AN AGREEMENT TO SHARE WATER BETWEEN
ISRAELIS AND PALESTINIANS:
THE FoEME PROPOSAL

REVISED VERSION

By David B. Brooks and Julie Trottier

With Preface by Nader Al Khatib, Munqeth Mehyar and Gidon Bromberg

March 2012

With the support of the European Union and the Czech Republic
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Friends of the Earth Middle East (FoEME) is a unique organization at the forefront of the environmental peacemaking movement. As a trilateral organization that brings together Jordanian, Palestinian, and Israeli environmentalists, our primary objective is the promotion of cooperative efforts to protect our shared environmental heritage. In so doing, we seek to advance both sustainable regional development and the creation of necessary conditions for lasting peace in our region. FoEME has offices in Amman, Bethlehem, and Tel Aviv. FoEME is a member of “Friends of the Earth International”, the largest grassroots environmental organization in the world.

Note of Gratitude

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Amman Office
PO Box 840252 - Amman, 11181 Jordan
Tel 962-6-5866602/3 Fax: 962-6-5866604
Email: info@foeme.org

Tel-Aviv Office
Menachem Begin Road 90 - Tel-Aviv, 67138 Israel
Tel: 972-3-5605383 Fax: 972-3-5604693
Email: info@foeme.org

Bethlehem Office
PO Box 421 - Bethlehem, Palestine
Tel: 972-2-2747948 Fax: 972-2-2745968
Email: info@foeme.org
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NOTE ON POLITICAL GEOGRAPHY

The reader may be puzzled by the use of different terms: future State of Palestine, West Bank and Gaza Strip, and Occupied Territories to designate what many people perceive as the same piece of land. To the contrary, the several terms are distinct and do not designate the same territory:

- The future State of Palestine has not emerged yet, and its borders are still being negotiated. This term refers to a state that includes a government, a defined territory, and a specific population.

- The West Bank and Gaza Strip are geographical terms that designate two precise territories. The West Bank designates the portion of the British Mandate over Palestine that was annexed by Transjordan when it became Jordan and includes East Jerusalem. The Gaza Strip is a small portion of land along the Mediterranean coast that lies between Israel and Egypt. Use of the word Gaza alone refers to the largest city in the Gaza Strip. Israel occupied the West Bank, the Golan Heights, the Sinai, and the Gaza Strip in 1967. After its peace treaty with Egypt in 1979, Israel withdrew from the Sinai, and in 2005 it withdrew from the Gaza Strip. Jordan relinquished all administrative ties with the West Bank in 1988.

- The Occupied Territories designate regions that are not in Israel proper, but under Israeli control. The Knesset (the Israeli Parliament) passed a law to annex East Jerusalem in 1967 and another law to annex the Golan Heights in 1981. However, it never passed a law to annex either the Gaza Strip or the West Bank apart from East Jerusalem. Consequently, Israel no longer considers East Jerusalem or the Golan Heights as occupied territories whereas the international community does. Given the return of the Gaza Strip to Palestinian authority, the term Occupied Palestinian Territories has become synonymous with the West Bank, and is not used in this document except for references to events or conditions in the past when that term was appropriate.

- In addition, under the Oslo agreements, the West Bank was divided into three temporary administrative divisions until a final status agreement is signed. The areas are not contiguous but rather distributed depending on the different population areas as well as Israel's military requirements. Area A (about 17 per cent of the West Bank) grants full civil and security control to the Palestinian Authority (PA) and includes all Palestinian cities but no Israeli settlements. Area B (about 24 per cent of the West Bank) allows for Palestinian civil control and joint Israeli-Palestinian security control; it includes many Palestinian towns and villages but no
Israeli settlements. Area C (nearly 60 per cent of the West Bank) allows full Israeli civil and security control, except over Palestinian civilians, and includes all Israeli settlements and most roadways that connected the settlements. In a few places in this report, we refer to these areas because of different conditions of or rules for water use and treatment. Although some powers have been devolved to the Palestinian Authority in Areas A and B, the Israeli Civil Administration (CA) remains as the ultimate authority throughout the West Bank.

The choice of each term — future State of Palestine (commonly shortened to “Palestine”), West Bank and Gaza Strip, and Occupied Territories — has therefore been carefully chosen every place it is used, so that it designates a reality that could be acceptable to both parties. At the time of this writing, the PA has an official government in the West Bank with the Hamas government in control of the Gaza Strip.
NOTE ON PHYSICAL UNITS AND METRIC CONVERSIONS

Water quantities are presented in litres, cubic metres and millions of cubic metres (MCM). In English units, one litre is equal to 0.264 gallons (approximately ¼ gallon), and one cubic metre contains 264 gallons; one MCM is equal to 811 acre-feet. When dealing with large quantities of water, one sometimes finds the term cubic decametre. One cubic decametre is equal to 1000 cubic metres.

Land areas are measured in hectares and square kilometres. In English units, one hectare equals about 2.5 acres, and one square kilometre equals about 250 acres or roughly three-eighths of a square mile. In some documents from the Middle East, the term dunam is found. Originally this term referred to a small parcel of land of varying sizes, but for some time now it has been standardized so that one dunam is equal to 0.10 hectares.
FOREWORD

This report by EcoPeace / Friends of the Earth Middle East puts forward a proposal for joint management of water shared by Israelis and Palestinians. The material that is presented in this report was originally developed in response to the need to complete the original version of the Geneva Accord. That version was presented in December 2003, to the peoples of Israel and of Palestine by individuals outside normal diplomatic or official channels. As originally written, Article 12 in the Accord identified the need for attention to fresh water, but that Article was left empty with only the words “still to be completed.” In an attempt to bring the Accord up to date, officials of the Geneva Initiative came to Friends of the Earth Middle East (FoEME) in 2007 to propose a contractual relationship under which FoEME would prepare draft material on fresh water that could be used to complete currently vacant portions of the Accord. As part of that contract FoEME had responsibility to engage analysts to do the drafting and to establish a review process for their work. As well, the Geneva Initiative agreed that the results of FoEME's work would be accepted in whole or not at all. Subsequently, FoEME engaged Dr. David B. Brooks and Dr. Julie Trottier, both of whom had many years of experience in dealing with water problems in the region. They drafted the Article on fresh water during 2007 and 2008.

The Geneva Initiative eventually decided not to adopt the draft Article prepared by Brooks and Trottier, favouring instead a more traditional quantitative allocation formulation published in 2009.1 However, FoEME believes that the ideas and the institutions that Brooks and Trottier proposed deserve to reach a wider public. In concept, it is a modern approach to managing water that flows along, across or under a state border – or, as the authors prefer to call it, a “post-modern” approach. Therefore, we have renamed the proposal originally prepared for the Geneva Initiative as the FoEME Proposal for Joint Management of Water Shared by Palestinians and Israelis.

An initial version of this Proposal was presented at a conference of nearly 250 people in East Jerusalem in November 2010 (Brooks and Trottier 2010b). The conference was very helpful both in indicating the extent of interest in resolving Israeli-Palestinian water issues and also in identifying weaknesses in what was still a version of the report originally prepared by the Geneva Initiative. After the conference, Drs Brooks and Trottier revised their first version, and this publication is the result. Chapter 6, which contains the institutional heart of the FoEME Proposal, is little changed from the earlier draft. However, the revised version is now supported by additional background information, explanatory materials, and references to the literature. In addition, the revised version responds directly to the critiques that have

been received, presents three case studies, and suggests specific steps that could be taken to move the Proposal from concept to realization in legislation by the two governments.\footnote{An earlier publication of the concept was published in the March 2010 issue of the Journal of Hydrology (Brooks and Trottier 2010a). A critique of their article by Hillel Shuval along with a response by Brooks and Trottier has also been published (Shuval 2011).}

We are proud to present this revised draft of the FoEME Proposal for an agreement to share water between Israelis and Palestinians. We firmly believe that it can make a significant impact on the peace process. But it is not just for Israelis and Palestinians. The FoEME Proposal has much wider applicability and could be considered for any place in the world where watershed boundaries and national, state or provincial boundaries do not coincide. Within that context, the FoEME Proposal incorporates institutional arrangements that are specifically designed for the Middle East.

Much work remains to be done to carry the FoEME Proposal forward. Some work is required to extend the development of the concepts in the report, but most of it will entail distribution of the proposal to Israelis and Palestinians, and, eventually, to ensure that it is heard and considered fully by their political leaders.

Finally, we wish to emphasize that the focus in this report on a permanent agreement for management of waters shared between Israel and the Palestinian Authority is not meant to ignore the immediate need for an increase in the quantity of water the Palestinians are allowed to use. The increase must provide enough water to meet the basic domestic and local food-growing needs of the population, as defined by international standards.

\textbf{Nader Al Khatib, Munqeth Mehyar and Gidon Bromberg}  
\textbf{Palestinian, Jordanian and Israeli Co-Directors}  
\textbf{EcoPeace / Friends of the Earth Middle East}  
\textbf{December 2011}
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Many people contributed their time and their ideas to the material in this report. We would particularly like to mention five people who served on the advisory committee for an earlier draft: Eng. Shaul Arlossorof, Dr. Karen Assaf, Jean-Marie Barrat, Prof. Abed Rabbo, and Prof. Hillel Shuval. All were very helpful, even when they did not agree with the views we express here. The Geneva Initiative provided initial funding for that phase of our work. We must also recognize the work of many people in the Palestinian and the Israeli offices of Friends of the Earth Middle East who helped with the editing and production of the report.

Heartfelt thanks go to Michael Alexander, who prepared much of the material for Chapter 4 and part of that for Chapter 7, and to Laura Doliner of Ottawa, who used her formidable editing skills to serve as both technical and literary editor for this revised version. Uri Ginott, Mira Edelstein and Youval Arbel of FoEME’s Tel Aviv office and Samiramis Kutlo in the Bethlehem office also helped at various stages in the preparation of the manuscript.

Finally, but in some ways most importantly, we want to thank former Czech diplomat and current Director of the Energy-Water-Environment Programme at the London School of Economics, Pavel Seifter. He was our guide, our advisor, our critic and, at some times, our host throughout the entire process from initial conception to final editing. He was also instrumental in bringing the support of Forum 2000 and of the Czech Republic Development Corporation to our work after other funding ran out. Though neither Jew nor Arab, neither Israeli nor Palestinian, he is a true friend of peace in the region.

David B. Brooks and Julie Trottier
February 2012
INITIALISMS AND ACRONYMS

- **BWC**  Bilateral Water Commission
- **CA**  Israeli Civil Administration on the West Bank
- **EXACT**  Executive Action Team, as created by the Water Resources Working Group of the Multilateral Track of the Middle East Peace Process
- **FITFiR**  First-in-Time / First-in-Right
- **FoEME**  Friends of the Earth Middle East
- **GAO [US]**  General Accounting Office
- **GLOWA**  Global Change and the Hydrological Cycle (in German)
- **GTZ**  German Technical Cooperation Agency (in German)
- **IDRC**  International Development Research Centre
- **HSI**  Hydrological Service of Israel
- **IJC**  International Joint Commission
- **IWA**  Israeli Water Authority
- **JSET**  Joint Supervision and Enforcement Teams
- **JWC**  Joint Water Committee
- **L/c-d**  litres per capita per day
- **LWMB**  Local Water Management Board
- **MCM**  Million Cubic Metres
- **MENA**  Middle East and North Africa
- **Mekorot**  Israeli national water company
- **MoU**  Memorandum of Understanding [between agencies or organizations]
- **NASA**  US National Aeronautics and Space Agency
- **NGO**  Non-Governmental Organization
- **O&M**  Operations and Maintenance
- **OSA**  Office of Science Advisors
- **PA**  Palestinian Authority
- **PWA**  Palestinian Water Authority
- **TVA**  Tennessee Valley Authority
- **UN**  United Nations
- **UNESCO**  United Nations Educational, Scientific and Cultural Organization
- **UNILC**  United Nations International Law Commission
- **UNRWA**  United Nations Relief and Works Agency
- **USAID**  United States Agency for International Development
- **WEAP**  Water Evaluation and Planning
- **WHO**  World Health Organization
- **WMB**  Water Mediation Board
EXECUTIVE SUMMARY

Transboundary 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. This approach works for land, which is stable, but not for water, which not only moves along, across and under political boundaries but can be used over and over from the time it originates as precipitation until it eventually finds its way back to the sea or evaporates or seeps into a deep aquifer. Though a fixed allocation — that is, specific amounts or percentage shares to each of the parties — is sometimes useful to avoid conflict and solve short-term problems, it is not appropriate as a way to ensure efficient, equitable, and sustainable management of shared water over the long term. Older legal regimes for allocating water, such as First-in-Time/First-in-Right, are gradually being replaced, even in western North America where they were once common. Newer approaches emphasize the duties to use shared water in ways that are reasonable and equitable, and to avoid harm to neighbouring states. The trick, of course, is to define those terms in ways that are acceptable and applicable in specific circumstances, which brings us to the focus of this report by EcoPeace / Friends of the Earth Middle East (FoEME).

The FoEME Proposal adopts a joint management structure for Israel and the future State of Palestine that allows for ongoing resolution of issues concerning fresh water, and does so in a way that effectively de-nationalizes and de-securitizes water uses. That is, water is shared by rules that are designed to protect the ecosystem for everyone’s benefit, and then deliver water to different parties in ways that meet their needs and allow for their development without resorting to arguments of national security or beggar-thy-neighbour development. Though looking toward a Final Status Agreement, the FoEME Proposal is designed in a way that allows it to be adopted and implemented in the near term, prior to that agreement.

Flexibility, not rigidity, is what is needed for effective joint management of shared water. The FoEME Proposal first defines those bodies of water that are shared by the two Parties and establishes equal rights to that water. The Proposal then provides for continuous, cooperative water management based on agreed-upon rights and responsibilities as well as ongoing monitoring of the aquifers and dispute resolution mechanisms. That approach is consistent with the thrust of international water law as it has developed over the past 100 years. It is also consistent with efforts to “depoliticize” decision-making about water use. Although any decision about water incorporates political considerations, that is a different matter from allowing the decision to be politicized along national, religious or ethnic lines.

This proposal therefore treats the conflict over water in a new manner. It is not just a matter of two central institutions, one state and one proto-state, that deploy their policies over a national territory. Instead the proposal treats the differences over water between Israelis
and Palestinians as a matter for a great number of institutions that deploy their policies over a great variety of scales. Instead of trying to determine “just” and permanent allocations of water to the two parties, it tries to integrate the various institutions that access, use and release water in the environment into a flexible framework that would allow sustainable and equitable management of the resource. Ultimately, the greater problem facing the two peoples is not how to share water resources but how to use shared resources in a sustainable and equitable way.

Joint management of water is never easy, but it is particularly difficult for Israelis and Palestinians because of the many years of conflict between them, their different rates and patterns of economic development during those years, and the almost diametrically opposite approaches to water management they have adopted — Israel largely top down; Palestine largely bottom up. Indeed, although the long-term strategy proposed in this report will inevitably increase access to household water for those who presently use less than 50 litres/day, future moves toward joint management are currently clouded by the need for an immediate increase in access to water by those portions of the Palestinian community that fall below international standards for household water and sanitation.

