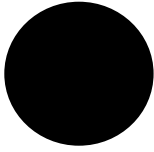


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Iraq: Water, Water Nowhere

Martin Chulov

BAGHDAD—From his mud brick home on the edge of the Garden of Eden, Awda Khasaf has twice seen his country's lifeblood seep away. The waters that once spread from his doorstep across a 20 percent slab of Iraq known as the Marshlands first disappeared in 1991, when Saddam Hussein diverted them east to punish the rebellious Marsh Arabs. The wetlands have been crucial to Iraq since the earliest days of civilization—sustaining the lives of up to half a million people who live in and around the area, while providing water for almost two million more. The waters vanished after the First Gulf War due to a dictator's wrath; over the next 16 years, they ebbed and flowed, but slowly started to return to their pre-Saddam levels. By 2007, with no more sabotage and average rains, almost 70 percent of the lost water had been recovered. Now it's gone again. This time because of a crisis far more endemic: a devastating drought and the water policies of neighboring Turkey, Iran, and Syria. These three nations have effectively stopped most of the headwaters of the three rivers—the Tigris, Euphrates, and Karoon—that feed these marshes.

"Once in a generation was bad enough," says Awda, a tribal head and local sheikh in the al-Akeryah Marshlands, who also advises

the Nasiriyah governorate on water issues. "Twice could well be God's vengeance."

In a land where fundamental interpretations of monotheistic scripts often determine the tone of public discourse, particular attention is now being paid to the biblical Book of Revelation, in which the Euphrates River drying up was prophesized as a harbinger for the end of the world. It is not doomsday yet in Iraq, but the water shortage here has not been worse for at least the last two centuries—and possibly for several millennia more. Government estimates suggest close to two million Iraqis face severe drinking water shortages and extremely limited hydropower-generated electricity in a part of the country where most households get by on no more than eight hours of supplied power per day, in the best of times.

The flow of the Euphrates that reaches Iraq is down, according to scientific estimates, by 50–70 percent and falling further by the week. From his frugal office in Baghdad's National Center for Water Management, engineer Zuhair Hassan Ahmed has for the past decade plotted the water levels of the Euphrates and the Tigris, the latter of which bisects the Iraqi capital. The hand-etched ink graphs show a black line that marks an average "water year," from October to May, super-imposed over a

green line, which shows the actual flow through the two rivers over the same time. The green line had been markedly lower than the benchmark for much of the past decade. But in 2007—the start of a serious drought—it dipped sharply and has continued to fall.

In Baghdad, the lack of water has been an inconvenience, an eyesore, and a health hazard. Raw sewage and refuse pumped into the Tigris is not flushed downstream as rapidly as it once was. The Tigris is Baghdad's main artery, but it is also still a working river, long traversed by small commuter ferries, industrial barges, and, in the city's halcyon days, even pleasure boats. Giant mud islands now protrude from the once wide, blue expanse of the river, making it unnavigable for larger vessels. Further downstream, and especially along the Euphrates—which runs roughly on a parallel track west through Iraq's bread basket—the effects of the shortage are far worse.

Between Two Rivers

Here, in the land between the two rivers that was once the heartland of ancient Mesopotamia, the water crisis has ravaged agriculture, an industry still struggling to regain its footing after three decades of deprivation and war. This was the second mooted site (the other was the Marshlands themselves) of the fabled Garden of Eden—a land so rich in soil and water that it would quench the needs of its dwellers throughout eternity. It doesn't look quite like that now. Crops of grain, barley, mint, and dates have failed almost en masse. Further west, in Anbar province, a prized rice variety that was once sold at a premium throughout Iraq and in the markets of neighboring countries has just been harvested. Like almost all other crops, this year's yield is a disaster.

"We blame the Turks for this," says Hatem al-Ansari, a local Anbar rice grower who claims to have lost half his family's life

savings since January 2009 due to a lack of water to irrigate his rice. "We have been digging wells nearby, and so has the government, but it is not enough. Not even close." Shielding his face with a black scarf from a sandstorm blowing in on an acetylene desert wind, Hatem points in the direction of the Euphrates' upper reaches. "If you go down to the bank, you will see where the water was last year and last week," he says. "Our water pumps can no longer reach it. It's true it hasn't been raining, but it's just as true that even 30 percent of normal rainfall does not cripple a mighty river like this." He had to be taken on his word. The swirling sand and dust were starting to turn the sky an ochre-orange haze and was steadily closing like a shroud on us all, making an inspection of the river bank impossible.

