

Israel's Water Resources

Program Outline

- Introduce our trip, range of places we visited
- Focus on water:
 - o general issues/facts of water in Israel
 - o examples
 - Yad Hana
 - Frank Fisher and the Middle East Water Project

Read aloud:

Management of Water Resources in Israel¹

Despite the fact that its technological expertise in the realm of water use is among the most advanced in the world, Israel is in the throes of an ongoing water crisis, which is becoming progressively more serious, bringing the country to the verge of catastrophe. The damage to the country's three main reservoirs, as a result of excess pumping, salination and contamination has not been adequately addressed at the systemic level, and as of yet no authorized and agreed upon master plan exists to guide the activities carried out by the many bodies entrusted with authority for water management in Israel. A review of present policies and subsequent reform are urgently needed, and the water problem must be accorded priority on the national agenda, in light of the guidelines suggested by Agenda 21, in order to achieve a balanced and sustainable water management policy.

Regional & International Cooperation

The cost of this failure to cooperate on regional environmental issues has directly contributed to the dramatic degradation of key natural ecosystems in Israel and the region. Pollution of the Coastal and Mountain Aquifers (key sources of drinking water for both Israelis and Palestinians) and the degradation of sites of global heritage such as the River Jordan and the Dead Sea, for example, could have been avoided or mitigated if the political will and commitment to cooperate regionally for the benefit of the environment had existed.

¹ Paths To Sustainability: Shadow Report to the Government of Israel's Assessment of Progress in Implementing Agenda 21
Heschel Center for Environmental Learning and Leadership, 2002

Examples from our trip:

1. Yad Hana – Pictures, Introduce, discuss
2. Frank Fisher and the Mideast Water Project

WATER AND PEACE

Franklin M. Fisher

It is often said that water will be the source of the next war in the Middle East -- indeed, that water conflicts all around the globe will arise in the next century. In the Israeli-Syrian negotiations, a major issue as to the return of the Golan is reported to be control of the water sources there. In the Israeli-Palestinian negotiations, water is one of the "final-status" issues and a potential obstacle to a lasting peace agreement.

It does not have to be like that. Rational thinking about water and water agreements shows that water can be a source of cooperation rather than of conflict and that, in a very precise sense, water is not worth war.

To begin: No matter how valuable water is believed to be, it cannot rationally be valued at more than the cost of reproducing it. Hence, for any country with a seacoast, the cost of seawater desalination implies an absolute upper bound on the value of water in dispute. In the case of Israel, desalination costs are currently estimated at \$.75 per cubic meter or less. Since the water in dispute is not on the seacoast but itself has costs of extraction, treatment, and conveyance, that water can never be worth more than a good deal less than \$.75 per cubic meter. Much of the water claimed by both Israel and the Palestinians is underground. One hundred million cubic meters of that water annually (a major amount of water in that dispute) can never be worth more than roughly \$30 million per year. This is a minor sum in the peace negotiations. Fighter planes cost far more than that.

As this suggests, water ownership is only a matter of money. But that is only the beginning....

To read more, visit

<http://web.mit.edu/ffisher/www/waterpage/contentpage/watercontent.html>

Discussion questions:

1. What are options for sustainability for Israel and its neighbor's water supply?
2. How should water resources be divided (certain allotment, etc)?
 - a. What are the best options for sustainability in a region with shared resources?

Yad Hana Images



Figure 1: View of Tul Karm from Yad Hana water treatment plant



Figure 2: Yad Hana houses. Some of the residents were evacuated from Gush Katif in the Gaza Strip during the 2005 Disengagement.



Figure 3: Yad Hana water treatment plant

Small, illegible text or logo centered on the page.

Figure 4: 5% Sludge

1) TAINTED WATERS

Matti Friedman

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Endangered by unchecked pollution, the underground reservoir that is the main source of water for both Israelis and Palestinians needs to be protected now. But the worsening conflict above ground is preventing a solution below.

