision on fees had an adverse effect on customers, so he shared his concerns with Forestry and Water Affairs Minister Veysel Eroğlu. He noted that the directives on fees need to be approved by the Council of Ministers.

Saying that a half megawatt production has been initiated as a result of a TL 52 million (\$21.24 million) research and development project on domestic wind energy systems and production of prototype turbines, Yıldız said they are expecting to increase the production amount to 2 megawatts to 2.5 megawatts. Yıldız further pointed out the target was not only the target of Turkey, but also one for those who perceive Turkey as a center to reach out to African and Middle Eastern markets. Yıldız also said that Turkey's wind energy efficiency is very appealing and the 20,000-megawatt target for 2023 still remains achievable, but more efforts should be made in this respect. "Turkey will increase



the share of new resources, local resources and renewable resources within the total pool." The chairman of the Turkish Wind Energy Association, Mustafa Serdar Ataseven, said that these meetings, which they are organizing for the fourth time, are staring to pay off, and now with the attendance of both the government and the opposition, the results will improve. "There cannot be any opposition to wind energy. We want these meetings to unite the government and the opposition," Ataseven said. Explaining that the established wind power in the world reached 370 gigawatts last year, Ataseven said China has 30 percent of the production with 114 gigawatts.

Ataseven said that there has been a 30 percent increase on average within the last four years in Turkey's wind energy production with facilities producing around 804 megawatts commissioned last year. "At the end of last year, Turkey could produce 3,762 megawatts of energy from wind power and there are facilities with 1,200 megawatts of potential production that are currently being built," he said. The Energy and Natural Resources Ministry developed Turkey's first National Renewable Energy Action Plan in line with the EU's Renewable Energy Directive to increase the security of the energy supply and reduce greenhouse gas emissions to grow the share of renewables in the country's energy mix. Turkey has pledged to develop 30 percent of its total installed capacity from renewable sources by 2023. The objective is to add 34 gigawatts of hydroelectric power, 20 gigawatts of wind energy, 5 gigawatts of solar energy, 1 gigawatt of geothermal and 1 gigawatt of biomass energy. The country also aims to have 10 percent of its transport sector needs met by renewable energy

"Turkey determined to tap into wind", 17/02/2015, online at: <u>http://www.dailysabah.com/energy/2015/02/17/turkey-determined-to-tap-into-wind</u>

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✤ ISIS's War of Water and Electricity

Brutal terror regime has taken to cutting off basic necessities in its fight to expand control in Syria and Iraq.

Islamic State (ISIS) terrorists have spared no brutal methods in their conquest of Iraq and Syria, executing by burning, stoning and beheading, but a cruel new tactic the group is using to expand its reach involves cutting off civilians from the basic necessities of water and electricity.

In fighting the "atheists," a term it applies not only to non-Muslims but also to Muslims opposing their iron-fisted rule, ISIS has cut off electricity to wide areas in the Damascus region of Syria after its members succeeded in detonating the gas pipe supplying the electric power station.

Meanwhile in the Anbar Province of eastern Iraq ISIS cut off the water to the strategic city of al-Baghdadi during its eventual conquest of the city last Thursday.

The water cut-off took place after ISIS seized five pumping stations drawing water from the Euphrates River. The Anbar Province head asked the Iraqi government for urgent aid in fear that the water disconnect could cause a humanitarian disaster.

Al-Baghdadi did indeed witness a disaster, but one caused by fire and not water - in capturing the city ISIS terrorists brutally <u>burned 45 people to death</u> according to the local police chief, who added that several areas of the city are still under siege.

Elsewhere in Iraq, ISIS terrorists abducted 120 civilians from the al-Abid and al-Nasara tribes in the northeast of the city Takrit, and there is a fear that all 120 have been executed.

The Moroccan *Akhbar El-Yom* newspaper reports that one of the ISIS members published a warning stating that soon Morocco and Spain will be targeted in attacks, including suicide bombings, explosives and exploding cars.

According to figures of the Moroccan government, 1,500 of the country's citizens left for Syria and Iraq to fight for ISIS.

"ISIS's War of Water and Electricity", 18/02/2015, online at: http://www.israelnationalnews.com/News/News.aspx/191500#.VOolfSx5at8

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***** Water resources in 14 Iranian cities is in critical condition

TEHRAN -- According to the Ministry of Energy, 14 cities across Iran are in critical situation with respect to their water resources, Department of Environment chief Masoumeh Ebtekar announced on Wednesday.

She made the remark in a national conference in Tehran on urban space preservation and the inevitability of urbanization, IRNA reported.

"Tehran's water resources are also in critical condition," she added.

The official added that the capital city ran out of biological resources in 1998 due to uncontrolled population boost and industrialization.

She noted that based on meteorological reports, Iran will experience 23 consecutive years of temperature increase and low precipitation, calling for comprehensive plans to tackle the situation.

"Water resources in 14 Iranian cities is in critical condition", 18/02/2015, online at: http://www.tehrantimes.com/politics/121943-water-resources-in-14-iranian-cities-is-in-critical-condition

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***** Israeli authorities ban water hook-up to Palestinian city

Israeli Minister of National Infrastructure, Energy and Water Silvan Shalom banned water connection to the new West Bank Palestinian city of Rawabi, which is to house around 40,000 Palestinian families, Israeli newspaper *Haaretz* reported yesterday.

Israeli Defence Minister Moshe Ya'alon and the Coordinator of the Israeli Government Activities in the Palestinian Territories Major General Yoav Mordechai had ordered the Israeli Water Authority to provide water to the city.

However, Shalom refused Ya'alon's instruction saying that water and sewage projects in the West Bank require Israeli-Palestinian Join Water Committee's (JWC) approval.

Shalom blamed the Palestinians, calming they have been refusing to convene the committee since 2010. The response from Shalom's office stated that according to an agreement with the Palestinians singed in 1995, the committee is the principal party which decides on such issues in the West Bank communities.

Haaretz reported the Palestinian side confirming that the committee had not convened since 2010, but they insisted this does not justify the ban to connect water to the city.

The head of project department in the Palestinian Water Authority Ihab Al-Barghouti said: "The reason why the committee has not convened was the Israeli condition that the committee must approve an Israeli settlement project in return of any approval of any Palestinian project."

Al-Barghouti insisted that the Palestinians refused this condition, thus, they do not attend the committee's meetings.

"Israeli authorities ban water hook-up to Palestinian city", 16/02/2015, online at: https://www.middleeastmonitor.com/news/middle-east/16996-israeli-authorities-ban-water-hook-up-to-palestinian-city

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* Israel uses water to blackmail Palestinians

Ramallah: Despite approval by the Israeli Civil Administration in the West Bank, the Israeli National Infrastructures, Energy and Water Minister Silvan Shalon has refused to connect the newly built Palestinian Rawabi city near Ramallah to the water network.

Rawabi is the first Palestinian-planned city in the West Bank, which is located near Birzeit and Ramallah.

Palestinians accuse Shalom of blackmailing authorities by attaching approval to connecting water to Rawabi to approval to connecting water in other Israeli colonies in the West Bank.

Shalom demanded written approval from the Palestinian government to allow water projects for colonies. Palestinians of course reject this move accusing the Israeli regime of trying to 'force Palestinians to legalise colony activities in the West Bank'.

Other Palestinians say the move is a campaign manouver to tying in with the upcoming Israeli elections.

According to the Oslo Accords, Palestinian water and sewage projects are tackled by a joint Palestinian-Israel Water Committee which the Palestinians froze in 2010 following Israeli insistence that the committee tackle water and sewage for Israeli colonies in the same way it did water and sewage for Palestinian cities and towns.

"Israel uses water to blackmail Palestinians", 17/02/2015, online at: <u>http://gulfnews.com/news/region/palestine/israel-uses-water-to-blackmail-palestinians-1.1458492</u>

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* Israel opens dams, floods Gaza

GAZA, Feb. 22 (Xinhua) -- A Palestinian minister lashed out at Israel on Sunday after it opened its dams near the border with the Gaza Strip, flooding the central area of the besieged enclave with huge amounts of water.

Mufid al-Hasaynah, minister of Housing and Public Works in the Palestinian unity government, told Xinhua that Israel deliberately increases the suffering of the Gazans.

"Dozens of houses were filled with water of the Israeli dams, which were largely opened this morning towards the Gaza Strip. These actions double the people's suffering who live under a tight Israeli siege," said the minister.

Early on Sunday, rescue teams and firefighters rushed to the central area of the Gaza Strip to rescue dozens of Palestinians who were stuck in their houses after Israel opened the dams.

Witnesses said that bulldozers were bringing sands to reduce the amounts of water that covered the houses in the area and that several main roads and streets were closed due to the floods.

The Gaza-based Ministry of Interior said in an emailed press statement that the civil defense teams rescued 18 families after their homes were fully covered with water that came from the Israeli side.

Mohamed Abu Shamallah, head of the Gaza civil defense, said that the level of water in the area in central Gaza Strip grew up to three meters and a half.

"Israel opens dams, floods Gaza", 22/02/2015, online at: <u>http://www.globalpost.com/dispatch/news/xinhua-news-agency/150222/israel-opens-dams-floods-gaza</u>

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Hundreds of Palestinians flee floods in Gaza as Israel opens dams

<u>Hundreds of Palestinians were evacuated from their homes</u> Sunday morning after Israeli authorities opened a number of dams near the border, flooding the Gaza Valley in the wake of a recent severe winter storm.

The Gaza Ministry of Interior said in a statement that civil defense services and teams from the Ministry of Public Works had evacuated more than 80 families from both sides of the Gaza Valley (Wadi Gaza) after their homes flooded as water levels reached more than three meters.

