

# ORSAM

## ORSAM WATER BULLETIN

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#### **ORSAM WATER BULLETIN**

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#### **\*** Turkey suffers from driest winter in years

Turkish people are increasingly concerned about the approaching drought that is seen in the decreasing water levels in dams in winter and the increasing prices of agricultural products.

These concerns are further amplified by the fact that the rainfall levels are extremely low or below seasonal norms, except for certain regions of the country.

Drought is a slowly developing natural disaster associated with huge socioeconomic losses. It ranks the first among 31 natural disasters in terms of its damage to the human and natural environment. As its impact is not felt immediately, its magnitude is not readily noticed. Drought starts in the form of meteorological drought. If the lack of precipitation persists, the soil humidity decreases, leading to agricultural drought. A persistent fall in the flow rates of rivers is defined as hydrological drought. When these developments start to make an impact on human life, the phase of socioeconomic drought begins.

Scientists advise that we should prepare practical "drought plans" before we start to be affected by drought. For efficient use of scarce water resources, a water balance should be drawn up at the beginning of every water year (between Oct. 1 and Sept. 30) and, in response to decreasing precipitation, drought action plans should be implemented.

In Turkey, there is a widespread lack of water awareness among the general public and government officials. Dr. Mikdat Kadıoğlu of the Meteorological Engineering and Disaster Management Center at İstanbul Technical University (İTÜ), notes that drought is not listed as a disaster under the Law on General Disasters no. 7269, from 1959, and is not included in national statistics.

Kadıoğlu believes it is a statistical lie to say that drought is a periodically recurring event. "In reality, the weather does not know such periodicity. Therefore, it is wrong for government officials to say, 'Turkey faces a mild drought once every eight years and a severe drought once for every 12 years.' This is because the weather does not have a memory. Precipitation levels vary greatly among provinces," he says.



#### Precipitation fell by 50 percent

Scientific studies show that the distribution of precipitation in Anatolia occurs irregularly among regions and over time. A semi-arid climate reigns in central Anatolia and a significant portion of eastern Anatolia. The annual average precipitation for Turkey is 643 millimeters. The amount of cumulative precipitation calculated for the entire country between Oct. 1, 2013 and Jan. 17, 2014 indicates a 37 percent fall compared to the extended year's average and a 47.4 percent decrease compared with 2013. The precipitation level for December of 2013 was 42 millimeters, compared to Turkey's average for that month of 82 millimeters.

According to State Waterworks Authority (DSI) data, Turkey receives 501 billion cubic meters of precipitation in total per year. Of this amount, 274 billion cubic meters evaporate. The amount of water that is potentially usable is 112 billion cubic meters and of this, only about 42 billion cubic meters end up being used. Of this water, 74 percent is used in agriculture while 15 percent and 11 percent are used respectively as drinking water and for industrial purposes. Although 16.7 million hectares of 28 million hectares of agricultural lands can potentially be irrigated, the country has irrigated only 5.1 million hectares. The storage capacity of the dams and lakes in the country is 65 billion cubic meters. This means that Turkey cannot bear the consequences of a precipitation deficiency for more than two years.

Since 2007, agricultural drought action plans have been being drawn up by all provinces of the country. These plans comprise drought alarm, drought preparation, confinement and urgent action phases.

#### **Politicians underestimate drought**

People are curious about the reasons for drought. As explanations, scientists offer the functioning of the atmosphere's internal dynamics, global climate change, urbanization and the destruction of flora. They argue that climate change, which is attributable to increased emission of carbon dioxide and greenhouse gases into the atmosphere, triggers extreme weather conditions. According to the 5th Assessment Report of the United Nations Intergovernmental Panel on Climate Change (IPCC), the



world's average temperature has increased by 1 degree over the last century. This increase is expected to reach 4.5 degrees by 2100. Extreme weather events will skyrocket.

Water resources fall short of fully supplying agricultural, industrial and drinking water due to the uncontrolled growth of certain cities. Metropolitan cities not only contribute to the emission of greenhouse gases, but also exploit water resources disproportionately. For instance, İstanbul consumes the water resources of a vast geography stretching from Turkey's border with Bulgaria to the province of Sakarya. The authorities tend to talk about creating new water resources with investments amounting to billions of dollars only after facing drought lasting for several months. It is estimated that the population of İstanbul may increase up to 30 billion if the city's northern sprawl continues.

Being growth-centered, this approach does not take into account the increased risk of more frequent and severe drought due to global climate change. The Law on Metropolitan Municipalities, which will enter into force in April 2014, will make metropolitan municipalities responsible for providing services for the entire province. One of the most challenging tasks for metropolitan cities will be to supply water. This task is likely to create problems in terms of how to share water resources among provinces. In addition, the government has failed to pass the long-debated bill on water resources or introduce a central authority to manage the country's water resources.

Dr. Halil Murat Özler, deputy rector of İstanbul Gelişim University and dean of its Faculty of Architecture and Engineering, says he does not agree with politicians who try to reassure the public that there is no problem while the water levels of dams are falling. Maintaining that politicians are trying to conceal the real severity of drought from public attention because of the upcoming elections, Özler urges the authorities to immediately implement measures for the economical use of water. He warns that a dry summer awaits İstanbul if the lack of precipitation persists. As a safety measure, Özler suggests that the treated water of İstanbul should not be discharged into the sea but injected into underground aquifers or stored in dams. He warns that if this is not done, we will be talking about projects to desalinate seawater in the future.

Özler further claims that the impending water scarcity should force authorities to revise big projects such as Kanal İstanbul and the construction of the third airport for İstanbul. "If Kanal İstanbul is built



between the lakes of Terkos and Büyükçekmece or Küçükçekmece, this will cause irreparable damage to the city's drinking water potential. As 30 percent of the water in these lakes comes from underground water resources, they will become salinated or dry in a short time. What İstanbul needs is water, not these projects," he says.

Experts assert that the country is likely to face a more serious impact of drought in the future due to climate change. Therefore, they argue, we need to adapt human activities to the future of the climate and the world. Strategically speaking, they note that water should be used less in generating energy and dams should be used mainly for obtaining drinking water and for agricultural irrigation. Moreover, large amounts of fresh water are used for cooling purposes at coal or natural gas power plants.

Dr. Murat Türkeş, a lecturer at the Middle East Technical University (ODTÜ) and a member of the Turkish Foundation for Combating Soil Erosion, for Reforestation and the Protection of Natural Habitats (TEMA), is a leading expert on climate change and drought in Turkey. Türkeş contributes to IPCC reports and is one of the scientists who prepared the IPCC's 5th Assessment Report. Türkeş believes the IPCC reports are not taken into consideration in the planning and implementation of projects in Turkey. Referring to the general perception that taking heed of the impact of climate change will complicate investments, Türkeş says: "If you consider the climate change parameter in your project, your project will be more efficient and last longer. Your water supply system will not be overtaxed and your dams will not dry out or be destroyed, and the disaster risk will be minimized also for human systems."

Noting that it is bad practice to consider disasters when they happen and forget them later, Türkeş advises us to adopt economical living as a lifestyle. "The public authorities must first implement the regulatory arrangements. But laws and regulations are not enough to warrant good conduct. The awareness of the entire society should be raised and everyone should be included in the decision-making processes. In other words, people should be stakeholders in the processes related to the weather, water, energy and environment. Thus, people can be expected to abide by the decisions taken in these processes."



Dr. Türkeş further notes that drought will seriously impair power generation at hydroelectric power stations. This will pose strategic risks in terms of energy security for the country as well as in terms of operational and economic factors. Therefore, it is of great importance to take proper measures against these risks. Türkeş explains that long-term flow measurements were not generally made for many of the rivers on which hydroelectric power stations were built, and therefore there are not reliable calculations for the water potential of these rivers. This poses a great risk for the future, he says. In coming months, power generation at hydroelectric power stations will decrease and natural gas thermal power plants will be used at a greater rate for power generation, which will push power costs up. Therefore, Türkeş strongly advises that climate change be taken into consideration when planning energy investments.

#### Water roadmap should be drawn up

The Water Management in Turkey, Issues and Recommendation Report prepared by experts in 2008 for the Turkish Industrialists and Businessmen's Association (TÜSİAD) indicates that water scarcity problems may emerge if proper planning is not carried out in Marmara, Sakarya, Küçük Menderes, Meriç, Gezi, Akarçay, Yeşilırmak, Kızılırmak and Konya. As potential measures, the report suggests that population growth and migration to urban areas should be restricted, new investments should be made with increased needs in mind, people's awareness should be raised about water consumption, technology should be employed to minimize the need for water and water resources should be diversified (through desalination, storing rainwater and treatment of waste water). The report further notes that agricultural products should be selected based on precipitation patterns, irrigation with sprinkler systems should be promoted and closed models that minimize evaporation should be developed for irrigation. Moreover, the 9th Development Plan prepared by the State Planning Organization (DPT) states that water loss from the water supply network is 30-40 percent and the share of people who use the water supply network by illegal means is 40-60 percent, suggesting that this should be eliminated through infrastructure investments as soon as possible. The plan explains that only half of the 6 billion tons of water fed into the water supply network reaches consumers. In addition to water scarcity, industrial pollution is at high levels in the rivers Ergene, Meric, Susurluk, Nilüfer, Gediz, Küçük Menderes, Büyük Menderes, Sakarya and its branches, Porsuk, Ankara, and Çark.



#### WATER RESEARCH PROGRAMME -Weekly Bulletin-

The Turkey Report by the Water Foundation, which conducts studies specific to Turkey, recommends that Turkey should draw up a Water Roadmap for the period until 2100 and revise it at five- or 10-year intervals. It draws attention to the need to establish a Water Institute and other institutions working in this area. It suggests that the practice of hydrology should be implemented in an integrated manner. Noting that there are not detailed documents about Turkey's water balance, it makes clear that this deficiency should be rectified immediately. It emphasizes that water scarcity should be eliminated using scientific and technological methods and, at the same time, the public should be trained about the need for water economy. The report also stresses the need to ascertain whether the recent drought is attributable to periodicity or climate change, suggesting that, to this end, drought monitoring and research centers should be established.

"Turkey suffers from driest winter in years", 02/02/2014, online at: http://www.todayszaman.com/newsDetail\_getNewsById.action?newsId=338094

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#### > Drought could jeopardize wild animals in Turkish wetlands

A serious threat of drought that Turkey faces due to a lack of precipitation this year has caused concerns over wildlife in Turkey and poses an increased risk for biodiversity.

The fact that the government has failed to take necessary precautions in this issue further intensifies concerns, according to experts speaking with Sunday's Zaman. Nature Association General Director Engin Yılmaz told us that "two million hectares of wetlands have been destroyed in the last 20 years."

In the last 50 years, wetlands three times the size **Lake Van** in eastern Turkey have been lost due to drought. Furthermore, according to the **World Wide Fund for Nature (WWF)**, 74 percent of Turkey's reserves of water are used for agriculture, 15 percent for households and 11 percent for industrial production -- without any provision for the preservation of wildlife.

Drought affects wildlife in two main ways, **Animal Rights Federation** (**HAYTAP**) representative **Ege Sakin** told Sunday's Zaman. Firstly, drought makes it relatively harder for birds migrating to Turkey in winter and other animals to feed both by the edge of water sources and diving into the water. When there is drought, lakes dry and the surface area of water shrinks, which in turn causes a reduction in each animal's access to the water. Secondly, a problem is created by the increased concentration of bacteria and toxins in a smaller quantity of water, reducing its quality and making wild animals more prone to illness.

Commenting on the issue, president of the Mersin Friends of Animals Association Nilgün Derviş told Sunday's Zaman about the Konya plain problem, saying that "due to problematic agriculture and water decisions, water reserves both above and below ground are decreasing, causing a reduction in biodiversity." However, Derviş is still of the opinion that there might be a chance to preserve wildlife with seasonal rainfalls if priorities shift from solely human use for economic gains to a more holistic attitude that cares for wildlife in Turkey.

The studies conducted so far seen to indicate the opposite. Yılmaz claims that his association has made the most extensive research project in Turkey with an expert team representing leading global conservation institutions in order to identify "key biodiversity areas [KBAs]" that are relevant to



the current status of wildlife in the country. The research concludes that there are 305 locations in Turkey that boast a rich and irreplaceable diversity of plants, mammals, reptiles, amphibians, freshwater fish, butterflies and dragonflies. These locations cover 26 percent of Turkeys' surface area.

