Salty solution: The fight over water in the Middle East

by James L. Hecht in the June 19, 2002 issue

Water will determine the future of the Occupied Territories, and by extension, the issue of conflict or peace in the region." Thomas Naff made this remark several years ago, and water remains a key, if often unacknowledged, issue behind the strife in the Middle East. When Israel's Likud Party vowed in May never to allow the creation of a Palestinian state, former Prime Minister Benjamin Netanyahu acknowledged that a central issue is water: "A Palestinian state would control the aquifer, which gives us 30 percent of our water. Yes to a Palestinian state means no to a Jewish state, and yes to a Jewish state means no to a Palestinian state."

When Israel occupied the West Bank in 1967, it enforced stringent methods to monitor and control water supplies. Only 15 percent of the water supply was allocated to the Palestinians; the other 85 percent is used either by Jewish settlers, who constitute less than 10 percent of the population, or by Israel. As a result, about 90 percent of the land cultivated by Jewish settlers is irrigated, as opposed to only 3 percent of the land farmed by Palestinians.

For personal use—drinking, cooking, bathing and sanitation—Jewish settlers consume more than four times as much water as do West Bank Palestinians, who average only 88 liters per person per day. This is less than the 100 liters considered to be the minimum for an acceptable quality of life. (Most American toilets require at least two liters for a single flush.)

Since the beginning of the occupation, the Israeli authorities have not permitted Palestinians to drill any new wells for agricultural purposes or to repair existing wells that are in close proximity to the wells of Jewish settlers. Arab wells have been metered, and limits have been placed on the amount that may be pumped from them. In addition, water from two aquifers which are mainly in the West Bank but extend into Israel are used to supply Israel.

Yet even these measures have not solved Israel's water problems. Like many other parts of the world, Israel has a critical need to increase fresh water supplies.

The planet has huge amounts of water—about 1,360,000,000 cubic kilometers. But 97 percent of the earth's water is seawater and another 2 percent is locked in icecaps and glaciers. Most of the remaining 1 percent of the earth's water supply is found in underground aquifers which are recharged by rainwater seeping through the soil.

Water use has been increasing even more rapidly than population. During the 20th century world population more than tripled, and the use of water for agriculture increased more than fivefold. Agriculture accounts for 65 percent of the global use of fresh water.

As a result of these large increases, which are likely to continue, pumping from most aquifers has exceeded the rate at which they replenish themselves. For example, the Ogallala Aquifer, which runs 1,300 miles from Texas to South Dakota, is being used up eight times faster than nature can refill it. Over several decades the Texas portion of the Ogallala has been depleted by an estimated 164 billion cubic meters—more than five times the entire state's annual water use for all purposes.

For decades Israel's use of water has outstripped its renewable supply. Overpumping has seriously degraded the Coastal Aquifer, which is entirely in Israel, deepening Israel's dependence on the two aquifers in the West Bank and increasing its reluctance to end the occupation.

The U.S. can do something to alleviate this problem and, in the process, better prepare itself and the rest of the world to deal with their own water shortages: it can offer to finance a series of large desalination plants to greatly increase the supply of water in Israel, the West Bank and Gaza. Recent progress in desalination technology makes such a move feasible.

The new technology of "reverse osmosis" offers a more efficient and less costly method of desalination than the old process of distillation. Reverse osmosis involves passing sea water through a thin-film membrane at a pressure of 1,000 to 1,500 per square inch. About one-third of this water emerges with a low salt content; the other two-thirds, containing 50 percent more salt than the water that was taken from the sea, is then returned to the sea.

While the cost of desalinated water has steadily decreased, it still is much more expensive than water from traditional irrigation sources. The cost of a medium-size desalination plant, producing 6 million gallons per day, is about $25 million; the cost of the water produced is about 0.3 cent per gallon, three or four times the present cost of water for agricultural use in Israel. This makes desalinating seawater for agricultural use too costly to attract private investment.

But for only a small fraction of the $2.8 billion a year the U.S. gives Israel in military and economic aid it could provide the subsidies that would make desalination plants economical. The subsidies could be provided through a combination of grants and low-interest loans. Since about half the cost of delivering water represents capital charges, such subsidies would reduce the cost of desalinated water by 20 to 50 percent.