Sandstorms have long been a fixture of Iraqi summers—on average, there are about eight to ten each hot season. But this year they became a pandemic. Close to 40 sandstorms blew in during the five months from May to early October. Some lasted three days at a time, sheeting farms with suffocating silt, closing airports, and adding another layer of misery to a society that has been through hell. Lack of water for irrigation, especially in Anbar, is a key problem. Iraq's water minister, Dr. Abdul Rashid Latif, says that the government dug an extra 1,000 wells over the past two years, taking advantage of a relatively high groundwater table. But drawing on a diminishing resource during a time of drought has proved costly. "We now have only around 20 percent of our original reserves left," he says. "And the thing about this water is that not much of it is being replenished."

Disturbing Numbers

Iraq's water numbers make for disturbing reading across the board. Government estimates put total reservoir storage at around 9 percent of nationwide capacity on the



Once the Garden of Eden, now a desert.

leading edge of a wet season that is not forecast to bring much relief. For the past two years, rainfall was some 70 percent lower than usual in most of Iraq's 18 provinces. The snow melt that usually feeds the Tigris system from the Zagros Mountains in the Kurdish north was equally deficient. There are now seven dams on the adjoining Euphrates system, most in Turkey and Syria, with plans for at least one more. And then there are the rampant inefficiencies built into Iraq's antiquated 8,000 miles of canals and drains, which send countless millions of gallons gushing into parts of the country that have little use for the water, and no means to harness it even if they did.

Some have looked to the heavens to explain the lack of rain. Society here is deeply superstitious. Many Iraqis, from the Sunni Arabs of Anbar to the tribes of the Marshlands, believe the natural deficiencies are God-ordained—and possibly a punishment for the sectarian ravages that have torn the country apart over the last three years.

"Droughts have happened before and will plague us again," says Awda as he sur-

veys the vast expanse of hard-baked and cracked brown mud in front of him that used to be the Marshlands. "But not even in '91 was the water like this. Now there is nothing." The only water left in the maze of feeder streams that empty into this giant basin are pools of lime-colored stagnant ooze. Nothing flows. Ducks and geese sit listlessly on creek banks that have not been exposed in decades—if ever—to direct sunlight. Infestations of flies circle like Saturn's rings around giant, steel barrels of drinking water, imported from the nearby city of Nasiriyah, that line village roads. Reeds that were once the staple of the agrarian peoples who worked this waterway through the ages jut starkly from the banks, nearly all of them yellow and hardened, looking more like medieval weapons of war than crops.

Earlier this fall, the major tributaries of the Euphrates were flowing at around 30 percent of their normal levels. "Look at that mark on the bank," says Awda, pointing to a stain on a corrugated iron beam at the base of the bridge. Not long ago, he notes, this had been a high-water mark. The

waterline is now at least nine feet lower. The pungent murk of the riverbed lingers in the air. "Take a deep breath," says Awda. "That smell is the scent of a dying ecosystem." Two fishermen, who had launched themselves into what remained of the waterway in a bid to net carp, return to the banks with their haul—12 fish, none bigger than 10 inches. The catch is not enough to feed their families, let alone take to market. Two years ago, the fish were fat and bountiful.

"Fishing is our staple here," explains one local man, Sheikh Hameed from Abart village, further north of the Marshlands. "That, and hunting water birds. But they've all flown away. I had a stall here for many years," he recalls, pointing to an abandoned roadside hut, where he used to sell his catch. The white polystyrene crates that used to hold the fish on ice are now home to street cats and sand drifts. A giant water buffalo, which once spent the best part of the summer immersed in the water, is now making do with what remains. He stands motionless, buried to the midriff in a festering, black mud. The caked soil cast offers at least some respite from the heat, but with the temperature expected to hover between 118 and 124 degrees Fahrenheit for the following week, he doesn't have long left to wallow. "We are digging wells for our own survival," says Sheikh Hameed. "And this in the most water-rich area of the country. This is not God's wrath. This is the work of people."