Four hundred fifty-one species that live in KBAs are threatened by extinction, not least because of drought. Yılmaz states that the situation is urgent, citing information from his research to the effect that "over the past 10 years, five wetlands [Seyfe Lake, Eşmekaya Marshes, Hotamış Marshes, Sultan Marshes and Ereğli marshes] have become completely dry, 22 KBAs are classified as 'very urgent' and 46 KBAs are classified as having an 'urgent' need for conservation action." These problems may result in permanent loss of these sites and therefore result in real danger for wildlife in Turkey.

However, not all wildlife sites have lost their natural integrity; two sites (**Hodulbaba Mountain and Nallihan Hills**) in central **Turkey**have improved over the last 10 years. Nevertheless, it still holds true that human activities, such as large dam constructions and conversion of land for agriculture, are major causes of drought in the long run, with all the problems that this implies.

One example is the death of thousands of flamingos due to drought near **Lake Tuz** in central Turkey in 2008. Yılmaz told Sunday's Zaman that last year, conditions were better and that approximately 20,000 flamingos were born in the region and were then able to fly across the world. "This was the highest number of flamingo births on record," Yılmaz stated, indicating an unexpectedly optimistic state of affairs. But he warns that "Due to the forecasted drought this year, it is likely that the Lake Tuz area could become a flamingo cemetery again."

Drought is not the only immediate concern of those who are advocates of wildlife in Turkey. Indeed, Sakin from **HAYTAP** also draws attention to poaching in the country, mostly affecting swans and hawks that are shot by rifles and left to die. "Compared to poaching, drought is a secondary concern. Some wild animals don't live up to the point after which they would be negatively influenced by drought," she said. Speaking from her experience of active protection of wildlife in Turkey, Sakin claims that she receives daily calls about animals being poached but has never been contacted about animals dying of drought. She cites Lake Gala in Edirne, northwestern Turkey, as an example of drought, but suggested that wild animals in the are not significantly affected by the consequences of drought, thanks to the **Meriç River** located nearby.



What Sakin does not mention is that Turkey will become increasingly vulnerable to the effects of drought because plans for water infrastructure are implemented without careful consideration of the scale of river basins. Indeed, as **Berivan Dural** from the**WWF** in Turkey explained to Sunday's Zaman, water transfer projects on river basins and dams often impede the connection of rivers and therefore pose a risk to ecosystems whose balance is crucial to the survival of wild animals.

This human-caused risk factor combines with the expected frequency and severity of droughts that comes with climate changes which causes an increase in temperature and a decrease in rainfall across the world, including in Turkey. If protection of wetlands isn't enhanced, groundwater usage controlled and effective and regular monitoring mechanisms established, drought is likely to be yet again the scourge of wild animals in Turkey.

"Drought could jeopardize wild animals in Turkish wetlands", 02/02/2014, online at: http://www.todayszaman.com/newsDetail\_getNewsById.action?newsId=338107

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#### \* Northern Cyprus water project ready within year

Turkey says a new water treatment facility to supply water for agriculture to the Turkish Republic of Northern Cyprus (TRNC) will be completed within the year.

"[Agricultural] production will increase and welfare will enhance, which will also reinforce connections between Turkey and the TRNC," Turkey's Deputy Prime Minister Besir Atalay told journalists Saturday.

The project was initiated in 2011 with the building of a dam in Turkey's southern city of Mersin aimed at supplying water via an undersea pipeline to the island.

Veysel Eroglu, Turkey's minister of forest and water affairs, said the 200,000 cubic meter treatment facility and giant water pipeline would cost nearly TRY1.2 billion (\$530 million), TRY950 million (\$420 million) of which has been spent so far.

TRNC President Dervis Eroglu said that the problems of water and energy would now fall from his government's agenda, as they were on the eve of solving such problems.

"Northern Cyprus water project ready within year, 02/02/2014, online at: http://www.worldbulletin.net/world/128075/turkish-cypriot-water-project-ready-within-year

ВАСК ТО ТОР



#### \* The Behesht – Abad Project in Iran and Its Impacts

Iran transfers water to densely populated central provinces of the country from the basins out of the region in order to meet the water need for drinking and irrigation purposes. Shelving the Caspian Sea project aiming to transfer water to central provinces, Iran's President Rouhani's statements show that the projects on the Karun river basin which has been used as a donor basin in inter-basin water transfers for many years will be pursued.

Originating in Iran's Khuzestan province, Karun river is one of the most significant transboundary rivers of the region. The Karun River's watershed covers 58.000 km<sup>2</sup>, and according to the gauging station in Ahvaz, the river has an average annual discharge of 24,7 billion cubic meters. The Dez river with an average annual discharge of 7,4 billion cubic meters joins the Karun river in Ahvaz; while the Karun river joins the Shatt al-Arab in Al-Muhamara with a discharge of some 10 billion cubic meters. Iran has built many dams and water structures on the Karun river. The Karun river and Dez river waters are transferred to the Zayanderud sub-basin which is one of the most densely populated and industrialized regions of Iran through canals and tunnels; and the water is stored in multiple-purpose dam of Zayanderud that was built in 1970.

The Behesht – Abad project which involves the transfer of more than 1 billion cubic meters of water from the tributaries of the Karun River to the central provinces of Iran such as Yazd, Isfahan and Kerman is the fourth project carried out on the Karun river aiming to transfer water. The statements of President Rouhani who paid a visit to the region last week suggest that only the aforesaid project will meet the drinking water need of the provinces. Besides, the President Rouhani also said that the previous projects in the basin will be stopped.

The Karun river water which is a vital source for the region will not flow into the Persian Gulf after the project opposed by the local people and environmentalists is completed. Moreover, it is reportedly said that the projects carried out on the Karun river and its tributaries, not in good quality and full of salt due to the formations they pass through, will further impair the quality of the river waters. Also, this water is of great importance for the existence of the Shadegan Wetland that is located in the Khuzestan province. The Shadegan Wetland is the largest Ramsar-listed wetland of



Iran covering about 400,000 hectares. According to the studies, 110 plant species and 311 animal species have been identified in the wetland. The Ramsar-listed Shagedan wetland, registered in 1975, is internationally recognized due to its high animal biodiversity and registered on UNESCO's natural heritage list.

Another criticism on the project suggests that the project will affect the capacities of hydropower plants, dams, and derivation tunnels (such as Kuhrang tunnels) constructed in the basin. Some of these dams can be listed as follows: Gotvand Dam, Masjed Soleyman Dam, Kuhrang Dam, Bakhtiyari Dam, Kuhrang-1, Kuhrang-2, Karun-3, Karun-4 and Karun-5 dams.

These projects which are carried out on the Karun river, a transboundary basin between Iran and Iraq, have impacts not only in Iran; but also the studies conducted by the Iraqi researchers suggest that the projects on the Karun river will lead to a considerable decrease in quantity of water to join the Shatt al-Arab. This situation in the Karun river, containing low-quality water due to its salty structure, has hydrological impacts in Iraq as well. As is known, a considerable part of the tributaries feeding the Tigris river out of the Karun river originates in Iran. Iran continues to construct great projects especially on the Sirwan and Karun rivers, which cause worries in Iraq. It is worried that this situation will lead to political problems in the future in relations between the two countries due to both ecological and hydrological impacts.

"The Behesht – Abad Project in Iran and Its Impacts", Tuğba Evrim MADEN, ORSAM, 2901/2014, online at: http://www.orsam.org.tr/en/showArticle.aspx?ID=2590

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#### \* Its Great Lake Shriveled, Iran Confronts Crisis of Water Supply

LAKE URMIA, Iran — After driving for 15 minutes over the bottom of what was once Iran's largest lake, a local environmental official stepped out of his truck, pushed his hands deep into his pockets and silently wandered into the great dry plain, as if searching for water he knew he would never find.

Just an hour earlier, on a cold winter day here in western Iran, the official, Hamid Ranaghadr, had recalled how as recently as a decade ago, cruise ships filled with tourists plied the lake's waters in search of flocks of migrating flamingos.

Now, the ships are rusting in the mud and the flamingos fly over the remains of the lake on their way to more hospitable locales. According to figures compiled by the local environmental office, only 5 percent of the water remains.

Iran is facing a water shortage potentially so serious that officials are making contingency plans for rationing in the greater Tehran area, home to 22 million, and other major cities around the country. President Hassan Rouhani has identified water as a national security issue, and in public speeches in areas struck hardest by the shortage he is promising to "bring the water back."

Experts cite climate change, wasteful irrigation practices and the depletion of groundwater supplies as leading factors in the growing water shortage. In the case of Lake Urmia, they add the completion of a series of dams that choked off a major supply of fresh water flowing from the mountains that tower on either side of the lake.

"Only some years ago the water here was 30 feet deep," Mr. Ranaghadr said, kicking up dust with each step on the dry lake bed. In the distance, spots of land — once islands where tourists would spend vacations in bungalows overlooking the blue waters — were surrounded by plains of brown mud and sand. "We just emptied it out," he said with a sigh, stepping back into the car.

Iran's water troubles extend far beyond Lake Urmia, which as a salt lake was never fit for drinking or agricultural use. Other lakes and major rivers have also been drying up, leading to disputes over water rights, demonstrations and even riots.

Major rivers near Isfahan, in central Iran, and Ahvaz, near the Persian Gulf, have gone dry, as has Hamoun Lake, in the Afghanistan border region. Dust from the dry riverbeds has added to already



dangerously high air pollution levels in Iran, home to four of the 10 most polluted cities in the world, the United Nations says.

But nowhere is the crisis more pronounced than at Lake Urmia, once one of the largest salt lakes in the world — at 90 miles long and roughly 35 miles wide, it was slightly larger than Great Salt Lake in Utah. Environmentalists are warning that the dried salt could poison valuable agricultural lands surrounding the lake, and make life miserable for the three million people who live in its vicinity.

Along what used to be a lakeshore boulevard, worn-down snack bars and dressing rooms are testament to the days when people from across Iran would come to water-ski on the lake or cover themselves in its black mud, which is said to have healing powers.

About two decades ago, a local villager, Mokhtar Cheraghi, began to notice the water line receding. "First a hundred meters, then two hundred meters. After a while, we couldn't see the shoreline anymore," he said, standing in what was once his thriving cafe, Cheraghi's Beach. "We kept waiting for the water to return, but it never did."

Most people in the area blame the half-dozen major dams the government has built in the region for the lake's disappearance. The dams have greatly reduced the flow of water in the 11 rivers that feed into the lake. As an arid country with numerous lofty mountain chains, Iran has a predilection for dams that extends to the reign of Shah Mohammed Reza Pahlavi.

Dam construction was given renewed emphasis under Mr. Rouhani's predecessor as president, Mahmoud Ahmadinejad, who as an engineer had a weakness for grand projects. Another driving force is the Islamic Revolutionary Guards Corps, which through its engineering arm, Khatam al-Anbia Construction, builds many of the dams in Iran and surrounding countries.

Half an hour's drive into the mountains above the city of Urmia stands the mighty Chahchai Dam, collecting water that would otherwise have reached the lake. The dam, finished during Mr. Ahmadinejad's first term, now holds a huge lake itself, which local farmers use for irrigating their lands."Some of Urmia's water is here," said Mr. Ranaghadr, raising his voice over the howling winds that blow down from the surrounding snowcapped peaks. "The people here need water, too, is what they say."



Besides producing badly needed electricity, the dams are intended to address the water shortage. But too often, the water is wasted through inefficient irrigation techniques, particularly spraying, Mr. Ranaghadr and other experts say.

In recent decades, the amount of land dedicated to agriculture in the region, the country's heartland, has tripled, with many farmers growing particularly thirsty crops like grapes and sugar beets, Mr. Ranaghadr pointed out. His department has calculated that about 90 percent of all the water that should end up in the lake is sprayed on fields.

In a 2005 book that he wrote on national security challenges for Iran, Mr. Rouhani estimated that 92 percent of Iran's water is used for agriculture, compared with 80 percent in the United States (90 percent in some Western states).

"They turn open the tap, flood the land, without understanding that in our climate most of the water evaporates that way," said Ali Reza Seyed Ghoreishi, a member of the local water management council. "We need to educate the farmers."

The lake has also been attacked from underground. As part of the government's drive to promote local agriculture, large landholdings were divided into smaller plots, and most of the new owners promptly dug new wells, soaking up much of the groundwater.

"There are around 30,000 legally dug wells and an equal amount of illegal wells," Mr. Seyed Ghoreishi said. "As the water is becoming less, they have to dig deeper and deeper."

Climate change, particularly rising temperatures, has played a role. Average temperatures around Lake Urmia have risen by a little over 3 degrees Fahrenheit in the past decade, official statistics show.

