

# **Confronting Water in an Israeli-Palestinian Peace Agreement**

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## **Abstract**

Trans-boundary water agreements are usually conceived as allocation agreements. In other words, water is treated as if it were a pie to be divided among the riparian states. Though sometimes useful to avoid conflict in the short term, this approach is flawed as a way to ensure efficient, equitable, and sustainable management of water over the long term. This presentation proposes adoption of a joint management structure that allows for ongoing conflict resolution concerning water demands and does so in a way that effectively de-nationalizes and de-securitizes water uses. Though specifically applied to water shared by Israelis and Palestinians, the objectives, principles and institutional structure are relevant to any place in the world where trans-boundary water divides rather than unites two or more peoples.

## **Note on Background to the Work**

The work underlying this paper was originally prepared for consideration of the Geneva Initiative, an influential non-governmental effort to promote the Israeli-Palestinian Peace Process. The existing draft Final Status Agreement, generally called “The Geneva Accord,” allows for Article 12, “Water,” but only stipulates “still to be completed.” The material that we summarize below was prepared by the two authors under contract to Friends of the Earth Middle East, one of the few remaining Palestinian-Jordanian-Israeli organizations, which had been asked by the Geneva Initiative to undertake preparation of draft Articles on Water and on Environment, and which gave permission to release these summary results.

## **Note on Source Document**

A more detailed version of the argument in this presentation is available as Brooks and Trottier (2010). *Confronting Water in an Israeli-Palestinian Peace Agreement*, *Journal of Hydrology*, vol. 382, pp. 103-114.

# Confronting Water in an Israeli-Palestinian Peace Agreement

David B. Brooks and Julie Trottier

Treaties and institutional arrangements cannot remain static. Factors like water requirements, use patterns and efficiency of management change with time, as do water management paradigms, practices and processes. [...] It may not be an easy task to formulate dynamic treaties, but one that must be considered very seriously in the coming years. (Varis, Biswas and Tortajada, 2008, p. XI)

## Introduction

Sensational reporting has sometimes presented water as the key problem separating Israelis and Palestinians, but borders, refugees, the status of Jerusalem, and Israeli settlements in the Occupied Territories appear far more contentious to negotiators and researchers alike. Both Wolf and Gleick have demonstrated that, time and again, riparian states collaborate over trans-boundary water bodies rather than fighting over them (Wolf, 1998; Gleick, 2000). Israel and Jordan offer a case in point, as exemplified by Annex 2 of their 1994 Peace Treaty. However, the absence of water wars does not mean that fresh water is free of conflict. Even less does it mean that shared water resources will be managed in ways that are efficient, equitable and sustainable. To achieve those broader goals requires that, in this region as elsewhere, water governance be treated less as a technical issue and more as a political one (Feitelson, 2002; Blomquist and Ingram, 2003; Molle 2009).

The common approach to sharing water involves dividing the water as if it were a pie; available water is divided among riparian nations by a quantitative formula involving absolute or percentage shares. This was the approach used for the Israel-Jordan Peace Treaty and for the Oslo Agreement; it is currently reflected in proposals put forward by both the Israeli and the Palestinian negotiating teams (Lautze et al., 2005; Lautze and Kirshen, 2009). Unfortunately, though it can avoid diplomatic problems and even resolve some short term issues, this once-and-forever approach is seriously deficient over the longer term.

The purpose of this paper is to outline a different approach for joint management of shared water. Though specifically applied to water shared by Israelis and Palestinians, the objectives, principles and institutional structure are relevant to any place in the world where trans-boundary water divides rather than unites two or more peoples.

The next section of the paper identifies the main defects of quantitative approaches to sharing water. The paper then provides a brief review of the hydro-geology of water resources in Israel and the Occupied Territories—for brevity, we do not discuss Gaza—and then identifies those water resources to be designated as “shared” within the context of this proposal. The following sections describes the objectives that our proposed agreement is designed to achieve. All of this material culminates in the final major section where we describe the institutional structure proposed to implement a joint management system for water shared by the State of Israel and the future State of Palestine. We conclude with comments on the unhappy fate of our proposal when it

confronts not water but the water establishments on both sides of the Israeli-Palestinian border.