Though joint management can only be fully implemented in the context of fixed borders, the structure of our proposal does not require prior definition of those borders. For example, FoEME’s Good Water Neighbours Project brings Palestinian and Israeli communities together to resolve common water problems even though the final borders have yet to be defined. In addition to its specific benefits of more and cleaner water, it is the kind of confidence-building activity that shows that joint management is not just conceivable but practically implementable. Joint management of shared water has also been shown to create its own positive dynamic that leads to further cooperation in a peace process.

Regardless of final location of borders, any agreement for joint management of water must be clear about exactly which bodies of water are shared. Given the diversity of paths that water can follow from source to sink, and the possible connections between surface watersheds and underground watersheds, designation of water as “shared” is at least partially a political choice. The western and northern basins of the Mountain Aquifer are shared water, but the eastern basin is deemed Palestinian. Most cross-border streams are shared water, but the Coastal Aquifer is not. Special rules are needed for sharing the Jordan River because the Israel-Jordan Peace Treaty ignored the West Bank. In 2014, FoEME will be publishing its Model Lower Jordan River Basin Commission study, and that will delve into the specific mechanisms needed to share and manage the Lower Jordan River in its entirety.

The core of the revised approach to water shared by two sovereign peoples lies in a process of ongoing mediation of water use at the appropriate levels of management, with the only bottom lines being the parallel needs for equity and for sustainability, reinforced by attention to efficiency of water use and implementability by stakeholders in Israel and Palestine.
EXECUTIVE SUMMARY

Figure ES-1 shows the key body that make up the institutional structure for implementation of the FoEME Proposal, and Figure ES-2 shows the flows of activities and information among those bodies.

**FIGURE ES-1. Organization chart for institutions in the FoEME Proposal**

Two senior bodies, each responsible to its government, guide the process: A **Bilateral Water Commission** (BWC) and a **Water Mediation Board** (WMB). Both bodies are composed of an equal number of Israeli and Palestinian representatives plus one member from outside the region, agreed to by both sides. If voting is necessary, the rules are designed to prevent either side from dominating the other.

The BWC would replace today’s Joint Water Committee (JWC) but with responsibility for all shared water (not just Palestinian water, as with today’s JWC) and will make key decisions on rates of extraction and of delivery of water and the removal and treatment of waste water. Its decisions are based on advice from a subsidiary body, the **Office of Science Advisors** (OSA), which is made up of staff appointed or seconded by the two governments. Should the BWC find itself unable to accept a decision of the Science Advisors, or should any group or community wish to oppose a decision, the **Water Mediation Board** (WMB), which would be trained in mediation techniques, can take action. The WMB has a wide range of tools available to guide a process of seeking resolution ranging from scientific investigations to public forums. The WMB also receives advice from another subsidiary body, the **Local Water Management Board** (LWMB),
which also has the role, if appropriate, of representing local bodies before the WMB. As a further brake on unilateral decision making, the BWC cannot make a decision on its own; rather, it can accept or reject recommendations from the OSA or the WMB, but not alter them. If it rejects the recommendation, it must provide explicit reasons for its rejection and send the issue back for further work and a new recommendation.

Responsibility for water management in selected areas could be delegated to subsidiary bodies, such as a **Mountain Aquifer Authority** (to manage the shared portions of the Mountain Aquifer) and a **Cross-border Streams Authority** (to manage streams originating in the West Bank and flowing through Israel into the Mediterranean Sea).

In the end, the success of the process will be indicated less by the number of disputes successfully mediated but by the number of disputes that are resolved by the normal give and take of negotiations and that never come to the table for formal mediation. In order to judge the likelihood of success, additional materials are presented. One chapter focuses
on the failures of current arrangements to provide adequate water to some Palestinian communities on the West Bank, to deal adequately with waste water originating on the West Bank, and to prevent excessive pumping from shared aquifers. Another chapter presents three case studies to show how current issues have been handled with current arrangements and how they would have been handled had the FoEME Proposal been in effect. In addition, a number of the more important critiques of the earlier version of the FoEME Proposal are discussed and responses to them offered.

The report concludes with comments on next steps to take in order to move the FoEME Proposal forward from concept to formal binational acceptance. It is estimated that it will take one to three years to complete research to supplement those parts of the FoEME Proposal that are not adequately detailed, most importantly a detailed proposal for the Water Mediation Board, and for developing a strategy to bring the FoEME Proposal before the Israeli and Palestinian publics and their governments. During this period, it might be appropriate to implement a partial agreement with a more limited scope. This staged approach could be based on experimenting with a Mountain Aquifer Authority, which has been the subject of extensive earlier study, before creating the BWC.

Many people claim that Israel created the first modern national water law with adoption of its Law on Water in 1959. The proposal in this report is for Israelis and Palestinians to create the first bilateral water agreement that harnesses state-of-the-art research on conflict resolution and responds to changes in natural, economic and social conditions. The result would be a “post-modern” water agreement that can be carried over into the Final Status Agreement between the current State of Israel and the future State of Palestine.

Though specifically applied to water shared by Israelis and Palestinians, the general goals, the specific emphasis on ongoing monitoring and mediation, and the type of institutional structure are relevant to any place in the world where transboundary water divides rather than unites two or more peoples. The process is therefore much more in the realm of social science and conflict resolution than of physical science and hydrology, though of course those disciplines provide the context within which any institutional design must operate. As Aaron Wolf writes (2012, 73): “Water management is conflict management, and has been since time immemorial.”
CHAPTER 1: FRESH WATER IN THE ISRAELI-PALESTINIAN PEACE PROCESS

The suggestion that a liquid resource—which is in a near-constant state of motion moving within the hydrological cycle in surface waters, subsurface strata, and the atmosphere, transforming between gaseous, liquid and solid states, and traversing local and international political barriers—can be subject to a state’s sovereignty defies logic.

*Eckstein 2011, 580-581*

Resolution of issues related to fresh water that is shared by Israel and Palestine will not alone bring about peace between the two peoples. State borders, Israeli settlements, Palestinian refugees, and the status of Jerusalem far outweigh water as divisive issues. However, in the absence of a just resolution of water issues, no peace can be complete. Further, in the absence of sustainable use of water by both peoples, overall social and economic development will be threatened, and so too will be stability and peace for the region.

**Politics, Borders and Water**

During the 1950s, President Eisenhower’s special envoy, Ambassador Eric Johnston, went repeatedly from capital to capital in the region trying to achieve an agreement on water. These negotiations and the ensuing “Johnston Plan” treated water in a narrow, quantitative manner. Water, a mobile resource, was to be divided up in the same way as land, an immobile resource. The political problem concerning water was therefore defined as if it were a pie to be shared between two parties, and the political problem was limited to determining how big each slice would be. This approach was copied thereafter for water negotiations throughout the rest of the 20th century up to and including the Oslo agreements.

Israel and the Palestinian Authority (PA) have yet to achieve an agreement concerning water. However, in what are called “Track Two” (non-diplomatic) activities, academic and development specialists have supplied them with an impressive number of studies about fresh water in the region. If the problem concerning water is simply one of determining adequate allocations for each party, how can we explain this lack of success? No one
challenged the initial formulation of the water issue as a quantitative one, either specific amounts or per centage shares. Almost everyone began to search for additional sources of water. Then, however the pie might be sliced, more water would allow all portions to be larger. The inevitable result of this approach has been that both analysts and politicians locked themselves into a focus on supply management. Resolution of the water conflict, it was thought, would only be achieved if a technical solution brought more water to both parties. This approach carried over into the multilateral talks convened as part of the Oslo peace process. Water quantity issues were discussed in one series of talks defined as “Water Resources” whereas water quality issues were placed in a different series defined as “Environment.” Both were formally treated as technical issues, but of course each has at least as many political as technical dimensions. This inappropriate division of water into separate quantity and quality areas illustrates the sort of contextual problems that are, we believe, blocking resolution of water issues that separate Israelis and Palestinians.

A New Approach

The FoEME Proposal challenges the assumption that water can be treated as a pie, and that the water conflict can be reduced to a question of determining the right allocations for two parties. This Proposal therefore treats the conflict over water in a new manner. It is not just a matter of two central institutions, one state and one proto-state, that deploy their policies over a national territory. Instead the proposal treats the differences over water between Israelis and Palestinians as a matter for a great number of institutions that deploy their policies over a great variety of scales. Instead of trying to determine “just” and permanent allocations of water to the two parties, it tries to integrate the various institutions that access, use and release water in the environment into a flexible framework that would allow sustainable and equitable management of the resource.

The concept underlying the FoEME Proposal starts with the following observations:

- Determining once and for all the “right” allocations for the two parties is impossible because demographic change and economic development will affect demand for water in unforeseeable ways. Quantitative allocations that seem equitable today will likely be considered inequitable in a few years by one or another party to the original agreement.

- Sharp seasonal variations of rainfall are common throughout the Middle East and North Africa (MENA). Most of the rain will fall in four winter months; the other eight months are generally dry, except for morning dew and cloud cover in the mountains.
Regional and spatial variations are also important. Compared with most of the Middle East, the northern half of Israel and the West Bank are relatively well supplied with water, but not southern Israel (the Negev) or the Gaza Strip. The thin coastal strip of Lebanon gets 2000 mm of rain per year; the Bekaa Valley, just 50 km to the east (but across the Lebanon mountains), gets only one-tenth as much. In the north of Israel, rainfall may reach 1000 mm per year; a day’s drive southward at Eilat, less than 50 mm per year. However, except at its southern tip Eilat (near Golf of Aqaba), the Negev is lightly populated, whereas the Gaza Strip is one of the most densely populated regions on earth.

Low rainfall causes problems, but, so long as the pattern is predictable, engineering and economic calculations can learn how to deal with it. However, the dominant hydrological characteristic in MENA, as in other semi-arid areas, is not seasonal or spatial but annual variation (Rogers and Lydon 1994). Joseph's dream of seven good years and seven bad years in the Biblical Book of Genesis reflects normal, not abnormal, climatological conditions. Along with the rest of the region, Israel and Palestine are subject to climatic variability that subjects them to frequent and severe droughts, as well as occasional intense rainfalls and flooding. Water planning and management must therefore focus on extremes and on risk minimization, not on averages and maximum utilization.

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; Sowers and Weinthal 2010). Quantitative allocations that are possible today may very well be impossible in a few years simply by virtue of climate change. Even so, as will be illustrated in Chapter 2, most scenarios are relatively optimistic about water futures for Israel and the West Bank over the next few decades, but uniformly pessimistic about water futures for the Gaza Strip.

Water is a mobile natural resource. Each drop is used several times between the moment it falls as precipitation and when it reaches the sea, seeps into an aquifer, evaporates or evapotranspires.³ The process that is generally called the hydrological cycle is envisioned as a purely natural cycle that excludes human activities. However, there are few if any places on earth that are free of human influence. Even national parks are un-natural interventions in nature. A better approach is to envision a “hydro-social cycle” that includes both natural forces

³ Evapotranspiration includes evaporation from the earth’s surface and from water bodies, and also transpiration as water flows through plants and goes into the atmosphere mainly through their leaves. Both are part of the water cycle.
and human activities (Linton 2010). Equally important, the quality of the water degrades as it collects fine sediments, salts and other pollutants as it is used over and over again on its journey from precipitation to the sea – and, if it evaporates, it leaves many of those pollutants behind it in the soil.

- As water moves, it comes to be used within different polities, each with its own structure of power determining the rules of management. Every time humans interact with this water drop, the set of actors determining what will be done to prevent that drop of water from evaporating or from being contaminated is organised differently. These polities are all related within a complex situation of legal pluralism, and each of them needs to be considered in the elaboration of a Final Status Agreement if it is to be implemented in practice.

Box 1-1. The journey of a water drop

Consider a raindrop that falls on the West Bank. It may resurface in a spring, where it is used a first time within a Palestinian farmer-operated irrigation system based on a communal property regime before it returns to the aquifer, perhaps laden with pesticide or fertilizer. It may then reappear in a well operated by the Palestinian Authority according to a public property regime to supply drinking water to an urban network. It is chlorinated and distributed as domestic water. Then it may return to the aquifer laden with bacterial contaminants and reappear in an Israeli well operated by Mekorot to supply drinking water to either an Israeli or a Palestinian municipality, once again according to a public property regime. This time, the water drop, once chlorinated, might be pumped up to a settlement, at about 900 metres altitude. It may return once more to the aquifer, after collecting a few bacterial contaminants during its passage through a toilet. It may then once again resurface in a farmer used spring and the entire cycle may start again. No hydrological study can assess to this day how many times the same water drop will come into interaction with a human institution before it finally leaves the system in one of three ways: either it reaches the sea, or it evaporates, or it evapotranspirates through the leaves of a plant. Further complicating things, the quality of the water drop changes as it travels, and it usually becomes more and more degraded. As the same water drop can be used several times, in effect, a greater quantity of water is used than lies in the aquifers, and the water that is used has a greatly varying quality.
Goals of Joint Water Management

In order to meet the water needs of the region, joint management of the shared fresh water resources in Israel and Palestine must simultaneously achieve four primary goals:

- economically efficient
- socially equitable
- ecologically sustainable
- practically implementable

Several of these terms require elaboration, and that elaboration will be found in Chapter 5. For the moment, it is only necessary to understand them literally and to accept that achieving all four goals simultaneously requires a new approach to shared management of water.

Flexibility, not rigidity, is what is needed for effective joint management of shared water. The FoEME Proposal first defines those bodies of water that are shared by the two Parties and establishes equal rights to that water. The Proposal then provides for continuous, cooperative water management based on agreed-upon rights and responsibilities as well as ongoing monitoring and dispute resolution mechanisms. This approach is consistent with the thrust of international water law as it has developed over the past 100 years. It is also consistent with an effort to “depoliticize” decision-making about water use. True, any decision about water has political dimensions, but that is very different from allowing the decision to be politicized along national, religious or ethnic lines.

The effort to achieve the four primary goals will inevitably bring currently hidden or suppressed conflicts between different interest groups to the surface. To deal with these conflicts, a mediation process is proposed. The mechanism to accomplish this does not aim to be a judicial authority entrusted with implementation of a law or a given clause in a treaty. Rather, it aims to be a permanent centre for mediation with the main objective of settling disputes, after appropriate investigations and after attention to the water management institutions that the various parties consider as legitimate. However, ensuring sustainability of water sources and protection of ecosystems is essential, for, in their absence, neither equity nor efficiency can be assured for long. Further, freshwater ecosystems are particularly important, especially in dry areas, as they provide many more services per hectare than do terrestrial ecosystems (Safriel 2011).
Secondary objectives are to allow extensive public participation and to promote transparency of process and of results. The proposal is also designed to ensure that processes and results are resilient in the face of periodic droughts and the effects of climate change. As well, it takes into account expected population growth and economic development in Israel and in Palestine.

