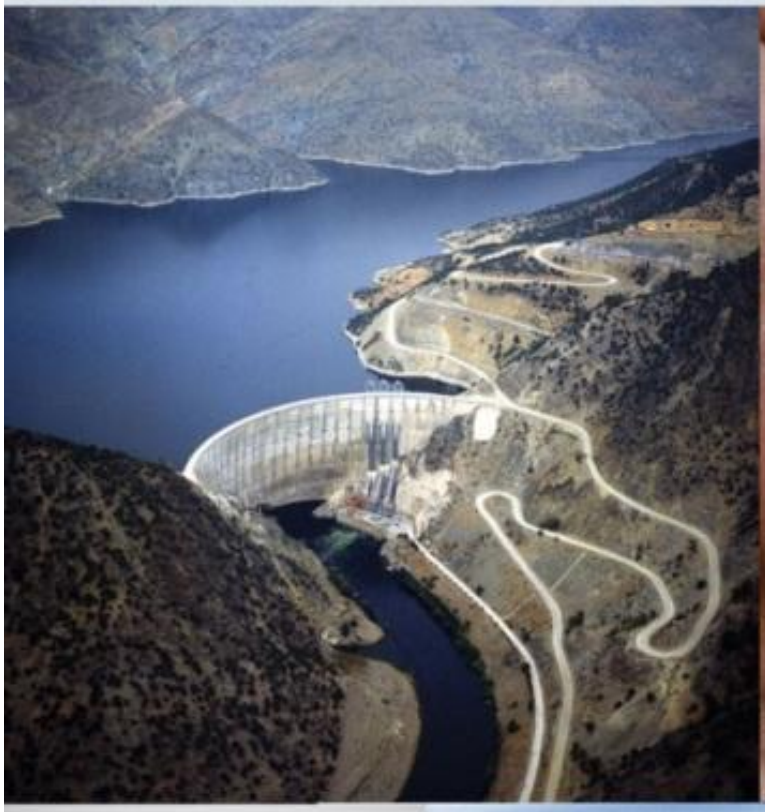


ORSAM WATER BULLETIN

Weekly Bulletin by ORSAM Water Research Programme

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





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❖ Bulgaria main culprit for floods in northwestern Turkey

Turkish authorities blame Bulgaria for failing to take measures in its reservoirs after the country's floodgates opened following torrential rains that inundated the neighboring Turkish province of Edirne

Turkey is at odds with Bulgaria after floodwaters from neighboring Bulgaria engulfed the country's northwestern border province of Edirne. Authorities told reporters that three rivers in the province broke their banks as water levels suddenly increased in the wake of the opening of reservoir floodgates in Bulgaria after last week's heavy rainfall.

Floodgates in Bulgarian dams have frequently caused problems for Edirne, situated right next to the Balkan country, but this time, Turkey has adopted harsh rhetoric against the neighboring country.

Veysel Eroğlu, Minister of Forestry and Water Affairs told reporters that they have warned Bulgarian officials "innumerable times" against floods. "They built dams but they failed to allocate a flood volume unfortunately," he said, referring to the extra space built in dam reservoirs to allow storage of more water than anticipated. Eroğlu said that the patience of people in Edirne has "run out." "(Locals) told me that they would file lawsuits against Bulgaria for causing the floods. I think this is an appropriate action," he said.

Eroğlu mentioned the Tunca Project with Bulgaria, named after the Tunca (Tundzha) river which runs through Bulgaria to Turkey. "It was a project to improve our friendship. We signed protocols and drafted an agreement. Unfortunately, Bulgaria did not take steps to finalize it," he said. The minister was referring to a joint dam construction project on the river that will hold water in peak season for torrential rains and contribute to the irrigation of some 15,000 hectares of lands in Turkey and Bulgaria. The two countries had reached an agreement in 2006 for the construction scheduled to start in 2009 but the project was never realized, as Sofia remained reluctant to contribute to the project. Experts attribute the reluctance to a "lack of benefits" for Bulgaria, as the dam will be in Turkish territories and the reservoir in Bulgaria.

According to experts, the operation of dams by the private sector in Bulgaria is among the main causes of flooding. They claim private-run hydro-electric power plants, seeking to boost energy

production, keep water levels at the maximum throughout the year in their reservoirs, blocking the flow of excess water that eventually forces them to open the floodgates in the case of torrential rains.

Currently, an early warning system is active in Bulgaria that warns Turkey about the rise in water levels but it is only helpful in preventing flood-related casualties.

Edirne Governor Dursun Ali Şahin says the floods that left about 5,000 people trapped in Karaağaç district "may be repeated" if Bulgaria opens the floodgates again in the coming days. Şahin said that the water level in rivers has decreased to 1,576 cubic meters per hour from 2,246 cubic meters over the past two days, adding that it is "a good development."

People were evacuated from flooded houses by rescue crews, and Şahin said some 500 houses were affected by floodwaters, with their residents returning home yesterday after spending two nights at schools and sports halls in the province.

The governor said Bulgarian dams posed a great risk for Turkey. "We should take our own measures and be cautious against the rise in water levels in rivers," he said. Although water levels declined, Şahin said some roads will remained closed until Monday, and search and rescue crews will be on the alert at least until next week against a repeat of flooding.

"Bulgaria main culprit for floods in northwestern Turkey",04/02/2015, online at:
http://www.dailysabah.com/nation/2015/02/04/bulgaria-main-culprit-for-floods-in-northwestern-turkey

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❖ Benefits of project to bring water from Turkey to Cyprus' occupied areas under question

The "project of the century", as it has been described, appears to be more controversial than beneficial, with many interested parties questioning whether bringing water from Turkey to the areas of the Republic of Cyprus under Turkish occupation for drinking and irrigation purposes will solve the water shortage problem and give the rural economy a boost, or whether the consequences and cost will overshadow the benefits.

Since January 26, water is being collected in Alaköprü Dam in southern Turkey. According to Turkish Minister for Forestry and Water Veysel Eroğlu, the water is expected to arrive in the Turkish occupied areas of Cyprus by July 20 this year. To facilitate the transport, a 23km-long pipe has been constructed in Turkey along with an equalisation tank with a capacity of 10,000 cubic metres in Anamur.

A receptor station has already been built in the Vavylas region in the island's northern occupied areas, along with a 3.5km-long pipe to the dam in Panagra. A treatment plant is being constructed in Myrtou, from where a network of pipes with a total length of 475km will send the drinking water to all regions in the occupied areas.

A total of 132 high density polyethylene (HDPE) pipes, with a length of 80km and weighing 220 tonnes, are being installed and will hover at a depth of 250-280 metres under the sea surface, and the metal fittings joining the pipes will be anchored with steel ropes to the seabed and will be kept in place with the help of floats.

The project is under supervision of the Water Department of Turkey (DSI). Director of the project Birol Çınar has told CNA that the whole venture would be able to cover the water and irrigation needs of the population in the occupied areas in 2040, when it is expected to reach 400,000.

Commenting on criticism regarding the effects on the environment, Çınar said such projects were exempt from environmental consequences reports in Turkey but for Cyprus a report has been drafted and approved. He said that although trees were cut down for the purpose of the project, there are plans to replace them soon.

Çınar also said it was not yet clear who would be benefiting from the water from Turkey and that any solution should be in favour of the people. He furthermore noted that the possibility of water being transferred to the southern government-controlled areas of the Republic of Cyprus had not been examined but could be if such an issue was raised.

The "local authorities" in the occupied areas are strongly criticising the project. Speaking to CNA, Nicosia "mayor" Mehmet Harmancı has said that all discussions were held behind closed doors and the "municipalities" were not invited to express their views, despite the fact that the water issue was of vital importance to them.

He said the Nicosia "municipality" in the occupied areas has already made an investment worth about €7.5 million, with funds from Turkey, the EU and the "municipality" itself, and also raised questions regarding the future of the sewerage treatment plant for which the two sides in Cyprus and a German firm have signed a 10-year contract.

Harmancı added that the "union of municipalities" has set up a committee to investigate alternatives.

Chairwoman of the Union of Turkish Cypriot Biologists Dilge Ozerdem has described the project as an irreversible intervention in nature and a blow to the ecology, and criticised the fact that there was no water policy in the occupied areas.

Ozerdem pointed out that this project would have more consequences than benefits and that it was the people who would pay the price in the long term. She also said that there are easier ways to address the shortage of water.

Furthermore, Ozerdem had told CNA that no report was prepared for the environmental fallout and noted that the so-called government in the occupied areas had no say in the project and there had been no preparation regarding who would be using the water.

Cyprus' Environment Commissioner Ioanna Panayiotou has told CNA that there would be more disadvantages than benefits from the project.

She said that if there is water shortage in a country, the first thing to do is take measures to save, recycle and reuse the natural resources.

Panayiotou pointed out the consequences to the land and sea, the destruction of natural habitats, and the materials needed to complete the project, and questioned the benefits which, as she said, were not recorded in any report.

She furthermore said the Republic of Cyprus and the Ministry of Foreign Affairs had made representations but it was necessary for more action on behalf of the European and international community.

Panayiotou pointed out that the parameters for this project were neither environmental nor financial, but political. She explained that when an arid area becomes an irrigated area, the value of the land increases, which leads the users to believe they come before the owners of the land and argue that the value of the land is higher due to their investments, an argument they will use in talks to solve the Cyprus problem.

She also said the Republic of Cyprus should make its own plans regarding water management because climate change is here and must be addresed, and the state has much to do.

Ankara, whose troops occupy Cyprus' northern part since they invaded in 1974, does not recognise the Republic of Cyprus and refuses to normalise relations with Nicosia, in spite of repeated calls from the EU to do so.

"Benefits of project to bring water from Turkey to Cyprus' occupied areas under question",05/02/2015, online at: http://cyprus-mail.com/2015/02/08/benefits-of-project-to-bring-water-from-turkey-to-cyprus-occupied-areas-under-question/

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❖ Major investment planned for Turkey's hydro sector

Around $16 billion is to be invested in the hydropower sector in Turkey under the government's 10th Development Plan, newswires have reported.

The investment is the largest part of a wider $50 billion plan for the country's energy market over the next four years. Other investments are planned for the country's nuclear, coal and gas power sectors.

Hydro facilities currently meet around 25% of Turkey's energy requirements, and the country has immense untapped potential.

"Major investment planned for Turkey's hydro sector", 05/02/2015, online at:
http://www.waterpowermagazine.com/news/newsmajor-investment-planned-for-turkeys-hydro-sector-4505093

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❖ Water Resources Ministry, Oxfam sign cooperation agreement to secure citizens' water needs

Damascus - Ministry of Water Resources and Oxfam International signed a cooperation agreement to secure drinking water for citizens.

Following the signing, Minister of Water Resources Kamal al-Sheikha underscored the important and vital role of the international organizations which cooperate with the Ministry to provide clean drinking water for citizens, pointing out that despite to the crisis in Syria, the Ministry has managed to get drinking water to every residential concentration across the country.