### **Defects of Quantitative Division of Shared Water Resources**

Quantitative approaches to sharing water have three serious defects: securitization, rigidity, and ecological fiction. An issue becomes “securitized” when it becomes portrayed as an essential component of national security (Buzan 1983). It then leaves the realm of what is negotiable, what can be the object of compromise. Once such allocations have been fixed, changing them is perceived as a threat to national security (Lustick, 1993) .

Quantification also leads to rigidity. As a result of climate change, renewable water resources are likely to decrease in the Middle East, with particularly severe effects on agriculture (Freimuth, et al., 2007; FAO, 2008). Quantitative allocations that are possible today may very well be impossible in a few years simply by virtue of climate change. Further, demographic change and economic development will affect demand for water in unforeseeable ways. Quantitative allocations that seem equitable now may be considered inequitable in a few years by one or the other party.

Finally, unlike land, water is a mobile natural resource. Each drop is used several times between the moment it falls as precipitation on the West Bank and the time it reaches the sea or evaporates or evapotranspires. During that trajectory, the quality of the water is generally degraded. As well, the water comes to be used within different polities, each with its own structure of power determining the rules of management. It may be used a first time within a Palestinian farmer-operated irrigation system based on a communal property regime before it returns to the aquifer and reappears in an Israeli well operated by Mekorot to supply drinking water to an Israeli municipality or a Palestinian village. Every time, the set of actors determining how that drop of water will be used, and how to prevent it from being contaminated is organised differently. These various polities all need to be considered in the elaboration of an agreement on sharing water.

It is a key part of our thesis that fixed quantitative allocations of water, even if presented as percentage shares, work against long-term solutions. Our proposal is designed to avoid these defects as much as possible. However, our proposal does presume prior definition of final borders between the State of Israel and a future State of Palestine.

### **Geography And Hydro-Geology**

Reviews of the water resources available to Israelis and Palestinians appear in many places (Hillel, 1994; Lonergan and Brooks, 1994; World Bank, 2009), so only a brief summary will be given here. Figure 1 shows the region occupied by Israel and the Palestinian Authority with the 1949 armistice line, commonly called the Green Line, and the larger surface water bodies and aquifers. The ridge where many of the oldest cities are found separates drainage westward to the Mediterranean from drainage eastward

to the rift valley. It also serves as a rain shadow with lower levels of precipitation on the eastern slope compared with those on the western slope.

### ***Aquifers***

Two main aquifer systems underlie Israeli and Palestinian land: the Mountain Aquifer and the Coastal Aquifer. The Mountain Aquifer underlies the ridge mentioned just above. It is a karstic system that carries high-quality water with relatively rapid rates of flow from intakes mainly located on the West Bank in three directions, as shown on Figure 1: an eastern block that lies almost entirely under the West Bank; a northeastern block drains through springs in northern Israel to the Jordan Valley; and a western block, by far the largest, drains to the Mediterranean through springs in Israel. Because it underlies the highlands, much of the Mountain Aquifer can only be exploited by deep drilling.

The Coastal Aquifer is made up of a series of partially disconnected lenses in a sandstone series of rocks that dip gently from the coastal areas of Israel and the Gaza Strip toward the Mediterranean Sea. A relatively shallow aquifer, it has long been tapped to supply local communities and farms along the coastal belt. In recent years it has been subject to pollution from agricultural chemicals and to seawater infiltration as a result of over-pumping.

### ***Coastal Rivers***

A number of rivers rise in the highlands, mainly in the West Bank, and flow through Israel to the Mediterranean Sea. These rivers have been heavily exploited for local water uses and wastewater disposal. Many had become little more than open sewers, but in the last few years their value for ecological services, for recreation, and for urban amenities has come to be acknowledged. With significant funding from the Israeli government, reclamation has yielded results evident in better water quality and the return of species that had been extirpated.