<u>Gaza has experienced flooding</u> in recent days amid a major storm that saw temperatures drop and frigid rain pour down.

The storm displaced dozens and caused hardship for tens of thousands, including many of the approximately <u>110,000 Palestinians left homeless by Israel's assault over summer.</u>

The suffering is compounded by the fact that Israel has maintained a complete siege over Gaza for the last eight years, severely limiting electricity and the availability of fuel for generators. It has also prevented the displaced from rebuilding their homes, as construction materials are largely banned from entering.

Gaza civil defense services spokesman Muhammad al-Midana warned that further harm could be caused if Israel opens up more dams in the area, noting that water is currently flowing at a high speed from the Israel border through the valley and into the Mediterranean sea.

Evacuated families have been sent to shelters sponsored by UNRWA, the UN agency for Palestinian refugees, in al-Bureij refugee camp and in al-Zahra neighborhood in the central Gaza Strip.

The Gaza Valley (Wadi Gaza) is a wetland located in the central Gaza Strip between al-Nuseirat refugee camp and al-Moghraqa. It is called HaBesor in Hebrew, and it flows from two streams -- one whose source runs from near Beersheba, and the other from near Hebron.

Israeli dams on the river to collect rainwater have dried up the wetlands inside Gaza, and destroyed the only source of surface water in the area.

Locals have continued to use it to dispose of their waste for lack of other ways to do so, however, creating an environmental hazard.

This is not the first time Israeli authorities have opened the Gaza Valley dams.

In Dec. 2013, Israeli authorities also opened the dams amid heavy flooding in the Gaza Strip. The resulting floods damaged dozens of homes and forces many families in the area from their homes.



WATER RESEARCH PROGRAMME -Weekly Bulletin-

In 2010, the dams were opened as well, forcing 100 families from their homes. At the time civil defense services said that they had managed to save seven people who had been at risk of drowning.

"Hundreds of Palestinians flee floods in Gaza as Israel opens dams", 22/02/2015, online at: http://www.albawaba.com/news/hundreds-palestinians-flee-floods-gaza-israel-opens-dams-659932

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* Rawabi's dried-up pipe could land Israel in deep water

Rawabi's dried-up pipe could land Israel in deep water - YNET

Op-ed: There are quite a few ways to explain to the world why uninvolved people were killed in Gaza or why Jews are allowed to settle in an occupied territory; but there is no way to explain why Israel is preventing a Palestinian city from receiving water.

Published: 02.17.15

In a few weeks' time, we'll sit around the Seder table and recount the Exodus from Egypt, and the more the merrier.

We will recount how Moses went to Pharaoh, the king of Egypt, and called on him: Let my people go. But God hardened Pharaoh's heart, and Pharaoh refused. God hit Egypt with nine horrible plagues, and each time the frightened king accepted the demand, and then, when the punishment was called off, he went back on his word and refused. He only let them go after the 10th plague, death of firstborn.

And now let's put the Bible stories aside and focus on settling the country. North of Ramallah, near the Ateret settlement, a city is being built. Its name is Rawabi. The diligent reader likely remembers press reports about the progress in the city's construction, newspaper reports which stretched over two pages and long television and radio reports.

I wrote about it quite a lot myself. I thought that the project marked the Palestinians' shift from sanctifying terror to normalization, and the huge importance of this move for the State of Israel requires no explanation.

I traveled there. I was impressed by the multi-story buildings being constructed in Area A, by the quality of the urban planning which followed in the footsteps of the Israeli city of Modiin, by the enviable prices starting at \$80,000 for a four-room apartment, by the quality of construction, by the marketing method. I interviewed the entrepreneur, Bashar al-Masri, who insisted on buying the materials for his project from Israel of all places, despite the Palestinian Authority's boycott declarations.



The first stage of the project was completed last May. The buyers were supposed to receive the keys. The keys were not delivered. The construction company couldn't house the buyers because there was no water flowing out of the taps in their apartments. The water didn't flow because Israel refused to connect them to the joint pipe. Israel refused to connect them because its government is involved in a conflict with the Palestinian Authority.

Each side in this conflict has principles: The PA won't sign on water supply to the settlements; our government won't approve water for the Palestinians as long as the PA won't sign.

In the meantime, the city's construction work has been halted. The marketing has been stopped too. The project, which was partly funded by Qatari money and partly by the buyers' money, is stuck. It will soon reach the courts.

The damage suffered by the investors is unfortunate, but what we should be interested in is the damage to the State of Israel. There are quite a few ways to explain to the world why uninvolved people were killed during Operation Protective Edge in Gaza. There are even ways to explain why Israel insists on letting Jews settle in an occupied territory. There is no way to explain why Israel is preventing a Palestinian city from receiving water. All the more so when Rawabi is the complete opposite of Hamas' Gaza: It's a bourgeois, well kept, demilitarized island, free of politics. It's the model of peace according to the West's perception.

The PA, which is looking for issues to use in the "diplomatic intifada" it is waging against Israel, has enthusiastically jumped on Rawabi: In this case, water is thicker than blood. And there are already colleges in the United States and Europe in which anti-Israel activists are going on about the city which was not joined together, the Palestinian thirst and the Israeli pharaoh. The dried up pipe will serve as an excellent propaganda tool.

Major-General Yoav Mordechai, the coordinator of government activities in the territories, has made a huge effort in recent month to push the problem off the agenda. He used his connections in the PA to pave the way to a compromise. When he realized salvation will not come from there, he convinced Defense Minister Moshe Ya'alon to support a one-sided connection of the city. That's how quite a few settlements were connected to a water supply system.



Ya'alon mulled over the issue quite a lot. It's possible that he thought about the primary elections, and about how Likud members in the hardcore settlements would vote. He eventually decided that the pipe should be connected. According to rumors, Prime Minister Benjamin Netanyahu is also in favor of connecting the pipe. He realizes that Rawabi is a ticking bomb, both from the PR and legal aspects.

Until the matter reached Silvan Shalom's desk. Shalom is the minister of energy and water. When it comes to the West Bank area, the authority belongs to the Central Command chief, and in fact to the defense minister. The defense minister is in charge of the pipe, but the water minister is in charge of the water. Mekorot, Israel's national water company, will not supply water without the Water Authority's approval, and the Water Authority will not give the approval if the water minister refuses.

We have a prime minister who can launch a war on Iran or fire the Israel Prize for Literature's panel of judges, but doesn't know how to turn on the tap to Rawabi. Or perhaps he does know, but doesn't want to do it while fighting with Naftali Bennett and Baruch Marzel over the right-wing votes. And we have a defense minister with good intentions who is incapable of acting.

We survived Pharaoh, Israeli singer-songwriter Meir Ariel sang. We'll survive this too.

"Rawabi's dried-up pipe could land Israel in deep water", 17/02/2015, online at: http://www.ynetnews.com/articles/0,7340,L-4627501,00.html

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* Ya'alon pushes for water hookup in order to open new Palestinian city Rawabi

Rawabi, which is located on a Samaria hilltop between Ramallah and Nablus, is the first planned Palestinian city in the West Bank that offers affordable modern homes.

To help the new Palestinian city of Rawabi open its doors to its first residents, Defense Minister Moshe Ya'alon (Likud) has ordered water to be hooked up to its large apartment buildings.

Rawabi, which is located on a Samarian hilltop between Ramallah and Nablus, is the first planned Palestinian city in the West Bank. It offers affordable modern homes.

Although the first batch of apartment buildings is ready, hundreds of new homeowners have been unable to move in because the city lacks water.

Rawabi, along with other Israeli and Palestinian projects, has been frozen, pending approval from the Israeli-Palestinian Joint Water Committee (JWC), which has not met for the last five years.

Ya'alon, along with the Coordinator of Government Activities in the Territories Maj.-Gen. Yoav Mordechai, decided to circumvent the JWC and ordered Israel's Water Authority to provide water to Rawabi and a number of other projects, including for Israelis.

Infrastructure Minister Silvan Shalom, whose office has oversight over the Water Authority, has refused to heed Ya'alon and Mordechai's demand. Silvan's office said on Thursday that, according to a 1995 Interim Agreement under the Oslo Accords, water and sewage projects for Israelis and Palestinians in the West Bank must be approved by the JWC.

"To our sorrow, since 2010, the Palestinians have refused to convene the committee.

We'd be happy if the Palestinians would sit in the committee, which could then debate projects from both sides," Silvan's office said.

His spokesman added that, once the Palestinians return to the committee, a water hookup for Rawabi could likely be approved fairly quickly.



Rawabi is located in Areas A and B of the West Bank, which is under the civil control of the Palestinian Authority. It abuts Area C of the West Bank, which is under Israeli civil and military rule.

Security officials said that Ya'alon and Mordechai are working to find a way to advance projects, like Rawabi, that have been frozen because the JWC has not met.

Rawabi is the brain child of Palestinian businessmen Bashar al-Masri, who together with the Qatari Diar Real Estate Investment Company, has developed a city that will eventually house some 40,000 residents.

"Ya'alon pushes for water hookup in order to open new Palestinian city Rawabi",12/02/2015, online at:<u>http://www.jpost.com/Arab-Israeli-Conflict/Defense-Minister-pushes-for-water-hookup-so-the-new-Palestinian-city-of-Rawabi-can-open-390899</u>

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Solution Israel must connect the new Palestinian city of Rawabi to the national water grid

For many Israeli settlers and politicians, every Palestinian success is an Israeli failure.

The new Palestinian city of Rawabi, near Ramallah, inspires envy. Not necessarily because of the extraordinary success that was achieved in planning an entire city meant to provide decent, affordable housing for thousands of Palestinian families couples, nor on account of the stunning views it affords. No, this is the envy of Israeli settlers and politicians, for whom every Palestinian success is an Israeli failure.