High-value crops such as vegetables, citrus fruits, grapes and apricots can by grown in the Middle East if 5,000 to 8,000 cubic meters of water (about 1.7 million gallons) per hectare (2.47 acres) are provided each year. Since the value of the crops per hectare would be about $10,000, the present cost of about $5,000 for desalinated water per hectare is too high. But the cost of desalinated water probably will be much less in the future.

Lower costs can be achieved through technological innovation and through economies of scale—a product is less costly to manufacture in large quantities. Today the cost of desalinated water is about half of what it was 15 years ago; surely the cost can be decreased by half again—or more. Improved membrane technology could allow operating at a pressure as low as 600 psi, which would substantially decrease both capital and operating costs.

By financing desalination plants, the U.S. could also greatly decrease the tensions in the area, turn barren land into rich farmland, some of which could be used for resettling those in refugee camps, and encourage economic cooperation between Israel and Palestine that would provide a powerful incentive for peace. While the first use of the desalinated water must be to address the present inequities and to improve agriculture on existing Palestinian farmland, further increases in water could be used to convert barren land into productive farms.

The Occupied Territories include large areas of rich soil which need only water to flourish. By skillful use of drip irrigation, the Israelis have demonstrated that it is

possible to make a desert bloom. A $25 million desalination plant would provide enough water to make about 3,000 acres of Palestinian land bloom.

Land is at the heart of the conflict between Israelis and Palestinians. By increasing the amount of available arable land, it will be easier to agree on how to divide it. Implementing a desalination project would require cooperation between Israelis and Arabs, and the necessity for this cooperation can be one of the proposal's major benefits.

Inspired by a 1943 book by David Mitrany, *A Working Peace System*, political scientists developed the concept of "functionalism," the idea that a lasting peace can be achieved if political adversaries learn to cooperate on a functional, rather than a political, project. Thanks to the vision of a French statesman, Jean Monnet, this concept was tested in 1951 when Belgium, France, Italy, Luxembourg, the Netherlands and West Germany established the European Coal and Steel Community. The ECSC united its six member nations in a single common market for the production and trade of coal, steel, iron ore and scrap metal, abolishing all trade barriers for these products.

That was the beginning of increasing economic cooperation between European nations which for centuries had fought bitter wars against each other. The community eventually became the European Community and eliminated all tariffs for trade between the member countries. In 1992 the EC, which had grown to 12 countries, created the European Union. The result of this economic cooperation has been a half century of peace and prosperity.

The desalinization project would make it necessary for Israelis and Palestinians to cooperate. Desalination plants must be adjacent to the sea. However, the West Bank does not border the Mediterranean. Gaza does, and it would be economical to locate desalination plants serving the southern part of the West Bank in Gaza. For much of the West Bank, pipes would need to run through Israel.

Here is a workable scenario: A corporation owned by both Israeli and Palestinian interests (probably the governments, at least initially) builds one or more very large desalination plants and the necessary pipelines, develops the land to be irrigated, manages the farms on that land, and perhaps develops communities where the farm workers can live. The management team includes Israelis and Palestinians. The workers on West Bank farms would be Palestinian, although there might be some

Israeli technical staff. The desalination plants in Israel would be staffed primarily by Israelis, though some Palestinians might be part of the staff.

While the first jointly owned desalination plants would provide water for the West Bank, subsequent plants would provide water for Gaza and Israel. The latter would not only increase cultivated land but also replace some of the water now being drawn from the aquifers largely in the West Bank. In addition, desalination plants might be built to furnish water to areas in Jordan, Syria and Lebanon, particularly if such areas were opened up for refugee resettlement.

Since there are advantages to competition, as well as to not having all of one's eggs in one basket, one company should not manage all of these ventures. There should be about three, each of which would control multiple desalination plants and the farming enterprises that they would spawn.

There are, of course, some risks. Water costs might still remain high. Israelis and Palestinians might refuse to cooperate. But there is so much to gain from such practical cooperation on the water problem that the risks are worth taking.