Al-Sheikha expressed the Ministry's permanent readiness to cooperate with international organizations and facilitate their work, highlighting Oxfam's efforts to deliver aid to civilians.

For his part, Oxfam representative in Damascus Dimitry Madulv expressed pleasure over singing the agreement, considering the Ministry a real partner to Oxfam in view of its support and facilitations for the organizations to overcome difficulties facing their work.

He also stressed the importance of providing drinking water and sanitation services to citizens in Syria.

Both sides agreed on cooperation to put the agreement into effect in best way and on ongoing consultations to expand future cooperation.

Oxfam is an international confederation of 17 organizations working together with partners and local communities in more than 90 countries. It works to find practical, innovative ways for people to lift themselves out of poverty and thrive.

"Water Resources Ministry, Oxfam sign cooperation agreement to secure citizens' water needs", 04/02/2015, online at: https://www.zawya.com/story/Syrian_Water_Resources_Ministry_Oxfam_sign_cooperation_agreement_to_secure_citizens_water_needs-ZAWYA20150205072518/

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❖ Tehran, Berlin to Cooperate in Resolving Iran's Water Crisis

TEHRAN (Tasnim) – Iran has voiced its willingness to use Germany's experience in the field of climate change and improvement of water efficiency, an Iranian energy official said.

Deputy Energy Minister for Water and Wastewater Affairs Rahim Meydani referred to current cooperation between Tehran and Berlin in educational and research fields, and voiced Iran's willingness to start new cooperation with the European country in the field of water manangement.

He made the remarks in a meeting with German Ambassador to Iran Michael Ungern-Sternberg in Tehran.

"Given the special conditions of Iran's water resources in recent years and … the climate change, drought, and temperature rise (in the country), we want to start new cooperation with Germany in non-structural water management," Meydani explained.

Water efficiency and the way to deal with the climate change phenomenon are among the issues of interest in such cooperation, the Iranian deputy energy minister said, adding that water management and protection of water resources are among the ministry's top priorities.

Ungern-Sternberg, for his part, referred to the existing capacity for the development of water cooperation between the two countries, and asked for further cooperation in the field of water.

"Tehran, Berlin to Cooperate in Resolving Iran's Water Crisis", 02/02/2015, online at:
http://www.tasnimnews.com/English/Home/Single/641723

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❖ Parsons to design mega Iraq seawater supply facility

Parsons, an engineering, construction and technical and management services firm headquartered in California, US, has been awarded a front-end engineering design (FEED) deal for South Oil Company's Common Seawater Supply Project in southern Iraq.

This landmark project will provide 12.5 million barrels per day (bpd) of treated seawater to oilfields in southern Iraq, said a statement from the company.

Parsons' scope of work includes conducting 14 optimisation studies and preparing the Feed for water intake and outfall structures, an approximate 500-m shipping channel and offloading facility, a 12.5-million-bpd seawater treatment facility, and a gas turbine power plant.

The other support structures included in the Feed are living accommodation; administration buildings; potable water and sewage treatment systems; security, clinic, maintenance, and warehouse facilities; an emergency station; a mosque; and a helipad.

As per the contract, Parsons will also design, construct and operate a 9,200-bpd pilot plant at the site.

On the contract win, Virginia Grebbien, the group president, said: "Parsons is pleased to be engaged in the design of this facility, which is one of the largest of its kind worldwide. Providing treated seawater to southern Iraqi oilfields will ensure proper oil reservoir maintenance and maximize oil recovery."

Parsons, celebrating 70 years of growth in the engineering, construction, technical, and professional services industries, is a leader in many diversified markets with a focus on defense/security, industrial, and infrastructure, he added.

"Parsons to design mega Iraq seawater supply facility", 08/02/2015, online at:
http://tradearabia.com/news/CONS_275014.html

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❖ Parsons picks up Iraq water Project

Engineering consultancy Parsons has won a contract to carry out front-end engineering designs (FEED) for a system to supply treated seawater to state-owned South Oil Company in Iraq.

The contract will see Parsons completing 14 separate studies for a system that will deliver 12.5m barrels of water per day (bwpd) to oil fields in southern Iraq.

These include a 500m shipping channel and offloading facility, a seawater treatment facility, water intake and outfall structures and a gas turbine power plant. Parsons will also design staff accommodation, admin buildings, potable water and sewerage networks and security, clinic, maintenance and warehouse facilities.

An emergency station, mosque and a helipad will also be included.

As part of the works, an initial 9,200 bwpd plant will be built.

Virginia Grebbien, Parsons Group president, said: "“Parsons is pleased to be engaged in the design of this facility, which is one of the largest of its kind worldwide. Providing treated seawater to southern Iraqi oilfields will ensure proper oil reservoir maintenance and maximize oil recovery."

“Parsons picks up Iraq water Project”, 05/02/2015, online at: http://www.constructionweekonline.com/article-32464-parsons-picks-up-iraq-water-project/

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❖ Jordanian Envoy Returns to Israel Against Backdrop of Security, Water Cooperation

The Jordanian government announced on Monday that its ambassador to Israel will return to Tel Aviv. According to The New York Times, the ambassador, Walid Obeidat, is scheduled to arrive back in Israel this week. The Jerusalem Post reported that "Prime Minister Benjamin Netanyahu welcomed the Jordanian decision, calling it 'an important step that reflects Israeli-Jordanian joint interests, first and foremost stability, security and peace.'" In November of last year, the Jordanian government recalled its ambassador over tensions on the Temple Mount in Jerusalem, over which Jordan holds custodial rights. Despite the absence of the ambassador, the Jordanian embassy in Tel Aviv remained open.

Jordan and Israel have a history of shared cooperation on a range of issues, from security and economic ties to water scarcity and tourism. Israel and Jordan formally signed a peace treaty in 1994. In June 2014, as the Islamic State of Iraq and Syria (ISIS) expanded in Iraq and parts of Syria, journalist Yossi Melman wrote, "With the advancement of radical Sunni forces from Iraq toward Jordan's borders, the clandestine cooperation and consultations between Israel and Jordan are increasing." Last June, a Jordanian diplomatic source told Ynet that "there is a very good cooperation between us regarding ISIS' growing presence in Iraq and Syria, but also on issues relating to other radical forces in the Middle East which have their sights set on Israel and Jordan." Neri Zilber, a visiting scholar at the Washington Institute for Near East Policy, said that "there is an unwritten, unspoken kind of Israeli commitment that if Jordan were ever in serious trouble … Israel at a certain point would take action and come to Jordan's aid. Jordan is a massive strategic asset to Israel."

In 2013, over 200,000 Israelis visited Jordan and 18,000 Jordanians visited Israel. 24 flights per week fly out of Ben-Gurion Airport in Israel into Jordan to accommodate the flow of tourism. In December

2013, Israel and Jordan finalized an arrangement over water allocation with Israel providing Jordan "8-13 billion gallons per year of fresh water from the Sea of Galilee, while Jordan would deliver the same amount of desalinated water pumped from Aqaba to Israel's Negev desert region."

"Jordanian Envoy Returns to Israel Against Backdrop of Security, Water Cooperation",04/02/2015, online at: http://www.thetower.org/1594oc-jordanian-envoy-returns-to-israel-against-backdrop-of-security-water-cooperation/

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❖ Israeli Army Demolishes Agricultural Property, Destroys Crops in West Bank

WEST BANK, February 2, 2015 (WAFA) – Israeli army Monday demolished a water well and residential sheds in the village of Qusra, south of Nablus, while also destroyed crops in a Palestinian owned land near the town of Yatta in the West Bank, according to local sources.

In Nablus district, army forces stormed the village of Qusra and demolished a water well, two residential sheds and a number of retaining walls, head of Qusra village council, Abdul-Azim Wadi, told WAFA.

He said confrontations broke out in the village in the aftermath between Israeli army soldiers and angry local residents.

Meanwhile in Hebron, army forces broke into a farming area near the town of Yatta and proceeded to turn over 8oo dunums (8 hectares) of crop-planted lands, destroying wheat and barley plants and other crops, reported Rateb Jabour, coordinator of the Anti-Settlement Committee in Hebron.

The destroyed crops belong to local residents of Masafer Yatta, a rural congregation located south of Hebron. The congregation, consisting of almost 19 small villages, relies heavily on farming and animal husbandry as the main source of income.

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

During recent years, villagers in Masafer Yatta were frequently subjected to violations by Israeli army and illegal settlers, including settler attacks on vulnerable communities and regular denial of construction permits**.**

"Israeli Army Demolishes Agricultural Property, Destroys Crops in West Bank",02/02/2015, online at: http://english.wafa.ps/index.php?action=detail&id=27750

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❖ The new Palestinian city that lacks only one thing

A Palestinian millionaire has built a totally new city from scratch in the Israeli-occupied West Bank, complete with a Roman amphitheatre and football stadium. But one thing is stopping people moving in - there's no water.

You know what they say about property: "Location, location, location."

What about building in the midst of one of the world's most intractable conflicts?

"It's the biggest ever project in Palestinian history," exclaims American-Palestinian multi-millionaire Bashar Masri, the driving force behind a new Palestinian city in the hills of the Israeli-occupied West Bank.

"There's nothing even close to this, not even half this," Masri enthuses. We're walking across what will be a grand Roman amphitheatre in the foothills of a jagged skyline of apartment blocks that, one day, 25,000 people may call home. There's also the promise of cinemas and shops, parks and playing fields, to complete the kind of middle class dream you'd see in a property development anywhere.

But build on controversial land, and controversy comes with the price.

Palestinian critics accuse him of "normalising the occupation", of making deals with Israel for private profit. Jewish settlers on nearby hills watch and worry as Rawabi rises from the ground.

"I am defying the occupation," insists the well-dressed and well-spoken Masri, who comes from an extended Palestinian family known for its financial success and political savvy.

His risk-taking real estate is a microcosm of the tumultuous process of Israel-Palestinian peace-making and the web of complex relationships in the occupied territories.

Over the past turbulent year, which has included the collapse of the peace process and eruption of another war, we have followed the fate of this audacious project.

Could this billion-dollar gamble possibly succeed?

"I can just see everything, in my mind, complete," Masri tells us on our first visit to Rawabi, in the spring of last year. A slim man in his fifties, he strides confidently across paving stones strewn with coils of wire and piles of stone.

"I see people here in the restaurants, I see people in the homes…" His voice trails off as he gazes across the dusty terrain which now consumes most of his time and a lot of his money.

Cranes draped with Palestinian flags soar above the concrete shells of homes, and trucks rumble past laden with cement.

By early 2014, more than 600 families have bought into his dream. Ayman and Suhad Ibrahim are among the first to visit a gleaming showroom set on a manicured lawn dotted with slender trees and graceful sculptures.

Like many Palestinian professionals, the Ibrahims are now living about 6 miles (10km) away in the city of Ramallah, which they describe as a crowded jumble with no outdoor space for their three children to play.

Rawabi promises gardens, trees, and quiet. Their plans are taking shape - a Bedouin-themed corner in the living room; pink and blue shades in the children's bedrooms.

And Rawabi is about more than a nice home.

