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Smoothing the Waters

Part I of II: The Jordan Rift

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Water allocation from the Jordan River and the three major regional aquifers remains a major obstacle in the path of the Israeli-Palestinian peace process. Middle East stability depends upon effective regional water management. *Full recommendations, page 4.*

Summary: The Oslo Peace Process aims to address, first and foremost, salient security issues between Israelis and Palestinians that stand in the way of a lasting regional peace agreement. The other major challenge to regional stability in the region, however, involves meeting basic human needs and, in particular, providing adequate food, water and sanitation to sustain rapidly growing populations. While control of water resources has long been seen as an important security

objective, most other regional environmental issues are closely tied to some aspect of water quantity and quality.

Thus, although the current dilemma is often identified as a crisis of water scarcity, the reality is quite different. The critical issue is to find ways to efficiently manage available water resources and reliably deliver all the water demanded. Ensuring adequate water quality will be a more difficult management problem than supplying enough water. ❖

This brief is the product of IGCC's April 1998 *Conference on Water and Food Security in the Middle East*, hosted by the foreign minister of Cyprus in Nicosia, and a December 1998 Washington DC policy seminar titled *Middle East Environmental Diplomacy: Past Efforts, Present Dilemmas and Future Options*. We wish to thank the United States Institute of Peace, the Muskie Foundation, the Hewlett Foundation and the United States Department of Energy for generous support of this work.

IGCC is a multicampus research unit of the University of California, established in 1983 to conduct original research and inform public policy debate on the means of attenuating conflict and establishing cooperation in international relations. Policy Briefs provide recommendations based on the work of UC faculty and participants in institute programs. Author's views are their own.

SINCE BIBLICAL TIMES, WATER HAS been the source of conflict in the Middle East, and has played a prominent role in the demarcation of political boundaries in the region. Currently, there are water conflicts involving (in various pairings): Egypt, Israel, Jordan, Iraq, Lebanon, Sudan, Syria, and Turkey. Not unexpectedly, the Oslo Accord failed to resolve the allocation-of-water issue, putting it off for subsequent negotiations along with land allocation issues.

In short, the current regional water allocation structure has proven inadequate. In this brief, we argue that it should be replaced with some form of a water market. While there are different ways to implement water markets, such considerations are secondary to the transformation of water from a security issue into an economic commodity.

Implementing water markets represents a major institutional change that will require political will at the highest level. Another desirable institutional change follows from the close proximity of Israeli and Palestinian populations in many areas. In such areas, separate water services are economically undesirable, and often impractical. Introducing international contracts for building and operating water concessions, in areas where engineering considerations suggest large cost reductions from serving populations in more than one political jurisdiction, is the solution.

The future of agricultural production in the region, given its scarce water resources, has been hotly debated. This debate should end; the widely held concept of "food security" should be abandoned in favor of recognizing that many water-intensive agricultural commodities can be safely imported at far lower cost. The region is ideally suited for specialization in a small number of valuable export crops. Further, there are likely to be large gains from developing a regional certification program to ensure the health and safety standards of these agricultural exports.

Finally, the formation of a regional professional association of experts on environmental planning, assessment and management will help provide the technical expertise to solve environmental problems in the region. It will also build competency and trust among experts in the different countries at the technical level.

Water Shortage, or Management Shortage?

Most available fresh water is used for irrigated agriculture, although urban water consumption is rapidly increasing. Water use, particularly in agriculture, is sensitive to price. Higher prices would induce a shift away from low-value to high-value crops, and from the agricultural sector to urban areas. The *effective* water supply can be increased by more efficiently using water in all sectors; by adopting a variety of different water reuse schemes, and by importing water-intensive commodities. Over the next twenty years, reused water will become a major source for agricultural production, while fresh water will increasingly be allocated to direct human use.

Over the long term, desalination is likely to play a substantial role in providing part of the water supply. However, at present desalination is unlikely to see large-scale implementation, since substantially less expensive alternatives now exist. However, the technical feasibility of large-scale desalination should fundamentally alter perceptions of water as a major security issue. It is possible to reproduce all of the water resources at issue using desalination at the cost of less than 1% of the current Israeli GNP! Since the cost of desalination is largely the energy used, it may be desirable to build several large desalination plants to assure the Israeli public that a reliable supply of water is available.

If not for the military nature of conflicts in the region, economic and political forces would have long ago forced political leaders to deal with the underlying water management issues. Aside from the need to use water pricing to reduce demand, the most serious short- to medium-term water supply issues involve deficiencies in the infrastructure required for transporting water to where it is most needed.

Further, poor water quality is becoming the increasingly critical management issue and has several dimensions. Open sewage in Gaza is only the most visible of current problems. Contaminated drinking water poses serious public health problems, and outbreaks of water-related insect-borne infectious diseases are already occurring. Seawater intrusion is a serious problem along the Mediterranean and is accelerating due to over-pumping from underground aquifers.