**Starting Points for Creating a Draft Agreement**

The draft proposal takes into account a number of initial conditions, both hydro-geological and socio-political. The former are presented in Chapter 2; the latter appear throughout this report but key elements are summarized below. One preliminary point: any agreement on fresh water will be more easily implemented after formal borders between the existing State of Israel and the new State of Palestine have been established. However, nothing in the FoEME Proposal depends on those borders. To ease the explanation of how the draft proposal is to work, this report will treat the “Green Line” (the 1949 armistice line) as the border between Israel and the West Bank for the purpose of defining what water is and is not shared. (Israeli settlements complicate but do not negate this picture; a specific way of dealing with them is suggested in Chapter 6.) In addition, the Proposal presumes a sufficiently developed political, administrative and financial base in Palestine to permit implementation of the agreement, whether it is found inside a formal State of Palestine or is initially administered by the PA.

The salient socio-political points that influenced the design of the FoEME Proposal include:

- Israel’s gross domestic product has greatly exceeded that of the West Bank and Gaza Strip, particularly since 1967. In parallel, Israelis have far surpassed Palestinians in average per capita income and in providing basic needs and in overall infrastructure development. As one result, water use between the two communities now differs greatly from what it used to be (Table 1-1). The reasons for those differences, and in particular the extent to which they derive from Israeli control, is an important issue but not one that is relevant to the design of new joint management institutions for water.
### Table 1-1. Total and per capita water use in Israel and Palestine, 2010

<table>
<thead>
<tr>
<th></th>
<th>Israel</th>
<th>Palestine</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total water use - only natural, fresh water (million cubic meters)</td>
<td>1200</td>
<td>West Bank: 153.8</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Gaza Strip: 179.8</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Total: 333.6</td>
</tr>
<tr>
<td>Population (millions)</td>
<td>7.6</td>
<td>West Bank: 2.28 (excluding East Jerusalem)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Gaza Strip: over 1.5 (estimate)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Total: over 3.78</td>
</tr>
<tr>
<td>Domestic water use (Litres/capita-day)</td>
<td>275</td>
<td>West Bank: 102 / 73*</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Gaza Strip: see note **</td>
</tr>
<tr>
<td>Use by Sector (MCM)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Agriculture</td>
<td>1044 (500) #</td>
<td>West Bank: 68.8</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Gaza Strip: 81 (estimate)</td>
</tr>
<tr>
<td>Industry</td>
<td>120 (90) #</td>
<td>West Bank: Included in Domestic, below</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Gaza Strip: 5.0</td>
</tr>
<tr>
<td>Domestic</td>
<td>764 ##</td>
<td>West Bank: 85.0 / 60.3 *</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Gaza Strip: 93.9 / 53.1 *</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Total: 178.9 / 113.4*</td>
</tr>
</tbody>
</table>

* before / after water loss from leakage and theft
** "The per capita production and consumption cannot be calculated [for the Gaza Strip]... since almost 90% of this quantity [of the municipal water supply] is water classified as poor quality and not adequate for human consumption* (PWA, 2012, p.34)
# Fresh + treated + saline water (Fresh water only)
## Fresh + desalinated water (desal: circa 300 MCM in 2011)

- All Israelis, with the exception of Bedouin in unrecognized villages, are adequately supplied with fresh water for domestic use. In contrast, some Palestinians do not have access to even the necessary minimum quantities or qualities of fresh water (Hadi 2003; Zeitoun 2008; Zagar and J-D, 2008), which have been defined as 20 litres per person-day of potable water plus another 30 litres per person-day of water of adequate quality for other household uses (Gleick 2000a). Chenoweth (2008) suggests that for a high quality of life and adequate non-agricultural social and agricultural development requires about 135 litres per person-day. Some analysts argue that adding water for growing food near the household should also

---

be included (Assaf et al. 1993), and if so this would increase the daily minimum by another 70 litres per person-day. A recent Israeli-Palestinian study found that about 165 litres per person-day were required for a “high level of human and economic development” (Feitelson, Tamimi et al. 2011).

- Palestinians are far more dependent on agriculture than are Israelis, whether viewed from the perspective of local livelihoods or from the perspective of the share of gross domestic product coming from agriculture. By implication, the value of additional water to Palestinian farmland is significantly greater, even with today’s forms of agriculture, than on Israeli farms (Lonergan and Brooks 1995). Over time, use of water for agriculture in Palestine can be expected to decline, just as it has in Israel. Such decline should be seen as an indication of progress. Only a few nations in the MENA derive even one-fifth of their gross domestic product from agriculture, but those that do are among the poorest in the region. (Beaumont 2002).

- Israel has had a highly centralized water management system at least since 1959 when it passed its Law on Water in 1959. (See Box 1-2.) In contrast, the Palestinian Territories have mostly remained with decentralized management of water. (See Box 1-3.) Joint management of shared water requires agencies that can bring those very different management approaches together within an over-arching institutional framework, and that can relate both upward to central authorities and downward to individual communities. We will return to this point several times in the discussion below. Whereas Israeli water law has been amended several times, there has been no general revision of Palestinian water law except for creation of the Palestinian Water Authority (PWA) as a result of the Oslo agreements. Further details about both Israeli and Palestinian management of water appear throughout this report.
Box 1-2. Israeli water law: some salient provisions

Some of the key points in Israel’s Water Law of 1959 were the following:

- The water resources in the State are public property; they are subject to the control of the State and are destined for the requirements of its inhabitants and for the development of the country.
- Land rights do not convey rights to any water flowing through or under that land.
- Every person is entitled to use water providing that use does not cause the salinization or depletion of the water source.
- No one may cause immediate or subsequent water pollution.

For many years, water in Israel was centrally managed by the Office of the Water Commissioner, which (reflecting the early importance of irrigation) reported to the Minister of Agriculture. In 2006 the Office of the Water Commissioner was replaced by a Authority of Water and Sewage, which brought together powers that had been scattered among various ministries, and which now reports to the Ministry of Energy and Water. More recently, steps have been taken to authorize the transfer of water distribution and sanitation from municipal governments to commercial utilities. Further amendments to the 1959 law were made in 2010 to mandate efforts for water conservation.


- Finally, the contentious political situation since 1948 has influenced water use and water management. There is a legacy from past negotiations over water and experience from more recent negotiations, as with the Oslo agreements. (See Chapters 3 and 4 and Annex A). Moreover, since 1967 Israel has dominated water management on much of the West Bank and Gaza Strip. Even so, there are examples of cooperation over water at the local level, as with FoEME’s Good Water Neighbors Project, and these may be a better indicator of possibilities than the distrust at senior governmental levels.

5 http://foeme.wordpress.com/tag/good-water-neighbors/
Also, foeme.org/www/?module=projects

A Modern Agreement To Share Water Between Israelis and Palestinians: The FoEME Proposal - Revised Version
Box 1-3. Management of water in Palestine before and after 1967

Until 1967, most of the water Palestinians used went to irrigation. However, that water did not come from any large dam or canal system. Instead, water was accessed from several hundred springs and local wells, and was managed according to communal property regimes with rules for distribution depending upon the preferences of individual clans, families or communities. The one significant exception to this pattern is the Jerusalem Water Undertaking, which was created with the aim of supplying Ramallah, East Jerusalem and Bethlehem with drinking water. The 1967 war interrupted its development, and, in particular, the pipelines were never extended to Bethlehem.

Soon after Israel took control of the West Bank, Israeli military orders were issued which gave sweeping powers to Israel over the water of the West Bank. Israel imposed meters on Palestinian wells and, after a year, applied an extraction quota over irrigation wells corresponding to the quantity that had been metered over one year. This capped the total quantity of water that Palestinians could withdraw as the military orders also required a permit for the drilling of any new well. Few permits were issued, and those permits were only for drinking water wells were approved; no new wells were permitted for irrigation (World Bank 2009). However, Israel did not interfere with the manner in which the local population managed the water from its springs and wells, so long as the overall extraction remained within the prescribed limits. A multitude of rules governing water management at the local level therefore persisted while some of those villages that were progressively equipped with pipelines adopted different rules to manage their drinking water. The result was the present situation of legal pluralism in the West Bank and Gaza Strip, where different sets of rules are called upon at different occasions to justify different types of management of water within the same villages.

Organization of the Report

The next two chapters provide the context with which to view the FoEME Proposal for joint management of water by Israelis and Palestinians. Chapter 2 provides a short review of geographic and hydrologic conditions, and Chapter 3 describes international water law as it pertains to transboundary water, as well as various proposals for managing water in the region from about 1920 to the present. Chapter 4 identifies and documents the failings of the current arrangements for water in Israel and Palestine. Readers who are familiar with these issues can go directly to Chapters 5 and 6. The former presents the concept for the
institutional structure of the FoEME Proposal, and the latter presents the structure itself, along with responses to some of the concerns that have been raised about it. Chapter 7 then provides several case studies of existing situations in Israel and Palestine and indicates how they developed under the current arrangement (the Oslo agreements) and how they would be treated under the FoEME Proposal. Chapter 8 shifts the focus from analysis to politics, arguing that an agreement on water does not need to wait for a general peace agreement but can be concluded right now. It then suggests steps that should be taken to move from an informal proposal to a Final Status Agreement between Israel and the PA.6

There are three annexes: Annex A provides further details about previous efforts to resolve water issues in the region; Annex B presents the results of a poll among 500 adult Israeli Jews with respect to their views about water; and Annex C describes the process of designing a proposed Mountain Aquifer Authority, as prepared a decade ago. The report concludes with Arabic and Hebrew translations of the Executive Summary and of Chapter 6, which, as indicated just above, presents the FoEME Proposal itself. In the case of any discrepancies between the translations and the English language version of the FoEME Proposal, the English version should be taken as authoritative.

6 Because the area administered by the Palestinian Authority (PA) is not yet formally a "state," it cannot be party to a "treaty." Therefore, the term Final Status Agreement is used for the general terms for peace between Israel and the PA, and Draft Water Agreement for the FoEME Proposal as presented in this document. For practical purposes, both have most of the features of a treaty.
CHAPTER 2: GEOGRAPHY, HYDROLOGY AND SHARED WATER RESOURCES

Water is a necessity for life. Water is also necessary to maintain ecological services and as a base for sustenance. These widely agreed-upon insights can serve as a departure point for addressing water conflicts in general, and in the Israeli-Palestinian case in particular.

*Feitelson, Tamimi, et al. 2011, p.50.*

This chapter provides a brief overview of the hydro-geology of water resources in Israel, the West Bank and Gaza, and then specifies which of those water resources are to be designated as "shared" within the context of this proposal. Water resources that are not shared remain subject to the exclusive sovereignty of the state within which they lie, and would therefore be managed by either the Israeli or Palestinian Water Authority. The chapter closes with a brief indication of how far current use of water resources available to Israelis and Palestinians exceeds the renewable quantities. Ultimately, the greater problem facing the two peoples is not how to share water resources but how to use shared resources in a sustainable way. However, as we emphasize below, both problems must be resolved together.

**Fresh Water in Israel, the Gaza Strip and the West Bank**

Reviews of the water resources available to Israelis and Palestinians are numerous (Hillel 1994; Lonergan and Brooks 1995; World Bank 2009), so only a brief summary will be given here. Figure 2-1 shows the region comprised of Israel, Palestine and western Jordan, with emphasis on the larger surface water bodies and aquifers. The high ground (where many of the oldest cities are found) separates drainage westward to the Mediterranean Sea from drainage eastward to the rift valley where the Dead Sea and the Red Sea are located. The ridge also pushes moist air from the Mediterranean upward so that it cools off and tends to precipitate on the west-facing slope. This phenomenon, which is called a rain shadow, results in less rain on the eastern slope compared with that on the western slope.
Figure 2-1. Generalized map of the shared waters of Israel, Palestine and Jordan
Aquifers

Aquifers are bodies of rock that not only have water-containing pore spaces but in which the pores are connected so that the rocks are permeable and the water can flow (generally very slowly) through the rock according to ‘water-head’ exerted by gravity and the overlying water pressure. In some cases, the flow is so slow that the water in the aquifers can be considered as non-renewable, but the more important aquifers in Israel and Palestine have renewable water, with the sources coming from rain that infiltrates into the rocks. Figure 2-2 illustrates the nature of water flow in an aquifer.

**Figure 2-2. Illustrative diagram of water flow in an aquifer**


Two main aquifer systems underlie Israeli and Palestinian land: the Mountain Aquifer and the Coastal Aquifer. The Mountain Aquifer underlies the ridge that runs from northern Israel through the West Bank and south to about Be‘er Sheva. It is made up mainly of limestone that exhibits what geologists call karstic features, such as sink holes and caves, and carries high-quality water at relatively rapid rates (for ground water). These characteristics mean that it is both a highly valuable source of water but also highly susceptible to pollution (Gvirtzman 2002).
The Mountain Aquifer carries water from intakes mainly located on the West Bank in three directions, as shown by the curved arrows on Figure 2-1:

- The Eastern Basin lies almost entirely under the West Bank.
- The Northern Basin drains through springs in the West Bank and Israel to the Jordan Valley.
- The Western Basin, by far the largest, drains through springs in West Bank and Israel to the Mediterranean.

Because the Mountain Aquifer underlies a ridge, much of it can be tapped only by deep drilling that goes down several hundred metres, which means that, though the water is high in quality, it is also expensive. Only those portions of the aquifer that are close to the natural discharge areas can easily be tapped.

Figure 2-1 also distinguishes those parts of the aquifer that are “confined,” which means that the water-bearing rocks are covered by an impermeable layer that prevents recharge from surface water. Though still generally maintaining good water quality, all three basins of the Mountain Aquifer are increasingly threatened by seepage from solid waste dumps and from sewage channels (Tagar, et al. 2005; Tagar and Qumsieh 2008). In some such cases, the seepage can dissolve the limestone, with the result that water flow is blocked, and potential water resources are lost.

The Coastal Aquifer is made up of a series of partially disconnected permeable bodies of sandstone in a series of rock layers 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 seepage of agricultural chemicals (fertilizers and pesticides), and it is increasingly subject to seawater infiltration as a result of over-pumping. The latter, a common problem for coastal communities around the world, arises when wells tapping the aquifer withdraw enough water to drop the water table in the aquifer below sea level, which allows seawater to infiltrate. In the case of the Coastal Aquifer, increasing salinity stems from two other sources as well: irrigation as well as leakage and seepage from fish ponds. According to the Hydrological Service of Israel, about 15 per cent of the water pumped from the Coastal Aquifer does not meet drinking water standards for chloride and nitrate concentrations. In addition, many wells are contaminated from industrial wastes, runoff of pesticides and fertilizers from farms, and sewage sludge, with the result that over 40 per cent of the wells operating in 1980 are no longer in use.