“The new Palestinian city that lacks only one thing”,

"It's the first step to building a small model for a Palestinian state," says Suhad.

"It's creating a truth on the ground," Ayman explains. "First of all we want peace, we want to build our future. We have the ability, and it's our land."

Masri leads us up an empty stairwell to inspect one of the finished showroom apartments. It's light and contemporary, with gleaming kitchens complete with fridge magnets from Paris, as well as stylish sofas, and a whiff of scented candles.

But the view from the windows of a modern oasis of calm is the age-old conflict of this neighbourhood.

Step on to the balcony and the hills are also alive with blue and white Israeli flags billowing on the next hilltop in the Jewish settlement of Ateret.

"We're not promising people here heaven, we're not promising anything less than we are still under occupation," insists Masri.

In a nod to his Palestinian critics, he adds: "This is not normalising and accepting the occupation and looking the other way."

For their part, the 800 Jewish settlers living in Ateret can see the line of Palestinian flags that flutter on the hills of Rawabi, including a giant one measuring 1,450 sq ft.

In the spring of 2014, we find Ateret residents suspicious, but already resigned to the new city's existence.

Families like Chanan and Avigail Damri express satisfaction that Palestinians will be able to live in a nice place, but they worry about what it means for traffic and security. Their kids travel to school by armoured bus, and there is frequent stone-throwing on the roads.

The Damris are softly spoken with a strong political message. "This state is our state. The Jewish nation needs a home so much. We need to always remember that it's our land and we are the landlords," explains Avigail as their young boys play games on the floor in their modest bungalow.

Like Israel's government, they reject the claim that settlements are illegal under international law.

If negotiations ever lead to the creation of a Palestinian state, settlements like Ateret are likely to fall within that state.

The Damris don't believe that will happen any time soon but suspect Rawabi is an effort to move toward it. "We can't let that happen," says Chanan.

From the nearby hill, Masri is equally defiant. "It's our land they're sitting on. I am 100% confident that [Ateret] will be a suburb of Rawabi one day - it's just a question of when."

He baulks at comparisons between Rawabi and Israeli settlements, but concedes his strategy is similar: building on the hilltops, creating Palestinian "facts on the ground". "If we did this 10 years ago, we wouldn't have seen the settlement boom that we saw today."

To build here, Masri has needed co-operation from Israeli officials every step of the way since plans first surfaced on paper seven years ago - even on where to build the city, and a temporary access road.

Rawabi is being built in areas governed by the Palestinian Authority within the Israeli-occupied West Bank, but access to a permanent road and a fixed pipeline goes through an area which an interim peace accord placed under Israeli jurisdiction.

About 60% of the West Bank, including settlements and their access roads, as well as military bases, is under direct Israeli administration.

"What did you want me to do, stop living?" Masri demands rhetorically, in response to his critics. "The water most Palestinians drink is from Israel, so is our electricity."

But a Palestinian activist we meet close to a nearby Israeli checkpoint, on a day when the death of a 21-year-old Palestinian has led to the eruption of clashes between soldiers and protesters, says Rawabi is "just a way for [Masri] to expand his wealth".

"That's not resistance," he adds.

Asked about Palestinians who want a better standard of living, he retorts: "Which nice life are they talking about? The way to Rawabi is full of checkpoints. The Israelis can block the road and prevent anyone from reaching the city. "

Masri's critics also accuse him of building for a privileged elite. A typical apartment in Rawabi costs $95,000 (£62,000) which is cheaper than in Ramallah, but well above what many Palestinians can afford. There's also a chronic shortage of affordable housing in the West Bank.

Masri insists Rawabi isn't just for the rich. He says the cost of apartments is within reach for many middle-class Palestinians. But he also blames the Palestinian Authority for not helping him finance low-income housing.

Masri is funding the $1bn project from his own considerable fortune, as well as with hundreds of millions from the real estate arm of the Qatar Investment Authority. The wealthy Gulf state has become a powerful player across the Middle East. Masri concedes that their backing is politically as well as commercially motivated, and, admits they requested a very big mosque.

Over the past year, we've seen how Rawabi is slowly but surely taking shape. The project's first phase is now almost complete, and nearly ready for residents to move in.

But, at this late stage, the politics of property has thrown up another major hurdle - Rawabi doesn't have water.

All new water infrastructure larger than a pipe 2in (5cm) in diameter has to be approved by the Joint Israeli-Palestinian Water Committee. But the JWC hasn't met for years.

Construction teams are using a village well but this new city needs a fixed pipeline.

There was a glimmer of hope when moribund Israeli-Palestinian peace talks finally resumed in the summer of 2013, under concerted international pressure and constant US mediation.

But, by early 2014, talks broke down.

And then came a summer of discontent: a wave of kidnapping and killings in the West Bank; a war in Gaza and rockets fired into Israel; rising political recrimination.

When we return to Rawabi at the end of 2014, even Masri's trademark optimism is beginning to falter.

"We are reaching a point where we are seeing a lot of the buyers raising questions. The word on the street is that we are in financial trouble. Well guess what, we *are* in financial trouble."

Despite repeated promises from Israel that water will be provided "in a few weeks", the JWC still hasn't met. And both Israeli and Palestinian officials are dragging their feet.

Masri suspects he's become a bargaining chip - that Israel will only agree to Rawabi's water if the Palestinians retrospectively approve water that's already installed in Jewish settlements.

Col Grisha Yakubovich of the military body which administers Israel's occupation in the West Bank, COGAT, is adamant that "there are no conditions". "Water will come in days, or weeks," he tells us.

Other sources corroborate the quid pro quo arrangement, including Middle-East envoy Tony Blair.

At his offices in east Jerusalem, Blair says the Palestinians have a point in refusing to agree to the water supplies provided for the Jewish settlements, whose existence are a key plank in negotiations.

"When there's an absence of a political process, what happens is that everything else becomes a casualty of that paralysis. There was a period of time when this went through the Joint Water Committee in a very non-political way," he says.

He's raised the water issue with Israeli officials. "Even President Obama has raised it," he adds, his voice rising with exasperation.

That's because a lot more than one big building project rests on the fate of Rawabi.

"It's going to be a lot tougher for us to bring in investment from people outside of Palestine if one of the leading Palestinian businessmen can't get his project to go ahead inside what would undoubtedly be a Palestinian state," Blair explains. He's responsible for overseeing a $4bn economic plan for Palestinian areas, announced last year as an effort to bolster a beleaguered peace process.

As Rawabi's water remains hostage to politics, its would-be residents are losing hope.

Some, including the Ibrahims, have pulled out. They tell us, over the telephone, that they still believe passionately in this project. But they need somewhere to live.

Israeli officials insist Rawabi will not fail. "Rawabi is supported by Israel," says COGAT's Grisha Yakubovich. "We want to see happy people at the end."

In this crisis, many Palestinians see another troubling omen.

"If Rawabi fails, it's a failure for the two-state solution. It's a failure for the peace process", argues Saeb Erekat, the chief Palestinian negotiator.

On our last visit to Rawabi, Masri leads us on to the majestic stage of his Roman amphitheatre, waving his arms with a flourish of pride to show an inviting stadium which is nearly complete. The

honey-coloured columns, which lay in the dust on our first visit, now stand tall, framing the hills all around us.

"I would love to see [a peace deal] in a year's time, I would love to see it in my lifetime, I want to enjoy it. But if it doesn't happen in my lifetime, so be it, we will keep on working for it."

Does he regret building Rawabi?

"Not a single moment. Never ever."

"The new Palestinian city that lacks only one thing", 07/02/2015, online at: http://www.bbc.com/news/magazine-31154138

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❖ Bringing water to dry regions: The search for reliable sources of drinking water

Scientists are crafting radical new approaches that may one day rejuvenate the world's water-starved regions.

The Arava desert, a salty wasteland dotted with tufts of scrub, gets only about an inch of rain each year. And yet cows at dairy farms collectively produce nearly 36 million litres of milk annually. Orange bell peppers flourish in a long swath of greenhouses that skirts the Jordanian border. Kibbutzim (collective communities) with vineyards somehow manage to churn out Shiraz and Sauvignon Blanc, unfazed by the desert sun.

The clusters of farms and wineries in the Arava are a testament to Israel's acumen in water technology. One of the most parched places on Earth has found a way to beat water woes once so severe that Israel's national mood rose and fell with the changing level of the Sea of Galilee, one of their most critical water sources.

That expertise helps explain why the University of Chicago sought out Israel's Ben-Gurion University to help tackle one of the world's most worrisome problems – water scarcity. In laboratories in Chicago and the Israeli desert, scientists are crafting radical new approaches that may one day rejuvenate the world's water-starved regions.

One project uses a common ink jet printer to apply layers of chemicals to a water filter to repel bacteria and keep the filter clog-free. Another turns radioactive isotopes into tracking devices to trace water movement through aquifers, a development that could lead to the discovery of vast new strata of groundwater. Still another effort strives to create filtering membranes that operate on a molecular level, using electrically charged, cilia-like hairs to repel filter-fouling microbes. The goal is to complete research by the latter part of 2015.

By 2030, nearly half of the world's population will be living in regions saddled with severe water stress, the United Nations projects. Three quarters of the world is covered by water, but less than 3% is fresh water. Areas with annual water supplies below 1,000 cu m per person are regarded as water-scarce.

Lesson from Israel

Israel is the ideal place to turn to for water research expertise. Since its independence in 1948, Israel has had to find ways to build its society and economy in one of the most water-starved places on the planet. Its game plan for surmounting water scarcity had several pillars. It built a water supply line known as the National Water Carrier that transported water from the Sea of Galilee to the rest of the country, including the barren wastelands of the Negev and Arava deserts. It ingrained water conservation deep in the population's mindset – for years, Israelis rationed their water use, and even as young children, they were taught to conserve.

"From the age of three, we learned to shut off the faucet while brushing our teeth," said Udi Tirosh, business development director at IDE Technologies, an Israeli corporation that builds and operates desalination plants in Israel and around the world.

The most significant initiative was Israel's embracing of desalination technology. It now has five desalination plants producing 500 million cu m of water each year, about half of the country's drinking water needs. In desalination, water is drawn out of the sea and then pumped through a series of filters to separate the brine and yield fresh water.

"Desalination gives you the power to control your supply," Tirosh said. "Up until a few decades ago, you were waiting for rain or digging a well. Now that you can desalinate, it's game-changing. You can produce efficient water from the sea, which is important because rivers, lakes and aquifers can dry out."

There are now more than 17,000 desalination plants in 150 countries, and expanded use of the technology could drastically ratchet up water supplies for water-starved nations. But desalination isn't problem-free. The bane of desalination plants is bio-fouling, the build-up of microbes on filter surfaces. It makes an already costly approach to creating drinking water even costlier.

To solve the problem of bio-fouling, the researchers at Ben-Gurion and University of Chicago are creating new strand-like molecules less than one-10,000th of the diameter of a human hair, and attaching those strands to the surface of a desalination filter. The strands are electrically charged both positively and negatively, and that combination repels bacteria.