Tweaking the Tap

Over the past six chaotic years, new reservoirs have been built into the Euphrates system on both the Syrian and Turkish sides of the border. Iraq, as a downstream country, would have likely suffered from serious water depletion even if it had a government strong enough to assert its authority against two powerful neighbors. But with a political class struggling to win legitimacy amid

a sectarian war that has torn the country apart along ancient societal fault lines, there has been little time to tend even to the bare basics of survival. Delivery of services has been close to non-existent, from the national government down to village mayors. Now, with Prime Minister Nouri al-Maliki claiming to run a credible sovereign state, work has begun in earnest on talking to the neighbors about many issues of Iraqi sovereignty, including border integrity, that have remained sidelined throughout the post-war turmoil.

"They should realize that we are an important neighbor and share many things in life," says Dr. Rashid, who has three times led Iraqi delegations to Istanbul and Damascus to beg for more water. He has returned with promises, but little fruit for his labors. With no treaties or agreements signed with either state, however, he has little leverage. "Our neighboring countries need to get the message that it is our right to get our share of water from these two international rivers and that we should have a say in their operational procedures because we are downstream. In our discussions they have never connected the water issues with any other issues."

There is trouble, too, from Iran, whose government earlier this year ordered the diversion back into Iranian territory of a key tributary of the Tigris—the Karoon River, which enters Iraq just north of the southern city of Basra. Until early this year, the Karoon had sent regularly a vital flush of freshwater down the Tigris and into the Shatt al-Arab waterway at the northwestern end of the Persian Gulf. The freshwater pushed back the tidal effect and allowed tens of thousands of Iraqis from the southern Marshlands to make their livelihood through fishing and farming. "There were 13 billion cubic meters of freshwater [annually] feeding into the Shatt al-Arab," says Dr. Rashid. "Now that has gone. We have

asked them to sit down and talk but they won't even answer our requests." In late October 2009, Iraqi technicians finally met with their Iranian counterparts. "They were told about the effect on the people in the south who are exclusively Shias—their people," says Iraq's foreign minister, Hoshyar Zebari. "They were very embarrassed by this and promised to look into it."

Today, the saltwater of the relentless tides around Basra is still winning the push-me, pull-you game and, like a rampaging army, has pushed farther north up the waterway than ever before. As a result, some 30,000 locals have left their land, some of which has now been heavily salinated, leaving it of marginal agricultural value at best.

Across Iraq, entire ecosystems are under threat. So far, redress from the Turks and the Syrians has consisted only of sympathetic words, followed by the occasional tweak of the tap. "We need 500 cubic meters per second," Dr. Rashid said in August. "We have been getting 350 meters on some days, but 150 meters on average. They have promised us more, but we have yet to see it." In the months that followed, Iraq, Syria, and Turkey three times announced a boost in the headwater flow from the Euphrates. But by late autumn, the downstream effect had been negligible.

The giant power station in the city of Nasiriyah was still using only two of its four turbines that are normally powered by the flow of the Euphrates. One had broken down, but could not have been used anyway because, along with a second turbine, there was not enough moving water to power it. Nasiriyah was getting by on about six to eight hours of power a day—roughly the same as the rest of the country. Throughout the summer and fall, engineers at the power station were desperately hoping the river

would not fall another eight inches, to a level that would have left Iraq's fourth-largest city without any electricity whatsoever. "We saw it rise a centimeter or two, roughly two days after every announcement from the Turks, but it would soon drop away," says an engineer at the power station.

“The saltwater of the relentless tides around Basra has, like a rampaging army, pushed farther north than ever before.”

"The figures we were being promised were not translating into tangibles."

The Rains Not Cometh

Both Turkey and Syria have been suffering from the same rainfall deficiency as Iraq. The winter storm fronts that once formed regularly near Cyprus and swept east through Syria, Jordan, and Iraq have been rare over the past three years, as have the low-pressure systems that could usually be counted on to dip south into Turkey from the Balkans and the Russian steppe. Cloud seeding and the contentious science of rain-making have been considered in all four countries. Jordanians, in particular, remember the 1991 winter season, when seeding was attempted near Cyprus. That year, six separate snow-bearing storm fronts swept through the country, leaving yard-deep snow drifts on the streets of the capital, Amman, for many weeks. Heavy snow also fell across the Iraqi desert plains and the Zagros Mountains. The snow melt that autumn saw the Tigris burst its banks in Baghdad. Upstream in Turkey, there is still enough reliable winter rainfall to keep the dams brimming and make cloud seeding unnecessary. Downstream in Iraq, where the water is needed most, there is

neither money nor interest for such an experiment.