The situation is even worse for those portions of the Coastal Aquifer that underlie the Gaza Strip (Bruins et al. 1991; Shomar 2006). Studies are now underway to indicate how to rectify the current situation in Israel (Goldfarb and Kislev 2009), but not, to our knowledge, in the Gaza Strip. Salinity of the Coastal and Mountain Aquifers are among the indicators that will be used to evaluate the prospects for sustainable development in Israel by 2030 (Brachya 2010).

**Cross-border streams**

A number of streams rise in the highlands, some in the West Bank and some in Israel, and flow to the Mediterranean Sea. Some of these streams cross the Green Line and are therefore shared water. (See Box 2-1.) These streams 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 economic and social values for ecosystem 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 (Bar-Or 2000). Further clean-up of cross-border streams has been suggested as an opportunity for Israeli-Palestinian cooperation (Asaf et al. 2007; Abramson et al. 2010).

**Box 2-1. Transboundary Rivers in Israel and the West Bank and the Gaza Strip**

“Within Israel and the West Bank and Gaza Strip . . . there are 15 streams that cross the Palestinian/Israeli Green Line. Twelve of these are major streams that flow year-round in a westward direction toward the Mediterranean Sea, and the other three flow east to the Dead Sea or the Jordan River. All of them originate in watersheds located in the Palestinian Authority, or in lands that will eventually be outside Israeli jurisdiction, and then flow into Israel . . . At least part of each of these streams can be defined as highly polluted, posting a health hazard to users, endangering flora and fauna and unfit for recreational or consumptive uses . . .”

Source: Asaf et al. 2007, p. 286

**Jordan River Basin**

Lebanon, Syria, Israel, Jordan, and Palestine all have riparian rights to the Jordan River. ("Riparian" is an adjective that refers to states or groups or individual landowners whose property abuts onto the relevant water course and that thereby have some legal standing to claim a share of its benefits.) The Jordan River originates from three sources: the Dan Springs (in Israel) contribute about half the flow, and the Hasbani River (in Lebanon) and
the Banyas Stream (from the foot of the Hermon/Jabel Sheich on the flanks of the Golan Heights) each contribute about one-quarter of the flow. The Upper Jordan River flows from the conjunction of these three sources to the Sea of Galilee (Kinneret, in Israel), which lies entirely within Israel according to the 1949 armistice line, and then on through the Lower Jordan River to the Dead Sea. The only major tributary is the Yarmouk River, which, for part of its course, marks the border between Jordan and Syria. Just northeast of its confluence with the Lower Jordan River, the Yarmouk marks the border between Israel and Jordan. The Lower Jordan River in turn marks the border between Israel and Jordan north of Bezek Stream. South of the Bezek, it marks the border between Jordan and the West Bank down to the Dead Sea. As well, the Hasbani River in Lebanon is one of the sources of the Jordan. This geographic situation means that there are five riparian nations with a claim on some share of the Jordan's flow: Israel, Jordan, Lebanon, Palestine and Syria.

Water quality in the Lower Jordan River was once good but nearly all the good quality springs have now been diverted for local uses, and the river is seriously degraded by sewage, saline springs, and runoff from agricultural fields (FoEME 2010). According to this report, which focuses on the importance of environmental flows in the river, 98 per cent of the river’s original flow has been diverted for other, purportedly more “productive,” uses by Israel, Jordan, and Syria. As one result, half of the original biodiversity has been lost, and much of the rest is endangered. As well, the River no longer delivers the ecological services that were once provided for free when it had a stronger flow of water. We will return to this point just below.

The Jordan Valley lies within the rift valley and is characterized by unique geography. The Sea of Galilee is about 215 metres below sea level, which makes it the lowest fresh water lake on earth, and the Dead Sea is nearly 425 metres below sea level, the lowest place on earth. The geography of the basin has major implications for water supply and energy use in the region. For one thing, even though water in the Sea of Galilee is reasonably good, it must be pumped upward to reach the major population centres other than Tiberias. (This is one example of the energy-water nexus. It takes energy to obtain water, but elsewhere water is essential for generating electricity.) For another, the rift valley containing the Dead Sea is so deep that there is little if any connection between water on its eastern and western sides.

**Other sources of water**

In Israel, approximately 70 per cent of the municipal waste water is captured, treated to secondary and in some cases tertiary levels, and reclaimed for agriculture. (Secondary treatment includes both physical filtration and aerobic bacteria digestion to reduce the organic content of waste water; tertiary treatment adds additional steps to improve water
quality including, in some cases, chlorinization. There are plans to expand the system (Arlosoroff 2007), but already more than 20 per cent of total water use and about 50 per cent of irrigation water comes from treated waste water. The additional cost (beyond collection and secondary treatment of urban sewage) is significant but well below the cost of additional fresh water. In Palestine, very little of the waste water is currently reclaimed and treated for reuse. Some waste water originating in the West Bank is treated in Israeli plants, and a plant is being built in Nablus to serve the West Bank’s largest city. Two of the case studies presented in Chapter 7 involve proposals for wastewater treatment plants in the West Bank.

In 2010, desalination already supplied over 40 per cent of Israel’s household water needs (Tenne 2010). Desalination plants located along the Mediterranean coast now supply about 320 MCM (million cubic metres) of fresh water per year, with at least as much additional capacity coming on stream within the next ten years. Israeli desalination plants are among the most cost-effective in the world (Tenne 2010), and the delivered cost of desalinated water compares favourably with that of other alternatives to provide additional drinking water (Zhou and Tol 2005; Tenne 2010). 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. FoEME’s position is that, though some level of desalination is necessary, it should be the policy choice of last, not first, resort, with much greater attention devoted to better management of existing water supplies (Rosenthal and Katz 2010).

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. Given the diverse paths that water can follow from rain (or occasionally snow) to the sea, and the possible connections between surface watersheds and underground watersheds, designation of water as “shared” is at least partially a political choice. It is not necessarily inconsistent to have different designations of a water course for different purposes: hydro-geology, diplomacy, or, as in the case of the FoEME Proposal, water management. For example, the PA prefers to consider the Eastern Basin of the Mountain Aquifer as shared water whereas in this Proposal we consider it exclusively Palestinian. This ironic difference is explained by our different objectives. The PA wants the Mountain Aquifer, which is currently managed by Israel, to be internationalized as soon as possible so Palestinians get a larger share of the water, whereas the FoEME Proposal wants to identify those portions of the Aquifer that can be managed solely by the future State of Palestine so that in time they get their full share.

For management purposes, it is also convenient to apply some rules of reason. To this end,
we suggest that an aquifer 90 per cent of which underlies one side of the border be treated as non-shared water. Special arrangements also have to be made for water treatment plants that are located on or very close to the future border between Israel and Palestine and that receive waste water from across the border.

Most of the water that occurs in or under Israel and Palestine is shared water. The main exceptions are the Coastal Aquifer, many springs in the Arava Valley, and some of the aquifers and streams in the Galilee. In particular, the Western and Northern basins of the Mountain Aquifer are shared water, as are all of the streams that rise in the West Bank and cross the Israeli-Palestinian border before discharging into the Mediterranean Sea, and the several that rise in Israel and cross the border before discharging into the Jordan River or the Dead Sea. However, the Eastern Basin of the Mountain Aquifers is largely contained within the West Bank and can therefore be considered Palestinian. (Special consideration needs to be given to the springs, as with those near Ein Gedi in Israel, that may flow from the Eastern Basin.)

The Coastal Aquifer is composed of largely disconnected lenses, that is, thin bodies of porous rock separated between bodies through which water cannot flow. There seems to be only limited lateral movement from one lens to another. Individual lenses can therefore, using the rule of reason, be considered as either Israeli or Palestinian, but not shared. (Should current research, such as that by Vengosh et al. (2005), find significant interconnections among the lenses, this position would have to be reconsidered.) With the exception of Wadi Gaza, the bulk of water available in the Gaza Strip is found in parts of the Coastal Aquifer, which is not shared water. Therefore, the FoEME Proposal would seem to have more relevance to the West Bank than to the Gaza Strip. However, if, as some allege (Weinthal et al. 2005), Israeli wells to the west of the Gaza Strip intercept water that would otherwise flow to aquifers under the Strip, this position would have to be reconsidered.

Rules for sharing the Jordan River must take into consideration 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 access to water, even for the West Bank. We can accept this inconsistency partly because there is little interest in opening the Treaty to new negotiations and partly because it does “work” in a physical sense. The depth of the Dead Sea and the rift valley provides a barrier against hydrological connections between Jordan on the east and Israel and Palestine on the west. As well, the Israeli-Jordanian Treaty deals with only a part of the Jordan River watershed, and thus it falls short of providing for joint management of the whole basin. In their review of a number of existing transboundary water agreements, Kliot and her colleagues (2001) suggest that basin-wide agreements are ideal, but they require financial and monitoring resources not available to most managers, and that agreements over part
of the watershed have worked reasonably well.

For our purposes, the critical gap is not hydrological information but the lack of attention to Palestinian water rights. In order to compensate for that gap in the Israel-Jordan Peace Treaty, but to live within the provisions of its Annex 2, we recognize that Jordan is one of the most water-stressed states on earth (Scott et al. 2003; Alkhaddar 2005). Therefore, 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. Then, and, admittedly in the absence of any fully rational criterion for dividing that joint share, we suggest that the Israeli allocation be divided equally between Israel and the future State of Palestine. In 2014, FoEME will be publishing its Model Lower Jordan River Basin Commission study, and that will delve into the specific mechanisms needed to share and manage the Lower Jordan River in its entirety.

Though not immediately relevant to the FoEME Proposal, our suggestion at this stage to divide the “Israeli” share of the water in the Jordan River equally with Palestine is consistent with recent FoEME reports on ways to rehabilitate the River, which, as noted above, is currently in deplorable condition. A team put together by FoEME and including experts from Israel, Jordan and Palestine (Gafny 2010) concluded that 400 to 600 MCM per year would be needed to flow in the Lower Jordan River (the reach of the river between the Sea of Galilee and the Dead Sea) and keep salinity below 750 parts per million, to provide adequate water in the summer and restore the river’s geomorphology and ecology. FoEME went on to suggest that 100 MCM come from Syria, 90 MCM from Jordan, and 220 MCM from Israel. The subsequent DHV MED report (Safier 2011) used the WEAP model to find alternatives for meeting those environmental goals based on the last 15 years of inflow rates to the river, licensed users, and other factors. Their conclusion was that Israel could find 220 MCM by reduction of its withdrawal rate from Sea of Galilee, modification of the operational scheme for maintaining lake levels, and reductions of current withdrawals for agricultural purposes. The first two recommendations are not terribly controversial, but the third certainly is. It would require a roughly 30 per cent reduction in withdrawals for agriculture and fewer fish farms.  

In conclusion, our analysis of the extent of shared and non-shared water indicates that roughly two-thirds of the available fresh water is defined as “shared water” (the Western and Northern basins of the Mountain Aquifer, cross-border streams, the Lower Jordan

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9 To no one’s surprise, there was an angry response from the agricultural sector to this suggestion, which is described in articles in Haaretz by Zafir Rinat on 20 November 2011, and in The Jerusalem Post by Sharon Udasin on 18 November 2011. Udasin also notes that, in a statement to the press, Dr. Yuval Arbel, Israeli Deputy Director of Friends of the Earth Middle East, said that, “For the first time in Israel, a public, intensive and open debate has been conducted on the fate of the Jordan River.”
River), and therefore requires some form of joint management by Israel and Palestine. The remaining one-third (Sea of Galilee and other waters in the north and south of Israel, the Coastal Aquifer lenses, the Eastern Aquifer) is defined as non-shared water, and therefore subject to separate management by the two parties according to whatever management structure each chooses.

**Supply and Demand / Sustainability and Depletion**

It has long been recognized that Israel has been pushing to the limits of the sustainable water resources available to it and, all too often, beyond those limits (GoI 2010). Though desalination has provided some relief from concerns for drinking water supplies, it comes with a high dollar and energy cost, as well as raising new environmental problems. Palestinians, too, push against and exceed the limits of sustainable water resources, particularly in the Gaza Strip (Nasser 2003; Klawitter 2007). Throughout the region, the water problem is not just insufficient quantity but also includes declining quality of water. Again, the most serious problems are in the Gaza Strip.

There are a number of reasons for the lack of sustainable management of water resources. They range from purely political through economic and social to purely physical (Lonergan and Brooks 1995; Tal 2006; Shuval and Dweik 2007). For present purposes, it is less important to explore those reasons than to indicate how great the current gap is. This is most easily accomplished by Table 2-1, which was prepared by Lautze and Kirshen (2009) from the work of other authors. One can argue about the specific numbers in the table, but different allocations between Israelis and Palestinians will not change the roughly 15 per cent overdraft above sustainable water use.

Indeed, the overdraft is likely larger, as estimates of renewable supply almost certainly underestimate the volume of water that needs to be left in situ as “environmental flows” to provide ecosystem services, such as waste removal, delivery of nutrients for plant growth, and maintenance of nature reserves. (The Millennium Ecosystem Assessment (2005) divided these services into four groups — provision of goods, regulation of flows, cultural benefits, and support of habitats.) Throughout the region, much more careful attention than has been evident until now will be required to ensure that adequate water is left in place to protect ecosystems so that they continue to provide these services, the value of which is never fully determined but is known to be very large (Kaplan 2004; Gafny et al. 2010; Katz 2011b; Safriel 2011).
CHAPTER 2: GEOGRAPHY, HYDROLOGY AND SHARED WATER RESOURCES

Table 2-1. Water withdrawals in Israel and Palestine (MCM/year) in about 2000

<table>
<thead>
<tr>
<th>Water Source</th>
<th>Israel</th>
<th>Palestine</th>
<th>Total Withdrawn</th>
<th>Average Annual Recharge</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jordan River Basin</td>
<td>700</td>
<td>0</td>
<td>700</td>
<td>565</td>
</tr>
<tr>
<td>Mountain Aquifer</td>
<td>485</td>
<td>115</td>
<td>600</td>
<td>550-620</td>
</tr>
<tr>
<td>Western Basin</td>
<td>340</td>
<td>62</td>
<td>402</td>
<td>320-360 (42)</td>
</tr>
<tr>
<td>Northern Basin</td>
<td>105</td>
<td>30</td>
<td>135</td>
<td>131-144 (28-30)</td>
</tr>
<tr>
<td>Eastern Basin</td>
<td>40 (in settlements)</td>
<td>23</td>
<td>63</td>
<td>95-110 (22-35)</td>
</tr>
<tr>
<td>Coastal Aquifer</td>
<td>430</td>
<td>125</td>
<td>555</td>
<td>330</td>
</tr>
<tr>
<td>Israeli</td>
<td>420</td>
<td>5</td>
<td>425</td>
<td>250-270</td>
</tr>
<tr>
<td>Gaza</td>
<td>10</td>
<td>120</td>
<td>130</td>
<td>60</td>
</tr>
<tr>
<td>Minor Aquifers, Runoff reservoirs; Desalination</td>
<td>300</td>
<td>0</td>
<td>300</td>
<td>100 280</td>
</tr>
<tr>
<td>Reused Wastewater</td>
<td>220</td>
<td>0</td>
<td>220</td>
<td>220</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>2135</strong></td>
<td><strong>240</strong></td>
<td><strong>2375</strong></td>
<td><strong>2300</strong></td>
</tr>
</tbody>
</table>

Source: modified from Lautze and Kirshen (2009), which used various sources

Happily, longer term prospects for Israel, Jordan and the West Bank, though not for the Gaza Strip, are somewhat better, even under the impacts of climate change and growth (Feitelson et al. 2012). Scenarios extending to 2050 were explored by Chenoweth (2011) with a wide range of combinations of water availability and population growth. They generally suggest that water resources in Israel and Jordan would be adequate to permit social and economic development. They suggest a similar future in the West Bank provided that a greater portion of shared water flows to that region. However, unless there is a significant population decrease, the Gaza Strip will require additional sources of fresh water, probably from desalination, perhaps from imports, as well as stringent conservation and water reclamation programs. Feitelson, Tamimi and their colleagues (2011, 2012) reach similar but less optimistic conclusions. In particular, their scenarios indicate developing problems in the West Bank if there is a significant return of Palestinian refugees, and in both Israel and the West Bank if there is prolonged drought. Many of the problems they identify stem from the need for irrigation water in those parts of the region where alternatives to farming are limited. None of these scenarios are optimistic about restraining human withdrawals of water so that enough water is left in situ to protect ecosystems and provide ecosystem services. The inescapable conclusion is that all of the riparian states need to move to sustainable management of the limited fresh water in this region.
CHAPTER 3

INTERNATIONAL WATER LAW AND WATER MANAGEMENT

PROPOSALS FOR THE REGION

Given the predominance of rights-based language, it is not surprising that during most international negotiations, parties base their initial positions in terms of rights. . . . However, in almost all of the disputes that have been resolved, particularly on arid or exotic streams, the paradigms used for negotiations have not been “rights-based” at all — neither on relative hydrography nor specifically on chronology of use, but rather needs-based. “Needs” are defined by irrigable land, population, or the requirements of a specific project.