"It's important to have widespread use of desalination, so it's important to bring the cost down," said Matthew Tirell, a professor at University of Chicago. "The potential of this research is to have very long-lasting membranes where the cost of the membranes comes down by a factor of two."

Ben-Gurion's role is to find a way to ramp up the scale of production of the strand-covered filters. At its Sede Boker campus in the heart of the Negev desert, biological chemist Christopher Arnusch is relying on an everyday office mainstay – the ink jet printer – to help improve water filtration. He has found a way to use the printers to apply anti-bacterial coatings to filters, a breakthrough that allows scientists to economically affix the right mix of chemicals to sheets of filters a metre wide.

"When you get this slimy, bacterial material on membranes, it makes them ineffective and reduces their shelf life," Arnusch said. "And it costs more energy to run the systems."

Searching for water

Another Ben-Gurion scientist, Eilon Adar, is looking for new sources of water. His team is using naturally occurring radioactive isotopes to track the movement of groundwater through aquifers as deep as 1.6km below the surface, relying on a special laser device to detect the number of krypton isotopes in a water sample. Krypton isotopes are used because they begin to decay once they move from surface water to underground strata. The number of isotopes found tells scientists how long the water has been underground. With that information, they can plot the oldest to youngest samples on a map and determine the water's flow through the aquifer, and ultimately the aquifer's size and characteristics.

Adar says the research has an intriguing practical application – finding water in the bedrock beneath the world's deserts. "You cannot sustain a growing population with diminishing amounts of water. So we move into arid and semi-arid basins. And we all know that, under deserts around the world, there are huge groundwater reservoirs."

Adar's research can also help in Israel, where desert enterprises – from dairy farms to wineries to fish hatcheries – distill their struggles into a single, common plight: lack of water. Israel's evolution as a wellspring for water technology know-how explains why farms in the Arava thrive. Israel is the birthplace of drip irrigation technology, which conserves by delivering a trickle of water directly to

plant roots. Israeli researchers also have fine-tuned how much pure water needs to be added to brackish water drawn from Arava aquifers in order for a given plant species to thrive.

Today, farmers in the Arava grow almost everything found in the nation's grocery store produce sections: mangoes, pomegranates, grapes, watermelons, tomatoes, potatoes, corn, bell peppers and eggplants. At a kibbutz farm in Samar, the challenge is to keep from overheating dairy cows, livestock that normally would not survive in a desert climate. The solution – showers, seven times a day during summer months, and three or four times a day during the rest of the year.

The wineries of the Arava and Negev face their own daunting obstacles: water and soil that's too saline, a desert sun that bakes vines with temperatures above 46°C during harvest time. And yet, at Kibbutz Neot Semadar, a winery in the southern end of the Arava desert, an oasis blooms. Gardens of lavender line pools filled with large goldfish. Orchards yield apricots, almonds, apples and plums. And despite the climate, the Shirazes, Merlots and Chardonnays hold up well, locals say.

"Over time, Israel's farmers have become extremely efficient at using water," says Jack Gilron, a scientist at Ben-Gurion's Zuckerberg Institute for Water Research. "For them, water's scarcity became the spur for how to do water more efficiently." – Chicago Tribune/Tribune News Service

"Bringing water to dry regions: The search for reliable sources of drinking water",09/02/2015, online at: http://www.thestar.com.my/Lifestyle/Features/2015/02/09/Bringing-water-to-dry-regions-The-search-for-reliable-sources-of-drinking-water/

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❖ Dead Sea Living

Although the Dead Sea has no life, it provides living through the rich minerals extracted from it. Yet the flood of water into the Dead Sea is slowly receding. It has witnessed a ninety-foot drop in only thirty years on a lake that is just sixty-seven kilometers long and twenty kilometers wide. At this rate, the Dead Sea will bottom out as a small pond in about fifty years.

German Gutierrez's film *Dead Sea Living* depicts the dying of the Dead Sea and its economic, environmental, social, and political implications. Gutrierrez is a Colombian film director currently based in Canada who has made other documentaries, including the *Coca Cola Case* (2009), *Who Shot my Brother?* (2009), and *Societies Under the Influence* (1999). The original idea for *Dead Sea Living* came from Palestinian film director George Khleifi and other colleagues in 2009. In a recent interview, Khleifi said: "we witnessed the changing reality around the Dead Sea. We used to sit three steps away from the water of the Dead Sea on the terrace at the Lido Beach. Now, the sea receded six hundred to seven hundred meters and you cannot walk in that area as it is full of sinkholes. These six hundred to seven hundred meters are actually what used to be the bottom of the Sea." He added that living in the region makes you aware of the water crisis, since water is under Israeli control and there are constant water cuts in the summer.[1] Khleifi wrote and pitched the original project and received support mainly from the European television network Arte and Radio Canada.
The documentary crosses traditional lines to reach audiences interested in the link between socioeconomic and political conditions and environmental sustainability. It also crosses geographic,lines between the Israeli, Jordanian and Palestinian areas around the Dead Sea, shifting between photographing the main sites of the Dead Sea, Jordan River, and Sea of Galilee to interviewing officials, as well as, people whose daily lives are directly affected by the changes taking place.

The film portrays a stunning landscape of the Dead Sea and the surrounding areas. As the film's photography employs panoramic and aerial imagery showing the rich ecological and historic context, it zooms into the political reality that is contributing to its obliteration. The film moves between narratives that invoke both biblical connotations as well as colonization and domination. It simultaneously contrasts life and death, the revival of the Dead Sea and its demise.

The dying of the Dead Sea is a result of the drying up of the Jordan River, which used to feed the Dead Sea from the Sea of Galilee. The Jordan River is believed to be the site of Jesus' baptism. It attracts pilgrims from all over the world who come to both the Jordanian and the Israeli sides of the river to be baptized. But the Jordan River's water, as Gidon Bromberg of Friends of the Earth Israel puts it in the film, "is anything but holy." The water bottles sold at the Israeli baptism site have a warning label indicating that they are "for religious use only, do not drink." This water, adds Bromberg, is a polluted mixture of sewage, brine, and runoff from fish farms and agricultural operations.

As countries in the region compete for fresh water, the Dead Sea has had the tap shut off from both ends.[2] In the north, Jordan, Syria, and Israel have cut off the Jordan River; in the south, two massive mineral extraction operations occupy the entire southern basin of the Dead Sea: the Arab Potash Company in Jordan and the Dead Sea Works in Israel. The Canada Potash Company is a shareholder in both. The film portrays how these mineral extraction industries are accelerating the rate of evaporation of the existing waters.

The Dead Sea is in fact one of the most profitable mines in the world. In addition, the resort and tourist businesses that have been recently established along its cost were created by the potash industry. The film ironically depicts how the tourism pools—where people come from all over the world to float in, and seek the health remedies of, the minerals of the Dead Sea—are nothing but a one-square-kilometer reservoir created by the nearby chemical plants.

The camera simultaneously shows naked women tanning in an Israeli Dead Sea resort alongside depictions of the plight of Palestinians who do not have enough water to survive, let alone enjoy the luxury of access to the Dead Sea. Palestinian access to the area has been severely restricted since the early 1990s. According to the Oslo Accords, the Western aquifer in the West Bank is shared by Israel and the Palestinians, while the Eastern aquifer is exclusively Palestinian, though in fact it is totally controlled by Israel through the mechanisms of its occupation. Agriculture in the West Bank constitutes thirty to thirty-five percent of Palestinian GDP, and as a result, the Palestinian economy is much more vulnerable to a water shortage than Israel's.[3] In comparison, the film portrays how sixty percent of Israel's water goes to agriculture, for a revenue of two percent of its GDP, while Jordan uses seventy percent of its water for agriculture, for a revenue of approximately four percent of its

GDP. Gidon Bromberg has noted in the film that it was "nonsensical" (and not sustainable) to grow bananas in the desert.

The film contrasts the conditions of the Palestinian farmers who are denied the right to dig wells with those in the Israeli settlements in the West Bank who are permitted to drill wells deep enough to tap the mountain aquifer. By blocking the Jordan River's borders, Israel has also blocked the access to the river for Palestinian farmers from villages such as Bardala and Ein Al-Baida. Palestinians in the Jordan Valley villages must live on only fifty liters of water per day. That is about half of what the World Health Organization considers as the minimum for human sustainability. By contrast, Israelis on average have access to about 350 liters of water/day.[4]

In the film, Palestinian farmer Abu Saqr, from Al-Hadidiyeh in the Jordan Valley, indicates that the sonic bombs of the Israeli military destroyed a well for collecting rain and that he is prevented from fixing it. The camera immediately moves between Abu Saqr's land and the neighboring Israeli settlement, Moshav Ro'i, where settlers plant flowers for export to Europe. While the cost of the water, subsidized by the Israeli government, is three Israeli New Sheqels (INS) per cubic meter for agriculture and seven to eight INS for home use at the settlement, Abu Saqr has to wait for two weeks for water delivery and pays twenty-seven INS per cubic meter. Uri Shani, who previously served as the head of the Water Authority in Israel, says in an interview in the film that in Area C, according to the Oslo Agreements, Palestinians need permission to dig, as they are "unfortunately under occupation." Shaddad Attili, Minister and Head of the Palestinian Water Authority, complains in a subsequent scene that he cannot lay a simple pipe in the West Bank without permission from Israel.

The film vividly portrays how the Palestinians are the weakest side in any of the negotiations surrounding access to the Dead Sea and control of the water flowing into it.

According to Khleifi, "The Oslo Agreements are clearly biased towards Israel and a number of mistakes were made by the Palestinians in the negotiations in regard to control over water.[5] He described to me the severe water shortages in the Hebron and Bethlehem areas and the draconian restrictions imposed by the Israeli Civil (read military) Administration in regard to digging wells. "The technicalities of the Israeli occupation in delaying authorizations for Palestinians to dig wells

could lead to months, if not years, of delays, as every request needs to go through at least ten departments."[6]

Dead Sea Living links the shrinking and disappearance of the Dead Sea with the overall problem of fresh water for people in the region. The film ends by showing how politics and environmental protection policies are contested when attempting to find a solution to the Dead Sea problem. Environmentalists suggest restoring the Jordan River instead of creating canals that will connect the Red and/or Mediterranean Sea to the Dead Sea. This could prevent the unpredictable side effects of these new canals, and lead to more conservation policies in Jordan, Syria, and Israel that could in turn revive the Jordan River. Yet, as long as both Israel and Jordan are growing food and flowers for the supermarkets of Europe while draining the aquifers to do it, and while the mineral companies are draining the Dead Sea for short-term profit-making endeavors, conservation efforts will remain limited. Most importantly, as long as the Israeli occupation and building of settlements are in place , and as long as wars in Iraq and Syria continue to bring more refugees into Jordan, conservation policies will remain subordinated to geopolitical concerns. The film clearly shows that any proposed solution has to take into account sustainability, not just to the Dead Sea and the Jordan River, but to the dignity of all people living in the area.

[1] Skype interview by the author with George Khleifi, 7 October 2014.