Four hundred feet above a vast subterranean water reservoir in the hills to the west of Nablus sits a small building staffed by two middle-aged men, one wearing pajama bottoms and the other a blue track suit. They are surprised to receive visitors; apparently not many passersby come to this Palestinian Authority pumping station, hidden off a West Bank side road. Their installation, where fresh water is extracted from deep underground and sent through white and blue pipes up to Nablus, is one of hundreds in the West Bank and Israel that tap into the mountain aquifer - the most important water source for Israelis and essentially the only one for Palestinians. The 200,000 residents of Nablus, like millions of others, depend on it for water to drink.

The Nablus River runs through a roadside ditch a few steps away from the little pumping station. The river is little more than a polluted creek, its water an unnatural and opaque shade of gray; it serves mainly as a conduit for detergents, industrial chemicals and sewage from Nablus, taking them west through the West Bank and under Israel's separation barrier at Tul Karm. Plastic bags in a rainbow of colors cling to branches on the banks. As the river flows by with its toxic load, chemicals and sewage are seeping into the ground, making their way slowly through cracks and pores in the bedrock and moving inexorably toward the mountain aquifer. No one can predict how long it takes pollution to reach the aquifer - it can be days or decades, depending on the pollutant and the makeup of the ground - but there are signs that in some places it already has. Nitrate levels, a sure sign of sewage contamination, are rising in many parts of the aquifer; around Hebron and on the Israeli side of the Green Line near Qalqilyah, deep wells are already showing nitrate levels above Israeli safety standards.

Consumed with a century-long struggle over land, Israelis and Palestinians pay scant attention to what is going on under it. The mountain aquifer is endangered by pollution in the West Bank, where environmental control, if it exists at all, is shunted down everyone's priority list by security concerns and political considerations. For Israelis, threats that aren't wearing bomb belts or firing

rockets are not seen as pressing. But with the population of the West Bank growing and producing more sewage and more garbage, and nothing being done to halt groundwater pollution, some experts and environmental groups are increasingly warning of a catastrophic contamination of the aquifer. "Once the pollution is in the water it will be irreversible," warns engineer Mohammed Said Hameidi, who headed the Palestinian Oslo negotiating team on environmental issues and was formerly the head of the PA's Environmental Agency. "It will spread disease, and no one on either side will be able to do anything about it."

Israelis and Palestinians tend to do their best to ignore the fact of the other's presence, but they share - and have always shared and will always share - the same aquifer. The mountain aquifer, which stretches under the hill country between the coastal plain in the west and the Jordan Valley in the east, provides around 600 million cubic meters of fresh water every year: 150 million to Palestinians and the rest to Israel. (The Palestinians have long charged that Israel takes more than its share of aquifer water, leaving their people with under 60 liters a day per capita, far less than the World Health Organization standard of 100 liters. In the Oslo years, Israel offered the Palestinians a desalination plant at Hadera, which the Palestinians turned down because it would leave them at Israel's mercy.) Israelis tend to regard the Sea of Galilee as the country's most important water source, cheering its water level on through the rainy season, but that's only because it's easy to see. Of Israel's three main natural sources of water - Lake Kinneret, the coastal aquifer and the mountain aquifer - the latter is easily the most important, providing over a third of the water that Israel uses and water of far better quality than the other two.

While Israel gets most of the aquifer's water, pumping it out from wells on its side of the Green Line, its recharge area - where rainwater enters the underground reservoir - is located almost entirely in the West Bank (see map, page 20). But it's not just water that can get into the aquifer through the recharge area. Anything can: chemicals, sewage, waste from factories and hospitals, concentrated toxins oozing out of solid waste dumps. This makes environmental control in the West Bank crucial for all users of the aquifer. But in the West Bank, divided into different areas of control, partially subject to Israeli military rule and beset with a host of other problems, a sense of long-term environmental responsibility is absent both among the Palestinians who make up the vast majority of its population and among the Israelis who control the majority of its land.