Fischhendler et al. 2012, page 9

The previous chapter provided the geographic and hydrologic background for an Israeli-Palestinian water agreement. This chapter provides the institutional and political background for such an agreement. The chapter is divided into three sections:

- The first section broadly describes existing international law for both surface and underground water that flows along, across or under an international border.
- The second section summarizes past attempts to create an international agreement for sharing the water of the Jordan Valley, with further detail provided in Annex A.
- The final section summarizes current Israeli and Palestinian positions on sharing water and water management, as indicated in material prepared for past negotiating sessions.

International Law of Shared Water Resources

Historically, international law over shared water resources leaned toward one of two principles of sovereignty:

- absolute territorial sovereignty, which gives a state the exclusive right to use and dispose of international waters that flow through its territory, and which is therefore preferred by upstream states
- absolute territorial integrity, which implies that downstream users are to be provided with a water supply that is unaltered in either volume or quality, and which is therefore preferred by downstream states
More recently, the rule of law dealing with shared water resources has been based on general principles arising from international conventions or inferred from existing agreements between states (Kliot et al. 2001). According to Rahaman (2009), they emphasize five principles for dealing with shared water bodies:

- reasonable and equitable utilization
- avoidance of significant harm to other users or states
- advance notification, consultation and negotiation
- exchange of information
- peaceful settlement of disputes

He suggests that these principles are now so widely expressed in treaties, declarations, and other international instruments that they can be regarded as “soft law” (also called “customary law”) even when not explicitly stated. That means that they are generally observed though no formal text says that they must be. (See Box 3-1, which describes soft law as applies to states, but which, with only minor adjustments, can apply to local groups.)

**Box 3-1. Customary or “Soft” International Law**

“Customary international law consists of the practices of states undertaken out of a sense that the practice is required by law. . . . Customary law is binding because the participating states have expressly or implicitly consented to the rule. . . . Thus references to a law connect a customary practice to a sense of legitimacy, and thus constitute the practice as law in a highly decentralized and institutionally undeveloped system like international law (or among subsistence farmers or nomadic tribesmen).”

Source: Dellapenna (2011, 586)

Of those customary rules, most attention has gone to ways to define or achieve reasonable and equitable utilization. This principle cannot be considered as a rule of law, but its very expression does amount to a rejection of both absolute territorial sovereignty and absolute territorial integrity (Camponera 1985). It also supplants or heavily qualifies the outmoded “first-in-time; first-in-right” approach to determining priority in access to water, according to which whoever started using the water first has a continuing and primary right to as much as is needed, even at the expense of later users (Bourne, cited in Salman 2010). We will return to these two principles later in this chapter.
CHAPTER 3: INTERNATIONAL WATER LAW

Special attention to ground water

Ground water has been described as “the neglected stepchild of international water law” (Eckstein 2011, 573). It has only been formally included within the scope of legal discussions about international drainage basins since 1966 when the Helsinki Rules were put forward, and is still largely ignored in academic studies of shared water (Dellapenna 2011).10 Box 3-2 shows the sequence of major international agreements on shared ground water. Just as with surface sources, many groundwater basins extend under political boundaries. The Disi Aquifer, for example, underlies Jordan and Saudi Arabia, and the Northeast African Aquifer underlies parts of Chad, Sudan, Libya, and Egypt. Only the specific political aspects make the conflict over aquifers shared by Israel and Palestine unique (Zeitoun 2007). Dealing with transboundary aquifers becomes particularly difficult when a political boundary lies between the location of the aquifer outflow and its recharge area, as is the case for the Western and Northern basins of the Mountain Aquifer in Israel and the West Bank. As will be shown below, we argue that for such situations the principle of no significant harm must take precedence over that of reasonable and equitable use.

Box 3-2. Major International Agreements on Transboundary Ground Water

Note: Only the first two of these “agreements” have been ratified by the requisite number of states. Though the other agreements have not yet formally come into force, this does not imply that they are without influence.

- Helsinki Rules (1966) first brought ground water that underlies a national border into the scope of international law.
- Bellagio Draft Treaty (1989) proposed model for agreements on international aquifers
- Watercourse Convention (1997) extended Seoul Rules to include aquifers that only have hydrological connections across international borders
- Berlin Rules (2004) added modern concepts of participation and environmental protection, and made “reasonable and equitable” more of an international obligation
- United Nations General Assembly Resolution (2008 draft) proposed model for future treaties on international surface and ground water based on review of previous documents

10 One of the few exceptions is the September 2011 special issue of the journal Water International (vol. 36, no. 5), which is entirely devoted to transboundary groundwater resources.
General principles of management for states sharing groundwater resources are similar to those related to surface water. However, early applications of these principles to groundwater were all limited in one way or another. A qualified professional body, the International Law Association, addressed these limitations by drafting the Rules on International Groundwaters, also known as the Seoul Rules, in 1986. The Seoul Rules went beyond the Helsinki Rules by making it clear that all types of aquifers are subject to international law (Eckstein 2005).

In 1996 the United Nations International Law Commission (UNILC) developed a more comprehensive set of guidelines entitled The Convention on the Law of Non-Navigational Uses of International Watercourses, but commonly shortened to The Watercourse Convention. Adopted by the United Nations (UN) in 1997, these guidelines recognize the interaction of surface and ground water, and define as “international” any aquifer that has hydrological links to transboundary surface water, even if the aquifer itself is within one state (Eckstein and Eckstein 2003). Despite the years of work, and overwhelming support in the General Assembly, only a few more than half of the 35 states required to bring the Watercourse Convention into force have ratified it to date.

Work on international water law has continued for more than half a century, yet most analysts believe that even the Watercourse Convention fails to address all types of transboundary aquifers. In an effort to bring this somewhat muddled situation together, the International Law Association reviewed everything that had happened since the Helsinki Rules were announced and made some important revisions. The result was the Berlin Rules on Water Resources, which were published in 2004 and which go beyond both the Helsinki Rules and the Watercourse Convention in several ways (Salman 2007). Most importantly for the FoEME Proposal, they apply to both domestic and transboundary freshwater resources and they require states to protect the ecological integrity of water-based ecosystems. They also recognize the right of affected people to some role in decision-making. And, in a more subtle change, the Berlin rules shift emphasis from the right of riparian states to a reasonable and equitable share of the water to the obligation to manage the shared water in a reasonable and equitable manner.

UNILC began to codify law specifically focused on transboundary aquifers in 2002. By 2008, with the support of the United Nations Educational, Scientific and Cultural Organization (UNESCO) International Hydrological Programme, the ILC was able to prepare a draft document with preamble and 19 articles for submission to the United Nations General Assembly; however, the draft did not contain any specific provisions for dispute resolution. This document, if adopted, will expand the scope and force of the Watercourse Convention by covering all aquifer types (Stephan 2009). In December 2008, the UN General Assembly adopted a resolution (A/RES/63/124) that encouraged states sharing an aquifer to consider
the ILC draft document as a basis for management of the aquifer. In some ways, the ILC draft document was anticipated by Annex 2 of the Israel-Jordan Peace Treaty of 1994, which has clauses that are specific to sharing the ground water that underlies their border.

In parallel with these efforts at the United Nations, starting in the 1980s a draft treaty for international law of aquifers was developed by an international group of specialists (Hayton and Utton 1989). Generally known as the Bellagio Draft Treaty and intended to be an unofficial codification of rules, or soft law, for managing ground water, the draft covers many topics, among them transboundary aquifers. It incorporates a series of dispute-resolution techniques up to and including formal arbitration or submission to the International Court of Justice. According to the late Fadia Daibes-Murad (2005, 127), who was based at the International Water Law Research Institute, the Bellagio Draft Treaty “presents the most advanced framework in relation to transboundary groundwater regulation, offers the best suited mechanisms and procedures for the protection, utilization and development and management of such resources.” It also has the distinction of being among the first documents of its kind to recognize explicitly the need to incorporate sustainability of the resource as one of the principles for groundwater extraction (Kemper et al. 2003).

**Balancing reasonable and equitable**

The Helsinki Rules of 1966 provide a long list of factors that should be considered in determining what is “reasonable and equitable.” Without denying that each of these factors is relevant, nor that the list itself reflects an advance in thinking, their value is limited in the absence of priorities among them or ways to make trade-offs between them, a problem that has led to considerable thinking from a legal perspective (Wouters et al. 2005). However, in at least two areas more can be said from a management perspective. One is whether existing uses should have priority in standing over future needs. The other is how to balance the principle of reasonable and equitable use with the principle of avoiding substantial harm to other parties.

Current work suggests that the choice between existing uses and future needs is being resolved in favour of the latter (Lautze and Giordano 2006; Wolf 1998, 2000; Fischhendler et al. 2012). Recent agreements about sharing water are tending toward a needs-based rather than a prior-use basis, and they seem to be longer lasting than earlier ones. This shift in thinking has a clear impact in the Israeli-Palestinian case. As mentioned in Chapter 1, the Israeli economy has grown to become much stronger than the Palestinian, and therefore any plan to allocate future water use on the basis of existing patterns would be certain to disadvantage and limit Palestinian economic and social development.
The dilemma of balancing reasonable and equitable use with the prevention of significant harm is less tractable. Salman (2007) shows how different formulations of the text of proposed agreements seem to give priority to one or the other principle, or, as in the case of the Berlin rules, to indicate that they have equal standing. However, Brooks and Linton (2011) argue that the conflicts between those two important principles can be resolved in the case of aquifers. The management of aquifers is distinguished from that of surface water by, among other things: the sensitivity of aquifers to pollution; the near impossibility of their decontamination after being polluted; and the slow rate of replenishment from precipitation. Therefore, they suggest that for transboundary aquifers the principle of no significant harm should have priority over reasonable and equitable use. If the principle of no significant harm does not have priority, the resource will degrade and the principle of reasonable and equitable use will, over time, come to have less and less value.

**Limits to the usefulness of international law**

Efforts to manage water shared by Israelis and Palestinians illustrate a serious limitation to the usefulness of international law. That law considers states and the institutions they may create as the only legitimate actors on the international scene. Israel has existed as a state for over 60 years, but a Palestinian state still has to emerge. For that reason alone, any proposal concerning water sharing between Israel and the future State of Palestine that only considers international law would be unfavourable to Palestine. The Oslo agreements did create the Palestinian Water Authority (PWA) to manage water in the West Bank and Gaza Strip, but it appeared within an institutional landscape where many local water management institutions had been functioning for decades, if not centuries (Trottier 1999). The result today is that almost all water is managed centrally in Israel whereas only a small portion is managed centrally by the government or some utility in the West Bank or Gaza Strip. (See Box 3-2.) Using only international water law to propose a solution to water management would both disadvantage the Palestinians in principle and likely be ignored in practice.

**Past Water Sharing Proposals for the Jordan River Basin**

The management of reticulation (local piped water) networks in Jerusalem was already the object of international politics in the 19th century (Lemire 2011). However, outside Jerusalem, the bulk of water used in the region went to irrigation and was the object of local politics only. The perception of water in the Jordan River Basin as a broader problem of quantitative allocations among nations arose after the First World War and the fall of the Ottoman Empire.

This section will briefly summarize the long series of attempts to reach agreements over
water resources specific to the Jordan River Basin, starting from the Mandate of 1922, which established Palestine (excluding Trans-Jordan) as a distinct political unit. Box 3-3 highlights significant dates for water management over the period 1922 to 1955. More detail on each of these proposals and agreements are found in Annex A.

Prior to the establishment of Israel

The Balfour Declaration recognized the historical connection of the Jewish people with the land of Palestine. Though the document itself only referred to a Jewish homeland, in the minds of many Zionists it implicitly provided for an independent Jewish state, and they reacted by creating a Jewish agency to assist with the administration of the British Mandate over Palestine. Soon after, a number of national development agencies and projects were created. Among them was the Jewish-owned Palestine Electricity Corporation, which was founded by Pinhas Rutenberg and which built a hydroelectric plant on the Jordan River.

Box 3-3. Major Proposals and Other Events 1922 to 1955 Related to Sharing Water in the Jordan Basin

1922: British-Palestine Mandate established (no mention of water)
1926: Rutenberg Concession granted for hydroelectric station just below confluence of the Jordan and the Yarmouk rivers
1936: first regional water project delivered water to western Galilee
1937: Mekorot founded as Israel’s National Water Company
1939: Ionides Plan (favoured by the Arabs)
1944: Lowdermilk Plan published (favoured by the Zionists)
1948: Hays published TVA on the Jordan, Proposals for Irrigation and Hydro-Electric Development in Palestine
1951: Murdoch MacDonald Corporation Report commissioned by the Government of Jordan
1952: Main Plan (based on TVA model), generally called the Unified Plan
1953: Israel begins construction of National Water Carrier
1953: initial Johnston Plan distributed to the riparian states
1954: Cotton Plan (Israeli response to Initial Johnston Plan)
1954: Arab League’s Technical Committee Plan (Arab response to initial Johnston Plan)
1955: Modified Johnston Report (sometimes also called the Unified Plan)
During the 1930s, the issue of fresh water became secondary to questions about the capacity of the land to support a higher population. Those concerns about the absorptive capacity of Palestine grew as Jewish immigration and, concurrently, Arab opposition, increased (Lonergan and Brooks 1995). These disputes fuelled a number of initiatives, as with the Ionides and the Lowdermilk Plans to assess the water resource and irrigation potentials of the Jordan River Basin. (The idea was that the more irrigation, the more options for farming, and the greater the absorptive capacity.) Not surprisingly, a few years after its founding in 1937 as the national water agency for Jewish villages and cities, Mekorot also prepared a plan for resolving the water resource problems of Palestine. Its plan proposed a “national” water resource project that focused on irrigation and hydroelectric development, and that incorporated both surface and ground water (Fishelson 1989). The Lowdermilk and Mekorot schemes, which reflected both Zionist and socialist ideals, were published in a book entitled *TVA on the Jordan* in 1948, just in time for the establishment of Israel.