[2] According to an interview in the film with Maysoon Zoubi, Secretary General of Water in Jordan, by 2025 Jordan would have exhausted all its reserves of ground water. Before 1948, Jordan had 3400 cubic meters per capita per year; now it is 145. Demand exceeds supply by two hundred percent.

[3] Background information for *Dead Sea Living*, 2013.

[4] Background information for *Dead Sea Living*, 2013.

[5] Skype interview by author with George Khleifi, October 7, 2014.

[6] In person interview by author with George Khleifi, July 27, 2014, Nazareth, Israel.

"Dead Sea Living",08/02/2015, online at: http://profiles.jadaliyya.com/pages/index/20804/dead-sea-living

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❖ World Bank urges haste on dam approval

BEIRUT: The World Bank's country director for the Middle East has urged the Lebanese Parliament to speed up the approval of the construction of the Bisri dam, a $612 million project financed by the World Bank and the Islamic Bank. "Lebanese officials have already expressed a great interest and willingness in the implementation of this project," Ferid Belhaj said.

"But what we really need now is an official approval by Parliament for us to be able to start with this crucial project," he told The Daily Star in an exclusive interview.

The World Bank Thursday signed an agreement with the Lebanese government granting Lebanon a $474 million loan for the construction of the Bisri dam, which aims to improve water supplies in the country.

The dam, which will take around five to seven years to be completed and to start operating, will store an additional 120 million cubic meters of water for potable use. The Islamic bank will be financing the difference between the total cost and the amount paid by the World Bank.

"This project is crucial because it will bring potable water to about 40 percent of the population in Lebanon including half a million people living under the poverty line," Belhaj said.

"We are very much looking forward to the whole process to be finalized within one month to start working on it soon," he added.

In addition to water issues, Lebanon needs to remove constraints in the telecom, electricity and transportation sectors in order to be able to foster a more conducive environment for the growth of the economy, Belhaj said.

With regard to electricity, the World Bank is working on a small project that would give the private sector a role in energy production in the country.

The project mainly consists of a private company creating a Floating Storage Regasification Unit for importing Liquefied Natural Gas, a source at the World Bank told The Daily Star.

The source explained that this terminal would allow the private firm to import LNG, re-gasify it and ship it via underwater pipelines all the way to the shore, where other pipelines route the gas to its destination.

The source added that the private sector would make the investment and sign a terminal-use agreement with the government, whereby the latter would pay for the services provided by the company.

"The World Bank's role in this process would be to guarantee the payment by the government for these services to the private company," the source said. "If it doesn't, then the World Bank would give the company its money and wait for the government to pay its dues to the bank."

The source added that the project is still under development and the government still needs to issue a tender and give the project to the most qualified company.

Belhaj stressed that the World Bank is serious in its commitment to Lebanon with regard to the electricity sector.

"We reached a point where we need to move ahead with this particular file but we just need political actors to be aligned on this issue for us to move forward," he said.

"The World Bank is ready to help on the financing and technical levels," he added.

Among the World Bank's long-term plans is a transportation project aimed at managing traffic from Beirut all the way to the north.

"We are looking at a rapid bus transfer system which would help Lebanese citizens get access inside and outside of Beirut in a smoother and less costly way," he said.

Belhaj said that the project, which has already been successfully implemented in a number of countries including Turkey and Argentina, would contribute in reducing traffic.

"The cost of the project will hopefully be assessed within nine months from now and we may see something happening in this regard within two or three years because there is a broad consensus on it," The World Bank official said.

Belhaj emphasized the World Bank's commitment to its short-term objectives in Lebanon which consist mainly of managing the country's immediate needs stemming from the Syrian crisis and its impact on the economy.

"We have put together a financing mechanism to allow the partners of Lebanon to donate money in a bid to help hosting communities who are welcoming Syrians not to fall under the pressure of this huge number of refugees coming into the country," he said.

The World Bank is financing projects in health and education while helping the most affected municipalities continue delivering services to their citizens.

It is doing this through a multidonor trust fund created last year with donations from Norway, Finland, France, the United Kingdom, the Netherlands, Switzerland, Sweden and the World Bank.

"The fund has $75 million so far and we are looking forward to having it reach about $100 million until next July," he said.

Belhaj said that the World Bank is in the process of putting this money through the government processes for municipal projects, mainly in the fields of health and education.

"When it comes to education, we are financing a project that would allow for a second shift to absorb Syrian kids," he said.

With regard to health, the World Bank is trying to make sure that hospitals can receive more patients by providing for dispensaries in places populated with refugees.

"World Bank urges haste on dam approval" ,08/02/2015, online at:
http://mideastenvironment.apps01.yorku.ca/2015/02/world-bank-urges-haste-on-dam-approval-daily-star/

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❖ Israel destroys water lines feeding Palestinian areas in Jordan Valley

TUBAS (Ma'an) – Israeli forces on Thursday destroyed a water network which feeds Palestinian villages and Bedouin dwellings in the northern Jordan Valley, the head of the village council of al-Maleh and its surrounding Bedouin dwellings said.

Arif Daraghmah told Ma'an that Israeli troops escorted excavators which destroyed a 2,000-meter-long water pipeline near the village of al-Atuf. The pipeline, he said, was funded by the Palestinian Agricultural Relief Committees.

In addition, Israeli forces confiscated 250 meters of water pipes near the village of Yarza east of Tubas.

"Israel destroys water lines feeding Palestinian areas in Jordan Valley", Maan, 08/02/2015, online at: http://mideastenvironment.apps01.yorku.ca/2015/02/israel-destroys-water-lines-feeding-palestinian-areas-in-jordan-valley-maan/

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❖ Environmental authority warns against Israeli toxic waste dumping

RAMALLAH (Ma'an) — The Palestinian Environment Quality Authority on Saturday said that any individual found responsible for exporting hazardous waste from Israel to Palestinian lands will be sentenced to lifetime imprisonment and hard labor.

The statement comes amid increasing concern over Israeli companies dumping toxic materials in Palestinian-controlled areas of the West Bank, with implicit Israeli government support and the use of local Palestinian collaborators.

The statement said that the Environment Quality Authority, also known as the Ministry of Environmental Affairs, is attempting to put an end to all forms of Israeli violations against the Palestinian environment.

The authority called upon Palestinians to cooperate with the authority in order to support its push for a safe and clean environment for all.

The statement comes in response to the recent discovery by customs police of a truck carrying Israeli asbestos waste to dump in Tulkarem.

Israeli businesses located in Jewish-only settlements in the West Bank regularly dump their waste in rivers or in public areas that flow down and negatively affect the environment of nearby Palestinian villages.

The problem is exacerbated by the fact that settlements are generally located on hills above pre-existing towns.

While Israeli authorities enforce relatively restrictive laws against destruction of the environment inside Israel, many factories have moved to West Bank settlements because the authorities there are lax in enforcement and Palestinian authorities are helpless to stop them.

"Environmental authority warns against Israeli toxic waste dumping", Maan, 08/02/2015, online at: http://mideastenvironment.apps01.yorku.ca/2015/02/environmental-authority-warns-against-israeli-toxic-waste-dumping-maan/

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❖ The Man Who Can Save The World From Wasting Water

Innovator Amir Peleg and his company TaKaDu have revolutionised the Israeli water network

Amir Peleg hunches his broad, 6-foot-3-inch frame into a tunnel leading to one of several reservoirs that supply water to Jerusalem. Condensation collects on the ceiling, inches overhead, like thousands of tiny stalactites. Peleg, an entrepreneur whose self-given job title is "chief plumbing officer", catches a droplet on his palm. "Literally every drop counts," he says. "This is the modern-day Gihon."

Gihon was the ancient, intermittent spring that made human settlement possible in Jerusalem circa 700 BC. Today, fresh water sources in Israel and the surrounding region are more precious than they were in the Bronze Age. About 1 million residents continually draw water from this reservoir, which is filled by pipelines snaking from the Sea of Galilee 145 kilometres north. Located at the edge of Jerusalem, the reservoir is held in a massive underground vault patrolled by armed guards to keep insurgents from poisoning the supply. Thick cement walls surround a floodlit pool of water, ghostly and luminous, 40 feet deep and wider and longer than two football fields.

Like most of its neighbours, Israel is a desert nation, and during the past seven years it's struggled through a drought with record-low rainfall. In response, Peleg and others have come up with an array of innovations, from microscopic sewage scrubbers to supersize desalination plants to smart water networks. Israel now has higher agricultural yields than it's had in non-drought years. It even has a water surplus, a portion of which (about 150 million cubic metres per year) it pumps to Jordan and the Palestinian Authority.

"I don't think it's overkill to say that Israeli entrepreneurs are disrupting and reinventing how the world creates and conserves water," says Peleg, 48. He's become one of the leaders of a water-tech movement that began in the 1950s, when Israel's first prime minister, David Ben-Gurion, implored scientists and engineers to "make the desert bloom".

In 2008, Peleg's startup, TaKaDu, began designing software that uses mathematical algorithms to detect and prevent leaks in water pipelines. Peleg has silver, buzz-cut hair, arching black eyebrows, and a jaw like an anvil—George Clooney's indomitable Danny Ocean meets the affable Schneider from One Day at a Time. He's part swaggering CEO and part scrappy superintendent.

Detecting leaks may seem like a small concern, but it matters, especially in environments where water is scarce and expensive. Of Israel's total water demand (2.2 billion cubic metres a year), less than one-tenth is supplied by freshwater sources such as the Sea of Galilee. The rest comes from filtered gray water—Israel recycles more than 85 per cent of its wastewater—and from desalination, an expensive process that transforms saltwater into drinking water. "Among all conservation technologies in development, the most valuable detect leakage in networks," says Avshalom Felber, chief executive officer of IDE Technologies, Israel's biggest desalination company. On average, utilities worldwide lose more than 30 per cent of the water they distribute in their networks. By comparison, Jerusalem's utility—Hagihon, Peleg's first customer in 2009—wastes less than 10 per cent of its supply, thanks in large part to TaKaDu.

Over the past five years, venture capital firms and companies including 3M and ABB have invested more than $20 million in TaKaDu, and its software has been adopted by 14 other utilities in cities from Campo Grande, Brazil, to Bilbao, Spain. Last month, Peleg signed with Australia's biggest utility, Sydney Water. Collectively, these utilities manage about 64,373 km of water pipelines. Peleg won't disclose TaKaDu's revenue but says it's grown more than 50 per cent annually over the past two years.