### ***Jordan River System***

The Jordan River originates from three sources, the Dan Springs in Israel contributing about half the flow, and the Hasbani in Lebanon, and the Banyas on the Golan Heights, each contributing about one quarter of the flow. The Jordan flows from the conjunction of the three springs in Israel to Lake Tiberias (Kinneret, in Hebrew) which lies entirely within Israel according to the 1949 armistice line, and then on to the Dead Sea. Its only major tributary is the Yarmouk River, which flows from highlands to the east and which, for part of its course, forms the border between Jordan and Syria and, then just north of the Dead Sea, the border between Israel and Jordan. Water quality in the Jordan river was once good but is now seriously degraded from sewage and runoff from agricultural fields.

### ***Other Sources of Water***

Approximately 70 percent of Israel's municipal waste water is captured, treated to secondary and in some cases tertiary levels, and reclaimed for agriculture. There are plans to expand the system until by 2020 some 20% of total water supply and 50% of

irrigation water will come from treated waste water (Arlosoroff, 2007). The marginal cost (beyond collection and secondary treatment of urban sewage) is significant but well below the cost of additional fresh water. Very little of Palestine's waste water is reclaimed and treated for reuse, though some waste water originating in the West Bank is treated in Israeli plants.

Desalination plants located along the Mediterranean coast now supply about 200 Mcm of fresh water per year, with at least as much additional capacity coming on stream within the next five years. Already, desalination plants supply around 20 percent of the Israel's potable water needs. Though expensive from both energy and capital cost perspectives, the delivered cost of desalinated water compares favourably with that of other alternatives to provide additional drinking water. However, desal water is too expensive (and ironically too pure) for irrigation, which is by far the largest use of water for both Israelis and Palestinians.

### **What Water Is Shared And What Is Not**

Any agreement for joint management of water must be clear about exactly which bodies of water are shared and therefore the object of the institutional structure described in this article. Given the path that water follows from source to sink, designation of water as "shared" is necessarily a political choice. As well, it is useful to apply some rules of reason. For example, we asserted that an aquifer that is 90% or more under one side of the border shall be treated as non-shared water. Special arrangements also have to be made for desalination plants or water treatment plants that are located on or very close to the future border between Israel and Palestine.

Skipping many details, most of the water that occurs in or under Israel and Palestine other than that in the Coastal Aquifer is shared water. In particular, the Western and Northeastern blocks of the Mountain Aquifer, are shared water, as are all of the coastal rivers that rise in the highlands and that empty into the Mediterranean Sea. However, the Eastern block of the Mountain Aquifer is considered Palestinian.

Rules for sharing the Jordan River have to be different because of the existing Peace Treaty between Israel and Jordan. Annex 2 of that treaty not only divides the water in the river in ways that are inconsistent with the approach we propose but also totally ignores Palestinian rights to water. In order to compensate for this gap but live within the provisions of the treaty, we recognized that Jordan is one of the most water-stressed states on earth (Scott, 2003; Alkhaddar, 2005), so its allocation cannot be reduced. By implication, then, the water allocated to Israel under Annex 2 must be treated as if it were allocated jointly to Israel and Palestine. Finally, in accord with the cut-the-pie approach of the Treaty, we suggested that the Israeli allocation be divided equally between Israel and the future State of Palestine.

### **Searching For Consensus On Objectives**

A literature review and discussions with water specialists on both sides of the border convinced us that consensus between the two parties could be reached on four broad objectives for shared water management:

- ! economically efficient water management,
- ! socially and politically equitable (not necessarily equal) water management,
- ! ecologically sustainable water management,
- ! management that would be implemented in practice.

Rahaman (2009) explains how the first three of these objectives fit within the general objective of “reasonable and equitable use,” which appears in almost all trans-boundary water agreements. The last of the four needs further explanation. An agreement can be implemented when all parties to the agreement have the institutional, social and financial means to translate it into practice. Many of the water laws adopted over the last 20 years fail this test. The Oslo agreements and the ensuing Palestinian water law were no exceptions. They created the Palestinian Water Authority as a regulating body entrusted with implementing the provisions of the agreement concerning water (Trottier 1999, 2007). That approach was appropriate for Israel, which, by its Basic Water Law of 1959, had effectively nationalized all water in the nation. However, still today, over 70% of the water actually used by Palestinians is managed by local or farmer-based institutions. In effect, and with the support of some Palestinian officials, the Oslo Agreement imposed a carbon copy of Israeli water management institutions onto the Palestinians (World Bank, 2009). Few Palestinians even knew about this component of the Agreement, and they continued to abide by the existing grassroots institutions, which, as shown by evidence in the area (Trottier 1999) and elsewhere (Mabry, 1996; Buckles, 1999), are generally perceived as both efficient and equitable.