The Israeli-Palestinian-Jordanian green organization Friends of the Earth Middle East (FoEME) has been persistently trying to drum up awareness of the problem, and some Western countries have been trying to get new sewage plants and garbage dumps built throughout the West Bank. But today virtually none of the sewage or garbage there is properly treated. According to FoEME, some 87 percent of solid waste in the recharge area poses a threat to the aquifer, and more than 90

percent of the sewage. Waste treatment in Jewish settlements is moderately better, though FoEME estimates that well under half of the sewage from Jewish settlements is adequately treated. Faced with the potential contamination of its primary water source, Israel continues to act as if this is solely a Palestinian problem.

There is no better example of the way Israel is allowing its vital water interests to fall victim to narrow security concerns and general disinterest than the saga of the new regional garbage dump that does not exist at Dir Dibwan, north of Ramallah. Over the past 20 years, Israel has cleaned up its own dump sites, building drainage systems so toxic chemicals don't seep into groundwater. But over the Green Line the situation is entirely different. Governed mostly by the Israeli military, with parts nominally controlled by a barely existent Palestinian Authority, the West Bank is split into three zones, A, B and C, and has a jumble of laws - Turkish, British, Jordanian, Israeli, Palestinian - most of which are irrelevant because any enforcement that existed before the renewal of violence in 2000 has more or less disappeared since then. For example, according to Hameidi, who today runs infrastructure projects for the American non-profit Cooperative Housing Foundation, there is no longer any agency tracking industrial chemicals entering and moving around the West Bank, or keeping an eye on how they are disposed of. "We have no idea anymore what's going in or coming out, or what health care waste is put in which dump," Hameidi says.

At the moment, two main garbage dumps serve Ramallah, the de facto Palestinian capital, and its surroundings, home to some 300,000 people: one steaming mass of refuse on a hill near Bituniyah and a smaller site at el-Bireh, which is also used by the Israeli army and by Jewish settlements in the area. (This rare coexistence makes the el-Bireh site popular with bands of Palestinian children who scavenge for metal and things they can sell - the Jewish garbage, they will tell you, is far more valuable.) Both dumps are old and unsafe, lacking drainage systems, and their toxic juices run into the ground, toward the aquifer.

The need for a new landfill for the Ramallah area was recognized as far back as the late 1980s. In the 1990s, the Civil Administration, the army office responsible for governing the Palestinians, chose land to the east of Dir Dibwan, a relatively prosperous West Bank town, as the site for the new dump. The German government volunteered to fund the project at a cost of 14 million euros (\$ 17 million).

The residents of Dir Dibwan agreed to have the massive landfill built next to the town, but not too close, and not on land the town wanted for its expansion. The Civil Administration, however, wanted it built in Area B (as the populated parts of the West Bank nominally under shared Israeli-Palestinian control are known), and not in Area C, the name for land controlled solely by Israel and which consists mostly of open spaces, roads and settlements. That meant building

it close to the houses. The Palestinians suggested alternative sites, says Hameidi, who was involved in the negotiations, but all of them were turned down by the Israelis. One site, he recalls, was zoned to be a helicopter landing pad, another was reserved for the nearby settlement of Ma'ale Mikhmash, another was close to a Jewish tomb, and so on. This dragged on for years, as the unsafe landfills at Ramallah and el-Bireh piled higher and higher and the danger to the aquifer grew.

The most recent site to be chosen by residents of Dir Dibwan, environmental groups like FoEME and the German government but vetoed by the army is a stark, beautiful slope to the east of Dir Dibwan, where the high land begins to roll down to the Jordan Valley. On a recent afternoon, a shepherd in a keffiyah is there with a small flock of shaggy goats, moving with a chorus of hollow tinkling. All around here the geography of the struggle for control over this land is visible: white and red settlement houses, boxy Palestinian homes, the trailers and antennas of illegal Jewish outposts. The new site is empty and far from any human habitation. But it is in Area C, and to the east of the Allon Road, a north-south highway that connects Jewish settlements and marks the informal border between the high land of the West Bank and the Jordan Valley to the east. (Dir Dibwan is to the west of the road.) The army will not approve the site, presumably because it does not want the Palestinians to have a foothold on the other side of the road in an area currently devoid of Palestinian presence and which Prime Minister designate Ehud Olmert and others have talked about keeping after a future withdrawal. According to Civil Administration spokesman Lt. Adam Avidan, the Palestinians turned down all the sites offered to them by the army. The official reason for the army's rejection of the latest location is simply "security," with no other explanation forthcoming.