TaKaDu's software is designed, as Peleg describes it, "to slice and dice and analyse raw data measured by smart sensors in the water network". These sensors monitor the flow rates, pressure, and quality of the water and identify bugs in the meters, valves, and other system equipment. From this data, the software can analyse when and where water is escaping. "Until TaKaDu came along, the water-utility world was almost deaf and blind," says Zohar Yinon, CEO of Hagihon. "Our network is not transparent without this software. It's like an EKG or an X-ray, exposing the inner workings of our system on a real-time basis. We are no longer plumbers and water engineers; we've entered the world of preventive medicine." But can Peleg shift the world's lowest-tech industry to big data solutions? "The best and worst thing Peleg has going for him is that he's ahead of the game," says Aaron Mankovski, who runs Pitango Venture Capital, Israel's largest VC firm, and has yet to invest

in TaKaDu. "Water is a cautious, nearsighted industry," he adds. "But I have no doubt that eventually all utilities will go this direction. They will have to, to survive." TaKaDu's headquarters are above a Pizza Hut and a pastry shop, in a glass-and-granite office building in a quiet suburb of Tel Aviv. Inside, the offices have the obligatory signifiers of the tech startup: minimalist couches and bean bag chairs, walls painted primary colours, and an open kitchen with a large picnic table for meetings and meals. The walls bear poster-size photographs taken by TaKaDu employees depicting water in some form, from dewy fields to foaming falls. Peleg's office is cozy and modest. There's little here to indicate he's a veteran of three startups. He sold his last one, YaData, to Microsoft, less than two years after he founded it. (A leading Israeli newspaper reported a rumoured sale price of about $30 million; Peleg says he's obligated by contract not to disclose the sum). YaData was another algorithmic venture; its software helped online advertisers to more accurately target customers. Peleg was influenced by his grandfather, who built Tel Aviv's first luxury hotel. At 13, Peleg hacked the first Apple computers that came to the market in Tel Aviv and created a version with Hebrew characters that he sold to local businesses. At 17 he was accepted to Talpiot, the Israeli Defence Force's most elite technology unit. Over eight years he learned to develop military drone operating systems and software to automatically -identify key visual information in satellite images, such as tanks, missiles, and other targets. Peleg then joined Elbit Vision Systems, a company that develops software for large-scale textile production. The software analyses visual data to identify flaws in fabrics. TaKaDu is doing something similar today with pipe flows and pressures. "It all boils down to finding new ways to understand aberrations in data," he says. Peleg got the idea for TaKaDu at a technology conference in Vienna in September 2008, when he met a water engineer specialising in the Scada (supervisory control and data acquisition) systems that collect data from pipe-embedded smart sensors. The sensors use mechanical methods, such as rotating wheels, as well as ultrasonics to measure network flow and pressure and can transmit hundreds of data points every 15 minutes. Peleg wasn't interested in the hardware, just the information generated. "I asked the Scada guy what he does with the data. He says, 'We store it.' I thought, 'This is it! I'm going to mine this dormant data for golden nuggets.' " Within a few months of the Vienna conference, Peleg had hired five programmers and was running TaKaDu out of his living room. A number of Peleg's early recruits were from the Talpiot programme. "I said, 'Now our enemies are not people, but the leaky pipes underground,' " Peleg recalls. Instead of using algorithms to scan images, he was now building software that had larger implications for Israeli security and that might even help wasteful and

drought-afflicted nations worldwide. His wife, Naama, wrote payroll cheques from their family checking account: "Finally Amir was doing something real," she recalls.

Hagihon CEO Yinon is munching cookies in a bunker-like basement that once functioned as the utility's control room. "We no longer have a physical control room—TaKaDu has put it right here," says Yinon, wagging his iPhone 6. "I can find out anywhere if my meters are accurate, my water quality is clean, my pressure is good, my flow is normal, my pumps are working properly, my infrastructure is humming … all these layers are integrated online." Six years after founding TaKaDu, Peleg has 35 -employees and offers utilities a cloud-enabled service that presents the full gamut of information about the network's operations. Peleg is essentially trying to do for water networks what Thomas Siebel did for customer relations management (CRM) in the early 1990s: rethink the interaction between organisations and customers and integrate all the layers of information a company has about a customer into a single interface. TaKaDu's software establishes a baseline of "normal behaviour" within each network. The better it understands normal patterns of water flow throughout the day, the more accurately it can detect aberrations that indicate a leak or burst. It knows that water flows are highest in mornings and evenings, before and after people are at work. It also considers local factors: At a Netherlands utility, for example, the system detected spikes of flow at regular intervals one Friday afternoon; it noticed that these patterns corresponded with breaks in play during a World Cup game between the Netherlands and Spain, when fans were flushing toilets. The software can also detect water theft. At Unitywater, a utility in Melbourne, the system noticed abnormally large flows coming from a fire hydrant; officials were notified, and they found a strawberry farmer siphoning water from the hydrant. Within a year of adopting the TaKaDu system, Unitywater saved more than 1 billion litres of water. That translated into savings of more than $2 million. The utility also reduced the time it takes to repair problems in its network by more than 60 per cent. TaKaDu is not a standalone solution for utilities. "We've found that TaKaDu works best when connected with other systems," says Yinon. Aquarius Spectrum, a company run by Israeli Zeev Efrat, uses advanced sound equipment to detect the exact location of leaks. Yinon uses TaKaDu software to identify the location of a leak within a neighbourhood and then Aquarius's technology to find the pipe it's coming from. Another Israeli startup, Curapipe System, offers an automated leak repair system that plugs ruptures without digging. When Peleg notes that TaKaDu has no direct competitors, it's more a lament than a boast. "There are companies doing many different aspects of what we do, but none yet that encompasses all." The French water and waste management company,

Suez Environnement, recently introduced a similar smart-network service called Aquadvanced, but it's too new to the market to have made an impact. Peleg insists that he wants competitors to come in and "wake up the market, so utilities get more familiar with the future we're all headed toward". As it is, only about 20 per cent of utilities worldwideand fewer still in the US—are using smart sensors in their infrastructure. "Not everybody can see it yet," says Zvi Arom, a member of TaKaDu's board. "There are those utilities you meet and you tell them what TaKaDu can do, and they say, 'I may as well believe in Snow White and Santa Claus.' " Peleg lives with Naama and their three young children in an agricultural village about halfway between Tel Aviv and Jerusalem. Their house is a modern expanse of glass and steel surrounded by eight acres of heavily irrigated farmland that Peleg calls his Eden. He has olive, pomegranate, avocado, lemon, fig, mango, and pecan trees, a vegetable and herb garden, and a small vineyard with merlot and chardonnay grapes.

The family pays the equivalent of thousands of dollars a year for water. Peleg, an avid cook who pickles his own cucumbers and brines his own olives, takes a certain pride in his water bill: "Americans think water should be free and unlimited, like air. But the philosophy in Israel is, if you want to have a garden or a pool, fine—pay for it!" Israel has a three-tiered pricing system, he says: "We're only allowed to consume a certain amount of low-cost water for a family of five, for example. Above that quota the water is 50 per cent more expensive. On the next tier, the pricing goes wild." The pricing structures of many US water utilities, Peleg says, encourage rampant consumption: "A third of the counties in America still charge a flat rate for water, whether you are a business or resident, you pay a flat rate. Like for $9.99, it's all-you-can-eat water." Last July, as California suffered through a crippling drought that would claim 200,000 acres of crops, a pipe broke under Sunset Boulevard in Los Angeles and released 20 million gallons of water. "Our software could have prevented such a burst," Peleg told a panel at a recent conference in Tel Aviv. "It would have picked up the problem when it was just a small leak." This year, Peleg will introduce a cloud-based service for US utilities that monitors water quality, which is tightly regulated by the US Environmental Protection Agency. Peleg and his peers are betting that as hardware costs decline, data tools improve, droughts become more common, and water pipes get older, the US will become a more lucrative market for their products. "It is becoming a much lower-risk investment," says Pitango Venture Capital's Mankovski. "The biggest challenge for a water startup is to get the initial 10 to 15 customers and proof of concept. Peleg has done this and has ushered those relationships into

long-term contracts. He has a real chance of providing the de facto tool for municipalities worldwide."

"The Man Who Can Save The World From Wasting Water", 02/05/2015, online at: http://businessweekme.com/Bloomberg/newsmid/190/newsid/416

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❖ 14 of the 15 hottest years on record have occurred since 2000, UN says

World Metereological Organisation's analysis narrowly places 2014 as the hottest recorded since 1850, as global warming continues

Fourteen of the 15 hottest years on record have occurred since 2000, according to the UN World Meteorological Organisation, as rising carbon emissions continue to trap heat and drive climate change.

The WMO's new analysis narrowly places 2014 as the hottest recorded since 1850, as have recent analyses from other organisations. The WMO analysis is particularly authoritative as it brings together a number of leading temperature records, as well as alternative ways of estimating the warmth of the globe.

The average global air temperatures over land and sea in 2014 were 0.57C above the average of 14.00C for the 1961-1990 reference period. The record temperature was above those in 2005 and 2010, the next hottest years, but only by a small amount which was within the margin of uncertainty in the calculations.

"The overall warming trend is more important than the ranking of an individual year," said WMO secretary-general Michel Jarraud. "2014 was nominally the warmest on record, although there is very little difference between the three hottest years."

"We expect global warming to continue, given that rising levels of greenhouse gases in the atmosphere and the increasing heat content of the oceans are committing us to a warmer future," he said. "In 2014, record-breaking heat combined with torrential rainfall and floods in many countries and drought in some others – consistent with the expectations of a changing climate."

Global sea-surface temperatures reached record levels in 2014, which is significant because 93% of the heat trapped in the atmosphere by greenhouse gases from fossil fuels and other human activities ends up in the oceans.

The WMO said it was notable that 2014's record temperatures occurred without a fully-developed El Niño event.

These occur when warmer than average seas in the eastern tropical Pacific combine, in a feedback loop, with weather systems to drive up temperatures. The high temperatures in 1998, the hottest year of the 20th century, occurred during a strong El-Niño. On land, England saw its hottest year in three and a half centuries, according to the Central England Temperature data set.

The confirmation of 2014's extreme heat comes ahead of the next round of preparatory UN climate change negotiations in Geneva, starting on 9 February. These are intended to pave towards a global agreement to tackle climate change, the deadline for which is a summit in Paris in December.

The WMO analysis is based, amongst others, on three datasets - Hadcrut, NOAAand NASA - and the analysis from the European Centre for Medium-Range Weather Forecasts.

"14 of the 15 hottest years on record have occurred since 2000, UN says", 02/02/2015, online at: http://www.theguardian.com/environment/2015/feb/02/14-15-hottest-years-record-2000-un-global-warming?utm_source=Circle+of+Blue+WaterNews+%26+Alerts&utm_campaign=4968e5a930-RSS_EMAIL_CAMPAIGN&utm_medium=email&utm_term=0_c1265b6ed7-4968e5a930-250657169

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❖ Black & Veatch appointed Consultant for Major Jeddah Desalination Project

Engineering and design will supplement water supply to Saudi Arabia's second largest city

Riyadh - Black & Veatch has been chosen by the Saline Water Conversion Corporation (SWCC) as engineering and design consultant for the Jeddah 4 project. This major desalination scheme will augment dramatically water supply in Saudi Arabia's second largest city.

Jeddah 4 will enhance water resources for the city's five million people by creating a 400 mega litres per day (mld) reverse osmosis (RO) plant. Saudi Arabia is the world's biggest producer of desalinated water. When completed, Jeddah 4 will be among the kingdom's largest desalination plants.