A long drought in the region seems to have ended two years ago, with rainfall levels returning to normal. But the increased rainfall has not made up for the other factors that are draining the lake.

"We are all to blame," Mr. Ranaghadr said. "There are just too many people nowadays, and everybody needs to use the water and the electricity the dams generate."



Back in his office, the Department of Environment, officials sounded like soldiers on a doomed mission. They had drawn up no fewer than 19 plans to save the lake, ranging from the sensible (educating farmers in new irrigation technologies) to the fanciful (seeding clouds to increase rainfall).

"We can start now," said Abbas Hassanpour, the head of the office. Flanked by his assistants, including Mr. Ranaghadr, he said his department had created "task forces and models ready to implement."

While Iran is shooting monkeys into space to advance its missile program, the Rouhani government, low on funds because of the impact of the international sanctions against Iran's nuclear program, has not made any money available for efforts to restore the lake.

Even if it did, officials say, it is probably too late to save Lake Urmia. All the money in the world can be poured into the lake, one said, but in the most optimistic projections, it would take decades for the water to reach its old levels, assuming it even could. There are simply too many problems, too many competing interests, for the rescue to be feasible.

Not doing anything, or not enough, will still create many problems. In 2010 and 2011, violent protests over the lake erupted in Urmia, and security forces had to be flown in to restore order.

"We are not allowed to speak of the lake," said Morteza Mirzaei, who lives in Urmia. "But they built their dams, and now everything is gone." Others said ordinary people are also to blame, but "the government is the steward of the country," said Mushin Rad, who sells printer equipment. "They are responsible."

Mr. Ranaghadr, who grew up around the lake, said he spends free time battling poachers in the hills around it. "You know what the real problem is?" he said. "Everybody across the world is only thinking of money. We did, too, and now our lake is gone."

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<sup>&</sup>quot;Its Great Lake Shriveled, Iran Confronts Crisis of Water Supply", 30/01/2014, online at: <u>http://www.nytimes.com/2014/01/31/world/middleeast/its-great-lake-shriveled-iran-confronts-crisis-of-water-supply.html? r=2</u>



### The Water Levels Of The Middle East's Biggest Lake Have Dropped 95 Percent In Two Decades

According to the local environmental office in Iran, only five percent of the water remains in the biggest lake in the Middle East.

Lake Urmia sits in the far northwest corner of Iran, and was once the sixth largest saltwater lake in the world — slightly bigger than Utah's Great Salt Lake. It's relatively shallow, so the water drop has exposed huge tracts of land. Hamid Ranaghadr, an Iranian environmental official, <u>told the New York</u> <u>Times</u> that areas of the lake that were once under 30 feet of water are now dry and dusty lake beds. "We just emptied it out," he said.

Being saltwater, Lake Urmia was never fit for drinking water or agriculture. But its collapse is indicative of the way climate change and poor water management <u>have driven Iran into</u> a potentially catastrophic water shortage.

Dam construction recently increased throughout the country, to provide both badly needed electricity and water supplies for irrigation. But that's also diverted massive amounts of the freshwater that formerly flowed into Lake Urmia. Other major rivers throughout the country have gone dry, and the dust from the riverbeds and the salt from Lake Urmia's dried basin are now a form of pollution unto themselves. (Four of the world's ten most polluted cities<u>can be found</u> in Iran.) Major cities around the country — including the capital of Tehran, home to 22 million — are making contingency plans for rationing. Iranian President Hassan Rouhani recently named water as a national security issue, and demonstrations and riots over water supplies have already erupted.

The collapse began in the mid-1990s. One local villager <u>told the Times</u> that he noticed the shoreline receding two decades ago, and now it's no longer visible from his community. According to <u>a 2012</u> <u>study</u> by the United Nations, 65 percent of the decline can be chalked up to climate change and the diversion of surface water cutting inflow to the lake. Another 25 percent was due to dams, and 10 percent was due to decreased rainfall over the lake itself.

A long drought in Iran ended two years ago, but the recent boost to rainfall has not been able to offset the other effects on the lake. Average temperatures around Lake Urmia <u>rose three degrees</u> in just the past ten years. In Pakistan, which sits along Iran's southeast border, <u>climate change</u> has reduced snowmelt and river flow. That's led to domestic political strife, and to a strained relationship with India over dams along the Indus River — Pakistan's main source of freshwater. <u>Research</u> from the



the Potsdam Institute for Climate Impact Research in Germany found water resources in northwest Iran could drop 50 percent should global warming increase by just 2°C.

The world is <u>currently on track</u> to blow past 2°C by the end of the century.

After the water Iran is diverted away from its natural flows, a lot of it is used recklessly. Ranaghadr and other experts point to inefficient irrigation techniques such as spraying, which allows most of the water to evaporate uselessly from the fields. His department<u>calculated</u> that around 90 percent of the water that should flow into Lake Urmia is sprayed instead, and President Rouhani <u>has estimated</u> that Iran's uses 92 percent of its water for agriculture. The United States uses 80 percent.

"They turn open the tap, flood the land, without understanding that in our climate most of the water evaporates that way," Ali Reza Seyed Ghoreishi, a member of the local water management council, <u>told the Times</u>. "We need to educate the farmers."

The Iranian government also attempted to promote agriculture by breaking large landholdings into smaller properties. Most of the new owners promptly dug new wells to supply their crops, draining the groundwater. "There are around 30,000 legally dug wells and an equal amount of illegal wells," <u>said</u> Seyed Ghoreishi. "As the water is becoming less, they have to dig deeper and deeper."

Efficient water management generally requires either a working market where prices keep supply and demand tethered, or well-developed public institutions to manage the supply. Unfortunately, the developing world <u>often has neither</u>. In April of 2013, a coalition of groups under the United Nations tried to quantify, in dollar terms, water use around the globe. They determined that West Asia, where Iran can be found, <u>was the third-most</u> costly regional user of water in the world, right behind East Asia and North Africa.

Thanks to budget choices and international sanctions, Iran has not made any money available to restoration efforts for Lake Urmia. Iranian officials <u>told</u> the Times that the lake is, at this point, probably unsalvageable.

"The Water Levels Of The Middle East's Biggest Lake Have Dropped 95 Percent In Two Decades", 31/01/2014, online at: <u>http://thinkprogress.org/climate/2014/01/31/3234381/iran-lake-unsalvageable/</u>

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#### \* Iran's severe water shortage may lead to rationing

Iran is facing a water shortage so severe residents of the capital Tehran and other major cities may face rationing in the coming year.

Nowhere is the shortage more apparent than in western Lake Urmia—once Iran's largest lake—which has devolved into a dry plain, the New York Times reported.

Lake Urmia was once one of the largest salt lakes in the world, measuring 90 miles long and about 35 miles wide, making it slightly larger than Great Salt Lake in Utah.

Environmental official Hamid Ranaghadr remembers how just a decade ago, cruise ships filled with tourists jammed the lake's waters in search of flocks of migrating flamingos.

Today, the ships are rusting in caked mud and the flamingos fly over the remains of the lake on their way to more promising spots. The local environmental office says only 5 percent of the Lake Urmia water remains.

Iranian President Hassan Rouhani has called the dwindling water supply a national security issue, and has promised to bring it back.

Experts name wasteful irrigation practices, climate change, and the depletion of groundwater supplies as major factors in the growing water shortage. In Lake Urmia, the completion of a series of dams choked off a large supply of fresh water from the mountains towering on either side of the lake.

"Only some years ago the water here was 30 feet deep," Ranaghadr told the Times.

In the area surrounding Lake Urmia, islands where tourists once spent vacations overlooking the blue waters are now surrounded by plains of sand and brown mud. "We just emptied it out," Ranaghadr said.



Environmentalists warn that the dried salt could poison valuable agricultural lands surrounding the lake, adversely affecting the three million people who live in the area.

Other lakes and major rivers have also been drying up in Iran, causing disputes over water rights, demonstrations and even riots.

Major rivers near Isfahan, in central Iran, and Ahvaz, near the Persian Gulf, have lost water, as has Hamoun Lake, near the Afghanistan border. Dust from the dry riverbeds has not helped the already dangerously high air pollution problem in Iran.

Most people in the area blame the half-dozen major dams the government has built in the region for the lake's disappearance. The dams have greatly reduced the flow of water in the 11 rivers that feed into the lake. As an arid country with many lofty mountain chains, Iran has a predilection for dams that goes back to the reign of Shah Mohammed Reza Pahlavi.

Dam construction was given renewed emphasis under former Iranian president Mahmoud Ahmadinejad. Another driving force is the Islamic Revolutionary Guards Corps, which builds many of the dams in Iran and surrounding countries.

The dams produce vital electricity, and are intended to address the water shortage. But experts say too often, inefficient irrigation techniques waste water.

In recent years the amount of land dedicated to agriculture in the region has tripled, and many farmers have chosen to grow crops like grapes and sugar beets, which require high amounts of water, Ranaghadr said. His environmental office has calculated that about 90 percent of all the water that should end up in the lake is instead used on fields.

"They turn open the tap, flood the land, without understanding that in our climate most of the water evaporates that way," said Ali Reza Seyed Ghoreishi, a member of the local water management council. "We need to educate the farmers."



Many of the new land owners dug new wells, soaking up much of the groundwater. "There are around 30,000 legally dug wells and an equal amount of illegal wells," Ghoreishi said. "As the water is becoming less, they have to dig deeper and deeper."

Rising temperatures in the area have also played a role in the shortage. A long drought ended two years ago, but even the increased rainfall has not helped enough.

"We are all to blame," Ranaghadr said. "There are just too many people nowadays, and everybody needs to use the water and the electricity the dams generate."

The Rouhani government-- low on funds because of the impact of international sanctions against Iran's nuclear program-- has not made any funds available for efforts to restore Lake Urmia.

But officials say, it's probably too late to save Lake Urmia. It would likely take decades for the water to reach its old levels.

In 2010 and 2011, violent protests over the fate of the lake broke out in Urmia, and security forces had to be flown in to restore order.

"We are not allowed to speak of the lake," said Morteza Mirzaei, an Urmia resident. "But they built their dams, and now everything is gone."

"Iran's severe water shortage may lead to rationing", 31/01/2014, online at: <u>http://www.foxnews.com/world/2014/01/31/severe-iran-water-shortage-may-lead-to-rationing/?intcmp=latestnews</u>

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#### Saving the imperiled Hamouns of eastern Iran

"Angels will kiss the hands of those who help us," the man said.

The face behind the handshake was grizzled and weathered. The tanned, leathery skin bespoke years of harshness. The fisherman's eyes welled with suppressed tears. He yearned for a time when his life was one of plenty. Lakes brimmed with water, he told me. And fish. His children were happy, and life was good.

I was so moved by his story that I impolitely forgot to ask his name. He wanted me to listen and then tell the world about the desperate conditions in Iran's harshest, poorest region: the Hamoun wetlands of the Sistan region, in Sistan and Baluchestan province.

"Wetlands" is really not the right word, for now these lands are parched. There is little gainful employment to be had, and more than half the residents get by on welfare delivered through the Imam Khomeini Relief Foundation (IKRF), a parastatal organization.

They are — or were — mainly fisherfolk. Almost all are now unemployed. They live amid the decayed ruins of ghost-like villages built on the shores of once-thriving lakes. Winds howl around the creaking jetties, the empty fish markets and broken boats, which are strewn everywhere.

The Hamouns comprise three large wetland areas covering 5,660 square kilometers (2,185 square miles). Two-thirds of these wetlands are located in Iran, linked to and fed by water from Afghanistan's Helmand river.

Twenty years ago, most of this area was green. Flora and fauna were abundant. The lake teemed with fish. The total annual catch used to exceed 12,000 tons. Fishermen would regularly haul in fish weighing 20 kilograms (44 pounds). The wetlands also supported agriculture and herds of water buffalo, providing a livelihood for thousands of families.

The development of dams and canals in <u>Afghanistan started drawing off water</u> to feed agriculture in the equally poor Afghan provinces of Kandahar, Helmand and Nimroz, and water levels in the lakes plummeted. Then came the building of four reservoirs within Iran itself, diverting more water.

I visited three villages — Takht-e-Dolat, Adimi and Kuh-e-Khajeh — and spoke with many residents. They were upset with the lack of water and wanted the government and the United Nations



to help. The Sistanis feel nothing is being done to save them other than the cash handouts. They want to work.

"We are struggling for our very lives," said one elderly lady, clutching at her two grandchildren. "See, this one is already dead," she added, pointing to a sad-looking sandy-haired girl of five. "We don't want ours to be the last generation to live here."