### **Proposed Institutional Structure**

The institutional structure proposed for joint Israeli-Palestinian management of shared water is shown in Figure 2. It divides power over water along several axes:

- ! between the Israeli and Palestinian governments,
- ! among several joint Israeli-Palestinian institutions,
- ! between scientific and political dimensions of management, whether local or national,
- ! among institutions working over several scalar levels.

The structure allows for the general principles of shared water management, but goes beyond, or perhaps behind, them to emphasize equality in all rights and responsibilities related to management of shared water. Just as with the objective of equity, equality in rights and responsibilities does not mean that each party to the agreement will receive an equal volume of water. It does mean that each will have equal standing within each of the institutions for joint management of shared water bodies and equal opportunity to participate in decision-making processes.

The main management tools that in the hands of the institutions illustrated in Figure 2 are continuous monitoring and ongoing mediation. Far from being simply a *modus operandi*, the combination of monitoring and mediation is the basis on which decisions will be reached concerning withdrawals from each well, reservoir or spring. It has many implications, including the need for fair treatment of water users who find themselves requested to reduce their rates of extraction. For example, users of a well supplying household water might require immediate replacement with water from a different source. In contrast, users of a well supplying irrigation water might be asked to cut back at certain times of the year or to accept monetary compensation (along with technical advice) for shifting to rain-fed methods.

Continuous monitoring and mediation mechanisms will apply to all shared water, regardless of whether the system is private, communal, or public. However, mediation mechanisms will be more relevant to the existing Palestinian institutions than to Israeli ones because the latter are so centralized.

### ***Bilateral Water Commission***

The Bilateral Water Commission (BWC) will replace the existing Joint Water Committee, but will have responsibility for all shared water, not only Palestinian water (as is the case with the Joint Water Committee). It will report directly to the Israeli and Palestinian governments with a mandate that is critical, but limited. Most importantly, it will:

- Establish limits for withdrawals, standards for treatment and targets for releases of water from aquifers on the basis of the recommendations set by its advisory bodies (see below).
- Grant permits for new drilling projects on the basis of the recommendations set by the advisory bodies.
- Develop extraction rates for contained aquifers, which are inherently non-renewable resources, so that their use is balanced over time against the ability of those using the water to develop alternative sources or to reduce demands for water.

The BWC can reject recommendations it receives from any of its subsidiary bodies, but it cannot issue an alternative decision on its own. Rather, should it reject a recommendation, it must explain its reasons for rejection and wait for new recommendations. If, after two exchanges, the BWC finds it impossible to reach agreement, the matter will be referred to the Water Mediation Board (see below) which is parallel to the BWC in status and which has more tools to promote a compromise and, if necessary, enough power to impose a resolution.

We suggest that the BWC be comprised of seven members, three selected by the governments of each Party, plus one member elected by the other six from any state

other than the two parties. Decisions of the BWC would be made by majority rule provided that at least two members from the three selected by each Party must be in favour of any decision.

A similarly structured sub-commission was proposed for the Mountain Aquifer because it is critically important to drinking water supply yet is probably the most vulnerable of the region's water resources. For brevity, the Mountain Aquifer Commission will not be discussed here, but a proposed model can be found in reports by Feitelson and Haddad (1998; 2000).

### ***Water Mediation Board***

The Water Mediation Board (WMB) will receive the complaints of any community or institution that argues that it is being negatively affected by either a planned water project, or an ongoing practice within another community or institution – including cases when these practices, such as urban planning, are not directly linked with water management. It will also receive complaints related to inequitable distribution of water or to inadequate water quality. And it will mediate in cases of disagreement between the BWC and any of its subsidiary bodies.