The zero-sum game that characterizes relations with the Palestinians is played out not only in the international arena, but also in every inch of the territories and East Jerusalem. Rawabi, the construction materials for which were provided primarily by Israeli manufacturers and suppliers, has been waiting for months to be connected to the national water grid. Around 1,000 apartments that have been purchased there are move-in ready, but for a lack of running water.

The official excuse for the punishment meted out to the buyers is that the Israeli-Palestinian Joint Water Committee hasn't met for years, and since every permit for supplying water requires the unanimous approval of this panel's members, there's no way to approve Rawabi's connection to the water system. An ancillary claim is that the Palestinians have refused to convene the water committee because they don't want to approve the supply of water to Israeli projects and to the settlements.

At first glance, these claims are correct. After all, the Joint Water Committee was set up pursuant to the Oslo Accords, and the requirement that both sides must agree to both Israeli and Palestinian projects was meant to produce an appropriate and fair allocation of the water. But in reality, these claims don't hold water: There is no record of any Israeli project that has ever been thwarted for lack of a JWC permit.

More important, this reliance on the Oslo Accords as a source of authority for allocating water is ridiculous. After all, this agreement also requires Israel to remit to the Palestinian Authority the taxes it collects on the PA's behalf. The Israeli government, which long ago declared the Oslo Accords dead and buried, and which ignores many of their provisions, adheres to them scrupulously when they allow it to punish the Palestinians. The result is that Israel violates the Oslo Accords' provisions



for giving the PA the tax money it owes, but complies when they allow it to withhold water from Rawabi.

Israel's Coordinator of Government Activities in the Territories is in favor of connecting Rawabi to the water grid. It would not affect the security balance and would provide an excellent solution to the housing shortage in the West Bank. The cabinet must issue an immediate order to carry out the connection and allow home buyers to move in without further delay.

"Israel must connect the new Palestinian city of Rawabi to the national water grid", 17/02/2015, online at: <u>http://www.haaretz.com/opinion/1.642850</u>

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State of the still refuses to run water to Rawabi

After nearly a year of foot-dragging, Coordinator of Government Activities in the Territories Maj. Gen. Yoav (Poli) Mordechai finally approved two weeks ago the connection of the new West Bank Palestinian city of Rawabi to the <u>water supply system</u>. For a moment, the entrepreneur behind the project, Palestinian-American billionaire Bashar al-Masri, who is a member of a wealthy Nablus family, was tempted to believe that the <u>project of his life</u> was saved from collapse. Masri invested practically his entire fortune in the new Palestinian city, and for a while, it looked like the threat of bankruptcy looming over the entrepreneur who sought to do good to his people had passed.

It turns out that the joy of Masri and the hundreds of Rawabi homebuyers was premature. While Mordechai approved the connection of the city to the national water supply system, his approval has been subsequently foiled by another Israeli knock-back that sealed off the taps even before they were opened. Minister of National Infrastructures, Energy and Water Resources Silvan Shalom decided, by virtue of his capacity as the official in charge of the water sector in Israel, to halt the connection of Rawabi to the water supply system pending the convening of the Israeli-Palestinian Joint Water Committee (JWC), which has not met for five years.

The JWC is the intricate story of Israelis and Palestinians, who in recent years, especially since the establishment of a right-wing government in Israel, have failed to reach any agreement, regardless of the suffering their failure inflicts on the general public.

The committee was established under the <u>Oslo Accord</u> in 1995. It was designed to create a mechanism for cooperation and understandings with regard to the distribution of water resources in the West Bank between the areas under control of the <u>Palestinian Authority</u> and the Israeli settlements. Each side in the JWC was given veto power. However, in view of the ongoing expansion of settlements in the West Bank and the establishment of new settlements, in the last five years, the Palestinians, unwilling to promote the construction boom, refuse to vote on the supply of water to the settlements.



Needless to say, the failure of the JWC to convene has not prevented a regular water supply to the settlements, or even to the illegal outposts in Judea and Samaria. Under the shadow of the political and diplomatic divisions between Israelis and Palestinians, which have deepened in recent years, and in the absence of meetings of the joint committee, the Civil Administration there had no choice but to improvise and find creative solutions to enable regular water supply to small-size Palestinian building projects. After all, water is a basic commodity, essential to human survival.

Then came the moment of truth. The Civil Administration in Judea and Samaria was asked to connect Rawabi, which is expected to be populated in the first stage by 25,000 inhabitants, to the national water supply system. The location of Rawabi, 13 kilometers (8 miles) north of Ramallah, was selected from three sites proposed by the Civil Administration when Ehud Barak was defense minister. Construction of large parts of the city has already been completed, and in fact, in May 2014, the project management was supposed to hand over the keys to the first 800 homebuyers. Yet, the Palestinians and Israelis persisted in the fruitless debate — quibbling over the question of who is the major culprit responsible for violating the understandings reached under the Oslo Accord. Meanwhile, the city looks like a ghost town, which the workers in the project find most difficult to maintain.

Two weeks ago, Mordechai decided to connect Rawabi to the water supply system, in coordination with Defense Minister Moshe (Bogie) Ya'alon. At the same time, to compensate for the failure of the JWC to convene, the settlement umbrella organization Yesha Council was promised that a number of water projects would be approved on behalf of the settlements. Nevertheless, the Rawabi water saga is not over yet. As noted, Shalom declared that as long as the JWC failed to convene, water would not flow to Rawabi.

Thus, with the ball in Shalom's court, the Civil Administration cannot possibly bypass the political level. Indeed, under the circumstances, no improvisation, creativity, fire-fighting or proposed compromises to <u>settle the disagreements</u> are effective here. In response to Al-Monitor's inquiry, the spokeswoman of the Coordinator of Government Activities in the Territories (COGAT) issued a statement making it clear that COGAT could do nothing about it: "Given the delay in the operation of the Joint Water Committee, Coordinator of Government Activities in the Territories Maj. Gen. Yoav (Poli) Mordechai has decided to approve a number of mature projects that are ready for



implementation, and are only waiting for the green light, which would serve populations in the West Bank."

Although, for obvious reasons, the message is carefully worded, in a laconic style, the meaning of COGAT's statement seems quite clear: As all efforts have failed, and since a large Palestinian population is under discussion here, COGAT has decided to put an end to the obstructions, the "games of honor" and the endless bureaucracy, and to make it easier for the population of Judea and Samaria. The problem, however, as aforesaid, is that COGAT and the minister in charge do not see eye to eye on the issue.

Attorney Dov Weissglass, the former bureau chief for late Prime Minister Ariel Sharon, who is currently representing business magnate Bashar al-Masri, told Al-Monitor that if the Rawabi project — in which hundreds of millions of dollars had been invested — collapsed, a suit for damages on behalf of the entrepreneur would be brought against the State of Israel in the United States, where Masri is a citizen. "Two weeks ago, Maj. Gen. Yoav (Poli) Mordechai sent a letter to the Ministry of National Infrastructures, Energy and Water Resources, asking to connect Rawabi to the water supply system; however, the minister is not going to do anything about it," he said.

The text of the interview follows:

Al-Monitor: Do you think the Israeli conduct in the affair is politically motivated?

Weissglass: Do you have any doubts about it? Well, ask yourself, has the failure of the committee to convene for five years now prevented the connection of even one settlement to the water supply system? Has Israel waited for the convening of the committee [to go ahead and connect the settlements]? It connects whoever it deems fit. Not even a single settlement has been denied connection to the water supply system because the committee failed to convene. Pinning it all on the committee is nothing but a pretext, and it is solely designed to present the convening of the committee as a prerequisite, and Rawabi, as held hostage to it.

Al-Monitor: Is this great venture bound to collapse in case Silvan Shalom fails to approve the connection of the city to the water supply system?



Weissglass: Without a question! In the coming days, 500 workers are going to be laid off. We are considering an appeal to the Supreme Court. It is going to take long months, at best. If the project collapses, it will be a suit for damages of an astronomical scope.

Al-Monitor: Let me ask you — not as a lawyer representing Masri but rather as a former bureau chief for late Prime Minister Ariel Sharon — can you understand the considerations [behind it]?

Weissglass: As far as the Palestinian issue is concerned, there are no [real] considerations, aside from what the Likud Central Committee members, and especially the settlers among them, may think. It is feared that any move that would be to the benefit of the Palestinians might be frowned upon by the Central Committee members. No wonder, then, that [Defense Minister] Moshe Ya'alon has been dragging his feet on the matter for a year now; but then came Poli Mordechai and pressed him [to move ahead with it]; and now you have Silvan Shalom, who is going to do everything he possibly can to stall it.

Following a request for a reaction on this issue, Al-Monitor received a statement from the Ministry of National Infrastructures, Energy and Water Resources:

"Under the interim agreements between Israel and the Palestinians (1995), a Joint Water Committee (JWC) was to be established, in the framework of which the two sides were to mutually approve water and sewage projects in the Jewish settlements and Palestinian communities. Unfortunately, since 2010, the Palestinians have refused to convene the committee and approve projects (approved in the past as a matter of routine), and this, for political reasons.

"Minister Shalom and the Water Authority believe that unilateral approval, without convening the committee, as proposed and advocated by a number of officials in Israel, would drop the basis for the regulation of the continued operation of the Joint Water Committee. Moreover, in the wider diplomatic context, the proposal is liable to bring about the complete dismantling of the Israeli-Palestinian water agreement, and undermine the Israeli water economy. At the same time, it might damage the cooperation with the professional echelons — the [very] cooperation that at present helps to safeguard our water resources and prevents damage to the aquifers. We will be happy if the



Palestinians change their minds and show up for the committee meeting convened to discuss the projects on both sides."