There are approximately 400,000 people living in the Sistan area. A large number of them already live below the poverty line. The cash handouts they receive from the government or the IKRF rarely exceed \$20 per month.

"We are fishermen; we have no land to farm," said another woman. "If there is no fishing, we have no life."

This <u>environmental catastrophe</u> has forced thousands to leave the region. The government indicates that in 2012 alone, as many as 5,000 families left the area. In total, 600,000 people have moved out. Most have trekked 2,000 kilometers (1,243 miles) northward to the Golestan province to start new lives, and others are scattered across Iran. The ones who remain simply get poorer and poorer, year after year.

What is striking is the pace of this man-made catastrophe. In just 20 years, livelihoods have been devastated. Easterly winds that once blew over the lake, acting as a natural air conditioner, now only stir up dust storms, bringing days of choking haze. Increasingly, they blow these storms back into Afghanistan — and even beyond, to Pakistan.

Most Iranians seem to know little about the plight of the people living in the Sistan Hamouns. By comparison, Iran's most emblematic environmental catastrophe — the slow death of <u>Lake</u> <u>Uromiyeh</u> — gets massive media coverage and much political attention. But when I travelled there recently, I did not encounter the level of desperation and hopelessness I found in the Hamouns.

The solution to this situation will probably only be found if two key things happen.

First, Afghanistan and Iran must jointly agree on a course of action to more equitably share the water that each has apportioned and survived on for centuries. Two hundred years ago, there were no borders. What mattered then were communities and families with a common culture and a common narrative. Finding solutions was easier.



Second, Iranians themselves need to better apportion what little water does come through to Iran. Most of it is diverted into the Chah Nimeh reservoir system for drinking water and agriculture. Much of this water can still be allowed to flow naturally into the Hamouns, replenishing them and re-energizing their communities.

Iranians and the international community must respond to this tragedy, and they must do so now. Champions need to arise to work with the Hamoun dwellers and help revive their way of life.

Let the angels then decide whether — and where — to bestow their grace.

"Saving the imperiled Hamouns of eastern Iran", 31/01/2014, online at: <u>http://www.al-monitor.com/pulse/originals/2014/01/hamouns-east-iran.html</u>

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#### \* Iraq Acts to Improve Drinking Water Quality

The Iraqi government on Friday (January 31st) signed contracts with local and foreign companies to carry out projects to improve the quality of drinking water in nine Iraqi provinces.

"The projects include building 70 water pumping stations on the Tigris, Euphrates and Shatt al-Arab in Basra, together with purifiers to clean water of salt and impurities," said Iraqi government economic advisor Salam al-Quraishi.

The projects also include constructing new water networks, replacing others and raising the production capacity of eight existing plants, he said.

The projects are being supervised by the various municipalities and planning ministries and are slated to be completed within 18 months, he said.

"Iraq Acts to Improve Drinking Water Quality", 01/02/2014, online at: http://www.aina.org/news/20140201164505.htm

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#### Veolia to build and operate a water desalination plant in Iraq

The Iraqi Ministry for Municipalities and Public Works has chosen Veolia to build and operate for five years a desalination plant in Basra, Iraq. For Veolia, this contract represents cumulated sales of \$115 million.

Limited water resources and conflict over its use have made water a crucial resource for Iraq's development, especially in the country's south. Water in this part of Iraq is mainly sourced from the Euphrates, which has a high salt content, and water from the Persian Gulf.

Under this new contract, won in partnership with Japanese conglomerate Hitachi and Egyptian engineering firm ArabCo, Veolia will build and operate a desalination plant with an ultrafiltration unit and reverse osmosis membranes. It will produce 200,000 cubic meters of drinking water a day. The technology used will reduce the salt content in the drinking water produced for Basra's population of 2.3 million people. Additionally, in a country with a chronic shortage of electricity, this desalination plant will be completely autonomous as it will have its own electricity generators to guarantee continuous service.

**Construction work on the plant is due to commence in the first quarter of 2014 and should be completed within 30 months.** This contract will also create 300 jobs for the construction of the desalination units, provided by ArabCo, and 50 jobs for the facility's operation for five years. *"This new contract that we have won in Iraq is further proof of Veolia's ability to deliver concrete and reliable solutions to the scarcity of water resources and the challenges facing large cities, especially in countries where water is crucial to economic development," said Antoine Frérot, Chairman and CEO of Veolia Environnement. "I am delighted that Veolia has been chosen by the Iraqi authorities to support the modernization of Basra, and that the company is able to provide a solution to the challenges confronted by this city, a leading center for the oil and gas industry."* 

As part of its reconstruction, Iraq has launched several national plans aimed at modernizing basic services, such as water, wastewater, waste treatment and energy, in order to support its economic growth. With the country's sole access to the sea, Basra is the subject of special attention from the Iraqi government, which is modernizing this port city to speed up its economic growth.

"This plant is part of a comprehensive plan to rehabilitate and extend the city's water treatment plants. The innovative technology and solutions we are providing Basra will enable it to improve its



### *citizens' access to quality drinking water while protecting its resources,"* explains Jean-Michel Herrewyn, Director, Global Enterprises, Veolia Environnement.

"Veolia to build and operate a water desalination plant in Iraq", 31/01/2014, online at: <u>http://www.wantoday.com/wia\_blog/2014/01/31/veolia-to-build-and-operate-a-water-desalination-plant-in-iraq/</u>

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#### ✤ Gaza faces deepening water crisis: NGO

An environmentalist organization says Palestinians in the Gaza Strip are facing a deepening water crisis as Israel maintains its crippling siege on the impoverished coastal enclave.

Some 1.7 million Gazans are facing water shortages, and the salinity of nearly 90 percent of drinking water in Gaza is above standard levels, the Friends of the Earth Middle East organization experts stated during a conference held in the occupied Palestinian territories on Wednesday.

The experts also warned of an increasing risk of waterborne diseases as the Gaza Strip is also facing a sewage crisis.

"In Gaza, the first desalination plant built by the World Bank was completed in October of last year," said Friends of the Earth Middle East Director Gidon Bromberg. "But the tragedy is that it has no electricity to run it."

Gaza municipality has also declared a state of emergency, and experts have warned of an environmental crisis in the besieged enclave.

Fuel and electricity shortages in the Israeli-blockaded Palestinian territory have worsened in recent months due to Egypt's closure of Gaza tunnels. These tunnels are the only lifeline for Palestinians living under the Israeli siege.

Gaza has been blockaded since June 2007, a situation that has caused a decline in the standard of living, unprecedented levels of unemployment, and unrelenting poverty.

Israel denies about 1.7 million people in Gaza their basic rights, such as freedom of movement, jobs that pay proper wages, and adequate healthcare and education.

"Gaza faces deepening water crisis: NGO", 03/02/2014, online at: <u>http://www.presstv.ir/detail/2014/01/30/348430/gaza-faces-deepening-water-crisis/</u>

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#### Gaza warned of looming water crisis

Friends of the Earth campaign highlights problem which it says is being exacerbated by hold-ups in Middle East peace process

Residents of Tel Aviv will wake up in February to discover a huge hourglass full of polluted <u>water</u> standing in the city's central Rabin Square. The installation is the centrepiece of a campaign launched by the <u>Friends of the Earth</u> Middle East under the headline: Water Can't Wait, designed to draw Israelis' attention to an approaching water crisis – particularly in the Gaza Strip. Gidon Bromberg, director of FoE in Tel Aviv, said the environment was being held hostage by the logjam in the Middle East peace process and internal Palestinian disputes between Hamas and Fatah. As the politicians dawdle, fresh drinking water is running out for the 1.7 million Palestinians in Gaza.

Last November, the World Bank completed construction of a wastewater treatment plant designed to prevent pollution of the underground aquifer that provides fresh water to 400,000 people in the northern Gaza Strip, but it stands idle, silenced by political wrangling. Gaza is dependent on Israel for most of its electricity supply but Israel is refusing to provide the extra three megawatts required to power the plant until Gaza's existing electricity bills are paid. Hamas and the Palestinian Authority cannot agree on who should settle the debt.

"Until a solution is found to provide electricity, untreated sewage will continue to contaminate the coastal aquifer and flow into the Mediterranean," said Bromberg. He said the waste also threatens to pollute an Israeli desalination plant in nearby Ashkelon.

Unicef says that more than 90% of the water extracted from Gaza's sole aquifer is unfit for human consumption. More than four out of five Gazans buy their drinking water from expensive, unregulated private vendors. Most of it is contaminated.

"Some families are paying as much as a third of their household income on water," said June Kunugi, Unicef special representative for the State of Palestine.

Unicef has helped provide 18 small neighbourhood desalination plants, providing free drinking water to 95,000 people.



"Residents receive access to drinking water once a week, which allows them to fill up their storage tanks at home with water that lasts until the next refill," said Sabri Al-Faleet, of al-Nuseirat municipality.

"Pollution crosses borders," declare the captions on the adverts accompanying the FoE campaign. "Time is running out. A solution to the water and environmental problems in the region is urgently required."

"Gaza warned of looming water crisis", 30/01/2014, online at: http://www.theguardian.com/environment/2014/jan/30/gaza-looming-water-crisis-friends-earth

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#### \* Livni: Environment can serve as 'common denominator' between Israel, PA

Justice minister says resolving environmental issues is being hampered by the political conflict with the Palestinians.

While water and environmental issues should serve as "a common denominator" among nations, resolving such issues in the Israeli-Palestinian neighborhood is being hampered by the larger political conflict, Justice Minister Tzipi Livni said on Monday.

"It should be a common interest to work together, to share water, to work together toward improving the environment," said Livni, who serves as Israel's chief negotiator with the Palestinians. "Yet the fact that we have this conflict going on for so many years prevents solving these issues."

Livni was addressing participants in a Tel Aviv conference titled "Cross Border Environmental Issues and Water Resources in the Context of the Peace Process," organized by Friends of the Earth Middle East (FoEME) and the Institute for National Security Studies (INSS).

Because environmental challenges such as water and sewage issues threaten the region's quality of life across borders, forging forward with cooperative solutions must no longer be held at the mercy of the greater political conflict, experts from all over the world agreed at Monday's conference.

"Environmentalists start with the commons," said Thomas Friedman, the foreign affairs op-ed columnist and three-time Pulitzer Prize winner for The New York Times. "If you don't collaborate to protect the commons, nothing will save you."

Going "green" and collaborating on environmental issues is advantageous on geostrategic and geopolitical levels, Friedman explained, adding that Mother Nature "doesn't care what religion you are."

"Mother Nature, she's just chemistry, biology and physics," he said. "Mother Nature always bats last and she always bats 1,000."



For Gidon Bromberg, FoEME's Israel director, a transboundary "environmental disaster" has ensued in the West Bank – and therefore also in Israel proper – from Palestinian villages and Israeli settlements failing to treat sewage properly. He advocated the idea that water must be shared more fairly between Israelis and Palestinians, referring to the dependence of many Palestinian communities on rain water and expensive water tankers rather than a reliably running tap.

"We also see too many examples of the environment being held hostage by the conflict," he said.

Dr. Muhammad Hmaidi, former director-general of the Palestinian Environment Ministry, agreed that the "environment is still a hostage of politics."

Although stressing that the Palestinians "should have complete control over land and resources in the West Bank," Hmaidi said that the parties must work to improve quality of life in the region even before the negotiations are through.

"We all believe that the scarcity of natural resources, the need to protect the environment, Mother Nature, cannot wait any longer," he added.

"Let us put hands together and protect the environment before it is too late."

Cooperation among the governments on water issues has, to a certain extent, already started occurring, former Israeli water commissioner Prof. Uri Shani pointed out.

Shani led the negotiations behind a December 9 trilateral memorandum of understanding on water sharing, signed by Israeli, Palestinian and Jordanian government officials.

According to the agreement, Jordan will sell Israel water from an Aqaba desalination plant in the South, in exchange for Israel selling an increased amount of Lake Kinneret water to its neighbor in the North. As an added part of the understanding, Israel will enable the sale of additional water to the Palestinian Authority.



"I believe that we should use the water to extinguish the fire," Shani said. "Lack of water is so important that no government can use water as a prisoner of war to solve the conflict. It's impossible."

The agreement is already moving forward, and Shani stressed the importance of employing desalinated water in order to solve acute water problems.

"We have proved that we can work together," Shani said. "It's not a dream. We do it."

Although Israelis, Palestinians and Jordanians were able to come together for this trilateral memorandum of understanding, progress on many burning environmental issues among the neighbors has been stalled due to stagnation in the larger peace process.