Even the ancient ways are starting to fail. From June to August of this year, the United Nations Educational, Scientific and Cultural Organization (UNESCO) conducted research into the status of ancient, natural subterranean aqueducts used both for human settlement and irrigation in the Kurdish north. The UNESCO results painted a bleak picture of water resources in northern Iraq, which had for centuries boasted relatively bountiful supplies, even during harsh times. The UNESCO study found that 70 percent of the aqueducts, known as *karez*, that were producing water in 2005 had since dried up and been abandoned. Of the 683 *karez* surveyed, most were not functioning, due largely to excessive use and ongoing drought—only 116 still delivered water. The study claimed that 36,000 people were at risk of being displaced, while tens of thousands more had already left their lands.

Figures in Iraq are always open to a degree of conjecture, but one reality is now clear: the water crisis is leading to mass migrations of people and a renewed displacement at both ends of the country, just as some order was starting to replace the bedlam of the invasion and civil war. Iraqis have been returning to their homes in mixed neighborhoods in Baghdad, but now rural people, fleeing in droves from the increasingly arid provinces, are also showing up in urban centers. The Marsh Arabs have left their lands in large numbers, according to Nasiriyah's governor, Qusey al-Ebadi, who has yet to find ways to accommodate them. "They are nomadic people and move around during difficult times," says al-Ebadi, "but I have never seen them coming into the cities with their animals like this." The men of the Marshlands—now far from their ancestral lands—mill around in small groups on street corners in Nasiriyah,

many searching for laboring work, looking incongruous and desperate.

The people from the Shatt al-Arab area of the southern Marshlands also need accommodating. Government estimates suggest as many as 30,000 have left their lands, all but abandoning their agrarian livelihoods. Thousands more have been pushed to the brink of survival. If the Tigris and the Karoon do not flow again toward the Shatt al-Arab, the ecosystem they have relied on is all but finished.

The water crisis could not have come at a worse time for Prime Minister al-Maliki, who has spent much of his time and energy as leader attempting to win enough authority to assert his will. His formula had been security first and stability second, followed by delivery of services. So far, he has achieved qualified approval on the first two, but abject failure on the third. Iraq's energy sector is in a desperate state of disrepair. In late October, a rare thunder and lightning storm that brought the first rains to Baghdad in seven months caused power to crash citywide for eight hours. Even without rain, or other disturbances such as dust or wind, most residents of the capital are getting by on no more than a half-day of regular electricity, the vast bulk supplied by coal-burning energy plants that generate power channeled by substations resembling museum pieces. What little electricity supply exists is frequently targeted by militias who boast of their intent to return the society (literally) to the dark ages. Sewer lines have only been dug in the most affluent areas and city roads are, at best, rudimentary.

With a national election looming in late January, al-Maliki knows that his current base of support across Iraq's religious and ethnic divides is fragile. Failure to give Iraqis the essential services they have long craved—especially electricity, water, and sewerage—will likely spell his doom. Twice this fall, he has traveled to the Shia bastion

of Basra to assess the plight of the Shatt al-Arab and to persuade locals that all is not lost. It is a hard sell for the people of the south, who collectively still see themselves as being as deeply deprived today as they were under Saddam. For the prime minister to blame his nation's neighbors for water woes is unlikely to

fly. Beyond the troubles over the water supply, al-Maliki has pointedly accused Syria of destabilizing Iraq by sheltering former Baathists, who he claims funded two bombing campaigns that targeted three

government ministries and the Baghdad municipal government headquarters in August and October. All four buildings were annihilated, with almost 300 people killed and more than 1,000 maimed. While wagging his finger at Damascus, al-Maliki has also been constantly promising patronage to the southern tribes and an entrée to state coffers if they fall in behind him. Two months before a definitive election and amid an unparalleled ecological crisis, the tribes are, at best, restless. And water is near the top of their worry list.

Enough Blame to Go Around

"The government didn't do this directly, it's true," says tribesman Maher al-Zubaidi, as he surveys the shrinking Euphrates in Nasiriyah. "But they tell us they are strong now and yet they can't stand up to the Turks. Wars have started in this region for a lot less. Also, Iraq constantly cries poor, yet we read about the trade minister taking a cut from every kilo of imported grain and see enormous revenues from oil. The time has long past for them to deliver."