"An augmented water supply is central to the prosperity and continued development of Jeddah. SWCC , through critical infrastructure projects such as Jeddah 4, has proved highly effective in addressing the kingdom's water requirements," said Mazen Alami, Managing Director, Middle East at Black & Veatch.

"Black & Veatch is a recognised leader in the best practices and technologies shaping the water industry; our desalination expertise extends across the entire value chain. Our experience with large-scale desalination projects around the world will help the corporation serve the needs of Jeddah's growing populace," he added.

Jeddah 4 will be tendered on an engineer, procure, construct (EPC) basis. Black & Veatch will be responsible for studies of site and adjacent sea conditions, conceptual process and engineering design, and preparation of tender documents. In addition Black & Veatch will support SWCC during the tendering and award of the EPC contract.

Black & Veatch has been serving the Middle East since the 1920s, undertaking projects that enhance quality of life: power generation to support economic development, and water and sanitation to improve health. The company has worked with SWCC since 1993, notably on the Shoaibah to Jeddah Water Transmission System.

•Black & Veatch has been involved in more than 40 desalination plants with a combined throughput of nearly 5,788 mld. Our role runs from planning through to design, construction and commissioning. For more details see our Membrane Technology factsheet and the desalination section of bv.com

• SWCC is a Saudi government corporation responsible for desalinating sea water to augment the supply of potable water to coastal and inland cities

•Black & Veatch has designed a combined membrane capacity exceeding 2,270 Ml/d on five continents

• SWCC 's 27 desalination plants provide more than 70 per cent of the water used in Saudi Arabia's cities

•In 2003 SWCC selected Black & Veatch to carry out engineering studies and preparation of engineering, procurement and construction tender documents for the six new desalination plants

• SWCC is the second largest electric power producer in Saudi Arabia

•Recent Black & Veatch energy projects in the Middle East include the 2X660 MW heavy fuel oil thermal power plant in Rabigh, Saudi Arabia; 430 MW and 69mld RO Salalah Independent Water and Power Project in Oman; and 2x150 ton-per-day sulphur recovery plant project, Sohar Refinery, Oman.

"Black & Veatch appointed Consultant for Major Jeddah Desalination Project", 04/02/2015, online at: https://www.zawya.com/story/Black__Veatch_appointed_Consultant_for_Major_Jeddah_Desalination_Project-ZAWYA20150204100513/

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❖ Tanzania parliament disappointed over delay to ratify Nile River agreement

DAR ES SALAAM, (Xinhua) -- Tanzanian parliament on Monday said the delay by the government to ratify the Nile River Basin Cooperative Framework Agreement (CFA) was denying the east African country the right to make good use of the Nile River water.

"Tanzania could have benefitted through the use of the Nile River water for power generation, irrigation farming and for domestic use," Saidi Nkumba, the vice-chairman of the Parliamentary Committee on Water, Agriculture and Livestock, told the National Assembly in Dodoma when tabling the January 2014 to January 2015 implementation report of the parliamentary on water, agriculture and livestock.

Nkumba said the agreement has set clear procedures of the Nile River water sharing among the Nile Basin Initiative (NBI) member states of Tanzania, Burundi, the Democratic Republic of Congo, Ethiopia, Kenya, Rwanda, Uganda, Egypt and Sudan.

He said only Ethiopia and Rwanda have ratified the CFA.

In October 2014, Mark Mwandosya, the Minister of State in the President's Office, said the cabinet has okayed the CFA to be ratified.

Mwandosya told the 4th Nile Basin Development Forum in the Kenyan capital Nairobi that the CFA was slated for ratification by the Tanzanian parliament in November 2014.

A 1929 pact between Egypt and Britain gives Egypt a veto power over upstream projects as well as access to most of the Nile waters.

"Tanzania parliament disappointed over delay to ratify Nile River agreement", 09/02/2015, online at: http://www.coastweek.com/3806-Tanzania-parliament-disappointed-over-delay-to-ratify-Nile-River-agreement.htm

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❖ What is the longest river in the world?

Planet Earth boasts some very long rivers, all of which have long and honored histories. The Amazon, Mississippi, Euphrates, Yangtze, and Nile have all played huge roles in the rise and evolution of human societies. Rivers like the Danube, Seine, Volga and Thames are intrinsic to the character of some of our most major cities.

But when it comes to the title of which river is longest, the Nile takes top billing. At 6,583 km (4,258 miles) long, and draining in an area of 3,349,000 square kilometers, it is the longest river in the world, and even the longest river in the Solar System. It crosses international boundaries, its water is shared by 11 African nations, and it is responsible for the one of the greatest and longest-lasting civilizations in the world.

Officially, the Nile begins at Lake Victoria – Africa's largest Great Lake that occupies the border region between Tanzania, Uganda and Kenya – and ends in a large delta and empties into the Mediterranean Sea. However, the great river also has many tributaries, the greatest of which are the Blue Nile and White Nile rivers.

The White Nile is the source of the majority of the Nile's water and fertile soil, and originates from Africa's Great Lakes region of Central Africa (a group that includes Lake Victoria, Edward, Tanganyika, etc.). The Blue Nile starts at Lake Tana in Ethiopia, and flows north-west to where it meets the Nile near Khartoum, Sudan.

The northern section of the Nile flows entirely through the Sudanese Desert to Egypt. Historically speaking, most of the population and cities of these two countries were built along the river valley, a tradition which continues into the modern age. In addition to the capitol cities of Juba, Khartoum, and Cairo, nearly all the cultural and historical sites of Ancient Egypt are to be found along the riverbanks.

The Nile was a much longer river in ancient times. Prior to the Miocene era (ca. 23 to 5 million years ago), Lake Tangnayika drained northwards into the Albert Nile, making the Nile about 1,400 km. That portion of the river became blocked by the bulk of the formation of the Virunga Mountains through volcanic activity.

Between 8000 and 1000 B.C.E., there was also a third tributary called the Yellow Nile that connected the highlands of eastern Chad to the Nile River Valley. Its remains are known as the Wadi Howar, a riverbed that passes through the northern border of Chad and meets the Nile near the southern point of the Great Bend – the region that lies between Khartoum and Aswan in southern Egypt where the river protrudes east and west before traveling north again.

The Nile, as it exists today, is thought to be the fifth river that has flowed from the Ethiopian Highlands. Some form of the Nile is believed to have existed for 25 million years. Satellite images have been used to confirm this, identifying dry watercourses to the west of the Nile that are believed to have been the Eonile.

This "ancestral Nile" is believed to be what flowed in the region during the later Miocene, transporting sedimentary deposits to the Mediterranean Sea. During the late-Miocene Era, the Mediterranean Sea became a closed basin and evaporated to the point of being empty or nearly so. At this point, the Nile cut a new course down to a base level that was several hundred meters below sea level.

This created a very long and deep canyon which was filled with sediment, which at some point raised the riverbed sufficiently for the river to overflow westward into a depression to create Lake Moeris southwest of Cairo. A canyon, now filled by surface drift, represents an ancestral Nile called the Eonile that flowed during the Miocene.

Due to their inability to penetrate the wetlands of South Sudan, the headwaters of the Nile remained unknown to Greek and Roman explorers. Hence, it was not until 1858 when John Speke sighted Lake Victoria that the source of the Nile became known to European historians. He reached its southern

shore while traveling with Richard Burton on an expedition to explore central Africa and locate the African Great Lakes.

Believing he had found the source of the Nile, he named the lake after Queen Victoria, the then-monarch of the United Kingdom. Upon learning of this, Burton was outraged that Speke claimed to have found the true source of the Nile and a scientific dispute ensued.

This in turn triggered new waves of exploration that sent David Livingstone into the area. However, he failed by pushing too far to the west where he encountered the Congo River. It was not until the Welsh-American explorer Henry Morton Stanley circumvented Lake Victoria during an expedition that ran from 1874 to 1877 that Speke's claim to have found the source of the Nile was confirmed.

The Nile became a major transportation route during the European colonial period. Many steamers used the waterway to travel through Egypt and south to the Sudan during the 19th century. With the completion of the Suez Canal and the British takeover of Egypt in the 1870s, steamer navigation of the river became a regular occurrence and continued well into the 1960s and the independence of both nations.

Today, the Nile River remains a central feature to Egypt and the Sudan. Its waters are used by all nations that it passes through for irrigation and farming, and its important to the rise and endurance of civilization in the region cannot be underestimated. In fact, the sheer longevity of Egypt's many ruling dynasties is often attributed by historians to the periodic flows of sediment and nutrients from Lake Victoria to the delta. Thanks to these flows, it is believed, communities along the Nile River never experienced collapse and disintegration as other cultures did.

"What is the longest river in the world?", 02/02/215, online at: http://phys.org/news/2015-02-longest-river-world.html

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❖ Drought-hit Pakistan turns to solar water treatment

MITHI, Pakistan (Thomson Reuters Foundation) - Worsening drought has led to over 80 percent of water resources in Pakistan's southern Tharparker district becoming unfit for people to drink, a new study says.

That has led to plans by the Sindh provincial government to invest 5.4 billion Pakistani rupees ($53 million) in installing 750 solar-powered reverse osmosis water purification plants across the sprawling desert district, to help get safe drinking water to the region's over 1.5 million people.

All of the facilities are expected to be set up and working by June this year, the government said.

Residents living near a first plant, inaugurated in January in the Misri Shah area of Mithi, the district headquarters of Tharparker, say it is transforming life in the parched region, where vanishing rain and drying groundwater supplies mean most available water is now saline or too high in fluoride.

'HARDLY LESS THAN A MIRACLE'

"It is really hardly less than a miracle for us that we can now drink sweet and clean water, for the first time in my entire life," said 45-year-old Rekha Meghwar of Mithi, as she turns on the water plant's tap to fill her pitcher.

Billed as the 'Asia's largest (by capacity) solar-powered water purification plant', the facility will treat 3 million gallons of water daily, enough to meet the water needs of 300,000 people in Mithi and in 80 adjoining villages, according to officials in the Mithi town municipal office.

Constructed at a cost of 400 million Pakistani rupees or $4 million, the plant is expected to particularly benefit women, who currently often must fetch water from far-away hand-dug wells.

Sunita Bheel, a woman waiting in line for water from the new Mithi plant, said women in the area often walk two kilometers a day to fetch water from a hand-dug well owned by a landlord outside the village.

EFFECT ON MIGRATION

Local people said having water available for themselves, and their livestock, may stem increasing waves of migration from the area.

Anil Kumar, who lives in Morrey-Jee-Waand village, a few miles from Mithi, said 80 percent of people in his village and in seven other villages around it migrated last September to other areas in the region with supplies of dam water in an effort to find potable water for themselves and their livestock, and to seek jobs after crops failed.

"But they are now gradually returning to their villages when they learn about the sweet water (plant)," said the 65-year-old guar farmer, who looks after the property and belongings of neighbors who have migrated.

Today, Kumar rides every other day on his mule, strapped with two empty 30-liter drums, to the filtration plant to bring back water, he said.