"Israel still refuses to run water to Rawabi", 18/02/2015, online at: <u>http://www.al-monitor.com/pulse/originals/2015/02/palestine-city-rawabi-water-network-israel-silvan-shalom.html#</u>

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Megascale Desalination

The world's largest and cheapest reverse-osmosis desalination plant is up and running in Israel.

On a Mediterranean beach 10 miles south of Tel Aviv, Israel, a vast new industrial facility hums around the clock. It is the world's largest modern seawater desalination plant, providing 20 percent of the water consumed by the country's households. Built for the Israeli government by Israel Desalination Enterprises, or IDE Technologies, at a cost of around \$500 million, it uses a conventional desalination technology called reverse osmosis (RO). Thanks to a series of engineering and materials advances, however, it produces clean water from the sea cheaply and at a scale never before achieved.

Worldwide, some 700 million people don't have access to enough clean water. In 10 years the number is expected to explode to 1.8 billion. In many places, squeezing fresh water from the ocean might be the only viable way to increase the supply.

The new plant in Israel, called Sorek, was finished in late 2013 but is just now ramping up to its full capacity; it will produce 627,000 cubic meters of water daily, providing evidence that such large desalination facilities are practical. Indeed, desalinated seawater is now a mainstay of the Israeli water supply. Whereas in 2004 the country relied entirely on groundwater and rain, it now has four seawater desalination plants running; Sorek is the largest. Those plants account for 40 percent of Israel's water supply. By 2016, when additional plants will be running, some 50 percent of the country's water is expected to come from desalination.

The traditional criticism of reverse-osmosis technology is that it costs too much. The process uses a great deal of energy to force salt water against polymer membranes that have pores small enough to let fresh water through while holding salt ions back. However, Sorek will profitably sell water to the Israeli water authority for 58 U.S. cents per cubic meter (1,000 liters, or about what one person in Israel uses per week), which is a lower price than today's conventional desalination plants can manage. What's more, its energy consumption is among the lowest in the world for large-scale desalination plants.



WATER RESEARCH PROGRAMME -Weekly Bulletin-



ENLARGE Q

The Sorek plant incorporates a number of engineering improvements that make it more efficient than previous RO facilities. It is the first large desalination plant to use pressure tubes that are 16 inches in diameter rather than eight inches. The payoff is that it needs only a fourth as much piping and other hardware, slashing costs. The plant also has highly efficient pumps and energy recovery devices. "This is indeed the cheapest water from seawater desalination produced in the world," says Raphael Semiat, a chemical engineer and desalination expert at the Israel Institute of Technology, or Technion, in Haifa. "We don't have to fight over water, like we did in the past." Australia, Singapore, and several countries in the Persian Gulf are already heavy users of seawater desalination, and California is also starting to embrace the technology (see "Desalination Out of Desperation").



Smaller-scale RO technologies that are energy-efficient and relatively cheap could also be deployed widely in regions with particularly acute water problems—even far from the sea, where brackish underground water could be tapped.

Earlier in development are advanced membranes made of atom-thick sheets of carbon, which hold the promise of further cutting the energy needs of desalination plants.

"Megascale Desalination", 18/02/2015, online at: <u>http://www.technologyreview.com/featuredstory/534996/megascale-desalination/</u>

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Israel helps Marshall Islands purify salt water

JERUSALEM– The Marshall Islands will soon have its first water purification vehicle – thanks to the Israel. The Israel Ministry of Foreign Affairs is supplying A desalination vehicle to the tiny nation with a population of about 70,000 people. Located near the equator in the northern Pacific Ocean, the Marshall Islands suffers from a serious fresh water shortage, which Israel hopes to help the country overcome.

"When I was at a meeting with the heads of state of the Small Islands Developing States (SIDS) in Samoa, I met with the president of the Marshall Islands, who asked me to help his country," explained Deputy Minister of Foreign Affairs, Tzachi Hanegbi.

On Monday, February 16, a special launch ceremony was held for the desalination vehicle which was made possible by the Hadera-based company, G.A.L. Water Technologies, Ltd. The launch, held in Hadera, was attended by Israeli government officials and the Honorary Consul of the Marshall Islands in Israel.

"This event brings together the most important fields of environment, health, and desalination, while helping and mobilizing the Ministry of Foreign Affairs to advance these issues and raise awareness around the world," said Hanegbi. The deputy minister was pleased to be part of the launching of the first "desalination car" in the world, according to the Israel Ministry of Foreign Affairs website.

G.A.L. Technologies, which has been involved in supplying solutions in the field of water quality for the last 20 years, will soon be sending a team of experts to the Marshall Islands to help train local staff members to operate the new system. The mobile portable water treatment system for sustained emergency response and recovery can be used in remote communities and emergency situations. The system can connect to any possible water source, including rivers, oceans, brackish water and wells to produce drinking water at the standard of the World Health Organization.

In the past, Israel has also provided both agricultural assistance and medical aid to the Marshall Islands.



The Marshall Islands, along with Micronesia and Palau, are strong supporters of Israel and have consistently voted with the Jewish state in the United Nations.

The Israeli Ambassador to the Marshall Islands and to the other 12 Pacific nations including Micronesia, Michael Ronen, pointed out that "Israel reaches out to all nations, large and small, including the Marshall Islands."

"Israel helps Marshall Islands purify salt water", 18/02/2015, online at: <u>http://www.sdjewishworld.com/2015/02/18/israel-helps-marshall-islands-purify-salt-water/</u>

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Yemen's collapse is a taste of things to come

Yemen's crisis serves as a grave warning for the looming risks to states in coming years and decades, not just in the region, but around the world

Yemen is on the brink of civil war. The collapse of the US-backed government in the 2,500 year old capital city, Sanaa, and the takeover by Shiite Houthi rebels from the north, has left the country in turmoil, amidst the threat of yet another regional conflagration along sectarian lines.

Britain, the United States and France have already closed down their embassies, but less clear is how they can respond to a crisis that looks ready to spiral out of control.

The <u>war pundits</u> have been out in force offering all manner of stale recommendations, largely rehashed from the last decade of failed counter-terrorism policies.

We are running out of options, but the reason for this is more nuanced than some might assume.

The core drivers of state failure in Yemen are neither Islamists, al-Qaeda jihadists, nor Houthis: they are structural, systemic, and ultimately, civilisational.

Welcome to the post-oil future

Yemen's story is one of protracted, inexorable collapse. Around 2001, Yemen's oil production reached its peak, since then <u>declining</u> from 450,000 barrels per day (bbd), to 259,000 bbd in 2010, and as of last year hitting 100,000 bbd. Production is expected to plummet to zero in two years.

This has led to a drastic decline in Yemen's oil exports, which has eaten into government revenues, 75 percent of which depend on oil exports. Oil revenues also account for 90 percent of the government's foreign exchange reserves. The decline in post-peak Yemen revenues has reduced the government's capacity to sustain even basic social investments.

Things are looking bad now: but when the oil <u>runs out</u>, with no planning or investment in generating another meaningful source of government revenue, the capacity to sustain a viable state-structure will completely collapse.



Water woes

It's not just oil that's disappearing in Yemen: it's water. Yemen is one of the most <u>water-scarce</u> countries in the world. In 2012, the average Yemeni had access to just 140 cubic metres of water a year for all uses, compared to the regional average of less than 1,000 cubic metres – which is still well below adequate levels. Now in 2015, Yemenis have as little as 86 cubic metres of renewable water sources left per person per year.

The water situation in Yemen today is catastrophic by any reasonable standard. In many cities people have only sporadic access to running water every other week or so. In coming years, Sana'a could become the first capital in the world to effectively <u>run out of water</u>.

Climate change has already played a role in aggravating regional water scarcity. From 1974 to 2004, the Arab world experienced <u>rises</u> in surface air temperature ranging from 0.2 to 2 degrees Celsius (C). Forecasting models generally project a hotter, drier, less predictable climate that could produce a 20-30 percent drop in water run-off in the region by 2050, mainly due to rising temperatures and lower precipitation.

According to the World Bank, while "climate change-induced alterations of rainfall" have worsened Yemen's aridity, this has been compounded by the rapid growth in demand due to the "extension and intensification of agriculture; and fast growth in urban centres."

Demographic disaster

At about 25 million people, Yemen has a relatively small population. But its rate of growth is exorbitantly high. More than half the population is under the age of 18, and by mid-century its size is expected to nearly double.

Last year, at a conference organised jointly by the National Population Council in Sanaa and the UN Population Fund, experts and officials <u>warned</u> that within the next decade, these demographic trends would demolish the government's ability to meet the population's basic needs in education, health and other essential public services.



But that warning is transpiring now. Over half the Yemeni population live below the poverty line, and unemployment is at 40 percent generally, and 60 percent for young people. Meanwhile, as these crises have fuelled ongoing conflicts throughout the country, the resulting humanitarian crisis has affected some 15 million people.

A major impact of the high rate of population growth has been in the expansion of *<u>qat cultivation</u>*. With few economic opportunities, increasing numbers of Yemenis have turned to growing and selling the mild narcotic, which has accelerated <u>water use</u> to around 3.9 billion cubic metres (bcm), against a renewable supply of just 2.5 bcm.

The 1.4 bcm shortfall is being met by pumping water from underground water reserves. As these run dry, social tensions, local conflicts and even mass displacements are exacerbated, feeding into the dynamics of the wider sectarian and political conflicts between the government, the Houthis, southern separatists and al-Qaeda affiliated militants.