Now, Livni explained, the sides are waiting to receive the American framework for negotiations from Secretary of State John Kerry. While the sides are waiting, however, environmental problems like water – which is a core issue on the negotiations table – are constantly increasing, she stressed.

"Basically we cannot wait," Livni said. "But we are waiting to solve all the core issues on the table, while we are affecting our possibility to solve these core issues."

Oftentimes, even though experts on shared issues like water know they need to meet and move forward collaboratively, misunderstandings and lack of trust can hamper such meetings, Livni explained.

"The idea now while negotiating is to give an answer to the core issues, including water and others," she said, expressing hope that the respective leaders will receive the framework positively.

"The fact that we are talking about a common goal and common interest, this is something that relates not only to water and environment," Livni added. "This is something that relates to the concept of two states and two peoples."



Emphasizing that discussing peace options is not simply an act to perform "to appease John Kerry," Livni said she feels proceeding with the negotiations embraces "the new vision of Zionism."

"It is clear to me that the Jewish people didn't dream for 2,000 years about an isolated state or a state that controls other people," she said. "The only way to keep these values of a Jewish democracy in harmony is to reach an agreement with the Palestinians."

With regards to the future framework for negotiations, FoEME leaders at the conference launched a new campaign, calling upon Israeli Prime Minister Binyamin Netanyahu, Palestinian President Mahmoud Abbas and Kerry to forge ahead, as water and environmental issues can no longer wait.

The campaign is based on 10 pillars, including among them the idea that "a thirsty neighbor is not a good neighbor" and "nature knows no borders," as well as the idea that transboundary streams cannot be rehabilitated without waste water treatment solutions in the West Bank. Shared groundwater resources not only require a shared solution, but such sharing also has the potential to serve as a catalyst for trust-building in the region, the pillars say.

"I think it must be the call of the environment community that the peace process issues move forward," Bromberg said.

"Because if we as an environment community don't understand that the clock is ticking, who will understand?"

"Livni: Environment can serve as 'common denominator' between Israel, PA", 27/01/2014, online at: http://www.jpost.com/Enviro-Tech/Livni-Environment-can-serve-as-common-denominator-between-Israel-PA-339534

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#### Gaza Strip faces water shortage

Israeli, Palestinian experts say Gaza Strip residents facing growing water shortage. 'Environment is still a hostage of politics,' expert says

The Media Line 01.29.14

The 1.7 million residents of the Gaza Strip are facing a growing water shortage, according to Israeli and Palestinian experts who presented their findings at a conference of Friends of the Earth Middle East. They reported that every day, sewage from Gaza flows into the Mediterranean Sea, and the aquifer beneath Gaza becomes more saline.

"It's a nightmare," Gidon Bromberg, the Israel Director of Friends of the Earth Middle East told The Media Line. "The Gaza aquifer is near collapse and if they continue pumping, it will be irreversibly destroyed."

Related stories:

Israel transfers water pumps to Gaza due to flooding Isolated Hamas faces Gaza money crisis Report: Civil Administration allows illegal water drilling in WB

Bromberg said that some 90 percent of the drinking water in Gaza has higher levels of salinity than is recommended by the World Health Organization, as well as an increasing level of water-borne disease. If pumping continues at this rate, he said, within two years there will be no usable water in Gaza.

The situation in Gaza is part of the reason Friends of the Earth is kicking off a new campaign called "Water Can't Wait" with newspaper ads and billboards calling on Israelis and Palestinians to focus on environmental issues even before political issues. The organization is investing half a million dollars in large ads and billboards around Israel.

"Prime Minister Netanyahu, Chairman Abu Mazen (Palestinian Authority President Mahmoud Abbas ), and Secretary (of State John) Kerry: pollution crosses border. Time is running out. We must have a



solution to water and environmental problems," the ads read, featuring a water glass in the shape of an hourglass.

The campaign was launched at a conference in Tel Aviv with Israeli and Palestinian experts, as well as Israel's Justice Minister Tzipi Livni .

"It should be a common interest to work together, to share water, to work together toward improving the environment," Livni, who serves as Israel's chief negotiator with the Palestinians, told the crowd of several hundred. "Yet, the fact that we have this conflict going on for so many years prevents solving these issues."

Both sides are waiting for US Secretary of State Kerry's "framework agreement" which is meant to offer a plan for solving all outstanding issues including the water issue. But even if Israelis and Palestinians adopt the Kerry plan, which seems doubtful based on comments from officials on both sides, it will take a long time to implement.

At the conference, Dr. Muhammad Hmaidi, former director-general of the Palestinian Environment Ministry, lamented that the "environment is still a hostage of politics."

"We all believe that the scarcity of natural resources, the need to protect the environment, Mother Nature, cannot wait any longer," he added. "Let us put hands together and protect the environment before it is too late."

In Israel, some 70 percent of sewage is treated and re-used in agriculture. Israel has also built several large desalination plants and has averted a potential water crisis. Palestinians, however, in both the West Bank and Gaza, face a growing water crisis.

"In Gaza, the first desalination plant built by the World Bank was completed in October of last year," Bromberg said. "But the tragedy is that it has no electricity to run it. So tens of millions of cubic meters of sewage are seeping into the Mediterranean each year. This is a perfect example of why water and the environment can't wait."



Water issues between Israel and the Palestinians were supposed to be worked out in a joint water committee, staffed by experts. But that committee has not met in two years, and there is growing need for water in Gaza and parts of the West Bank.

However, the water news is not all bad. During the years of negotiations with the Palestinians in the 1990s Israel built a pipeline to supply water to Gaza but did not connect it. After Hamas took over Gaza in 2007, the Fatah-controlled Palestinian Authority did not want to pay for Gaza's water, due to Fatah's rivalry with Hamas.

Since the start of Kerry's shuttle diplomacy last July, Israel and the Palestinians have reached an agreement to connect the pipeline and provide the Gaza Strip with 10 million cubic meters of water annually. However, that is only a fraction of the 50-60 million cubic meters that Gaza uses each year.

Article by Adam Nicky

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http://www.ynetnews.com/articles/0,7340,L-4482619,00.html

HAARETZ

In Gaza, water – and time – are running out

Experts say Gaza water shortage likely to bring about illness. By Zafrir Rinat | Jan. 28, 2014

The Gaza Strip is facing a severe shortage of potable water and immediate action is necessary, Israeli and Palestinian experts said Monday.

Without the provision of water to meet basic needs in the near future, Gaza could see a spike in diseases due to the reduction in the quality of water available, the environmental and water experts warned at a conference hosted by Tel Aviv's Eretz Israel Museum.



A collaboration by Friends of the Earth Middle East and the Institute for National Security Studies, the conference focused on including environmental and water issues in the talks between Israel and the Palestinian Authority.

Among the participants was Prof. Uri Shani, former head of the Water Authority and current Israeli representative in the talks with the Palestinians and Jordanians on water. Shani said Gaza already has a high rate of water pollution-related childhood illnesses, which threaten to cross over to Israel as well. Shani said the international project to establish a desalination plant for Gaza would take years to complete and warned that an additional supply of water is needed now.

Another participant in the conference was Dr. Mohammed al-Hamidi, former director of the Environment Ministry in the Palestinian Authority and now a private environmental consultant. He said there are types of desalination plants that could be set up more quickly if Israel were more flexible and did not hold up permits for their construction. He agreed with Shani that regardless of the progress on the peace process, there was an urgent need to alleviate the water shortage in Gaza.

"Hamas is not working to solve the water problem. Israel has ignored it too, and so far has not kept its promises to increase the water supply," said Gidon Bromberg, the Israeli director of Friends of the Earth Middle East, after the conference. "In addition, there are problems with the electricity supply in the Gaza Strip, which makes it difficult to construct desalination or sewage treatment facilities. We are facing a disaster, since in a little while there will be no water in Gaza. No fence will stop a million and a half people – with no reprieve offered by Hamas – who will try to reach Israel so that they will have water to drink."

The inhabitants of the Gaza Strip are almost completely dependent on water from the southern coastal aquifer. But increased demand is depleting the aquifer, and it is increasingly vulnerable to penetration by seawater and saltwater penetration from deep layers of soil. In addition, with the lack of treatment facilities sewage is trickling through the soil and threatening contamination.

The demand for water in the Gaza Strip is expected to increase by 60 percent by the end of the decade. According to UN estimates, only one-tenth of the drinking water in Gaza meets the sanitation standards set by the World Health Organization. The WHO estimates that as early as 2016, the



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groundwater will be unusable, and the inhabitants of the Gaza Strip will be left without a source of water.

"Gaza Strip faces water shortage", Ynet/Hareetz, 31/01/2014, online at: http://mideastenvironment.apps01.yorku.ca/2014/01/gaza-strip-faces-water-shortage-ynet-haaretz/

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#### \* 2 New Water Projects, Jordan

Authorities to implement water projects in Deir Alla, Ain Al Basha Petra | Jan 30, 2014

AMMAN — The Water Authority of Jordan on Thursday signed an agreement with the Japan International Cooperation Agency to implement water projects in Deir Alla and Ain Al Basha.

The schemes will be funded from the Japanese \$25 million grant to improve water supply and services in densely populated areas.

http://jordantimes.com/authorities-to-implement-water-projects-in-deir-alla-ain-al-basha

Potash company to fund construction of Wadi Ibn Hammad Dam Petra | Jan 30, 2014

AMMAN — The Water Ministry on Thursday signed an agreement with the Arab Potash Company (APC) to establish the JD26 million Wadi Ibn Hammad Dam in Karak Governorate.

Water Minister Hazem Nasser, who signed the agreement with APC CEO Jamal Sarayreh, noted that the project is part of the partnership between the government and the private sector.

Under the agreement, the Water Authority of Jordan will provide the APC with 30 million cubic metres (mcm) of water for 12 years at preferential prices upon the completion of the 4mcm dam, which will take three years.

"2 New Water Projects, Jordan", Jordan Times, 30/01/2014, online at: http://mideastenvironment.apps01.yorku.ca/2014/01/2-new-water-projects-jordan-jordan-times/

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#### Farm owner steals thousands of cubic metres from water main'

Water Ministry employees dismantle an illegal pipe hidden in a 20-metre tunnel built below the airport road (Photo courtesy of the Water Ministry)

AMMAN — Authorities on Wednesday discovered a 20-metre tunnel built below the airport road to hide an illegal pipe through which thousands of cubic metres of water were diverted to a private farm over the past year, according to an official source.

The owner of a farm located off the airport road had attached the pipe to a water main that carries water from Qastal in south Amman to a pumping station in Amman National Park that supplies most of the capital's eastern suburbs, the source said.

The tunnel was supported with reinforced steel pillars to conceal the 300-metre pipe, the source said, adding that the farm owner was diverting over 2,000 cubic metres of fresh water a day to a pool on the farm and using it to irrigate trees as well as selling it to scores of tankers.

A team from the Ministry of Water and Irrigation, the Jordan Water Company (Miyahuna), the Gendarmerie, the Royal Badia Forces and the Public Security Department went to the site, according to the source, who noted that the perpetrator was identified and referred to court.

"The ministry denounces this outrageous act which deprived over 20,000 people in east Amman from their proper and rightful share of water and also endangered the lives of motorists using the vital airport road," the source told The Jordan Times.

The Water Authority of Jordan discovered the violation after performing pressure tests, the source said, highlighting that the authorities are also tracking down all those involved in digging the tunnel and extending the pipe.

Since the ministry launched a crackdown on water violations in August last year, and up until December, more than 7,091 illegal water pipes were dismantled, of which 75.5 per cent were in the capital, according to the ministry's figures.



#### WATER RESEARCH PROGRAMME -Weekly Bulletin-

The ministry registered 1,919 violations on main water conveyors and 3,360 cases of changing water gauges in Amman alone between August and December last year.

The ministry said it is pressing ahead with its campaign to crack down on violators of the water network, calling on the public to cooperate with authorities and report violations.

"Farm owner steals thousands of cubic metres from water main", Hana Namrouqa, Jordan Times, 31/01/2014, online at: <u>http://mideastenvironment.apps01.yorku.ca/2014/01/farm-owner-steals-thousands-of-cubic-metres-from-water-main-jordan-times/</u>

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#### \* Water, the World's Greatest Resource in Peril

The pressures on today's drinking water as a global resource can be looked at through several socioeconomic, geopolitical lenses.

The civil war that erupted in Syria began in 2011 with protests that turned into armed rebellions. A lack of water was the fuse lit by politically motivated water policies that drove farmers during a drought into urban areas. Expect more water wars to come, as the global population will swell to <u>nearly 10 billion people, according to a UN report</u>.