With the project stuck for years, the Germans are now threatening to pull out. "The money exists, and all Israel has to do is say 'yes,'" says Zach Tagar, an Israeli FoEME researcher and activist. "But Israel is insisting on acting against its own interests. If the money disappears, everyone will suffer, not just the Palestinians." (A representative of the German Development Office in Ramallah declined to speak to The Report.)

Israel's seeming lack of interest in solving environmental problems like this one - the very fact that such decisions are left to the army, with its obvious preference for "security reasons" over any other considerations - is not the only thing standing in the way of a solution. At the moment, the latest disruption in the attempt by some international donors to fund infrastructure projects like the new dump at Dir Dibwan is the fact that the PA is headed by a terror group, Hamas, that they can't work with.

The U.S., the World Bank, Japan and European countries including France and Finland have all been pushing projects in the West Bank, and 15 major ones are in varying stages of development, including waste-water treatment plants in

Jenin, Nablus and Hebron. But in the light of Hamas's rise to power, representatives of those countries are waiting for signals from their home governments on how to proceed, and directives have been slow to arrive so far. In the meantime, all funding for projects that haven't yet begun construction has been suspended. The U.S. government's international development agency, USAid, has led the field, cutting off all contact with the PA and freezing a planned sewage plant in Hebron, among other projects. The World Bank has done the same. The EU announced on March 21 that the 500 million euros it provides yearly in aid to the Palestinians was on hold "indefinitely." Of the 15 West Bank projects, most of them with direct bearing on efforts to protect the mountain aquifer, nine are now frozen.

Pascal Gansen, a Frenchman who manages water projects for the World Bank and the Finnish government - he is currently heading an \$ 11-million emergency drinking water pipeline project near Hebron fed by the mountain aquifer - confirms that all projects in the planning stage are now on hold, and that all Western governments are telling their people to deal only indirectly with the Hamas-led government. "It could not have happened at a worse time," Gansen says of the Hamas victory. "There are projects that we're desperate to get built, and no one can afford delays like this." Gansen's emergency water project is going ahead because it was already under way at the time of the Hamas victory. The Palestinian Water Authority, as it happens, answers directly to PA President Mahmud Abbas, not to the Hamas cabinet led by Ismail Haniyeh, and is still headed by Fadel Kawash of Fatah. But Western governments are suspicious and the money isn't flowing.

Not everyone is upset about the delays in the construction of the dump at Dir Dibwan. When I arrive at the el-Bireh dump, the Palestinian children who scavenge the piles of garbage notice me and three of them, their faces filthy and their clothing torn, come over to see what I want. They are suspicious and won't give their names, but relax a bit when they are convinced I'm not a settler. They become agitated, however, when they learn that this dump, the source of their livelihood, could one day be closed and replaced with a new one at Dir Dibwan. When? the ringleader, who appears to be about 11, wants to know. Maybe in a few years, I tell him. He laughs, waves his hand, and predicts: "It'll never happen." Moments later an army jeep roars into the dump, and the frightened children scatter among the heaps of refuse and vanish. Between Kibbutz Yad Hana and its neighbor, the Palestinian city of Tul Karm, rises an 8-yard-high concrete wall, part of Israel's separation barrier. Adjacent to the wall on the Israeli side is the barrier's environmental equivalent: a state-of-the-art sewage treatment plant. If the concrete wall is meant to keep Palestinian suicide bombers from entering Israel, the plant is meant to stop Palestinian sewage from doing the same, treating waste that flows a short distance under the wall from Tul Karm as well as the polluted water of the Nablus River, which arrives here after its journey through the West Bank. Before the plant's construction in 2002, the waste flowed into the Alexander River near

Hadera, helping turn it into an environmental disaster. The plant played a major part in the river's successful rehabilitation.