Access to useable water is a key problem in drought-hit Tharparkar. Barely 5 percent of the population has access to clean and disease-free potable water, according to a study by Dow University of Health Sciences (DUHS) and the Pakistan Council for Scientific and Industrial Research (PCSIR).

One reason for this has been worsening fluoride contamination of underground water sources as less water recharges the drying system. The study found that the fluoride level at many locations in Tharparkar is at dangerous levels of over 13 mg/liter compared to the 1 mg/liter considered normal.

Excessive fluoride intake, from sources with more than 1.5 mg/liter of fluoride in the water, can cause problems such as bone deformation, dental problems, and damage to the kidneys and thyroid.

NO RAIN, NO RIVERS

Tharparkar depends heavily on rain-fed ground water, as it has no rivers. It receives an average annual rainfall between 200 and 300 millimeters, 80 percent of it during summer monsoon season,

which runs from July to September. The rainfall recharges groundwater that must then last for the other three quarters of the year.

Since 2011, however, average annual rainfall each year has been less than 50 percent of normal, straining further already depleting groundwater resources, according to thePakistan Meteorological Department.

"Given the current grim state of water woes, establishment of water purification plants is a welcome move," said Abdul Hafeez, the country manager at WaterAid – UK, a global water charity.

But water shortages in the area could be solved even more effectively by tripling the amount of rainwater harvesting going on in the district, he said.

"Drought-hit Pakistan turns to solar water treatment", 02/02/2015, online at: http://www.reuters.com/article/2015/02/02/us-pakistan-water-solar-idUSKBN0L60ED20150202?utm_source=Circle+of+Blue+WaterNews+%26+Alerts&utm_campaign=4968e5a930-RSS_EMAIL_CAMPAIGN&utm_medium=email&utm_term=0_c1265b6ed7-4968e5a930-250657169

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❖ 'Luxury water' to hit China stores amid water-safety fears

HONG KONG (MarketWatch) -- Nongfu Spring Co., one of China's biggest bottled-water suppliers, is planning to launch a "luxury" line of mineral-water products amid growing anxiety in China about water and food safety, according to a Securities Daily report Wednesday. "High-quality food has become the biggest luxury in China, even in the world, and thus we will take on the luxury water business," the report quoted Nongfu Spring Chairman Zhu Shanshan as saying. Zhu said the luxury mineral water is bottled at Moya Spring, located in China's northeastern Changbai Mountains, and has low levels of sodium, similar to the foreign high-end water brands such as Norway's Voss, Canada's Berg and Italy's Lurisia. The fancy water, which will come in glass bottles, will likely carry a high price -- as high 45 yuan ($7.20) a bottle, the report quoted company spokesman Zhou Li as saying, compared to as little as 1.30 yuan for a bottle of plain Nongfu water. The new water brand is due to launch on the Chinese market in two months.

"Luxury water' to hit China stores amid water-safety fears",04/02/2015, online at: http://www.marketwatch.com/story/luxury-water-to-hit-china-stores-amid-water-safety-fears-2015-02-04

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❖ Study reveals scale of water crisis in areas of Pakistan

Currently, one in nine people across the world lack access to safe water, and an estimated 842 000 people die every year from a water-related disease. It's not just about health and hygiene – all aspects of social and economic development – referred to as the food–energy–health–environment 'nexus' – depend on water. And demand is set to soar in the future as a combination of growing populations, increasing demands for resources associated with improved standards of living, and other forces drive pressure on water resources. Climate change is also creating new uncertainties with regard to freshwater supplies and to the main water use sectors such as agriculture and energy.

However, some countries don't have to wait for the future to witness a full-blown water crisis. In Pakistan, the situation is already dire in some areas with a new study revealing that 80 % of water resources in the country's southern Tharparkar district are unfit for people to drink. Barely 5 % of the population has access to clean and disease-free potable water, according to a study by Dow University of Health Sciences (DUHS) and the Pakistan Council for Scientific and Industrial Research (PCSIR) reported by Reuters.

Tharparkar depends heavily on rain-fed ground water, as it has no rivers. It receives an average annual rainfall between 200 and 300 millimetres, 80% of it during summer monsoon season, which runs from July to September. The rainfall recharges groundwater that must then last for the other three quarters of the year.

Since 2011, Reuters reports, average annual rainfall each year has been less than 50 % of normal, straining further already depleting groundwater resources, according to the Pakistan Meteorological Department.

One of the results of this has been worsening fluoride contamination of underground water sources as less water recharges the drying system. The DUHS and PCSIR study found that the fluoride level at many locations in Tharparkar is at dangerous levels of over 13 mg/litre compared to the 1 mg/litre considered normal. As Reuters reports, excessive fluoride intake, from sources with more than 1.5 mg/litre of fluoride in the water, can cause problems such as bone deformation, dental problems, and damage to the kidneys and thyroid.

One solution, as reported by IRIN News, is to use indigenous water-purification technologies. The NGO Thardeep Rural Development Programme (TRDP) has reached around 1 000 villages with water solutions, often using water access and purification methods based on traditional practices. One such purification technique is 'mussafa', which involves using a 1kg-bag of graded sand, treated with silver, as a filter in the clay pots used to store water.

However, the scale of the crisis in Tharparkar has now led to the provincial government stepping in and investing over EUR 46 million in installing 750 solar-powered reverse osmosis water purification plants.

According to Reuters, all of the facilities are expected to be set up and working by June this year to help get safe drinking water to the region's over 1.5 million people. Billed as the 'Asia's largest (by capacity) solar-powered water purification plant', the facility will treat enough water to meet the needs of 300,000 people in Mithi and in 80 adjoining villages.

The situation may be extreme in Pakistan but Europe is not immune to water shortages. According to the European Environment Agency (EEA), eight European countries can be considered water-stressed: Cyprus, Bulgaria, Belgium, Spain, Malta, Italy, UK, and Germany. And in the future it is likely that predicted climate change will exacerbate this situation in the most water scarce parts of southern Europe.

"Study reveals scale of water crisis in areas of Pakistan",09/02/2015, online at: http://phys.org/news/2015-02-reveals-scale-crisis-areas-pakistan.html?utm_source=Circle+of+Blue+WaterNews+%26+Alerts&utm_campaign=7220a944dd-RSS_EMAIL_CAMPAIGN&utm_medium=email&utm_term=0_c1265b6ed7-7220a944dd-250657169

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❖ France says climate talks crucial for world security

(Reuters) - French Foreign Minister Laurent Fabius launched a round of global climate talks in Geneva on Sunday and warned that world security, as well as the environment, depended on their success.

The week-long meeting is the first in a series that is meant to culminate in a globally binding agreement on reducing greenhouse gas emissions in Paris in December, with a target of limiting the rise in global temperatures to 2 degrees Celsius (3.6 Fahrenheit) above pre-industrial times.

Countries, companies and other organizations are expected to announce commitments to cut emissions in the run up to the Paris meeting. The cumulative commitments, backed by a financing mechanism and a binding global agreement that is being shaped at the series of meetings, must be enough to hit the 2 degree goal.

"Without sounding too grandiose, the survival of the planet itself is at stake," Fabius told reporters in Geneva. "You have rising sea levels, acidification of the oceans, immigration sparked by climate change, droughts that are much more severe.

"And then there's an aspect that we don't talk about much: the impact on security. If you have climate degradation, global security as a whole is degraded, there is immigration, and the fact that we fight over resources, be it oil or water."

Fabius said 20,000 delegates and a similar number of guests, plus 3,000 journalists, were expected to attend the Paris talks. He said 195 countries would be represented, but it was not decided which heads of state or government would come.

He described the mood at the Geneva talks as "extremely positive" but said the goal was ambitious and the task would not be easy.

Earlier, Peruvian Environment Minister Manuel Pulgar-Vidal, the current president of the talks, urged nations to avoid a repeat of a summit in 2009 in Copenhagen, when world leaders tried and failed to reach a deal to fight climate change.

"We cannot go back to the past. The world is not willing to accept our failure," he told the opening session.

He urged all to compromise and said there were "many good signals" from governments, people and businesses of willingness to act. "This is not a competition among us. This is one team for one planet."

Governments are due to submit their national plans by an informal deadline of March 31 to give time for the United Nations to compile them before Paris. China, the United States and the European Union - the top three emitters of greenhouse gases - have already outlined their plans.

"France says climate talks crucial for world security", 08/02/2015, online at: http://www.reuters.com/article/2015/02/08/us-climatechange-talks-idUSKBN0LC0U520150208?utm_source=Circle+of+Blue+WaterNews+%26+Alerts&utm_campaign=7220a944dd-RSS_EMAIL_CAMPAIGN&utm_medium=email&utm_term=0_c1265b6ed7-7220a944dd-250657169

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❖ Investments in water in poor nations give big benefits - World Bank

(Reuters) - Investing to provide drinking water for 750 million people in poor nations who lack clean supplies makes clear economic sense with bigger than expected health benefits, World Bank estimates showed on Friday.

A parallel drive to improve sanitation, especially in India where Prime Minister Narendra Modi has made basic toilets a national priority, would also yield strong returns without even considering improved human dignity.

"Provision of basic water and sanitation facilities ... would be a good investment in economic terms," Guy Hutton, senior economist at the World Bank's Water and Sanitation Program, wrote in a report.

Universal access to basic drinking water at home would cost $14 billion a year until 2030 and yield benefits of $52 billion, or about $4 for every dollar spent, according to the preliminary findings that will form part of a wider review.

The benefits were twice those estimated in a previous global study Hutton led in 2012, he told Reuters, partly because of larger than expected falls in diarrheal disease and lower costs of digging wells or boreholes.

Overall, building toilets to eliminate defecation outside in rural areas would cost $13 billion a year to 2030 and give benefits of $84 billion, a return of $6 for every dollar spent. The benefits were slightly less than in a previous study.

Investments in better water could mean 170,000 fewer deaths a year while basic sanitation would cut 80,000 deaths, mostly from infectious diarrhoea.

Water and sanitation have long been U.N. priorities. In the past 25 years, more than two billion people of a world population now totalling about 7.3 billion have gained access to better water and almost two billion to sanitation.

The findings are also part of a series for the Copenhagen Consensus Center, which is looking at costs and benefits of everything from crop research to fighting AIDS as part of new U.N. development goals for 2030.

"We can save a lot of people" with clean drinking water and sanitation, Bjorn Lomborg, head of the Center, told Reuters. Even so, rates of return were "not as spectacular" as investing in nutrition or ending malaria.

Still, Hutton said the study estimated only health benefits and time saved, such as from walking to a river to fetch water.

"They hide intangible impacts such as dignity, social status and security," he said. The United Nations in 2010 defined improved sanitation and water as fundamental human rights.

"Investments in water in poor nations give big benefits - World Bank", 06/02/2015, online at: http://in.reuters.com/article/2015/02/06/environment-water-idINKBN0LA1FQ20150206?utm_source=Circle+of+Blue+WaterNews+%26+Alerts&utm_campaign=caafa8716b-RSS_EMAIL_CAMPAIGN&utm_medium=email&utm_term=0_c1265b6ed7-caafa8716b-250657169

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