For all of the foregoing situations, the main role of the WMB will be to listen to the arguments of the parties involved in the complaint or conflict, and then to attempt conciliation. In cases when either the conciliation process fails or the alleged impact can not be proven or disproven by the evidence at hand, the WMB will be empowered to investigate independently. Open forums or public hearings may be held, and various dispute resolution options tried. Records shall be kept and published of all public hearings, and all recommendations to and from the Water Mediation Board shall be public. Ultimately, the WMB does have the power to impose a resolution, but that power will only be used as a last resort.

### ***Office of Scientific Advisors***

The Office of the Scientific Advisors will consist of two “Senior Science Advisors,” one each seconded from appropriate agencies in their respective governments, plus supporting staff. Their office will have the responsibility for reporting to the BWC on relevant issues related to water quality and water quantity and of recommending appropriate abstraction licenses and drilling limitations to the BWC. In addition to the other roles, the two Senior Science Advisors will be expected to have access to and to provide the BWC with commentary on three broad sorts of information:

- Water quantity data (including mapping)
- water quality data
- ecological limits on water withdrawals and wastewater disposal.

The Office is not expected to maintain an independent database but rather to ensure accessibility of the databases maintained by the two Parties. In addition to their duty to propose and monitor flow patterns and quality standards necessary to maintain the

ecological health of watersheds carrying shared water, the Senior Scientific Advisors must also find ways to guarantee a minimum domestic allocation, corresponding to a “human right for water,” to every household in a legal community.

### ***Local Water Management Board***

The Local Water Management Board will identify and register all bodies, families, communities or private entities that manage water resources locally and distribute the water to a community. The criteria used for this identification will be the existence of “rules-in-use” locally, that is the rules according to which a resource is actually managed by a group in specific situations. Those rules often differ from formal rules. They can, for example, remain oral, yet be scrupulously obeyed within a community. In effect, the process of registering local water institutions is to give them standing in subsequent interaction with the bodies described just above. A further duty of the Local Water Management Board is to assist the Water Mediation Board to ensure that local groups or institutions managing water sources in question are fully consulted during any investigation under the auspices of the WMB.

### **Conclusion**

In his response to the World Bank’s Assessment of Restrictions on Palestinian Water Sector Development (2009), Dr Nader Khateeb, Palestinian Director of Friends of the Earth Middle East said (2009), “It is time to replace the failed mechanism of the Joint Water Committee, established under Oslo, with an institution where Palestinians and Israelis are true partners in both water supply and management responsibilities.” That is exactly what we have tried to do with this proposal. The institutional structure described above is designed to accommodate the very different ways in which water is managed by the Israeli and Palestinian polities while, at the same time, treating them on an equal basis.

Our approach breaks with the double delegation model that has been so common until now. With such a model, citizens delegate decision-making to elected representatives. When dealing with scientific issues, these elected representatives then delegate decision-making to scientific experts (Callon, 2003). In contrast, we envisage a management structure for sharing water that both allows for a wider arena where non-state actors can interact, and also permits the system to react to changes in the natural regime as well as in economic and social development.

Scientists have a critical role to play in identifying alternative options for water management, but that their role (as scientists) stops short of determining what is best in water management. Political, social, economic and environmental values differ between and within societies, and those differences lead to different preferences for water management. We do not mean that one type of institution is better than the other; each has advantages and disadvantages. We do mean that the social capital produced by each society in dealing with water management must be reflected in and built upon within one agreement.

Unfortunately for our proposal, the water establishments on both sides of the Green Line that, for now, separates Israel from the West Bank, are dominated by hydrologists, hydraulic engineers and other physical scientists, leavened by a few economists. In contrast to other social scientists and conflict resolution specialists, most of whom react favourably to our proposal, physical scientists, engineers and quantitative economists prefer something closer to the model of water as a pie that can be cut into pieces. To compound the problem, Israeli negotiators tend to invoke the now widely abandoned doctrine of First-in-Time / First-in-Right. Even if that doctrine is still in force in some states in western US and in the Canadian province of Alberta, it surely has no role to play after nearly 45 years of military occupation.

The upshot is that, for now, the dynamic approach that we put forward has been taken off the table by the Geneva Initiative in favour of a more static approach. We hope that, as negotiations move toward conclusion, what we have proposed will again be seen to be the better approach for the long term.

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