On a recent afternoon, Moshe Grinberg, the sewage-splattered and bespectacled kibbutznik who runs the facility, is observing pungent brown goop - concentrated sewage - plopping from a pipe into a massive tank, where it would be turned into solid material and then shipped off to a center for hazardous waste disposal in the south. Fluids are filtered and sent to be used for irrigation or returned to the river to flow toward the Mediterranean. Every day, Tul Karm sends up to 4,000 cubic meters of sewage under the separation barrier and into the plant; between 6,000 and 10,000 more comes from Nablus. Other things come through too, like tires and trees and dead sheep. The 3.5-million-shekel (\$ 768,000) cost of maintaining the sewage plant is deducted from the taxes that Israel collects for the Palestinian Authority. (Since the inauguration of the Hamas government, all of those funds are being held up by Israel.)

Grinberg's plant has succeeded in blocking the flow of Palestinian sewage into this part of Israel and has helped save the Alexander River. But it isn't a solution. "I can only catch what comes through to our side," Grinberg says. "By the time the waste from Nablus reaches us, it's gone through half of the West Bank and seeped into the ground." When the sewage gets here, most of the potential damage to the aquifer has already been done.

The only solution, says Prof. Chaim Gvirtzman, a Hebrew University water expert, is to "stop waste at the source" - that is, treat sewage before it flows into the rivers of the West Bank and build safe dumps that don't deposit toxic chemicals into the ground. But because such solutions require Israelis and Palestinians to work together or at least agree, they were unlikely even before the Hamas victory, at which point they became close to impossible. When Israel constructed a sewage line down the Kana River in the northern West Bank several years ago to take waste from settlements like Kedumim into Israel proper, the Civil Administration offered Palestinian villages in the area the option of hooking up to the pipeline. The Palestinians refused, because they thought this would be tantamount to recognizing the legitimacy of the settlements. The same thing happened with a proposed sewage treatment plant for waste coming from the settlement city of Ariel and from the nearby Palestinian town of Salfit: The Palestinians would not take part in a project that required cooperation with Israeli settlements. As a result, the Palestinian towns continue to pour their sewage into rivers and cesspools.

Israelis and Palestinians are dependent on the same fragile aquifer, and - as in homes where opening the hot water tap in the kitchen makes the shower run cold - everything one side does is felt acutely by the other. Since Oslo, the Palestinians have drilled a large number of wells in the western West Bank that Israel says are illegal. (Gvirtzman puts the number at 250.) With the Palestinians pumping more out, Israel has to scale back its own use, because if

too much water is extracted the whole aquifer will become contaminated with salt. "The fact that the army is still in the West Bank keeps this to a minimum, but the moment we're gone it will increase many times over," Gvirtzman warns.

Israel recognizes that it will get less of a slice of mountain aquifer water in the future; this was, Gvirtzman says, one of the central reasons behind the construction of the desalination plant south of Ashkelon. Eventually that plant is supposed to provide 100 million cubic meters of water a year, around 5 percent of the country's overall water use, and more installations are set to be built. But this is not an adequate alternative for Israeli farmers, because the cost of desalinated water - three times the cost of aquifer water - will drive up agriculture prices.

The question of who gets how much water from the contested aquifer, however, will become academic if that water becomes unfit for drinking. Though all agree that the danger will increase the longer West Bank sewage goes untreated and dumps like the one at el-Bireh are operational, close to nothing is currently being done. With their government isolated and aid money on hold, the Palestinians are preoccupied by more pressing problems, like medicine and food, according to Hameidi: "I don't see this on the Palestinian agenda any time soon," he says. With Hamas in power, the Western countries that are the source of funding for badly needed infrastructure projects are keeping their distance. And in Israel, the idea that the country can pull out of much of the West Bank, build a fence and forget about it appears to have achieved something close to a consensus. But unilateralism is not an option in this case. After more than five years of terrorism, the collapse of authority in the West Bank and the rise of Islamist extremists to power in the PA, cooperation, compromise and meticulous negotiations seem like quaint relics from a simpler time. Nothing else, however, will save the mountain aquifer.