Agriculture is responsible for many regional water quality problems. Fertilizer and pesticide use is contaminating aquifers and reducing water quality in lakes and rivers. The major agriculture-induced water problem, however, is increasing salinity in soils.

Institutional (Market) Solutions

Water can be transformed into an economic commodity through the use of a regional water market where water can be bought and sold. Different forms of water markets require different levels of political involvement, trust, and technical expertise. While the economy as a whole will clearly gain from implementing water markets, there will also be individual gainers and losers. Recognition and adequate compensation of the losers is a crucial part of the transition to water markets.

Incremental approaches to dealing with the issue of water allocation have proven ineffective and will continue to prove ineffective. A dramatic change in existing water institutions is needed. One approach to allocating the gains from moving to water markets is to agree to split the profits from water sales among the parties according to an established formula. This avoids both having to bargain over initial water allocation on a source-by-source basis, and the issue of natural variability in rainfall and river flows. Such a scheme allows for continued supply of subsidized water to particular sectors or groups, as long as such subsidies were explicit and did not diminish overall profits.

Institutional change is also needed when dealing with pressing water-related health issues, particularly among the Palestinians. Critical water facilities providing drinking water and sewage are presently not being built because their existence is seen as dependent on the resolution of land conflicts. Yet, Israelis and Palestinians live in close proximity in many areas and could most efficiently be served by a single water utility. Net revenues from the operations of such a utility could be shared between respective political jurisdictions proportionately to the water services delivered. Putting up such a water concession for international bidding, and initially mandating that the bidders be from outside the region, would eliminate the political conflicts that are now associated with the ownership of and access to water supplies.

Regional Cooperation Schemes

There are successful examples of current regional cooperation on environmental issues in spite of the

seemingly insurmountable political, economic and religious differences in the Middle East. The most salient one is where the Jordanian, Israeli and Egyptian territories meet in a resort area along the Gulf of Aqaba, on the Red Sea. In the past, numerous large hotels dumped raw sewage straight into the Gulf, thereby damaging the existing coral reefs and making the beaches dangerous for swimming. Outside funding from international lenders, such as the World Bank, served as a powerful incentive to cooperate. The three neighbors invested in treatment plants and the problem is currently being resolved.

One possibility for extending this type of cooperation is the establishment of parks and nature preserves along the Jordan River. An intriguing function of such preserves, along with their recreation and tourism potential, is as buffer zones between contesting populations. Jordan, Israel, and the Palestinian National Authority (PNA) all gain from such an effort. Ecosystems do not respect borders and larger ecosystems are much more productive and resilient than smaller ones. Water necessary for such purposes, however, is all too easily assigned a low-priority position on any water allocation scheme. Providing water for this purpose could be incorporated into the structure adopted for regional water markets.

Food Security and (Water) Quality

Food security in the sense of being able to produce all the food that is needed in a country is a widely held goal. But in the Middle East, given the available water resources, such an objective is neither feasible nor desirable. Instead, water resources should be used to generate income required to import water-intensive foodstuffs, particularly grains. Meanwhile, agricultural water go for high-value crops. In many instances, agricultural production is most efficiently done through a combination of Israeli capital and Palestinian labor.

The geographic location of the area and its climate offer great potential for regional cooperation in exporting agricultural products to the European Union and the Gulf Arab states. However, given its strict food safety standards, the European Union is likely to want a certification program that shows no preference for Israeli products and pre-empts the problem of uncertified crops crossing porous borders. A regional food quality certification organization could serve such a purpose and deal with both biological pathogens and pesticide levels. Control of the first is likely to



improve sanitary conditions, while control of the second is likely to improve regional water quality. An agreement with the Gulf Arab states to accept agricultural products certified by this regional organization, regardless of country of origin, would provide a powerful incentive for its formation.

Planning Professionals

Removing the institutional roadblocks alone cannot solve the region's environmental problems. Experts will be needed to plan, execute and manage many individual projects. However, in-depth expertise is currently lacking in several key areas. When different political entities are involved, their experts need to know each other and, more importantly, trust each other's technical expertise. Moreover, the exchange of ideas between experts and their active collaboration play a key role in helping to find effective solutions to commonly occurring problems. Formation of a regional professional association is a critical step in bringing the various experts together and building up human capital. Such an association should hold regular meetings and publish a technically oriented journal to help disseminate regional

knowledge, identify key regional research needs, and encourage collaborative work. ❖

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How to resolve the Israeli-Palestinian water crisis:

- 1. Replace the current water institutions and allocation structure with a water market.**
- 2. Upgrade water infrastructure, particularly in areas controlled by the Palestinian National Authority, in order to facilitate water conservation, reuse, and transport.**
- 3. Where populations in more than one political jurisdiction can be most efficiently served by a single utility, put water concessions out for international bidding.**
- 4. Identify and compensate individual losers.**
- 5. Develop a regional certification program to ensure the health and safety of agricultural exports intended for major world markets.**
- 6. Form a regional professional association of environmental planning and management experts in order to build competency and trust at the technical level.**

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