A greater threat to human health: The World Health Organization estimates that <u>80 percent</u> of global illness and disease are caused by contaminated water. How does that affect population in Third World countries? If children weren't getting sick as often or severely, then mothers would likely have fewer babies. But until that broken paradigm is fixed, demand for resources will continue to grow with population.

Part of the problem is education. Another is coming up with solutions at the local level. This applies to the United States, too.

Americans have a poor view and understanding of water issues here, while governments all over the world fail to regulate bottled drinking water.

People take tap water for granted in two ways. First, they overlook the aging infrastructure used to deliver water to the faucet, which brings metals and contaminants with it through decaying pipes. Second, homeowners believe using filters to clean at the point of drinking (POD) provides safe water.

"Carbon filters, which are used by 90 percent of our U.S. companies, do little more than improve the taste and remove chlorine," Kevin McGovern said.

#### The Numbers are Scary

"Are we going to wait for Congress to act or the world to spend \$22 trillion to upgrade our failing global infrastructure system, which has been rated a D-minus by the Society of Civil Engineers?" McGovern asked in an interview, adding, "20 to 25 percent of the needed projects are related to water, according to a Booz Allen study. 75 percent of the U.S. infrastructure needs replacement. We're not going to spend that money -- emergencies consume infrastructure budgets each year." In his view, we don't have to wait for something as big or complex as infrastructure projects to get off the ground to begin addressing the problem of water.

Kevin McGovern is a 25-year veteran entrepreneur and innovator of water filtration systems. He was a founder of SoBe Beverages (sold to PepsiCo). While serving as Chairman of McGovern Capital he was one of three owners of KX Industries, the inventor and manufacturer of many leading home water purification filters, including PUR to P&G and end-of-tap filter to Brita. KX also created and supplied the first refrigeration filter for Electrolux/Frigidaire.



The WHO statistics are staggering. Those suffering from illnesses caused by water-borne diseases occupy about 50 percent of the hospital beds in the world, while 10 percent of the globe's GDP is dedicated to healthcare, much of which can be prevented with clean water. Everyday, up to 5,000 people die as a result, with 80 percent of the victims being children. -- McGovern

I met Kevin McGovern when he spoke at the ninth annual Livingston Securities Nanotech Conference held in New York City. The seasoned professional has the passion of someone half his age, but a deep understanding of the issues related to water. He told me,

Water is the number one health issue in the world. As water resources diminish, demand will double over the next generation. So the problem is a double-edge sword. Not only is water a problem of quality, but quantity, too. You need effective solutions that don't waste water.

He went on to say that "Water facts are scattered around, non-existent, limited and intentionally not disclosed. Why? Governments don't want to scare people with too much negative information about the problem."

That didn't stop Syria from being cleaved in a brutal civil war. Much of the entire Middle East, and the world for that matter, are engaged in an escalating competition for water.

#### Water Education and Awareness

What are some of the challenges clean water faces?

"Education is a key issue. Think of it in terms of a macro generalization," he said. "We have a global issue that needs local solutions, or what we call 'Glocalization.' Point of Use (POU) or POD, as we call it, solutions need to address the global issues."

He brought up the chemical spill in West Virginia, saying, "Last year, a part of Montreal had contaminated drinking water, which was yellow. Without being there, I figure metals contaminated the water. So, Montreal tells people to boil water and they'll be fine. But the problem with boiling heavy metals is that they concentrate the contaminated metal -- "as opposed to eliminating them, or when boiling water removes bacteria.

"Peru has had 200 insurrections in the past couple of years, rioting about the state's water issues," McGovern pointed out. "To combat these conflicts, state officials need to launch awareness programs. And in America, that starts with mom and then children, as they inform their parents about the latest technology. It's not about scaring people; it's about educating them about the POD aspect of water and contaminant avoidance. We have to teach and supply solutions on the local basis."

#### The Water Initiative

The Water Initiative (TWI) is an emerging company with a solid foundation that extends to their



partners with the "top material scientists and businessmen in the world" from MIT, Cornell, Singapore, and Monterrey Technology University in Mexico; PepsiCo; Coke.

Some of TWI's early success came from Mexico, where they partnered with local states and municipalities to take on fixing some of the most infamous drinking water problems in the western hemisphere. "We use a top down, bottom up approach. We reached out to Mexican politicians, and work with those who care, who want to solve some of Mexico's most severe drinking water issues, from pathogens and arsenic, to fluoride and other cancer-causing chemicals that lead to diabetes, heart disease, bone malformation, and brain damage."

Mexico's National Water Commission, Conagua, recommends TWI to any nation.

TWI works at the local level to test the water and diagnose the problem. From there they customdesign a collaborative solution. In Torreon, which is the ninth largest municipality in Mexico.

We designed a water purification system for 65,000 units that currently serve 50 rural areas and deliver fresh water to nearly 500,000 Mexicans. The solutions last five years, have no maintenance, and use no power. Because of our success there, we have been able to win five more bids. By the end of the year, we should be in 10 states, or about a third of the States of Mexico, serving up to two million people. -- McGovern

"We sponsored a third party study and found the satisfaction (97 percent of users) with our filters in Mexico has resulted in 91 percent of the residents paying their utility bills ahead of time. Out of 65,000 filters in use, we have experienced only seven returns." That is a remarkably low defect or error rate.

With the success of solving some of the "most severe water regions in the world, we have launched programs in the Mid-East and Latin America with local partners, installing customized solutions in hotels, schools, and residences in Saudi Arabia, Peru, and Columbia, and we are in discussions to expand into China and India, he said, "and customized solutions for Ghana," where old mines and arsenic in the water co-exist. "We will also be launching the finest portable filter in the world later this year."

That propels Kevin McGovern's quest to a healthier planet much quicker than large-scale water treatment and infrastructure projects. We have a saying, "We can get done in 20 months what can't otherwise be achieved in 20 years."

"Water, the World's Greatest Resource in Peril", 30/01/2014, online at: <u>http://www.huffingtonpost.com/james-grundvig/worlds-greatest-resource b 4679692.html</u>

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#### \* Ibn Hammad Dam to provide drinking water for southern region residents

### AMMAN -- Construction work on a new dam in Karak Governorate has commenced, according to government officials.

The 4-million cubic metre (mcm) Ibn Hammad Dam, to be built at a cost of JD26 million, will provide drinking water for residents of the southern Karak and Tafileh governorates among other towns in the region, according to Water Minister Hazem Nasser.

Under an agreement signed between the ministry and the Arab Potash Company, the former will provide the company with 2.5mcm per year for industrial use over 12 years at preferential prices, while the latter will fund the construction of the dam, a ministry statement said.

In addition to providing drinking water, the dam will also develop the surrounding land and recharge underground water, Jordan Valley Authority Secretary General Saad Abu Hammour said.

Named after the Ibn Hammad Valley, the 52-metre-high dam will help meet the increasing demand for water in the country, according to Water Ministry Spokesperson Omar Salameh, who noted that construction will be completed within three years.

A total of 10,000 people reside in villages scattered across Ibn Hammad Valley, which attracts hundreds of tourists from across the world every year.

The 86-square-kilometre valley, announced in 2010 as a special conservation area, stretches from the mountains of Karak to the Dead Sea, at altitudes ranging between 800 metres above and 400 metres below sea level.

Dams, though expensive to build, are vital for the Kingdom to secure its water needs, according to experts.

The Kingdom's 10 major dams are: King Talal, Wadi Al Arab, Sharhabil, Kafrein, Wadi Shuaib, Karameh, Tannour, Waleh, Mujib and Wihdeh.

Jordan, which is considered the world's fourth water poorest country, suffers an annual water deficit of 500mcm, while per capita share of water does not exceed 150 cubic metres annually, well below the water poverty line of 500 cubic metres per year.



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According to official figures, 91 per cent of the Kingdom's total area of 97,000 square kilometres is arid land with an annual average rainfall of 50-200 millimetres (mm), while 2.9 per cent is categorised as semi-arid with an annual average rainfall of 400-580mm.

"Ibn Hammad Dam to provide drinking water for southern region residents", 02/02/2014, online at: <a href="http://www.zawya.com/story/Ibn\_Hammad\_Dam\_to\_provide\_drinking\_water\_for\_southern\_region\_residents-ZAWYA20140202034729/">http://www.zawya.com/story/Ibn\_Hammad\_Dam\_to\_provide\_drinking\_water\_for\_southern\_region\_residents-ZAWYA20140202034729/</a>

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#### **Future war will be fought for water, says Jethmalani**

THANE: Renowned lawyer and politician <u>Ram Jethmalani</u>today expressed fears that the world may face a war in future over water if it is not preserved well now.

"In future, war will not be fought over any territorial or other issues, but over the sole issue of water crisis," Jethmalani said.

He was speaking at <u>Ram Ganesh Gadkari Rangayatan</u> here, after releasing a book titled 'Distillery Effluent Treatment Management Current Practices In India' written by Dr Umesh Kumar Sharma. "People need to be serious about the issue and conserve available water and other resources. If you fail to take action now, the day will not be far when we will be hit by the worst ever war over water," the former <u>Union Law Minister</u> added.

In his speech, Sharma said, "The world is rapidly running out of clean water. Some of the largest lakes and rivers on the globe are depleting at a very frightening pace. Approximately 40 per cent of the entire population of the planet has little or no access to clean water, and it is being projected that by 2025 two-thirds of humanity will live in water-stressed areas."

India's overall water availability is running dry. The country's <u>water crisis</u> is often attributed to lack of government planning, increased <u>corporate privatisation</u>, industrial and human waste and <u>government corruption</u>, he added.

"Future war will be fought for water, says Jethmalani", 29/01/2014, online at: http://articles.economictimes.indiatimes.com/2014-01-29/news/46782455\_1\_water-crisis-clean-water-ram-jethmalani

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#### **MNAs concerned over dams' construction by India on Pak rivers**

Wednesday, January 29, 2014 - Islamabad—Treasury and opposition members of National Assembly on Tuesday urged the government to vigorously defend Pakistan's <u>water rights</u> at rivers as India continues to build dams.

Taking part in the <u>discussion</u> at the floor of National Assembly on the resolution moved by MNA Beelum Hasnain on the <u>construction</u> of dams by India on the waters of Pakistan, the members urged the government to contest the country's rights for water at international forums.

However, the debate went off the track when some members took up the issue of Kalabagh dam and reminded that three provinces Sindh, Khyber Pakhtunkhwa and Balochistan were opposed to the project.

Pakistan Tehrik-i-Insaf MNA Aisha Gulalai said India had been constructing dams in violation of Indus Water Treaty signed between India and Pakistan in 1960.

PML-N MNA Javed Ali Shah said it was unfortunate that issue of <u>construction</u> of dams was politicised.

Ameer Haider Hoti of Awami National Party (ANP), Aftab Sherpao of Qaumi Watan Party, Shazia Marri and Yousaf Talpur of PPP said three provinces passed resolutions opposing <u>construction</u> of Kalabagh dam.

They asserted that only those projects should be taken up on which the provinces have a consensus.

The members urged the <u>federal government</u> to initiate more dam projects and improve <u>irrigation</u> <u>system</u> in the country to stop wastage of millions acre feet of water that drains into the sea every year.



The members criticised the Indus Water Treaty and said India was taking away share of water of Pakistan.

Aftab Sherpao said the 1991 water accord provides basis for distribution of water among the provinces.

He urged for completion of non-controversial projects like Diamer Bhasha dam. He said under the Indus Water Treaty Pakistan handed over <u>three rivers</u> to India, however, according to international law rights of lower riparian like Pakistan are protected.

Independent member Jamshed Ahmed Dasti said the successive governments did not pay attention to developing water resources. "Politics should not be done on the issue of water. Millions of cusecs of water gets wasted in sea and floods wreck havoc in the country and people lose their lives and livelihoods," he added.

He said Kalabagh dam should be built as it would not reduce water for Sindh province. Those who were opposing construction of dams were not favouring in the <u>best interest</u> of the country, Dasti remarked.

PPP MNA Mir Munawar Ali Talpur said more focus should be given to <u>economic issues</u>. He recalled that PPP government took different steps including export of wheat and provision of tractors to farmers for betterment of agriculture sector.

PPP MNA Nawab Muhammad Yousaf Talpur said according to 1991 water accord Sindh should be given 10 million acre feet of water downstream of Kotri and rights of Sindh as a lower riparian should be safeguarded. MNA Naeema Kishwar of JUI-F said half of the water in Khyber Pakhtunkhwa gets wasted so there is need to conserve water.