This has also undermined food security. As around 40 percent of Yemen's irrigated areas are devoted to *qat*, rain-fed agriculture has dropped by about 30 percent since 1970.

Like many other countries in the Middle East and North Africa, Yemen has thus become evermore dependent on food imports, and its economy increasingly vulnerable to global food price volatility. The country now imports over 85 percent of its food, including 90 percent of its wheat and all of its rice.

Between 2000 and 2008, the year of the global banking collapse, global food prices rose by 75 percent, and wheat in particular by 200 percent. Since then, food prices have fluctuated, but remained high.

But rampant poverty means most Yemenis simply <u>cannot afford</u> these prices. In 2005, the World Bank estimated that Yemeni families spend an average of between 55 and 70 percent of their incomes just on trying to obtain food, water and energy. And while 40 percent of Yemeni households have got into food-related debt as a result, most Yemenis are still hungry, with the rate of chronic malnutrition as high as 58 percent, second only to Afghanistan.



Slow collapse

For more than the last decade, then, Yemen has faced a convergence of energy, water and food crises intensified by climate change, accelerating the country's economic crisis in the form of ballooning debt, widening inequalities, and the crumbling of basic public services.

Epidemic levels of government corruption, contributing to endemic levels of government mismanagement and incompetence, have meant that what little revenues the government has acquired have mostly <u>disappeared</u> into Swiss bank accounts. Meanwhile, much-needed investments in new social programs, development of non-oil resources, and infrastructure improvements have languished.

With revenues plummeting in the wake of the collapse of its oil industry, the government has been forced to slash subsidies while cranking up fuel and diesel prices. This has, in turn, cranked up prices of water, meat, fruits, vegetables and spices, leading to <u>food riots</u>.

There can be no doubt, then, that the rise of violent and separatist movements across Yemen, including the emergence of al-Qaeda in the Arabian Peninsula (AQAP), has been largely enabled by the protracted collapse of the Yemeni state. That process of collapse has been driven primarily by trends that are at play across the world: the peak of conventional oil production, intensifying extreme weather events due to climate change, the impacts on water and food scarcity, and deepening economic crisis.

As the government has failed to deliver even the most basic goods and services, it has lost legitimacy - and the vacuum left behind has been exploited by militants.

The 'war' on starved, thirsty, and unemployed Yemenis

The US "war on terror" in Yemen is thus an ideal case study in failure: the failure of the "war on terror" as a strategy; the failure of the Yemeni state; the failure of neoliberal economic prescriptions; and, ultimately, the naval-gazing failure to understand how and why we are failing.



For the last few decades, successive US administrations have subsidised these failures by propping up corrupt, authoritarian regimes. Instead of recognising the fundamental drivers of state collapse, the approach has been to deal with the surface symptoms by propping up the police and military powers of a doomed and illegitimate state-structure.

The previous government of Abdullah Saleh was effectively toppled under popular protests in 2011, which forced Saleh to hand over the reigns of power to his vice president, Mansour Hadi. But Saleh, now blacklisted by Washington for sponsoring "terrorism" and "destabilising" Yemen by conspiring with the Houthis, was a staunch US ally, who even voluntarily took the blame for US <u>drone strikes</u> in the country, which have killed large numbers of civilians.

Saleh saw his main task as consolidating state coffers at the expense of the rest of Yemen, and deploying overwhelming indiscriminate military force to put down popular rebellions.

Throughout his rule, Saleh was supported by tens of millions of dollars in US aid annually – which reached a height of \$176 million for military training and counter-terrorism assistance in 2010.

Yet as documented by groups like Human Rights Watch (HRW), US military aid was used to ruthlessly crush secessionist and opposition movements. Massive aerial bombardment and artillery shelling regularly inflicted consistently "high civilian casualties," according to HRW. Government forces routinely opened fire on unarmed protestors years before 2011, usually "without warning" and from short-range.

Why do our friends love al-Qaeda?

Our blossoming love affair with Saleh was justified by the need to fight al-Qaeda in the Arabian Peninsula (AQAP), which of course recently claimed responsibility for the Charlie Hebdo murders in Paris.

But Saleh's regime had harboured al-Qaeda terrorists for decades, and largely with US knowledge. Since 1996 at latest, the National Security Agency (NSA) had been intercepting all of Osama bin Laden's communications with his al-Qaeda operations hub in Yemen, based in Sanaa, which



functioned as a logistics base to coordinate terrorist attacks around the world, including the US embassy bombings in East Africa and the bombing of the USS Cole.

But much of this terrorist activity also occurred under the patronage of the Saleh regime, as candidly described by a US Congressional Research Service <u>report</u> in 2010. The report explains how in 1994, "President Saleh dispatched several brigades of 'Arab Afghans' to fight against southern late secessionists," with US <u>backing</u>. In the same period, al-Qaeda linked militants "began striking targets inside the country."

Despite this, the Congressional report points out that "Yemen continues to harbor a number of al-Qaeda operatives and has refused to extradite several known militants on the FBI's list of most wanted terrorists" – including people who had been convicted of targeting Yemeni oil installations.

Former FBI special agent Ali Soufan said: "If Yemen is truly an ally, it should act as an ally. Until it does, US aid to Yemen should be reevaluated. It will be impossible to defeat al-Qaeda if our 'allies' are freeing the convicted murderers of US citizens and terrorist masterminds while receiving direct US financial aid."

The rabbit hole goes much deeper than this, though. Almost immediately after AQAP formally declared its existence through a partnership between al-Qaeda operatives based in Saudi Arabia and Yemen, Saleh "struck a deal with Ayman Zawahiri," al-Qaeda's incumbent emir, according to Yemen analyst Jane Novak.

"In the latest round of negotiations, Saleh reportedly asked the militants to engage in violence against the southern mobility movement," wrote Novak, whose blog <u>www.armiesofliberation.com</u> was banned by the Yemeni government in 2007. "The deal has reportedly included the supply of arms and ammunition to al-Qaeda paramilitary forces by the Yemen military."

A copy of an internal AQAP communiqué obtained by a Yemeni news publication <u>revealed</u> that al-Qaeda legitimised fighting for the state by referencing the 1994 war.

"Al-Qaeda in the Arabian Peninsula explained to its followers that President Saleh wants jihadists to fight on behalf of the state, especially those who did already in 1994, against the enemies of unity –



southern oppositionists," reported Novak. "AQAP in return will gain prison releases and unimpeded travel to external theatres of jihad, the letter explained."

Protecting our oil

US support for Yemen's authoritarian, terror-toting state-structure continues. Since the arrival of Saleh's successor, Mansour Hadi – deposed in the wake of the recent Houthi coup – Obama had authorised nearly \$1 billion in aid to the Yemeni government. The support was supposed to be a model success for political transition, offering a blueprint for how to take-on the "Islamic State" (IS).

Yet Hadi, like his predecessor, was no reformer. He came to power in a phony "democratic" election in which he was the only candidate, a US-backed process brokered by the Gulf Cooperation Council (GCC) consisting of some of the world's most brutal dictatorships, Bahrain, Kuwait, Oman, Qatar, Saudi Arabia and the United Arab Emirates.

Now, in the wake of the GCC powers threatening a joint <u>invasion</u> to remove the Shiite Houthis, the Houthis have agreed to form a "people's transitional council" with rival parties to resolve the political crisis.

For the US, the real issue in Yemen is its strategic position in relation to the world's oil supply. Yemen controls the Bab el-Mandeb strait, through which 8 percent of global trade travels including 4 percent of global oil products. The Houthi coup threatens the Yemeni government's ability to control the strait, and could even force it to close if violence worsens.

The closure of the strait would increase transit times and costs with severe implications for global oil prices that could potentially trigger an economic crash.

The biggest problem with the strategy in Yemen, then, is its obsession with sustaining business-asusual, no matter how defunct. Our global chronic dependence on fossil fuels is driving climate change, which in turn is accelerating regional water and food scarcity. But it also means that we must maintain a pliant authoritarian regime in Yemen to ensure that an anti-US government cannot come to power, undermine our access to this strategic region, and destabilise the global economy.



Yet it is precisely the execution of this very strategy that has intensified instability in Yemen; fuelled the grievances that feed dissent, rebellion and even terrorism; and culminated in the Houthi coup that we are now desperate to find a way to quell and accommodate.

Until all actors in the crisis are willing to recognise and address its deeper causes, the new "transition council" in Yemen will solve nothing. In coming years, Yemen's state will crumble, and US-led efforts to shore it up by empowering its most repressive structures will merely accelerate the collapse.

Yemen's crisis, in that respect, serves as a grave warning for the <u>looming risks to states</u> in coming years and decades, not just in the region, but around the world.

Yet there is an alternative. If we want a stable government in Yemen, we would do well to re-think the efficacy of focusing so much of our aid on corrupt and repressive regimes in the name of countering terrorism, a process that has contributed to the wholesale destruction of Yemeni society.

We need a new model, one that is based on building grassroots community resilience, facilitating frameworks for mutual inter-tribal political and economic cooperation, and empowering communities to implement best practices in clean energy infrastructure, local water management and sustainable food production.

That we would rather shoot, bomb and kill our way to victory instead, in cahoots with regimes that sponsor terrorism under our noses and with our support, reveals how neck-deep in self-induced delusion we really are about the unsustainable nature of our chosen course.

"Yemen's collapse is a taste of things to come", 20/02/2015, online at: <u>http://www.middleeasteye.net/columns/yemen-s-</u>collapse-taste-things-come-456530551

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Solutions to tackle water scarcity in the UAE

Dubai: The UAE has a shortage of water resources therefore it must come up with solutions, said Reem Abdullah, Emirati student at the Hamdan Bin Mohammad Smart University (HBMSU).