**After 1948 and the establishment of Israel**

Thinking that combining several of these proposals might alleviate some of the conflicts in the Jordan River Basin, The United Nations Relief and Works Agency (UNRWA), created to deal with the 700 thousand Palestinian refugees generated by the 1948 war, asked the Tennessee Valley Authority (TVA) to develop a “unified plan.” The resulting proposal was based on irrigation by gravity flow within the watershed, and also included drainage of the Hula marshes, storage of Yarmouk River water in the Sea of Galilee, a Mediterranean Sea–Dead Sea Canal, and dams on the Hasbani and Yarmouk rivers for irrigation and power (Lonergan and Brooks 1995). However, this proposal foundered on the inability of Israel and its neighbors even to agree that cooperation was acceptable. As a result, Israel undertook some unilateral projects on the Jordan River, including construction of its National Water Carrier.

The next major effort to develop a regional solution came in 1953 when Eric Johnston was appointed by US President Eisenhower as a special ambassador to lead a mission to propose multilateral water development of the Jordan River Basin. Shuttle diplomacy among Syria, Lebanon, Jordan and Israel took place over the next several years. (The West Bank was included in Jordan’s share of water, and the Gaza Strip was ignored because it was then administered by Egypt and not in the Jordan Valley.) In this case, diplomacy came very close to succeeding, not with the initial Johnston proposal but with a modified proposal (Phillips

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11 The Tennessee Valley Authority “was established by [the US] Congress in 1933 to address a wide range of environmental, economic, and technological issues, including the delivery of low-cost electricity and the management of natural resources.” [http://www.tva.com/abouttva/history.htm](http://www.tva.com/abouttva/history.htm) accessed 7 April 2012
et al. 2007a, b). Israel did grant formal political support to the modified Johnston Plan, and it was accepted by the Arab League’s Technical Committee (Haddadin 2011). However, the modified plan was never formally accepted by the Arab states because they feared that their signatures might be taken as recognition of Israel, which at the time was unacceptable to them (Lonergan and Brooks 1995). In practice, all of the riparian states unofficially accepted the Johnston Plan, with the exception of Syria, which did not reject it, but simply did not act on it.

For a time the modified Johnston plan provided a workable arrangement for water sharing for the Jordan Basin, but, in the absence of formal adoption, its influence gradually declined (Lonergan and Brooks 1995; Elmusa 1995). Today, it is doubtful whether either Israel or Syria would accept the Johnston Plan because each has built its water system in ways that give it more water than their allotments under that proposal. The FoEME Proposal also rejects the Johnston Plan for three reasons: first, as indicated above, we believe that the basic approach of fixed quantitative allocations is misguided; second, because the plan did not provide an explicit Palestinian share; and, third, because all water in the Jordan Basin is treated as if available for human uses with none left for ecosystems.

Between 1955 and the beginning of the Oslo Process, there was little discussion about shared water agreements. Countries in the region continued to develop their water resources, commonly at the expense of other countries. However, starting in the early 1990s, a number of activities were initiated to establish workable relationships for water management either between Israel and the Occupied Palestinian Territories alone or among all the Jordan Basin countries. Notable were the Declaration on Principles for Cooperation on Water-Related Matters and New and Additional Water Resources, signed by Israel, Jordan, and the Palestinian Authority (PA) in 1996, and the creation of the Executive Action Team (EXACT) with the mandate to work toward adoption of standardized data collection and storage techniques in the region. Also, two multilateral working groups were set up as part of the Madrid Process, one on environment and one on water resources. The agreements have been observed fairly well by official agencies, but not by some radical Israeli settlers, who have repeatedly destroyed local Palestinian water facilities. EXACT has continued to operate and to produce regular reports (http://www.exact-me.org/). However, the multilateral working groups ceased to operate after the second intifada.

In addition, much “Second Track” (non-diplomatic) literature emerged from academic institutions and from non-governmental organizations (NGOs) during, and even after, the Oslo period of active Israeli-Palestinian negotiations. As one notable example, a team of Palestinian and Israeli academics, plus some international development and legal experts,
met periodically during the last half of the 1990s to produce a model agreement for joint management of the Mountain Aquifer (Feitelson and Haddad 1998, 2000). At the same time, the first Israeli-Palestinian efforts to draft acceptable water-sharing plans began to be published (Assaf et al. 1993; Shuval 2007).

Somewhat later, the Israeli-Palestinian NGO known as the Geneva Initiative launched a process to prepare an Article on fresh water that would be included in a draft Final Status Agreement. That process turned out to be contentious, mainly because the draft Article prepared by Brooks and Trottier (2010a, b) broke with conventional approaches for sharing water. All of the participants in the discussions recognized that some form of water sharing was essential as part of a peace plan, and that the Palestinian population needed significantly more water than it is currently getting. However, they differed sharply on the means to get there. In an ironic twist, the differences were much more disciplinary than national — that is, they divided social from physical scientists rather than Israelis from Palestinians. The Brooks-Trottier draft Article (the document which later became the FoEME Proposal) was presented by the authors to the Geneva Initiative but lost out to another, more traditional proposal prepared by Hillel Shuval and Shaul Arlosoroff (http://www.geneva-accord.org/images/PDF/water.pdf). We return to the question of why one proposal was preferred by the Geneva Initiative over the other in Chapter 5.

**Israeli and Palestinian Positions**

Israeli and Palestinian positions about joint water management strategies have been explored in two parallel papers published by Jonathan Lautze and his colleagues from Tufts University, near Boston, US, and from the International Water Management Institute in Colombo, Sri Lanka (2005, 2009). These authors are particularly concerned by the failure of those strategies to allow for higher demand for water as a result of population growth and lower availability of water as a result of climate change. And, they point out that, although Israel has been “quite successful at maximizing the potential of its water resources… such efficiency has come at a price. Unsustainable withdrawal of ground water and surface water has resulted in severe environmental stress” (2005, 197). The two papers review the effects of climate change on water availability and on environmental conditions as they would evolve under different political choices by the respective governments. The authors emphasize that, “The goal is not to identify which side’s position is better or worse, but rather to help

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12 There are of course other papers that comment on the Israeli and Palestinian positions, but, to our knowledge, this pair of papers is unique in treating the two with a common methodology and from an external perspective.
identify alterations which can be made to both offers in order to make an agreement more viable and sustainable” (Lautze and Kirshen 2009, 189-90).

The Palestinian position on sharing available water resources is summarized in Box 3-4 and the Israeli position in Box 3-5 (based, respectively, on the parallel discussions prepared by Lautze and colleagues in 2005 for Israel and 2009 for Palestine). The information is all taken from public documents released by the Government of Israel and the PWA. In each case, the positions are set forth at the beginning of negotiations, and they should be seen in that context; they are not necessarily final status positions. Neither proposal accounts for annual fluctuations in precipitation, which can swing wildly in this region from drought to flood, nor for potential effects of climate change.

**Box 3-4. Palestinian Water Authority Position on Sharing Water, as seen by an academic team (summarized from Lautze and Kirshen, 2009)**

Clearly, the situation for Palestinians leaves much to be desired. Per capita Palestinian withdrawals average well below the WHO minimum standards for health and sanitation. Further, the environment is under severe stress, and problems are compounded by rapid population growth and the likelihood of decreasing supply as a result of climate change. Not surprisingly, the most recent position advocated by the Palestinian Water Authority (PWA) for reallocation involves considerable change in this situation. The Palestinians would receive three times as much water as they do now, but they would most likely not need to withdraw all of this with present population levels and existing economic activity. The remainder could either be sold to Israelis or returned to the environment. In contrast, the Israelis would have to cut their withdrawals by more than one-fifth from the present levels. Even so, they would still receive about twice as much water per capita as Palestinians. This water allocation plan nevertheless appears quite sustainable from a Palestinian perspective, as Palestinians would be able to meet their water demands even with sizable population growth. However, as Palestinians increase withdrawals to meet the demands of a growing population, the amount of water previously allowed for the ecosystem services will decrease.
Box 3-5. Israeli Position on Sharing Water, as seen by an academic team, Israeli Position from Camp David/Emmitsburg Negotiations (summarized from Lautze et al., 2005)

During the more widely known negotiations at Camp David in 2000, parallel negotiations on so-called technical issues took place nearby at Emmitsburg, and some of these focused on water. After general calls for mutual recognition of water rights and future cooperation, Israel offered 50 million cubic metres (MCM) from the Western Basin of the Mountain Aquifer, 10 MCM from the Northern Basin, and 80 MCM from the Eastern Basin. (All figures are per year.) As well, Israel offered Palestine the right to withdraw and desalinate 40 MCM from the Lower Jordan River. Another 50 MCM were to come from a desalination plant at Hadera, Israel, that would be co-managed by the Americans and Palestinians. When allowance is made for modest reductions in pumping from the Coastal Aquifer plus new supplies from other desalination plants, the net effect of these proposals is an increase of 10 MCM in water available to Israelis and 230 MCM to Palestinians — respectively a 1 per cent and a 100 per cent increase compared with current supplies. Even then, total Palestinian withdrawal of water would only be 19 per cent of total water withdrawals in the region while the Palestinians represent about 37 per cent of the 2000 population (assuming no return of refugees).

Allowing for the fact that the positions analyzed by Lautze and his colleagues are bargaining positions, not final acceptable positions, the two sides are not enormously far apart in reaching an acceptable compromise on sharing of water volumes. What is also evident, but more in wording than in numbers, is that the policy implications of the studies by Lautze and his colleagues (2005, 2009) will likely be of more long-term interest than the specific volumetric reallocations they suggest. For example, comparison among the various scenarios explored in the two studies shows that the PWA position results in less of an environmental deficit than the Israeli position. However, that position by no means eliminates the deficit, particularly in the Jordan River and the Coastal Aquifer; ultimately both nations will suffer from the eventual lack of the ecological services.

In their conclusion, Lautze and his colleagues argue that they “have established the parameters within which a potential water agreement can be reached” (Lautze and Kirshen, 2009, 202). They also go on to say that it “may be in the best interests of both parties not to divide their waters.” The FoEME Proposal does not take a position on the numerical specifics of their conclusion, but we fully support their argument not to divide the water. The difference in our stance on these two aspects is because the FoEME Proposal has more to do with
sharing management than with sharing water — Whose hand is going to be on the valve? — and, for that reason, it emphasizes the institutions appropriate for joint management of shared water. Chapter 5 focuses on the conceptual design of such institutions and Chapter 6, on their structure and operations. Prior to those two chapters, it is essential to be clear as to why existing arrangements for sharing water are at best inadequate and in some cases counterproductive.
CHAPTER 4

FAILINGS OF THE EXISTING REGIME FOR SHARING WATER

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.

Nader Khatib, Palestinian Director, Friends of the Earth Middle East

Two major agreements paved the way towards Israeli-Palestinian mutual recognition and settlement of major concerns. The Declaration of Principles, also known as Oslo I, which was the document signed on the White House lawn in 1993, gave only brief treatment to water issues. However, it did refer to “water rights of each party” and to “equitable utilization of joint water resources” (Oslo I, 1993, Annex III, ¶1). The Israeli-Palestinian Interim Agreement on the West Bank and the Gaza Strip signed two years later, also known as Oslo II, was more specific by referring to “Palestinian water rights in the West Bank” (1995, Annex III, Appendix I), but did not define them. The agreement also established an elaborate framework for the management and allocation of joint water resources via Article 40 and the related Schedules 8 –11. The key provisions of Article 40 pertain to the composition and administration of a coordinated water management body, the Joint Water Committee (JWC), which was originally mentioned in the Declaration of Principles; the allocation of water between Israel and Palestine, with major focus on the Mountain Aquifer; and the mutual obligation to treat or reuse wastewater.

Oslo II was intended to be an interim agreement governing relations between the parties during a “transitional period not exceeding five years from the date of . . . May 4, 1994, leading to a permanent settlement based on Security Council Resolutions 242 and 338” (Preamble). Oslo II did not address the possibility that final status negotiations might not commence by 1999, and thus contains no discussion of what force (if any) it would have beyond the interim period. Nevertheless, both Israel and the PA continue to operate in the field of water management as if the agreement is in force.

Though the shared water-management arrangement has fared better than some other parts of the Oslo II — notably, the JWC continued to meet during the second intifada — the failings of Article 40 are clear, and the consequences have been mounting as this “temporary” arrangement has stretched over 15 years. They include the failures to
Inadequate Fresh Water Supply for Palestinians in the West Bank

The Oslo agreements recognized that Palestinians in the West Bank did not have access to enough water to fulfil their domestic needs and agreed that their supply would need to be increased by 70-80 million cubic metres per year (MCM/y) above their 1995 baseline consumption level, estimated then at 119 MCM/y. The Oslo II joint technical team concluded that the Eastern Basin of the Mountain Aquifer, which lies almost entirely within the West Bank, contained 78 MCM/y of unutilised potential (Oslo II, Annex III, Schedule 10). Development of this untapped reserve by the Palestinians would thus fulfill their future needs. (See Table 4-1.)

