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Israeli and Palestinian Waters: Economics, Ecology and Equity

by David Brooks

For most of recorded history, conflict in the Middle East has revolved around water more than land or even oil. Consider how many of the stories in Genesis focus on water; similarly, more than 40 references to water can be found in the Koran.

Most of the region's main rivers cross international and ethnic borders, challenging successive peoples and governments to share water. Recent history is no less contentious, particularly so in the land shared by Israelis and Palestinians. With respect to water disputes, I distinguish three inter-related issues: the classic one of water quantity, the newer one of water quality, and geopolitics, an issue both new and old. Today's challenge is not simply to resolve the historic problem of water scarcity in an arid region but to do so with economic efficiency, ecological responsibility, and political equitability. Attention to one dimension alone is unlikely to be helpful.

In analyzing these issues, the word "crisis, favoured by popular writers, may be closer to the mark than describing the situation as "chronic, the typical practice of academics. "Chronic understates the urgency of conditions in which nations are heavily armed, urban dwellers depend on piped water systems, huge quantities and varieties of pollutants contaminate water courses, and rapid rates of population growth and economic change are endemic.

While conflict over water exists in many places in the Middle East, nowhere is the conflict sharper than in the Jordan River Basin shared largely by Israel, the West Bank and Jordan, with Syria and Lebanon also having some rights. It is in these areas that demand and supply are most seriously out of balance. Moreover, much of the water consumed in Israel originates in aquifers that rise on the West Bank -- land that may ultimately be controlled by Palestinians, a factor further contributing to crisis.

ECONOMIC CHALLENGE

From the moment humans first placed a few stones to direct water toward crops, supply augmentation has dominated discussions about water. Only in emergencies does conservation take priority. Typically, much more attention is devoted to increasing supply than to reducing demand.

It is time to shift emphasis to the demand side of water management. The energy crisis taught us that we are likely to close the gaps between water demand and water supply more easily, cheaply and safely by reducing use than by increasing delivery.

Middle East nations already use water relatively efficiently. The problem, to quote Thomas Naff, is "that they are not as efficient as the crisis and the scarcity requires them to be. In Israel, for example, water policy clearly answers to agricultural policy. Farming accounts for about 70% of all water use in Israel, including saline and recycled water. This water could be used to far greater economic gain in other sectors of the economy. Considerable volumes of water should be reallocated from irrigating crops to industrial

and household uses, or simply left unpumped to protect the aquifers.

Water is expensive because even conventional water supply systems are capital intensive, especially per dollar of revenue. The Jordan River Basin is not more arid than other parts of the region, but rainfall varies sharply from place to place and season to season. Hence, extensive systems must be built to gather and deliver water. As well, Israel and Jordan each use about one-fifth of their electricity just to pump water. Alternative systems are still more capital intensive, especially desalination. Desalination takes enormous quantities of energy, and even with low oil prices, costs to consumers would have to be two to five times current levels. Still, the idea survives in the form of megaprojects such as canals linking the Mediterranean and Dead Seas or the Red and Dead Seas. Such plans are questionable on economical and environmental grounds, especially before exploring demand-side measures.

Alternative analyses of energy -- dubbed the "soft energy path" -- that came out of the energy crisis of the 1970s have lessons that can be applied to the water crisis of the 1990s. Soft energy analyses focus on the services provided by energy, not on delivery of the commodity itself. The question then becomes how each end use or service can be most efficiently satisfied.

In marked contrast, conventional wisdom focuses on ensuring adequate supplies to meet present and future energy (water) demands. This perspective betrays outmoded doctrines of consumer sovereignty and the insatiability of human needs. It treats demand as being divorced from the policy process, a "given that must be satisfied by ever greater supply.

The soft path stands the conventional approach on its head. Analysis starts with end uses, not sources of supply. This reversal forces a bottom-up rather than top-down view. Now, conservation and efficiency are not merely unfortunate necessities but rather the touchstone of rational resource planning.

Of course, the analogy between energy and water is not perfect. Among other things, water lacks the direct linkage to thermodynamic constraints; except for hydropower, supply does not vary from year to year; and direct use is more important than indirect. Nevertheless, enormous opportunities present themselves to maintain excellent standards of living with lower consumption of water. For both water and energy, the amounts actually needed to support a comfortable life are only a small fraction of total consumption. The lesson for Israel and the Occupied Palestinian Territories is that the largest, safest and cheapest "source of supply for water is likely to be found through conservation in existing uses, mainly in irrigation water.