Reem, currently doing her masters in Science in Public Health, displayed a group project demonstrating the consequences of water shortage in the UAE at the Innovation Arabia 8 conference held at the Address Hotel. During the Learners Research and Posters Exhibition, Reem spoke to visitors about possible solutions to the issue.

"Out of the Gulf countries, the UAE is the country suffering most from scarcity of water," she said.

"There are solutions such as rain, desalination and grey water but there is much more to consider since desalination is expensive and it rarely rains in the country

Reem explained that grey water is wastewater that can be reused for irrigation rather than using sweet water or ground water.

"However, the issue with that is people might not accept eating vegetables or fruits that were grown with grey water," she said. "But grey water can be useful for watering plants and trees on the road."

The poster Reem displayed next to her as she spoke to attendees showed that conservation practices can result in a 14-17 per cent saving of water, according to the Federal Electricity and Water Authority (Fewa).

Another statistic by the World Bank demonstrated that the demand for desalination is projected to increase by 7.7 per cent in the UAE and that groundwater recharge will further decrease by 40 per cent or more.

Thekra Hussain, a student from the Hamdan Bin Mohammad Smart University from Yemen, said that with a new smart application residents can monitor their water use to begin conservation efforts.



"There's a recommendation to use a smart application to track utility bills and a text message will be sent once you've reached the limit," said Thekra. "It's like a warning every once in a while for people to be careful."

She said that their participation in the conference is to raise awareness since several people are not informed about the issue. Both Thekra and Reem agreed that much of their knowledge was attained from their master's programme and it is now their duty to pass on the information to the public through their presentation in the conference.

The Innovation Arabia 8 conference, held under the patronage of Shaikh Hamdan Bin Mohammad Bin Rashid Al Maktoum, Crown Prince of Dubai and President of the Hamdan Bin Mohammad Smart University, commenced yesterday and will run until February 18 under the theme 'Industrial Design and Technologies Towards Smart Learning'.

The conference will encourage students, researchers, experts, academics and stakeholders in the education sector to demonstrate efforts to incorporate smart learning in their projects.

"Solutions to tackle water scarcity in the UAE", 16/02/2015, online at: http://gulfnews.com/news/gulf/uae/environment/solutions-to-tackle-water-scarcity-in-the-uae-1.1458061

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Planning With Water (Pt. 1)

The World Economic Forum is meeting this month in Davos, Switzerland -- an annual gathering of national leaders, economists and corporatists who use the event to circulate with the self-declared best and brightest, promote their ideas, and otherwise network with movers and shakers who are, or want to be, among those who are shaping the world agenda.

In advance of the meeting, a survey was conducted among some 900 leaders in business, politics, and civic life that concluded that the most important global risk faced today is the world water crisis. According to <u>Circle of Blue</u>, a program of the <u>Pacific Institute</u> and one of the best web-based sources for water information, this is a major shift in world attention, explained in part by climate and weather phenomena, drought, pollution, and other limits on water that dramatically affect vulnerable populations, be they in California or the American southwest, China, India, southern Europe, South America, or Australia.

"The world is not doing enough," the survey report asserts. "Though the problems of floods, drought, and inadequate water supply that were projected more than two decades ago have come true, little is being done to address them effectively. Leaders are especially ill-prepared for widespread social instability..." <u>Circle of Blue</u> quotes Bob Sandford, chair of the Canadian Partnership Initiative, as follows: "We didn't realize until recently how much our economy and society relied on hydrologic stability.."

Well, that is not entirely true. China, for example, has been building massive water transfer systems to move water from areas in the south to the more arid north where drought, industrial irrigation, and flagrant pollution have brought scarcity as well as economic and political crises. A recent analysis by researchers at the Leeds Water Research Center at the University of East Anglia in the UK, published in the Proceedings of the National Academy of Sciences, suggests that this extraordinary expenditure of public funds and labor may not be sufficient to meet increased economic and population growth. Dabo Guan, Professor of Climate Change Economics at the University's School of International Development, is quoted by Bloomberg News describing the system as "pouring good water after bad."



China, India, Australia, Brazil, the United States -- all are grappling with these conditions, certainly not theoretical any more, but immediate, devastating, and disruptive. The rising price for grain and rice resulting from severe drought has been suggested as the major contributors to social unrest, perhaps toppling a government in Egypt and crippling a regional economy in Australia, and escalating prices in food dependent markets throughout the southern hemisphere. These are not problems easily dismissed or ignored. Indeed, we already fight wars for water (in the Middle East for example) as much as for oil or religion.

The old solutions do not serve these extreme events. It may be that the old engineering ideas and designs like the <u>Tennessee Valley Authority</u> in the U.S. or the diversion of northern rivers in India cannot meet the challenge of exponential demand, degraded supply, and global warming. That proof may now be visible to us all, even those leaders gathered in the Swiss mountains to contemplate the world condition and its most critical needs.

There is a direct link between water abundance and human well-being, between adequate supply and the sustainability of any community, rich or poor. Northern California is a region of great fertility and wealth in the U.S., entirely dependent on water from the Sierra Nevada mountains, distributed by engineered solutions. Water rationing, inadequate supply at key points in growth of fruit and crops, and weak and declining harvests can bring even such a community to its knees. The response cannot be conventional, or more of the same. The time for that has passed.

"We didn't realize until recently how much our economy and society relied on hydrologic stability." the analysis continues. Perhaps we do now, and if finally so, what are we going to do about it?

"Planning With Water (Pt. 1)", 16/02/2015, online at: <u>http://www.huffingtonpost.com/peter-neill/planning-with-water-part b 6694380.html</u>

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* 'Heavy penalty' soon for wasting water, electricity

Qatar will soon become the first GCC and Arab country to enact a landmark legislation against wastage of energy and water resources, Qatar General Electricity and Water Corporation (Kahramaa) president Essa bin Hilal al-Kuwari said yesterday.

"Heavy penalty will be imposed on those found wasting electricity and water," he stated yesterday on the sidelines of the launch of the Tarsheed 22 (T22) campaign, jointly undertaken by Kahramaa and the Supreme Committee for Delivery and Legacy (SC).

As part of its efforts to effectively put in place the proposed legislation, the government may consider banning the imports of certain high energy-consuming equipment and other instruments, including lamps, he revealed.

Al-Kuwari pointed out that excellent results had been achieved after the 2012 April launch of the Tarsheed campaign to reduce consumption of electricity and water in the country. The latest achievements will be announced on April 22 when the campaign enters its fourth year.

"The T22 campaign, which would make full use of the passion that Qatar's young generation has for football, is aimed at enhancing children's awareness on energy conservation," explained SC secretary general Hassan al-Thawadi.

The educational awareness project, being launched initially in 22 independent schools involving close to 1,500 children, is expected to strengthen Kahramaa's Tarsheed campaign.

The T22 campaign is to be launched in primary schools located in the communities near the 2022 FIFA World Cup venues across the country.

Along with the target of reducing energy consumption by about 25%, al-Kuwari hoped the T22 campaign would help raise awareness about the harmful emissions polluting the atmosphere.



As part of the campaign, schools will receive an energy audit and upgrades to water and electrical fixtures to decrease consumption through faucet aerators and energy-saving bulbs.

The Kahramaa president thanked HE the Energy and Industry Minister Dr Mohamed Saleh al-Sada and HE the Minister of Education and Higher Education Mohamed Abdul Wahed Ali al-Hammadi for their support to the T22 campaign.

While hoping that the 2022 FIFA World Cup would be the most environment-friendly one ever, al-Thawadi said the event's success would help increase awareness about the need to reduce harmful emissions across the world.

Al-Thawadi felt the campaign would give an opportunity for everyone to look seriously at the vital issue of protecting the environment through eco-friendly methods and help the country's youth to bring changes in their attitudes.

"Legacy, innovation and sustainability have always been at the forefront of our thinking since we bid to host the 2022 FIFA World Cup and we are pleased to play in this important programme by bringing the spirit of football and sport to T22. Sports have a key role to play in building a more sustainable community, which makes it perfect fit for this effort," he said.

T22 is targeted at students in the age group 6-12, school staff, teachers and parents. The target groups are to be reached through campaigns and an energy efficiency curriculum and sport activities.

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[&]quot;Heavy penalty' soon for wasting water, electricity", 18/02/2015, online at: <u>http://www.gulf-</u> <u>times.com/qatar/178/details/427539/%E2%80%98heavy-penalty%E2%80%99--soon-for-wasting--water,-</u> <u>electricity?utm_source=Circle+of+Blue+WaterNews+%26+Alerts&utm_campaign=aad3d5710e-</u> <u>RSS_EMAIL_CAMPAIGN&utm_medium=email&utm_term=0_c1265b6ed7-aad3d5710e-250657169</u>



***** Egypt participates in Nile Basin Initiative for first time in 5 years

Egypt attended for the first time in five years a Nile Basin Initiative meeting which took place in the Sudanese capital, Khartoum, Saturday, after receiving an invitation from Sudan.

Egypt had boycotted the initiative after the Basin countries signed the Entebbe Convention, which undermines Egypt's majority share in Nile River water.

Minister of Water Resources and Irrigation Hossam Moghazy said Egypt attended to clarify why it had not been present. Moghazy also said that the country had not cut itself off from the Nile Basin situation, but internal affairs had previously prevented it.

There is an Egyptian desire to return to anything related to the Nile basin, and to Africa in general Moghazy emphasised, according to state-owned news agency MENA.

"Egypt is back with an open mind to any initiative from any country for amendments in the Entebbe agreement in order to overcome obstacles," Moghazy said.