Estimates of Palestinian requirements for fresh water were divided between immediate needs and future needs. Immediate needs were determined to be 29 MCM/y (Oslo II, Annex III, Article 40 § 6-7). Of that amount, 23.6 MCM/y was marked for the West Bank and the rest was to be supplied to Gaza via a pipeline from Israel (ibid., § 7). Some 40 to 50 MCM/y were deemed necessary to meet “future needs” in addition to the 29 MCM/y defined as immediate needs. Under Article 40, the water necessary to fulfil the Palestinians’ future needs was to come from further exploitation of the “Eastern Aquifer and other agreed sources in the West Bank” (ibid. § 7(b)(6)).
CHAPTER 4: FAILINGS OF THE EXISTING REGIME FOR SHARING WATER

Table 4-1. Existing water uses (1994) and total estimated sustainable yield of water from the Mountain Aquifer according to Oslo II (MCM/y)

<table>
<thead>
<tr>
<th></th>
<th>Western Aquifer</th>
<th>North Eastern Aquifer</th>
<th>Eastern Aquifer</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Israeli Existing Uses</td>
<td>340</td>
<td>103</td>
<td>40</td>
<td>483</td>
</tr>
<tr>
<td>Palest. Existing Uses</td>
<td>22</td>
<td>42</td>
<td>54</td>
<td>118</td>
</tr>
<tr>
<td>Total Existing Uses</td>
<td>362</td>
<td>145</td>
<td>94</td>
<td>601</td>
</tr>
<tr>
<td>Estimated Sustainable Yield</td>
<td>362</td>
<td>145</td>
<td>172</td>
<td>679</td>
</tr>
<tr>
<td>Estimated future needs, Palestinian</td>
<td></td>
<td></td>
<td></td>
<td>70-80</td>
</tr>
<tr>
<td>Water available to be allocated to Palestinians</td>
<td>0</td>
<td>0</td>
<td>78</td>
<td>78</td>
</tr>
</tbody>
</table>


More than 15 years later, the two sides disagree on the Palestinian water consumption in the West Bank. While both sides concur that there is a large gap between Israeli and Palestinian levels of per capita water consumption, Israel claims the Palestinians have more than 100 litres per capita per day (L/c-d), the minimal amount of water deemed necessary for domestic use by the World Health Organization (WHO), whereas the Palestinians claim it is below the WHO standard. According to Israel, the PA currently has at its disposal some 250 million cubic metres of water per year for approximately two million residents, which translates to between 170 L/c-d (if based on a population of 2 million, as estimated by the Israeli Water Authority) and 150 L/c-d (if based on the PA’s estimate of 2.28 million West Bank residents, excluding the Palestinian residents of East Jerusalem who are supplied by Israel).

According to the Palestinians (PWA 2012), about 85 MCM of water was supplied in 2010 for domestic purposes in the West Bank — a rate of 102 L/c-d. However, only 60 MCM actually reached consumers in the West Bank, which means an average consumption rate of 73 L/c-d, well under the WHO minimum standard. The latter figure, which the Palestinian Water Authority (PWA) claims is the true average consumption rate, is low because, according to the report, “over 25 MCM (28 per cent of water supplied for domestic uses) was lost,” a result of high rates of leakage in aging distribution networks, as well as water theft” (ibid.). The PA blames these problems largely on the Occupation. It claims that, even after Oslo, Israel continued to restrict Palestinian efforts to replace inadequate water infrastructure and limits PA enforcement mechanisms against water theft in Areas B and C. Israel claims that it does not restrict these efforts; rather it says that ongoing water losses stem from inadequate governance in the PA.
Another source of dispute between the two sides involves responsibility for under-development of the Eastern Basin of the Mountain Aquifer. (See Table 4-1.) The Palestinians claim that the additional potential yield from this basin (78 MCM/y) is exaggerated, and that Israel uses two-thirds of the water withdrawn from this source. According to the PWA Report (2012), the Palestinians now withdraw less than 15 per cent of the “estimated potential” of the three basins (Western, Eastern and Northern). The Report goes on to claim that reduced withdrawal rate over the last decade results from the severe restrictions imposed by the JWC and the Israeli Civil Administration (CA) on Palestinian development water projects as well as lower water tables because of the drought. The PWA report notes that several Palestinian applications to deepen or replace individual wells have been mired for more than four years in the JWC or CA processes. The report concludes (ibid. 51): “A sustainable demand/supply scenario is difficult to achieve as long as the development of additional water resources is controlled by the approval of the Israelis, where the construction and maintenance of water infrastructure is also obstructed by the continuous Israeli veto in the Joint Water Committee.”

In sum, Israel claims that it has fulfilled its obligations under Article 40 and that the Palestinians have sufficient access to water; therefore, any problem of water accessibility is a result of the PA’s inadequate water supply systems and excessive leakage. Almost all Palestinian analysts claim that they do not have access to sufficient water sources because of Israel's obstruction of the development of Palestinian water infrastructure. As a result, per capita access to clean water does not meet minimal World Health Organization standards. Israel blames Palestinian under-exploitation of the Eastern Basin of the Mountain Aquifer on administrative problems in the PA, and adds that the Palestinians could increase their water reserves by purifying sewage for reuse, as Israel does. The World Bank puts responsibility on both sides. It notes that, “little more than half of the Oslo II ‘immediate needs’ for the West Bank has been developed,” and goes on to blame the current situation on constraints stemming from the governance system and the Israeli occupation, the weakness of Palestinian planning and technical services, and lack of donor support or poorly articulated donor coordination” (2009, 35 and 38).

Whatever the balance of responsibility, in the years since the Oslo II agreement was signed, Palestinian dependence on Israeli-supplied water has increased. According to the World Bank (2009), Palestinian withdrawals from West Bank sources have dropped as a result of both Israeli limitations on Palestinian drilling under Article 40 and poor Palestinian well maintenance. The supply shortfall is made up by Mekorot (the Israeli national water company), which increases Palestinian dependence on Israel. According to the PWA, between 2004 to 2010 the annual quantity of water purchased by Palestinians for domestic use from Mekorot wells in the West Bank increased by one-third, and is now more than 35 per cent of the total supply of water for domestic use in the West Bank (2012, Table 1.1).
Inadequate Sewage Treatment and Contamination of Shared Water

Another aim of Oslo II was to prevent contamination of the shared aquifers through proper treatment, reuse or disposal “of all domestic, urban, industrial, and agricultural sewage” (Art. 40 (3)f). Achievement of this goal was to be accomplished by jointly approved infrastructure projects including sewage systems, solid waste dumps and wastewater treatment plants. Instead, water infrastructure projects have been delayed or obstructed repeatedly, often by the very mechanism set up to facilitate them, namely the Joint Water Committee’s Subcommittee on Sewage.

A large quantity of Palestinian domestic and industrial waste water is released without treatment into the environment, and much of it is released right over the main replenishment areas for the Mountain Aquifer, which threatens it as a source of fresh water. In addition, Israeli settlements produce nearly 18 MCM of wastewater per year, of which one-third is untreated or inadequately treated. Jerusalem has a modern wastewater treatment plant for the western part of the city, but more than 11 MCM of waste water from the eastern portion and from Palestinian suburbs still flow untreated into the West Bank and toward the Dead Sea. In the opinion of Naomi Tzur, Deputy Mayor of Jerusalem, this sewage outfall is the greatest environmental hazard in Israel.13 Finally, the West Bank is dotted with hundreds of illegal solid-waste dump sites producing leachate that further contaminates ground water. As a result, nearly all the streams in the West Bank are now polluted.

The reason for this continuing failure is inadequate implementation of infrastructure to treat wastewater. Since Oslo II was signed, only one treatment plant has been constructed in the West Bank, in El Bireh. According to the World Bank (2009), of 236 water projects approved between 1996 and 2008, only 36 per cent were actually implemented. Israel claims that the JWC does its job in approving infrastructure projects, but that the Palestinians do not follow through with appropriate action. The World Bank did identify gaps in Palestinian water institutions as one cause of delay but also blamed the long bureaucratic approval process for water and sanitation projects under Oslo II. After JWC approval, most sanitation projects still require approval by the Israeli CA, and this can take up to three years (World Bank 2009, 54, 58; also see Figure 4-2). In the past, Israel also set unrealistically high standards for wastewater treatment, which the PA refused. The Israeli demand was later dropped, and the CA claims that it ultimately approved most of the projects. However, donors have become hesitant to commit funding as a result of delays and uncertainty characterizing West Bank projects (Schalimtzek and Fischhendler 2009). Several examples of these problems appear in Chapter 7.

In summary, more than 15 years since Oslo II was signed, less than a third of the West Bank’s Palestinian population has sewage systems connected to wastewater treatment plants. The remainder of the population relies on septic tanks and cesspits, which are often poorly maintained. Meanwhile, Israeli settlements and East Jerusalem continue to discharge additional millions of cubic metres of untreated or partially treated wastewater annually in the West Bank.

**Over-Extraction from Shared Water Sources**

One of the main aims of the 1995 water agreement was to use “the water resources in a manner which will ensure sustainable use in the future, in quantity and quality” (Art. 40 (3) c). Article 40 aimed to accomplish this by estimating the shared Mountain Aquifer’s potential and then setting an annual baseline withdrawal rate for both sides: 483 MCM for Israel and 182 MCM for the Palestinians, but also noting the Palestinian withdrawal rate would likely rise in the near-term. (See Table 4-1.) Instead, as shown by Figure 4-1, the period since Oslo II has been marked by constant over-extraction in the Western Basin of the Mountain Aquifer, in clear violation of Oslo. By 2008, the Chairperson of the Israeli Water Authority stated that withdrawals over the preceding five years had been so large as to bring aquifer levels “to the point where irreversible damage is done to the aquifer” (World Bank 2009, 12). The Hydrological Service of Israel (HSI) noted that in parts of the Mountain Aquifer’s western basin inside Israel, groundwater levels peaked between 1993 and 1995 and since 2004/05 groundwater levels are dropping low enough to raise concerns about the future quality of the aquifer’s water (HSI 2010).

According to Article 40, the withdrawal rates (e.g., drilling of wells in the West Bank) were to be monitored through the JWC. In fact, Israel has exceed its quota of withdrawals by drilling from inside the Green Line, where the JWC has no mandate, while the Palestinians have carried out unauthorised drilling inside the West Bank. (See Chapter 7.) The excessive rates of withdrawal shown in Figure 4-1 do not include Israeli withdrawals from the Northern and Eastern basins of the Mountain Aquifer (Zeitoun et al. 2009). Using HSI data, the Palestinians claim that Israel over-withdrew from all the shared aquifers an average of 72 MCM/y above the Oslo baseline between the years 1995–2005 (ibid.). According to the World Bank (2009), which based its conclusion on HSI data, in the extreme drought year of 1999 Israel withdrew half or more of the estimated flow in the Western Basin of the Mountain Aquifer.
Israel agrees that the Palestinians are not extracting up to the limit set in Oslo II, but notes that Palestinians have drilled hundreds of wells without JWC approval and that these wells extract around 10 MCM/y, mostly in the Northern Basin. Israel claims these actions have led to the drying up and salinization of springs in the Gilboa-Harod area inside Israel. It also charges that, since its withdrawal from the Gaza Strip in 2005, hundreds of “pirate wells” have been drilled and seriously compromise the quality of water in the Coastal Aquifer. The PWA agrees that the situation in Gaza is disastrous, and also admits that unlicensed wells have been drilled in the West Bank. However, it responds to Israel claims by arguing that “most of these wells are drilled into shallow aquifers…and only draw on Palestinian resources without any impact on Israeli wells” (PWA 2012, 6). In the Jordan Valley, local Palestinians believe a well approved by the JWC and drilled on behalf of the PWA has led to the drying up of the important Auja Spring, a claim disputed by Israeli hydrologists (Guttman 2007). This case is discussed at length in Chapter 7.

In sum, Oslo II has failed to uphold its promise to preserve the Mountain Aquifer, as each side has unilaterally exploited the shared ground water to its own benefit and blames the other for any problems that result. Thus, Palestinians drill wells without JWC approval in areas that they control. Israel systematically destroys Palestinian wells it claims are unauthorized, while drilling deep wells in the eastern aquifer which is nearly entirely within the West Bank.
Political and Procedural Problems from Current Arrangements

The source of problems with Oslo II arrangement for shared-water management is more fundamental than shortcomings in implementation. First, Oslo II covered only one of the shared water sources, the Mountain Aquifer, and only in those parts within the West Bank. Second, because it only meant to cover the five-year period after May 1999 (Oslo II, Preamble), there is no mechanism for re-evaluating current or future water needs. As a result, more than a decade after its original expiry, Israel enjoys the extension of an agreement that overestimated the capacity of the Eastern Basin to meet Palestinian needs, and West Bank Palestinians become more and more dependent upon Israeli-supplied water while losing faith in the whole process. The World Bank’s summary of this unbalanced status quo appears in Box 4-1; key results are described in the remainder of this chapter.

Box 4-1. World Bank perspective on Israeli control of water in the West Bank

(World Bank 2009, 33–34)

“Israel has de facto maintained predominance over the allocation and management of West Bank water resources. Under Article 40 water governance was to be managed jointly based on consensus. However, a number of factors give Israel a preponderant say in the management of West Bank water resources:

- Israel is the residual downstream beneficiary of the water resources in the three shared West Bank aquifers and can extract downstream the quantity it chooses without consultation. Article 40 thus allows Israeli authorities to limit the quantum extracted by the Palestinians in the West Bank, but does not conversely grant the PA the right to limit Israeli withdrawals in Israel, nor, effectively, in the West Bank.

- Article 40 indicated possible extra allocations for the Palestinians in the Eastern Aquifer and other agreed sources — but the PA has been unable to develop the resource to the degree expected, and still requires Israel’s permission to do so. Furthermore, the Palestinian Water Authority (PWA) is not consulted on decisions by the Israeli authorities or settlers to extract from that aquifer, despite the governance rules under Article 40.

- Israeli authorities have an effective veto over all PA water resource extraction and infrastructure projects (but not vice versa), and take action by force when they choose.

- Israeli retains control over most supply lines and the deep wells drilled by Mekorot since 1967.

- Some 60 per cent of the West Bank (‘Area C’) is under Israeli military law and Civil Administration control, and the PA has, de facto, no control over Israeli acts within this part of the Palestinian territory. As most water infrastructure has a footprint within Area C, Israel can impose further regulation on Palestinian infrastructure, but not vice versa.

- Even in Area A or B, Palestinian projects require coordination with Israeli authorities to get through the Israeli-imposed import and M&A [movement and access] restrictions.

- Israeli authorities have continual access to water resources data in the West Bank, which the PA has not.”
CHAPTER 4: FAILINGS OF THE EXISTING REGIME FOR SHARING WATER

**Limited mandate / limited legitimacy**

Article 40 established the JWC “to deal with all water and sewage related issues in the West Bank” (Annex III, Art. 40 ¶ 12). This wording excludes the Palestinians from shared management of those parts of the Mountain Aquifer that extend into Israel. As noted by the World Bank (2009, 34), “Article 40 thus allows Israeli authorities to limit the quantum extracted by the Palestinians in the West Bank, but does not conversely grant the PA the right to limit Israeli withdrawals in Israel, nor, effectively, in the West Bank.” Oslo II does not cover the lower Jordan River, the other major shared water source. Access to this reach of the river is fully controlled by Israel. It is hardly surprising, then, that the two signatories have not fully cooperated on water management as envisioned in 1995.

**The JWC: a problematic mechanism for shared water management**

As originally conceived, all JWC decisions were “to be reached by consensus, including the agenda, its procedures and other matters” (Oslo II, Annex III, Article 40 ¶ 12, 14). More specifically, the JWC would be responsible for approving the “drilling of new wells and the increase of extraction from any water source” in the West Bank by either side and for the “development of water resources and systems” in the West Bank by either side. Likewise, “plans for construction of new water and sewage systems or modification of existing systems” in the West Bank would require prior approval of the JWC (Oslo II, Annex III, Schedule 8 ¶ 1, 2).