The Turks, though sympathetic to the plight of their downstream neighbors, lay

much of the blame at the feet of Iraqi bureaucrats who have done next to nothing to protect an already precious natural resource from atrocious water management practices. It is not uncommon to see burst water-mains spouting geysers through Baghdad's parched suburbs or across village roads,

“With a national election looming, al-Maliki knows that failure to give Iraqis essential services—especially electricity, water, and sewerage—will likely spell his doom.”

quickly mixing with refuse and oil, turning into giant molasses-like pools. Almost all public taps invariably leak, and environmental awareness is close to non-existent.

Publicly, Turkey will say nothing on the subject of its water dispute with Iraq, other than it is working with both Syria and Iran to remedy the situation and has agreed to share daily technical data with both sides on flows. After recent floods near Istanbul, a limited extra release was allowed into the Euphrates system. It was soon stopped. The saga was symptomatic of Iraq's dilemma and its lack of means to do much about it. Again, Baghdad had to make do with what its neighbors could spare on a good day. Iraq is yet to press its case for water rights under international law and, with its hand weakened by so many ongoing woes, the government does not currently hold much sway in the region.

The torpor is of no comfort to Iraq's downstream dwellers. Back in al-Akeryah Marshlands, Awda Khasaf kicks a splintering skiff that used to ply the lowland waterways. The last six months, he says, have changed everything. "If the Turks release all the water that used to come down the

Euphrates, then the Marshes will fill up again within two months and we will recover. But that is not going to happen. They caught the government off guard while it was obsessed with the war and now they have a chokehold on us. This has had a revolutionary effect. The Turks have the upper hand and until we are strong enough to stand up for ourselves, all we can do is pray for a flood. Look at them. They are not serious about helping us. They are trying to build another dam [the Ilus hydroelectric plant planned for southeastern Turkey, on the northern reaches of the Tigris]. Only when we can stand up can we address this. For now...." He leaves the last thought hanging, possibly conjuring up the same apocalyptic vision that started our conversation: only the good Lord can save us.

In the short term, it would appear that divine intervention is Iraq's best hope. The means to address water management effectively seem decades away. Much of the country's infrastructure belongs in scrap yards or exhibits of nineteenth-century industrial artifacts. Re-laying water pipes nationwide for urban water delivery would likely take the best part of a generation. Desalination has been considered during cabinet meetings and projects have been offered by investors from the cash-rich Gulf states, which rely heavily if not exclusively on desalinated water. But Iraqi officials have so far described the costs as prohibitive. "It might work out for a small state like Abu Dhabi that doesn't need tens of thousands of kilometers of pipeline," says one minister. "But for us, it is a non-starter for now."

Globalization Woes

The crisis of 2009 has revealed some domestic inefficiencies that Iraq's farmers will struggle to reverse. Wholesalers have been able to import and distribute fresh produce at market rates that compete successfully

with what domestic consumers would have paid for locally grown produce. Hundreds of tons of bananas have been flown in from Somalia, watermelons from Iran, rice from the Far East, and bottled water from Saudi Arabia and the Gulf states. Water woes are playing a big part in turning Iraq into a net food importer. But so are the cost-efficient alternatives introduced to the Iraqi market by companies in both developing states and Western nations, all of which are clamoring to service some 20 million people who, for the most part, have always relied on home-grown produce.

Apart from small pockets that can still harness water from the Euphrates, much of Iraq's politically and strategically critical Anbar province is now a dust bowl. So, too, is Diyala province, north of Baghdad, which boasts some of the most fertile alluvial soil in the land. Both areas were ground zero for the Sunni militancy—Anbar the so-called triangle of death, Diyala the declared heartland of a new Islamic caliphate in 2006. The al-Maliki government had hoped to appease insurgents with the promise of prosperity. But as 2009 draws to a close, the notion seems fanciful. Family incomes are down substantially in many areas. The violence, successfully quelled throughout the past two years, is again on the rise, especially in Anbar.

Iraq's provinces and some of its most dangerous towns have been the focus of work throughout the past five years by American reconstruction teams, especially the U.S. Army Corps of Engineers, which in October wound up its mission. The engineers left, claiming that 21.2 million Iraqis now had access to potable drinking water, up from just over 5 million people immediately after the invasion. Last year, in the giant Sadr City slum in Baghdad's northeast, the Army Corps built a treatment plant which draws and purifies water from the Tigris. The net effect, the Army claims,

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