He added that differences over Entebbe are not an obstacle to the strong Afro-Egyptian relations.

In May 2010, five upstream Nile countries signed the Entebbe Convention, which calls for the redivision of the Nile water quotas, and cancelling the agreements of 1929 and 1959, which Egypt and Sudan refused.

Britain, a coloniser of Egypt at the time, signed the 1929 agreement on Egypt's behalf, which bars the establishment of projects on the Nile Basin except after consulting with downstream states. The International Court of Justice had ruled in 1989 that the water agreements, like border agreements, shall not be modified.

Ethiopia began constructing the Grand Ethiopian Renaissance Dam (GERD) in 2011. Since then, Egypt and Ethiopia have been locked in a diplomatic dispute, which reached a peak in 2013. Egypt, which utilises more Nile water than any other country, fears the dispute will have a detrimental effect on its share of the river's water.



As per the 1929 and 1959 agreements, Egypt receives 55.5bn cubic metres of the estimated total 84bn cubic metres of Nile water produced each year, with Sudan receiving 18.5bn cubic metres.

Egypt rejected in early January the GERD's current high storage capacity, as studies showed it will affect its national water security.

The dam's storage capacity reaches 74bn cubic metres. Calling such capacity "unjustified and technically unacceptable", Egypt asked Ethiopia to reduce it to what was agreed before the start of negotiations over the years-of-filling and operation of the dam.

Egypt, Sudan and Ethiopia are to hold meetings in Khartoum in March to discuss the dam, Egyptian state media reported.

The Nile Basin covers an area of 3.2m square kilometres and spans 11 nations.

The Nile Basin Initiative (NBI) aims at cooperatively developing the River Nile, sharing substantial socio-economic benefits and promoting regional peace and security.

It was launched on 22 February 1999 by the Ministers in charge of Water Affairs in Burundi, Democratic Republic of Congo, Egypt, Ethiopia, Kenya, Rwanda, South Sudan, Sudan, Tanzania, and Uganda. Eritrea participates as an observer. NBI provides the aforementioned countries with the first and only all-inclusive regional platform for multi-stakeholder dialogue, information sharing and joint planning, and management of water and related resources in the Nile Basin.

The highest decision and policy-making body of NBI is the Nile Council of Ministers, composed of Ministers in charge of Water Affairs in each NBI member state.

Prior to the emergence of the NBI, there was no common institutionalised and structured mechanism that was all-inclusive, bringing together all riparian countries to address a common agenda.

"Egypt participates in Nile Basin Initiative for first time in 5 years", 22/02/2015, online at: <u>http://www.dailynewsegypt.com/2015/02/22/egypt-participates-nile-basin-initiative-first-time-5-years/</u>

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& Egypt urges Nile Basin states to understand its water concerns

Egyptian Water Resources Minister Hossam Moghazi urged the Nile Basin countries to understand Egypt' stance as it depends on the Nile water to meet 97% of its needs.

Speaking during a meeting with his Nile Basin counterparts in Khartoum on Saturday on the sidelines of a Nile Basin Initiative extraordinary conference, Moghazi said Egypt's water resources are facing challenges with the country's growing population and climate change.

"Egypt urges Nile Basin states to understand its water concerns", 21/02/2015, online at: http://www.sis.gov.eg/En/Templates/Articles/tmpArticleNews.aspx?ArtID=90789#.VOowNSx5at8

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* Nile Basin countries to hold extraordinary meeting in Khartoum

February 20, 2015 (KHARTOUM) – Ten Nile basin countries will celebrate on Sunday the 16th anniversary of the Nile Basin Initiative (NBI) in Khartoum.

The NBI is a partnership among the Nile riparian states that seeks to develop the river in a cooperative manner, share substantial socioeconomic benefits, and promote regional peace and security.

It began with a dialogue among the riparian states that resulted in a shared vision to "achieve sustainable socioeconomic development through the equitable utilization of, and benefit from, the common Nile Basin water resources.

The initiative was formally launched on 22nd February 1999 by the water ministers of nine countries that share the river including Egypt, Sudan, Ethiopia, Uganda, Kenya, Tanzania, Burundi, Rwanda, the Democratic Republic of Congo (DRC), as well as Eritrea as an observer.

Sudan's minister of electricity and water resources, Muataz Musa, said on a talk show broadcasted by the state-run Radio Omdurman on Friday the NBI countries will decide on three items in order to complete the legal framework of the initiative.

According to Musa, these items include how decisions should be made within NBI, existing bilateral agreements of member states and how a member state should notify NBI countries about water projects it plans to carry out.

He revealed the role played by Sudan to shift the focus of the NBI countries from "water sharing" to "sharing water benefits", stressing this shift represented a major leap towards developing the resources of the basin.

Musa said the Nile basin countries became "one family" after they managed to overcome their previous differences over water shares.

He added his country will celebrate on Sunday the historic day of the launch of the NBI, noting the celebration aims to raise awareness of the governments, communities, development partners,



parliaments and ordinary citizens on the need for cooperation among the NBI countries to maintain and develop water resources.

Meanwhile, Egyptian *AlYoum Alsabie* newspapers said that Egypt's irrigation and water resources minister, Hossam Moghazy, will participate in the Nile Basin Initiative's (NBI) meeting, after a five-year hiatus.

"During the meeting, Egypt is set to give its views on the future of relations among the Nile Basin countries along with amendments on certain items in the Entebbe agreement," Moghazy was quoted by *AlYoum AlSabie* on Thursday.

The minister underscored that Egypt will not sign the Entebbe Agreement in its present form.

In 2010, five upstream countries, Ethiopia, Kenya, Uganda, Rwanda and Tanzania, signed the Cooperative Framework Agreement, also known as the Entebbe Agreement, seeking equitable sharing of the Nile waters that would allow for more irrigation and electricity development projects.

The move was strongly condemned by Egypt and Sudan and was seen as a violation of an earlier treaty signed during the colonial era between Egypt and Great Britain in 1929 which gave Cairo and Khartoum the right to veto projects in the upstream countries that would affect its water share.

Following the signing of Entebbe Agreement in 2010, Egypt and Sudan, who own over 85 percent of the river waters according to the colonial-era treaty, froze their activities in the NBI.

There was another agreement signed between Egypt and Sudan in 1959 agreement. It gave Egypt the right to 55.5 billion cubic meters of Nile water and Sudan 18.5 billion cubic meters per year.

The Nile Basin, which covers an area of 3.2 million square kilometres, across 11 basin states, which are facing growing pressures, including persistent poverty among its populations, climate change resulting in floods, prolonged droughts, low access to electricity, lack of food security and rising populations, placing increased demands on water flows.



These challenges and threats, among others, are by their very nature trans-boundary and hence require collective action among all the basin states and multiple stakeholders at national, regional and international level; with different and sometimes conflicting interests.

"Nile Basin countries to hold extraordinary meeting in Khartoum", 20/02/2015, online at: http://www.sudantribune.com/spip.php?article54057

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Hydro-mentality over the Nile

The Nile River is the only shared physical linkage between Egypt and Ethiopia. The thread of history has interwoven them along the channels and banks of this river. To an extent, it is from their relationship with the Nile waters that each country's identity, cultural dispositions and, at times, religion and civilization were born and continue to flourish. The Nile is a home of Egyptian, Nubian, and Axumite civilizations. Sadly, their common appreciation for the Nile has been marred by mutual suspicion, misperception, fear, and disagreement. A major issue is the divergent and irreconcilable mentality of each of these basin states regarding how the Nile waters ought to be shared.

The Nile River basin is unique in that its major water consumer, Egypt, is a downstream state that, hydrologically, does not contribute much water to the river. Indeed, the source of the Blue Nile, which forms over 84% of the Nile River's flow, is located in Ethiopia.¹ Egypt's use of the Nile exceeds the combined usage of all other Nile basin countries and many people in upstream states view this as an unequal sharing of benefits, a perspective engraved in the minds of the upstream people.

From the perspective of Ethiopia, for example, Egypt is a country that monopolizes the Nile and prevents Ethiopia from using it. However, from the perspective of Egypt, Ethiopia is a country that obstructs the uninterrupted flow of the Nile waters. Or put another way, Egypt views Ethiopia as 'a natural reservoir' of the Nile waters, not 'a user'. The ancient adage by Herodotus depicted Egypt as a 'gift of the Nile', Egyptians and their supporters promote this lasting image, whereas the Ethiopians have always contested it, arguing that the 'gift' is at their expense.

Erlich (2002) notes that the way in which Ethiopia is perceived as an 'other' directly changes with the way in which Egyptians perceive themselves and their entitlement to water resources.² And these mindsets and perceptions regarding rights to the Nile inform Egyptian and Ethiopian bilateral relations and foreign policy beyond issues of water access.

Unsurprisingly then, the allocation of Nile waters has historically been, and continues to be, a key aspect of foreign policy for states located in the river basin. Prior to the 1960s, the only institutional



mechanism available to promote intra-basin collaboration in the management of the Nile waters was the British Empire.³

However, even after the emergence of various basin- or sub-basin cooperation groups in the second half of the twentieth century, Egypt pursued exclusive bilateral deals with individual states. For example, there was an alliance between Egypt and Sudan regarding Nile River issues with the signing of the 1959 bilateral agreement which excluded the other riparian counties. Following this, the Egyptians partnered with Uganda in building the Own Falls Dam Lake Victoria at the origin of the White Nile.

In addition to utilizing diplomatic channels, claims have been made that Egypt has deployed military operations to secure water rights. For example, some scholars associate the *Gundet* in November 1875 and *Gura* in March 1876 wars between Ethiopia and Egypt as water related conflicts.⁴ While there is insufficient evidence to definitively label these events as water conflicts, Egypt and Ethiopia have long clashed over Ethiopia's right to build dams on the Blue Nile.