ECOLOGICAL CHALLENGE

A second element of the soft energy approach is to devote as much attention to conserving quality as quantity. All Middle Eastern countries have a wastewater problem, and one that links directly to water supply. The examples are numerous. Dumping of wastewater is common, directly into water courses or dry river beds. At the next rainfall, the wastewater seeps into the aquifers. Per hectare use of pesticides and fertilizers in Israel and Jordan is among the world's highest, and run-off is equally high and unregulated. As one result, nitrate concentrations (augmented by sewage effluent) in the Coastal Aquifer could eventually make the water unacceptable for irrigation. Olive oil mills, an otherwise excellent way to increase farm income and provide rural employment, release a black liquor that depletes the oxygen content of waters into which it seeps.

Although nations sharing the Jordan River are among the world leaders in recycling sewage for agricultural use, most of the re-used water receives minimal or no treatment, and much of it contains excessive quantities of chemicals. Industrial contamination of surface and groundwater can also be assumed to be serious, even without regular testing. Spot checks in Israel show concentrations of solvents, petro-chemicals, gasoline products and other contaminants at levels well above those allowed in other industrial countries.

The short coastal rivers are the most seriously degraded ecosystems in Israel. Their flows are greatly reduced because the springs that fed them have been diverted to the National Water Carrier. These

diversions remove the flushing effect of a stronger flow, worsening conditions in rivers such as the Kishon in Haifa, which, according to one source, receives 10 thousand cubic metres daily of industrial waste water. Parks along its banks are now considered dangerous to health.

Some exceptions relieve the generally dismal picture of water quality in Israel. Lake Kinneret (the Sea of Galilee) is managed under a unified plan that prohibits dumping and restricts the uses of water from the lake. As a result, Kinneret retains its quality, its beauty and its tourist income. The Yarkon River in Tel Aviv is the test case in a physical and economic feasibility study of rehabilitation to a level that would permit recreational use.

Water quality and water quantity are positively linked. Conflicts between economics and environment that arise so commonly when approached from the supply side are typically lessened or eliminated when approached from the demand side. For example, efficient irrigation reduces the risk of soil salinization, and low-flow toilets and showers cut wastewater flows into sewers. By and large, policies that promote more economically efficient use also support environmental protection.

GEOPOLITICAL CHALLENGE

How many times have we seen projections for water that show increasing deficits between water use and water availability! As a way to identify short-term problems and to adjust operations in water utilities, forecasts have their place. But as a way to determine policy options, they are seriously inadequate or misleading. Turning a final time to the soft energy alternative, it substitutes "backcasting" for forecasting. Forecasting begins from the present and tries to determine the future. Backcasting begins from the future and works back to the present. In a water backcast, one defines in detail a future water economy, and then analyzes whether there is a feasible and acceptable path between the present to that future. In the case of energy, traditional forecasting always called for greater supplies. However, backcasting indicated the option to maintain consumption at the same level or even cut it. Actual energy use turns out to be much closer to the patterns suggested by the soft path than by traditional analysis.

Approaching water problems through a soft path approach could work to reduce conflicts between Israelis and Palestinians. Because it is concerned with how desirable futures can be obtained, backcasting is explicit about its subjective goals. It has none of the pretensions to objectivity sometimes claimed by forecasting. This feature makes it an ideal partner for political science in a search for regional cooperation and accommodation. All sides see close linkages between water availability and national political and economic security. It is therefore only through the exploration of alternative futures, not simply a projection of the present into the future, that we will find ways to minimize conflict.

CAUTIOUS OPTIMISM

The Jordan River Basin is clearly an area of water stress. The best approach may well be to treat quantity and quality issues together, and to recognize that neither can be achieved without explicit recognition of mutually shared rights and responsibilities for management. Indeed, this was the principal message of the Brundtland Commission. Sustainable development is not just a matter of economics and ecology; if it does not also incorporate equity, it will fail.

The current water economy and water policies in Israel and the Occupied Palestinian Territories are coming into question sharply because they have been used to the severe and evident disadvantage of Palestinians, and even work to the less evident disadvantage of Israelis themselves. With the parallel bilateral and multilateral tracks of the current peace process, we may at last be witnessing Rothman and Lowi's iterative process "by which progress beginning at the political process -- that is, the Arab-Israeli peace process -- requires concrete progress at the practical level -- for example, sharing water resources -- for both consolidation and fruition." There are grounds for cautious optimism. Economy, ecology and equity may indeed be joined around water issues in the current negotiations.

NOTE:

This article is an abridgment of the keynote address by Dr David B. Brooks at the First Israeli-Palestinian International Academic Conference on Water in Zurich, Switzerland, in December 1992, organized by the Truman Institute for Peace at Hebrew University and the Jerusalem Center for Strategic Studies (MAQDES), a Palestinian organization. The conference was sponsored by IDRC and several other organizations. Dr Brooks is Program Director, Environment and Technology, IDRC.

Available from IDRC Books:

[Watershed: The Role of Fresh Water in the Israeli-Palestinian Conflict.](#)

by Stephen Lonergan and David Brooks.

IDRC October 1994, 220 p. paperback.

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