She called for building small dams and hydropower projects in areas like Chitral for irrigation and power generation. MQM MNA Salman Baloch expressed concern over scarcity of water in Pakistan and suggested that his party's plans for development of water resources should be adopted.



Sahibzada Tariqullah of Jamaat-e-Islami pointed out that water of Kabul river should be utilized before it makes its way into Afghanistan. He complained that the affectees of Diamer Bhasha dam had not received any compensation so far, adding Munda dam on Swat river and other dam projects in Khyber Pakhtunkhwa province should be completed.

PML-N MNA Marvi Memon said everybody has a common stance on building of dams by India on Pakistani rivers. She said the government had a clear policy on Kalabagh dam and Prime MinisterNawaz Sharif had consistently stated that without consensus, controversial projects would not be started. MNA Nazir Khan drew attention towards the displacement of tribesmen from FATA area and sought the government's help for them.—APP

"MNAs concerned over dams' construction by India on Pak rivers", 29/01/2014, online at: <u>http://pakobserver.net/detailnews.asp?id=231789</u>

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#### \* A new beginning for the Middle East

The U.N. Year for Water Cooperation is behind us. Before long, the U.N. Decade for Water for Life will be over in 2015. The U.N. recognition of water has succeeded in drawing the attention of policymakers to this critical sector in the last few years. Much of the discourse has focused on the centrality of water in economic development, sanitation and health. There is however, reluctance to discuss interdependence between water and peace.

The Middle East has lost many opportunities due to its failure to recognise the significance of the water and peace equation. In June 2010, relations between Jordan, Lebanon, Iraq, Syria and Turkey were very healthy. Except for Iraq, which had constitutional limitations in entering into any international agreement, the remaining four countries formed a Quadrilateral Free Trade Area. This covered cooperation in energy, trade, transit and industry. The region experienced fast integration of their trade and economies. However, with the crisis in Syria in early 2011, the experiment collapsed.

There was a similar situation in Central America in the 1980s. All the countries, including Nicaragua, El Salvador, Guatemala and Honduras were involved in warfare with each other. However, when Oscar Arias was elected President of Costa Rica, he created a window of opportunity by bringing the heads of all the governments together to agree on peace, stability and non-interference in each other's politics. Immediately following the Arias Plan, the Central American governments engaged in economic cooperation agreements, just as the Middle East governments had initiated the Quadrilateral Free Trade Area in 1010. However, the Central America countries did not stop with trade. They moved on to foster cooperation in joint management of water resources in the region. This helped consolidation of the peace process. Today there is no risk of war between countries in America.

In West Africa, Senegal and its neighboring countries have had similar experience. There was a border dispute between Senegal and Guinea. However, once Guinea joined the Senegal River Basin Organization, the conflict disappeared. In fact, the Senegal River Basin Organization has been instrumental in resolving ethnic conflicts between Senegal and Mauritania.

Empirical evidence in South America, Southern Africa and South Asia shows that water and peace



are interdependent. When water drives peace and good neighborly relations, experience all over the world shows that riparian countries move into a much higher level of cooperation and friendship than they could imagine otherwise. Mere trade liberalization is not enough, since it can be switched on and off easily. Since water is at the core of life systems, a decision to cooperate in this sector has implications for electricity, agriculture, urbanization, livelihood, migration and political stability.

Looking back, if Jordan, Lebanon, Syria and Turkey had added one country and one sector to the framework of cooperation, they would have taken the cooperation process to the core of their economies and polities. It would have helped them to build mutual confidence in a serious way. It would have also made trade-offs possible between water and significant issues such as transit routes, hydro-electricity and political stability. In this case, Turkey would have had a totally different approach to its relationship with Syria and Iraq. Also, Syria would have found it necessary to value its relationship, not only with Iraq and Turkey, but also with Jordan and Lebanon. This could have potentially led to political stability in Lebanon and the resolution of the Yarmouk river issue with Jordan. It was an opportunity to make another future possible, which the region lost.

A new report by Strategic Foresight Group, a think tank based in India, demonstrates that any two countries engaged in active water cooperation do not go to war for any reason whatsoever, including those related to ideology, borders, history and economy. Europe realizes this. That is why economic integration in Europe has been accompanied by integrated management of water resources. Also, as soon as the Balkan Wars got over in 1999, and a small window of opportunity was created for peace, the successor states of former Yugoslavia decided to initiate cooperation in the management of Sava River. And after the end of the Cold War, one of the first decisions taken by the East European countries was to join the Danube River Commission.

If the leaders of the Middle East countries recognize the strong equation between water and peace, even now they can make a fresh beginning. Currently, there is a window of opportunity in the relationship between Iraq and Turkey, despite internal challenges between the two countries. If the two governments engage in confidence building measures over Tigris and Euphrates, they can create the possibility to include Syria at a later stage in their cooperative framework. It will also be important to include Jordan and Lebanon as they share important rivers with Syria. If indeed a



#### WATER RESEARCH PROGRAMME -Weekly Bulletin-

regional cooperation mechanism between Iraq, Jordan, Lebanon and Turkey comes into existence for water resources, it will eventually be instrumental in bringing about comprehensive peace across the Middle East.

"A new beginning for the Middle East", 30/01/2014, online at: <u>http://www.yementimes.com/EN/1751/opinion/3419/a-new-beginning-for-the-middle-east.htm</u>

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#### Innovation key to solving global water challenges

"Water services represent one of the greatest challenges of the 21st century," said John Tattersall, Black & Veatch's new Global Director of Water Technology.

He cites "growing scarcity, rapid urbanisation, climate change, tightening regulatory controls and environmental protection," as key issues common to all water utilities and agencies around the world.

As the newly promoted leader of Black & Veatch's water technology group Tattersall will head a 60+ cross-discipline global team of the most respected experts in the company's water business. This brings together some of the best minds from around the world to share information and develop new, tailored approaches to suit client needs.

Providing a perspective on global water trends, he said, "We see a continuing tightening of water quality standards and a drive to meet tougher discharge limits." Looking at wastewater he spoke of a paradigm shift away from sewage being viewed as a problem, to its recognition as an increasingly valuable resource.

"There is a huge desire within the industry to do more with less," said Tattersall. "By reappraising wastewater treatment infrastructure we have the potential to engineer new sources of water, power and nutrients. This is an area where Black & Veatch excels with innovative, global treatment solutions."

In the Middle East, Black & Veatch has been providing sustainable water solutions since 1922, and has capability and experience over the full water cycle.

John Abi-Hanna, Black & Veatch's business development director for Middle East Water said, "Black & Veatch is a world-leader in water industry engineering & construction, and has contributed to the implementation of over 20% of the world's engineered water systems. Black & Veatch is not only a global leader in desalination and water reuse, but leads the wastewater industry in research, technologies and process enhancements."



Project examples in the Middle East include a wastewater treatment plant in Cairo – Egypt, serving as the main treatment plant for the Greater Cairo Wastewater Project with an ultimate capacity of 3,000 mega litres per day.

"Innovation key to solving global water challenges", 29/01/2014, online at: http://www.muscatdaily.com/Archive/Oman/Innovation-key-to-solving-global-water-challenges-2w77

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### ✤ Uzbekistan welcomes law on inadmissibility of construction of large HPPs adopted in U.S.

Uzbekistan welcomes the law on inadmissibility of construction of large dams and HPPs adopted in the U.S., Director of Uzbek Hydroproject Institute Sergei Zhigarev told journalists on Jan.30. The director said that the law was adopted by the Congress and Senate of the U.S. in January 2014

and was approved by President Obama.

The new law directly obliges the U.S. representatives in the boards of directors of international financial institutions to oppose the approval of any loan or document aimed at supporting such projects, according to Zhigarev.

Today the U.S. is the largest shareholder and a donor to major international financial institutions, including the International Monetary Fund, World Bank, International Development Association, Asian Development Bank, Asian Development Fund and other similar financial institutions.

The law adopted in the U.S which uniquely expresses the principal position of this country's parliament and government on the issue, once again shows that the international community has tremendous awareness of the nature of the threat posed by the construction of giant dams and hydroelectric power plants, Zhigarev said.

"This decision should have a sobering effect on those who are persistently pushing and lobbying for the construction of large dams and hydropower plants in Central Asia", the director said.

The issue of inadmissibility of construction of large dams and hydropower facilities is especially topical for the Central Asian region, as persistent attempts are made in recent times to revive the projects planned during the Soviet-era envisaging the construction of giant HPPs, including Rogun HPP and Kambarat HPP-1 on the trans-boundary rivers of the region, such as Amudarya, Sirdarya and on their flows.

"The adopted decision provides a new opportunity to focus on alternatives to solve the existing problems of energy shortage, which do not violate environmental regulations, do not cause the risks of man-made disasters, and do not contradict with the norms of international law defined by the United Nations, "Zhigarev said.

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<sup>&</sup>quot;Uzbekistan welcomes law on inadmissibility of construction of large HPPs adopted in U.S.", 30/01/2014, online at: <u>http://en.trend.az/regions/casia/uzbekistan/2236322.html</u>



#### **EU**, Uzbekistan discuss regional issues of water resources management

EU Special Representative for Central Asia, Patricia Flor discussed with the Uzbek government prospects of EU assistance to the country in 2014 and in the future, including support for rural development and the start of the bilateral dialogue on water policy within the EU Water Initiative, the EU delegation in Uzbekistan said in its report, released on the official visit of Flor to Tashkent.

According to the report, during her visit the EU Special Representative held constructive meetings with First Deputy Prime Minister and Uzbek Finance Minister Rustam Azimov, Foreign Minister Abdulaziz Kamilov, Deputy Minister of Economy Dilmurod Turdiev, Deputy Minister of Agriculture and Water Resources Shavkat Khamrayev.

During the visit, Flor also held meetings with representatives of civil society in Uzbekistan. "At the meeting, the sides exchanged views on various aspects of cooperation between the EU and Uzbekistan, including the areas of security, energy, water management, economic cooperation and governance," the report said.

During the meetings, Flor stressed the EU's readiness to continue to support Uzbekistan in strengthening the rule of law and touched on human rights issues. The parties also discussed the possibility of expanding bilateral trade and investment cooperation and major events in the Central Asian region.

According to the report, the purpose of the dialogue of the EU-Central Asia for the Environment on the principles of the EU Water Initiative is to develop proposals for the creation of systems of integrated water resources management at the regional level. In February 2013 at the conference "EU-Central Asia: Cooperation Platform for Environmental Protection and Water Resources", Flor supported the position of Uzbekistan, in particular its requirements for the international examination of environmental impact of construction of planned facilities, including Kambarata HPP.

"EU, Uzbekistan discuss regional issues of water resources management", 27/01/2014, online at: <u>http://en.trend.az/regions/casia/uzbekistan/2234468.html</u>

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#### ✤ Facing a Century of Water Conservation

#### Report: State to be millions of gallons short in 2110

A water crisis may be a century away, but conservation experts say Arizona has to start planning for the day economic growth spurs need beyond supply.

Conserving water is a way of life for desert communities, but recent reports show Arizona will have a shortfall of 3 million acre-feet by 2110.

The Arizona Department of Water Resources presented its strategic vision for dealing with these water supply challenges during the <u>Verde River</u> Basin Partnership's annual meeting in Clarkdale Tuesday night.

ADWR Interim Director Michael J. Lacey said the projected shortage comes as a result of how much Arizona's population and economy will grow, not because current water policy is unsustainable. "Having a conservation ethic has actually served Arizona well," Lacey said. "We sort of lead the west

and lead the nation in the application of water conservation programs."

The report takes into account two sources of research: A Basin Study conducted with input from all seven "basin states" that take water from the Colorado River; and a water supply and demand analysis for the state conducted through the Water Resources Development Commission.

"We share a resource: the Colorado River," Lacey said. "There's a broad range of ways that water is used throughout the basin...We can learn something from each other in terms of how water conservation can be applied across the basin."

The ADWR is presenting the strategic vision at established public meetings to make the public aware of what planning needs to be done.

"The biggest takeaway is, the situation in Arizona is not dire," Lacey said. "There are local places where we need to act sooner than later, but we're really trying to begin the process of building support for a large investment in water supply infrastructure for the state."

He said the report is setting the stage for the next big infrastructure project Arizona pursues to bring water to residents.

"We need to build a process whereby folks can get behind other similar efforts and begin to build support," he said.

"It's like that quote by Benjamin Franklin, 'When the well runs dry, you'll know the value of water."" We have time now to work on building the water supply infrastructure projected to be needed in the



next century.