On numerous occasions-from the twelfth-century with King Lalibela, to the fifteenth-century with Zar'a Ya'qob, to Haile Selassie in the 1950s, Ethiopia has threatened to use Nile waters in order to ensure a greater supply for its own needs and to check Egypt's expanding water consumption. However, with the completion of the Aswan High Dam (AHD) in 1970, Ethiopia's level of control over water flows in the Nile was weakened due to the fact that the dam holds a quantity of water equivalent to two years' flow of the Nile.

This changed on April 3, 2011, when Ethiopia began construction of the Grand Ethiopian Renaissance Dam (GERD), located on the Blue Nile. The GERD is the largest dam in Africa with a height of 145 meters, a retention capacity of 73 million cubic meters, and a generation capacity of 6,000 megawatts. The Egyptian government has vociferously challenged Ethiopia's construction of hydro-electric projects along the Blue Nile, including the GERD, due to the perceived potential impact on Egyptian water use.

Past Egyptian presidents from Nasser to Morsi have warned Ethiopia against attempting to use the Nile waters. In the recent past, former Egyptian President Morsi warned that *"Egypt's water security*"



cannot be violated in any way".⁵ While former President Morsi indicated that "*as head of state, I confirm to you that all options are open*" and drawing on an old Egyptian song about the Nile he added, "*if it diminishes by one drop then our blood is the alternative*".⁵ Although some Egyptian officials have recognized that Ethiopia has a right to use Nile waters, officials who entertain this view are currently unable to get much traction with policymakers.

From this historical vantage point, in the Ethiopian consciousness the GERD symbolizes newfound hope that counters many years of Egyptian monopoly over the Nile. Ethiopian leaders believe that the GERD will usher in a new era of equitable utilization wherein Ethiopia will assert its right to use the Nile and use it as a tool for socio-economic development. Many Ethiopians see the GERD as a counterbalance to the AHD. Put another way, in constructing the GERD, Ethiopia is contesting and challenging Egypt's hydro-hegemonic position and aims to put a halt to Egypt's monopoly over the Nile.

The discourse regarding the construction of the AHD half a century ago and the GERD now reflects not merely disparate views on water allocation, but more particularly a clash of divergent hydromentalities. Hence, the risk that these conceptions and misconceptions of the GERD may lead to water conflict are likely to be much higher than the impact of the actual construction of the dam.

In other words, it is not the presence of dams on the ground, but the presence of fear and suspicions, which are complicating the Ethio-Egyptian relations. It can be argued that the mentalities which impact, and at times determine, the policies and positions of states when it comes to the use of the Nile waters have to be given serious attention among policymakers and in academic debate.

In conclusion, the Nile conflict is not solely tied to the Nile waters but also to the conflicting narratives behind it. Misperception, myths, parochial sentiments, and unsubstantiated claims and counter-claims continue to overshadow concrete scientific findings and the reality that regional/shared approaches result in greater benefits for all basin states. Until these divergent hydromentalities are bridged, there will be no end to tension surrounding the Nile waters. These divergent conceptions threaten sustainable utilization of the Nile waters and result in no winners but only losers.



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* Texas May Look To Middle East For Water Solutions

After embarking on a massive desalination project in California, an Israeli company is well positioned to offer its technology to another state grappling with drought: Texas.

IDE Technologies, based in Kadima, Israel, opened its first U.S. office in Austin. It will market desalination technology to water utilities within the state and in other states.

The move is just one sign that Texas may become a land of opportunity for the global water industry in the coming years. The state is planning to pour billions of dollars into water projects.

Texas voters approved a proposal two years ago aimed at confronting water challenges in the drought-ridden state. The proposal, an amendment to the Texas constitution, <u>devoted</u> \$2 billion to water projects out of the state's rainy day fund, normally dedicated to safeguarding a state in the instance of a budget shortfall.

IDE Technologies has nabbed Mark Ellison to help it settle into the Lone Star State. Ellison "most recently served as former Gov. Rick Perry's manager of strategic water initiatives in the Texas economic development office," *Austin Business Journal* reported.

IDE Technologies specializes in desalination, and it has completed 400 water treatment projects around the world over the last forty years.

"The company, though only opening its first permanent U.S. office this month, is already building the largest desalination plants in the Western Hemisphere in Carlsbad, California.

Company officials think that Texas could benefit from expanded desalination infrastructure as a way to help meet the state's water needs," the report said.

Israel has confronted its own water scarcity challenges in large part by investing in desalination technology.



"Israeli planners are looking to desalination as a possible permanent solution to the problem of drought. Some even anticipate an event that was once unthinkable: a water surplus in Israel," the *Jewish Telegraphic Agency <u>reported</u>*.

"Texas May Look To Middle East For Water Solutions", 17/02/2015, online at: <u>http://www.wateronline.com/doc/texas-may-look-to-middle-east-for-water-solutions-0001</u>

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Making rain: can technology drought-proof the Caribbean?

To mention the Caribbean is to conjure up images of sun, sand and sea. Yet the island region's reputation for crystalline blue waters washes over a critical problem for many of its 30 territories: water scarcity.

Hard as it might be to believe, water-related risks in picture-postcard Caribbean islands such as Saint Lucia, Barbados, Antigua and Jamaica compare to those in the Western Sahara and parts of the Middle East, according to the World Resources Institute's <u>Aqueduct rankings</u>.

Some islands, such as Curaçao and Aruba, simply lack decent rainfall. For most, however, it's a case of "feast or famine" between wet and dry seasons, observes Paul Choules, senior vice president of business development at <u>Water</u> Standard, a Houston-based water treatment firm.

In addition, <u>changes in weather patterns in the Caribbean</u> due to climate change are exacerbating existing water challenges. "Places are not getting rain where they used to get rain, and places are getting rain where they [used not] to", Choules says.

Desalination is not new to the Caribbean, but extracting clean water from seawater is becoming an increasingly integral part of the region's search for water security. Since 2007, 68 new desalination plants have been built across the Caribbean, which now boasts an installed capacity of 782,000 cubic metres of purified water per day, according to the <u>Caribbean Desalination Association</u> (CaribDA).

Some islands, such as St. Martin, St. Thomas and the British Virgin Islands, where UK-based water treatment firm Biwater just inaugurated a <u>new $43m \pm 28m$ plant with a 10,400 cubic metres daily</u> <u>capacity</u>, are almost entirely dependent on the technology for their domestic water supply.

"A lot of these islands could not survive without desalination. Their overall economies would collapse", says Choules, who describes the technology as a "drought-proof solution" in a world facing ever more erratic weather patterns.



Counting the costs of freshwater

Desalination isn't without its challenges, however. By far the biggest and most obvious relates to energy consumption. Huge amounts of power are required to operate commercial-scale desalination – power that is often produced by importing expensive fossil fuels.

With large natural gas deposits offshore, Trinidad and Tobago is a rare exception to such import dependency. The fact that the twin island country is home to the largest <u>reverse osmosis desalination</u> plant in the Western hemisphere - Desalcott - is therefore perhaps no coincidence.

"We've got industry that can afford to pay for it [desalinated water] and large water demand ... but desalination in general is relatively expensive, [so] it's more difficult for small islands that don't have the industry", says John Thompson, general manager of Desalcott and president of industry group <u>CaribDA</u>.

Energy typically amounts to one-third of a typical plant's operating costs, increasing to as much as two-thirds in some cases, says Thompson. Being quick to adopt energy-efficiency innovations has therefore become a hallmark for the region's desalination operators.

It's a view echoed by Gerard Pereira, vice president of engineering at Consolidated Water, a desalination firm based in the Cayman Islands where electricity costs around \$0.40 per kilowatt hour – more than four times the price in the US. "Just out of necessity, we design and build the most efficient plants in the world", says Pereira.

Consolidated Water was among the early adopters of <u>isobaric energy recovery devices</u>, which Pereira credits for helping recover up to 98% of the unused energy in the waste streams of desalination plants. The Grenadine islands of Petite Martinique and Curaçao, meanwhile, recently installed two solar-power desalination plants in a \$2.1m project part-funded by UK development agency DFID.

"The Caribbean has tended to be where a lot of firsts have happened", Pereira says, pointing out that Aruba and Curaçao built the first commercial desalination plants more than 80 years ago.



Advances in membrane and pump technologies present further ways of reducing desalination's energy requirements, but the sense from industry experts is that many of the big energy-saving wins may already have been had.

"There is a thermodynamic limit for desalination", says David Maingot, regional sales manager at LG NanoH20, a manufacturer of nanocomposite membrane technology that has carried out about 20 retrofits in the Caribbean over the last three years. "We're getting close to that, so it's kind of limiting unless you change the actual reverse osmosis technology."

Wildlife concerns

Alongside its dependency on expensive - not to mention carbon-intensive - power supply, environmentalists have raised concerns over the <u>impacts of large-scale desalination on marine life</u>. In particular, open intakes of seawater can cause fish and other larger organisms to become trapped

A potentially safer alternative lies in subsurface intakes from coastal aquifers, a technique that extracts seawater from beneath the seafloor or beaches. This is now <u>being carried out in a handful of</u> Caribbean locations (pdf) where site conditions are suitable.

CaribDA's Thompson admits that desalination is no panacea. Ideally it should constitute only "one choice out of a number of options", he says, and not necessarily the top one either. However, while desalination may be more expensive and energy-intensive than some options, desalination remains the crucial answer to freshwater access in regions with heavy dry seasons.

"Making rain: can technology drought-proof the Caribbean?", 18/05/2015, online at:

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