"We'll procrastinate ourselves into a crisis when, in fact, we can avoid that today," he said.

Traditional sources of money are not always available, and Lacey said private sector involvement and customer rates are also considered to finance projects.

Lacey said it needs to be easier for communities to provide for their own water needs by "being able to maybe expand beyond their boundaries to secure water supplies and convey those to the point of use."

Flagstaff, for example, bought "basically a water ranch" to increase their access to groundwater supplies. The city needed to build a 30-mile pipeline from the well to the city, but struggled to do so because of <u>Arizona Department of Transportation</u> right of way rules.

#### **Conserving since settlement**

From the late 1800s to today, Arizonans have been confronted with the challenge of conserving and distributing the natural water resources available.

Sen. Carl Hayden and Rep. John Rhodes worked from congress's two bodies to help pass the Central Arizona Project. It took several years, but its 1968 approval brought water from the Colorado River to Phoenix and Tucson through a series of aqueducts.

Gov. Jan Brewer identified the strategic vision in her "Four Cornerstones of Reform," her comprehensive policy agenda. In this plan, Brewer points to Sen. Carl Hayden and Rep. John Rhodes as pioneers in water resource management.

"And just as they paved the way for Arizona during its first century, we are preparing for our second century with a 'strategic vision' to meet future challenges associated with water planning," according to Brewer's 2014 policy agenda. "This 'vision' is designed to provide the foundation for future discussions among the Arizona Department of Water Resources and stakeholders in communities around the state."

Lacey identified several historical highlights in his presentation Tuesday evening. The early days of the <u>Salt River Project</u> in 1903 harnessed a new ability granted by the National Reclamation Act to use public lands as collateral for federal loans intended for water reclamation projects.

The Colorado River Compact of 1922 was a "cornerstone," according to the U.S. Bureau of Reclamation, of the 'Law of the River,' an array of laws and court decisions that regulate Colorado River resources. This defined the upper and lower basin states and allocated water use for each.



The 1980 Groundwater Act established rules for groundwater use and effectively established the Arizona Department of Water Resources, which administers the Arizona Water Bank. This has 8.5 million acre feet of water in storage for future use.

He also noted the resolution of tribal rights claims and the Assured and Adequate Water Supply Program.

Arizona is one of four states leading the nation in reclaimed water use, a practice that is recommended in the strategic vision and one that Clarkdale recently put into more efficient practice with the Oct. 2013 dedication of its wastewater treatment plant.

#### Sustainable Clarkdale

Clarkdale Mayor Doug Von Gausig sits on several local water conservation boards. He said the projected water shortage would serve about 12 million homes or about 3 million people.

"Arizona has between six and seven million people, so that says a lot about their population projections," he said. "The state is going to continue to grow and it's going to continue to use more and more water."

As need increases locally, Von Gausig said research shows water resources like the Verde River will start to be used more heavily.

"That's an unacceptable consequence to the town of Clarkdale because this is a big part of our identity," he said.

In the past, the state has decided to use resources from rivers that now no longer reach the ocean. Von Gausig said the Colorado, Gila and Salt rivers are examples of that, creating the need for a different paradigm for people to talk about satisfying water needs.

"There has to be a new way of looking at this problem," he said. "Our primary goal has always been to grow in a measured, healthy way that maintains our small-town characteristics."

Clarkdale is itself in the midst of a water resource management study, conducted out of the<u>University</u> of Arizona Water Resources Research Center.

"That study is going to be looking at what kind of recourse do we have, what kind of groundwater do we have, how does it add or take away from the Verde Valley, how can be more effectively use reclaimed water, how are we going to expand," he said.

These big questions probably won't be answered for another year, Von Gausig said, and each community's solutions are going to be unique.



"Every one of those solutions is a very local solution, and Clarkdale will be no different," he said.

"It's really incumbent upon everybody to start participating in that process with the (Yavapai County Water Advisory Committee."

This group is responsible for a local version of the statewide report, called the Central Yavapai Highlands Water Resource Management Study.

"It's going to take a lot of coordination between local communities," he said. "We can't do it alone. We're going to have to have the public's participation in that."

"Facing a Century of Water Conservation", 01/02/2014, online at: http://verdenews.com/main.asp?SectionID=74&SubsectionID=114&ArticleID=58419

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#### \* Amid drought, California agency won't allot water

SACRAMENTO, Calif. — Amid an epic drought, California officials announced Friday they won't send any water from the state's vast reservoir system to local agencies beginning this spring, an unprecedented move that worsens a precarious situation for 25 million people and 1 million acres of farmland.

The announcement marks the first time in the 54-year history of the State Water Project that such an action has been taken, but it does not mean that every farm field will turn to dust and every city tap will run dry.

The 29 agencies that draw from the state's water-delivery system have other sources, although those also have been hard-hit by the drought.

Many farmers in California's Central Valley, one of the most productive agricultural regions in the country, also draw water from a separate system of federally run reservoirs and canals, but that system also will deliver just a fraction of its normal water allotment this year.

The announcement affects water deliveries planned to begin this spring, and the allotment could increase if weather patterns change and send more storms into the state.

Nevertheless, Friday's announcement puts an exclamation point on California's water shortage, which has been building during three years of below-normal rain and snow.

"This is the most serious drought we've faced in modern times," said Felicia Marcus, chairwoman of the State Water Resources Control Board. "We need to conserve what little we have to use later in the year, or even in future years."

State Department of Water Resources Director Mark Cowin said there simply is not enough water in the system to meet the needs of farmers, cities and the conservation efforts that are intended to save dwindling populations of salmon and other fish throughout Northern California.



For perspective, California would have to experience heavy rain and snowfall every other day from now until May to get the state back to its average annual precipitation totals, according to the Department of Water Resources.

"These actions will protect us all in the long run," Cowin said during a news conference that included numerous state and federal officials, including those from wildlife and agricultural agencies.

Friday's announcement came after Gov. Jerry Brown's official drought declaration in mid-January, a decision that cleared the way for state and federal agencies to coordinate efforts to preserve water and send it where it is needed most. The governor urged Californians to reduce their water use by 20 percent.

It also reflects the severity of the dry conditions in the nation's most populous state. Officials say 2013 was the state's driest calendar year since records started being kept, and this year is heading in the same direction.

A snow survey on Thursday in the Sierra Nevada, one of the state's key water sources, found the water content in the meager snowpack is just 12 percent of normal. Reservoirs are lower than they were at the same time in 1977, which is one of the two previous driest water years on record.

State officials say 17 rural communities are in danger of a severe water shortage within four months. Wells are running dry or reservoirs are nearly empty in some communities. Others have long-running problems that predate the drought.

The timing for of Friday's historic announcement was important: State water officials typically announce they are raising the water allotment on Feb. 1, but this year's winter has been so dry they wanted to ensure they could keep the remaining water behind the dams. The announcement also will give farmers more time to determine what crops they will plant this year and in what quantities.

Farmers and ranchers throughout the state already have felt the drought's impact, tearing out orchards, fallowing fields and trucking in alfalfa to feed cattle on withered range land.



Without deliveries of surface water, farmers and other water users often turn to pumping from underground aquifers. The state has no role in regulating such pumping.

But groundwater levels already have been stressed, after pumping accelerated during the dry winter in 2008 and 2009.

"The challenge is that in last drought we drew down groundwater resources and never allowed them to recover," said Heather Cooley, water program co-director for the Pacific Institute, a water policy think tank in Oakland. "We're seeing long term, ongoing declining groundwater levels, and that's a major problem."

Many towns and cities already have ordered severe cutbacks in water use.

With some rivers reduced to a trickle, fish populations also are being affected. Eggs in salmonspawning beds of the American River near Sacramento were sacrificed after upstream releases from Folsom Dam were severely cut back.

The drought is highlighting the traditional tensions between the groups that claim the state's limited water for their own priorities — farmers, city residents and conservationists.

Chuck Bonham, director of the California Department of Fish and Wildlife, urged everyone to come together during the water crisis.

"This is not about picking between delta smelt and long-fin smelt and chinook salmon, and it's not about picking between fish and farms or people and the environment," he said. "It is about really hard decisions on a real-time basis where we may have to accept some impact now to avoid much greater impact later."

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<sup>&</sup>quot;Amid drought, California agency won't allot water", 31/01/2014, online at:

http://www.washingtonpost.com/business/gov-says-flush-less-as-ca-struggles-with-drought/2014/01/31/d0dd2b7a-8a46-11e3-a760-a86415d0944d\_story.html



#### Connecting the Drops: Water and Power

It takes water to produce electricity, but*how much* water varies a lot depending on the fuel source and the power generating technology.

In Colorado, around half a percent of our total water usage is used to generate electricity.

It's a small percentage, says Stacy Tellinghusen, water policy analyst for<u>Western Resource</u> <u>Advocates</u>, a non-profit conservation group, but adds that it's not inconsequential.

"The total volume is around 65,000 acre feet of water per year that's consumed by power plants," said Tellinghusen. "That's about equal to the water that could be used otherwise by 500 to 600,000 Coloradoans."

Tellinghusen adds that pretty much all of the water in Colorado is spoken for - so more water to make electricity means less water for agriculture or any other use.

"Most of our river systems are fully or over-allocated and fully used," said Tellinghusen. "So any new water use for a power plant or for drilling or fracking is necessarily going to impact an existing water user in that basin."

Hydraulic fracturing - or "fracking" - uses pressurized water and chemicals to crack shale and release deposits of oil and natural gas trapped deep underground. The technology has led to a rapid increase in oil and gas drilling in Colorado, especially in the northeastern part of the state and in Garfield County on the Western Slope. Energy companies buy the water for fracking from any willing seller and it's often hauled by trucks to drilling sites. In 2011, the city of Greeley sold 500 million gallons of water to energy companies.

But the amount of water used to generate electricity at a natural gas-fired power plant is less than a coal-fired plant, even when factoring in the amount required for fracking. That's according to James Meldrum, research associate for a project called the <u>Western Water Assessment</u> at CU-Boulder. "This shift over to natural gas, the net is a reduction in the water use compared to coal," says Meldrum. "With the hydraulic fracturing, you still have a net benefit from a water perspective if

you're looking at an overall level."

But Meldrum is quick to echo Stacy Tellinghusen on the need to factor in water scarcity.



"One of the main points about water," Meldrum said, "is that it's not just how much water's used overall, it's where the water is used. So, one of the issues with hydraulic fracturing, of course, is that a lot of the places we have the shale gas, they don't have as much water to begin with."

A tight supply forces efficiency in power generation. In parts of the eastern United States with abundant water, as much as 50% of all water used may be to generate electricity - exponentially greater than the half a percent used here in Colorado. Meldrum says one big reason is inefficient cooling technology back East. In Colorado and most of the arid Western U.S., power plants *recirculate* cooling water.

An example is Xcel Energy's <u>Fort St. Vrain plant</u> in Weld County. It saves water thru efficient cooling and by burning natural gas instead of coal. Xcel is the largest utility in Colorado, and Rich Belt is a Senior Water Resources Analyst for the company.

"With a natural gas power plant you have a turbine that is fired directly by natural gas, and that generates electricity as the turbine rotates," says Belt. "But then there's a waste heat stream that comes out the back end of that turbine. That's also captured, and that's used to generate steam, using water, which is used to drive another turbine. You get two whacks at the heat."

Conventional coals plants are unable to do that - they'd first have to convert the coal into gas, which is an expensive and inefficient process.

Xcel is in the process of converting more of their coal plants in Colorado to natural gas, due in part to a mandate called the<u>Clean Air Clean Jobs Act</u> passed by the state legislature in 2010.

Many studies show that using natural gas instead of coal to generate electricity reduces air pollution and saves water. So does energy conservation at the individual level. Researcher James Meldrum says water use should also be factored into electricity use.

"A lot of the water that we as individuals use actually is indirectly through electricity that we use," says Meldrum. "So if you want to conserve water or electricity, there can be benefits of one or the other, combined. Your personal water use is your toilet, your lawn, as well as turning on your lights and turning them off."

And if the electricity powering your lights comes from renewable energy technologies -you're probably way ahead when it comes to water use. Xcel's Rich Belt says demand for Xcel's electricity



#### WATER RESEARCH PROGRAMME -Weekly Bulletin-

has increased over the past five years but the utility's water use has remained flat, thanks to the addition of renewables and the conversion of big power plants from coal to natural gas.

"Connecting the Drops: Water and Power", 29/01/2014, online at: http://kvnf.org/post/connecting-drops-water-and-power

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