Oslo II mandates the JWC to serve as a vehicle for cooperation through data sharing, joint fact finding, and the resolution of water-related disputes. However, it does not spell out specific procedures for achieving these aims, nor indicate how frequently the JWC must meet. It also leaves open the time within which the JWC must reach a decision. During and after the second intifada, when most of the other joint bodies established by Oslo II disappeared, the JWC admirably continued to meet, but the frequency of its meetings fell drastically to just a few times a year (World Bank 2009). After 2001, regular meetings were replaced by informal meetings without minutes. Still today, the JWC operates as a closed unit; minutes of its meetings are not available to the public, and there are no provisions for third-party observation or review.

The JWC’s decision-making process is characterized by delays and a low rate of approval for Palestinian projects brought before it. According to the World Bank (2009; see Table 4-2), between 1996 and 2008, one-third of all projects submitted were “pending” in 2009.
Table 4-2. Status of Palestinian Projects Submitted to JWC, 1996-2008, according to the World Bank

<table>
<thead>
<tr>
<th>Status</th>
<th>Number of projects</th>
<th>% of total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Approved</td>
<td>236</td>
<td>57</td>
</tr>
<tr>
<td>Not Approved</td>
<td>22</td>
<td>5</td>
</tr>
<tr>
<td>Pending</td>
<td>143</td>
<td>34</td>
</tr>
<tr>
<td>Approved by JWC/not approved by C.A</td>
<td>7</td>
<td>2</td>
</tr>
<tr>
<td>Approved/no possibility for execution</td>
<td>7</td>
<td>2</td>
</tr>
<tr>
<td>Withdrawn by Palestinian side</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td><strong>Total Submitted</strong></td>
<td><strong>417</strong></td>
<td><strong>100%</strong></td>
</tr>
</tbody>
</table>


The World Bank notes (2009, 50) that wastewater projects “suffer from the lowest rate of approval and the longest delays in the JWC.” The report also cited disagreements regarding ownership of the effluent and “the politics of bilateral aid.” The Israeli data shown in Table 4-3 and the process illustrated in Figure 4-2 were not intended to corroborate the World Bank’s statements, but they certainly suggest that there is a serious problem.

Table 4-3. Approval Status of Palestinian Wastewater Treatment and Reuse Projects, West Bank and Gaza, according to Israel

<table>
<thead>
<tr>
<th>Status</th>
<th>Number of Projects</th>
<th>% of Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Still not submitted to the JWC (e.g. in feasibility study phase)</td>
<td>11</td>
<td>41</td>
</tr>
<tr>
<td>Approved by the JWC</td>
<td>3</td>
<td>11</td>
</tr>
<tr>
<td>JWC approved but funding frozen by donors</td>
<td>3</td>
<td>11</td>
</tr>
<tr>
<td>Partially approved; final approval requires further action by Palestinian side (e.g. general design)</td>
<td>7</td>
<td>26</td>
</tr>
<tr>
<td>Status in JWC process unclear</td>
<td>3</td>
<td>11</td>
</tr>
<tr>
<td><strong>Total projects</strong></td>
<td><strong>27</strong></td>
<td><strong>100%</strong></td>
</tr>
</tbody>
</table>

Source: IWA Written Communication, 2011.
Another basic element in joint water management is the sharing of data between both sides, which is crucial to monitoring. For this purpose, Oslo II established “Joint Supervision and Enforcement Teams” (JSETs) in the West Bank. The ultimate purpose of the JSETs was to monitor the implementation of Article 40 and to attempt to rectify the situation whenever an infringement occurred. In 2001, during the second Intifada, the Palestinians claimed that access and mobility restrictions by the Israeli authorities made their work impossible (World Bank 2009). Since then, each side collects data separately. The failure of the JSETs to find a way to work together, as well as Palestinian limitations in independent collection, means that great asymmetry exists in data availability. This failure is expressed in the different information each side provides to “prove” that the other side is responsible for the two basic problems of the past 15 years.

**Overlapping authorities of the JWC and the CA**

Although the JWC is the coordinating body for water and sanitation development in the West Bank, it is not the only organization with jurisdiction over infrastructure and resource development in the Occupied Territories. The Israeli CA also plays a major role. Figure 4-2 illustrates the convoluted linkage between the JWC and the CA, as well as the asymmetry of power and the informal practices that exist in parallel with formal rules.

Under Oslo II, water and sanitation projects approved by the JWC in Area C (covering 60 per cent of the West Bank and where much of the needed infrastructure must be located) must still be approved by the Israeli CA. According to Articles 11 and 13, Israel maintained full responsibility in Area C for security, as well as broad control over civil affairs, including most water and sanitation issues, such as well drilling and the construction of wastewater treatment facilities. The CA bureaucracy has earned a reputation for opacity, inconsistency and foot-dragging in any approval of Palestinian projects. According to the World Bank (2009, 54), it “is seen by donors as a major constraint. One donor commented: ‘First thing we request is a letter from PWA approving the project. Then we go to the JWC. But then we have to go to the CA — and there delays of two or three years are normal.’”

For Palestinians, the costs in time and money of seeking CA approval for water infrastructure projects after they have already received approval from the Joint Water Committee deters many from “playing the game.” Instead, they drill “pirate” wells, dig cisterns and lay pipes, many of which are subsequently demolished by the CA. In short, current arrangement for joint management of shared waters has failed to protect these vital resources from over-extraction and contamination, as originally envisioned. No less critically, it has failed to build trust between the two sides in an area that could be a win-win situation — the management of water shared by Israelis and Palestinians.
CHAPTER 4: FAILINGS OF THE EXISTING REGIME FOR SHARING WATER

Figure 4.2. Decision-making process to approve Palestinian water projects.
CHAPTER 5: PRINCIPLES FOR DESIGNING AN INSTITUTIONAL STRUCTURE

PRINCIPLES FOR DESIGNING AN INSTITUTIONAL STRUCTURE
FOR JOINT MANAGEMENT OF SHARED WATER

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

With the background chapters completed, it is time to suggest what a water sharing agreement might look like for Israel and the future State of Palestine. The quotation that heads this chapter expresses at the most general level what is needed for an agreement that will be resilient not only to changes in the natural regime, as with global climate change, but also to changes in demographic, economic and social characteristics. To create a dynamic water agreement requires that we frame a policy problem where water is treated as a flow rather than as an immobile resource. Framing any policy problem is an intensely social activity (Jasanoff 2005), and development of a water agreement demands that we see water governance not as a technical issue but as a political one (Blomquist and Ingram 2003; Molle 2009).

The shift toward conceiving of water governance as a political process requires a different approach than has been used in most water agreements to date. Therefore, it is not an overstatement to say that this chapter presents the underlying basis not just for an agreement to share water between Israelis and Palestinians, but for any agreement for internationally shared water that will be resilient to changing conditions and still satisfy demands for efficiency, equity, and sustainability. The proposed institutional structure, which is more specific to the Israeli-Palestinian situation, appears in Chapter 6.

This chapter begins with two pairs of linked sections. The first pair delineates the pitfall of thinking that water is central to national development and national security, and is followed by a review of the defects of the conventional way of sharing water by quantitative division. The second pair begins with a section describing the goals that the proposed agreement is designed to achieve, followed by a section that details key ways to achieve those goals. The chapter closes with a section that discusses the different roles of scientists and of citizens.
when it becomes necessary to choose among alternative patterns of water development and water management.

**Water, Conflict and Security**

Any agreement on sharing water across national borders must avoid what has been called “hydrocentricity” (Brichieri-Colombi 2004) or “hydrocracy” (Molle et al. 2009). Each of these terms indicates excessive emphasis on large-scale water infrastructure, such as dams, and attitudes that misconceive the needs of both water governance and economic development in modern states by placing water at the centre of state building. In the Middle East, sensational reporting has sometimes presented water as the key problem separating Israelis and Palestinians, but more careful observation makes it clear that, in any peace agreement, water is quite secondary to political borders, refugees, the status of Jerusalem, and Israeli settlements.

History demonstrates that riparian states around the world prefer to cooperate over transboundary water bodies rather than fight over them (Wolf 1998, 2007; Gleick 2000b; Kliot et al. 2001; Jägerskog 2003; Katz 2011a). Indeed, joint water resource management seems to have “a singularly important role to play both in facilitating the rebuilding of trust following conflict and in preventing a return to conflict. . . .” (Weinthal et al. 2011, 149). The database on international conflict over water indicates that, though water has often been cited as a cause of war, reality does not conform to this common impression. As Wolf, who manages the database writes (1998, 251):

> This paper investigates the reality of historic water conflict and draws lessons for the plausibility of future “water wars.” The datasets of conflict are explored for those related to water -- only seven minor skirmishes are found in this century; no war has ever been fought over water. In contrast, 145 water-related treaties were signed in the same period. . . . War over water seems neither strategically rational, hydrographically effective, nor economically viable. Shared interests along a waterway seem to consistently outweigh water’s conflict-inducing characteristics. Furthermore, once cooperative water regimes are established through treaty, they turn out to be impressively resilient over time, even between otherwise hostile riparians, and even as conflict is waged over other issues.

The situation among Jordan Valley countries is no different. Again citing Wolf (1998, 253),

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14 http://www.transboundarywaters.orst.edu
who comments on a number of recent studies as examples of a causal link between war, including the 1967 War, and water in the region:

*The examples most widely cited are wars between Israel and her neighbors.*
*The only problem with these theories is a complete lack of evidence.*

In support of Wolf’s argument, Fischhendler, Wolf and Eckstein (2012) show that Israeli-Arab water issues have been resolved by agreements that use imaginative language to dodge the most contentious aspects. More importantly for the long run, the process allows the parties to step away from a focus on the dispute and look at their underlying interests. The result often enough is a compromise that respects international law but at the same time recognizes the specific needs of the “hegemonic riparian,” which is to say “Israel.” Annex 2 of the 1994 Israel-Jordan Peace Treaty offers an illustrative example. As Haddadin comments (2011, 184), the Annex not only facilitated agreement on other terms of the Treaty, but has “continued to be honoured by both parties” even when other terms have not been.

The absence of water wars does not mean that fresh water is free of conflict. Far from it—but the conflict will be mainly *intra*national rather than *inter*national. For example, cities that want water for domestic use can find themselves in conflict with farmers who want water for irrigation. Farmers who decide to line their earthen irrigation canals with cement can prevent infiltration into the aquifer, damaging the flow of water in the wells of a nearby village. Contamination from domestic cesspits or fertilizers spread on fields can enter the aquifer and damage its quality. Individually or collectively excessive withdrawals of water may prevent ecosystems from providing a range of services, such as decontamination of sewage, provision of nutrients for plant growth, and flood control. These examples indicate the kinds of water conflicts that occur every day across the world. They need to be resolved, but all too often they are made invisible by a nationalist discourse that portrays water as key to national wealth and sees water sources as a central element in national security (Trottier 2004). Careful analysis has shown that per capita availability of fresh water is not particularly useful as an indicator of national well-being or of national wealth (Wolfe and Brooks 2003; Chenoweth 2008).

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

As described in Chapter 1, the common approach to sharing water involves treating water resources as if they 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 agreements; 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 forestall diplomatic problems and even resolve some short-term issues, this once-and-forever approach is seriously deficient over the longer term.

It is a key part of our thesis that fixed quantitative allocations of water work against long-term solutions, or at least against long-term solutions that are simultaneously efficient, equitable, sustainable and implementable, the key goals elaborated in the next section. Our proposal is designed to avoid these defects as much as possible.

Quantitative approaches to sharing water have three defects: securitization, rigidity, and ecological fiction.

- An issue becomes “securitized” when it becomes portrayed as an essential component of national security. It then leaves the realm of what is negotiable, of what can be the subject to compromise (Trottier 1999; Zeitoun 2007; Trottier 2008). Once such allocations have been fixed or asserted, changing them is perceived as a threat to national security.

- 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. Palestinian agriculture has been held back because of Israeli restrictions on withdrawals from existing wells and drilling of new ones (Lonergan and Brooks 1995; Trottier 2007; World Bank 2009). Palestinian farmers in the West Bank would pay the current price (or even more) for greater quantities of water than they can receive at this time. However, over the longer term, as the Palestinian economy develops following a peace agreement, it is likely to turn toward high technology, which will mean a lower demand for water, even if population increases.

- Finally, quantification implies that water can be treated as stable in space and time, when, in fact, as explained in Chapter 1, water is inherently a mobile and fluctuating natural resource. Not only is water used over and over again between the time it falls as precipitation and the time it “disappears” into the sea or deep aquifer or back into the atmosphere, but with each use it comes under the management of different bodies. These bodies range from an informal organization of Palestinian farmers deploying a communal property regime to the centralized command-and-control regime of Mekorot, the Israeli national water company. Each body has
its own rules for determining how water will be used (or not used), and how and where it can be released back into the environment. All of these bodies need to be involved in the elaboration of agreements on sharing water. Otherwise, the agreement fails to regulate human interaction with the mobile resource that is water.

**Searching for Consensus on Goals**

Consensus between Israelis and Palestinians can be reached on four primary goals for shared water management, including three that are commonly cited as making up a “triple bottom line” plus one other that is too often ignored. In slightly more expanded form than given in Chapter 1, they are

- Economically efficient withdrawal, treatment, use and release of water
- Socially and politically equitable delivery of water services
- Ecologically sustainable withdrawal and release of water
- Means to implement water management in practice

Rahaman (2009) explains how the first three of these goals fit within the management principle of “reasonable and equitable use” which appears in almost all transboundary water agreements. The fourth is of particular interest to those who will be entrusted with implementation of a Final Status Agreement. No ranking is implied by the order in which the four goals are listed.

**Economically efficient water management**

Common definitions of economic efficiency create many problems when applied to water, and therefore a broad approach to economic efficiency is adopted in the FoEME Proposal. In particular, the Proposal accepts that water is valued for many purposes and in many ways, not only for drinking and as an input for production. Nonetheless, we argue any use of water should at least be able to cover the costs of delivery and disposal, even if some users are not required to pay the full price.

Economic efficiency in water management is often, but incorrectly, calculated by showing that the value of water used or saved is greater than the short-term savings, mainly in costs of O&M (operations and maintenance). At a minimum, the calculation should focus on long-term cost effectiveness, where the value of water used or saved is greater than the cost (including capital) of obtaining the next increment of supply (Gleick et al. 2003).
The cost to be considered will vary with the end use, which determines the quality of the water provided. For potable water, the next best source of supply in Israel and Palestine (in economic terms, the “marginal” source) is probably desalination (plus pumping to the user), and for irrigation water, additional treatment plants (plus pumping). Increasingly, disposal costs for waste water and quantifiable environmental impacts from both withdrawal and disposal are also included as components of economic efficiency.

In the context of Israeli and Palestinian water use, even more considerations must be added to these academic concepts of economic efficiency. For example, these concepts do not take into account the fact that development of water infrastructure in both Israeli and Palestinian territory has been heavily subsidized from international sources. Keating and colleagues (2005) and the World Bank (2009) have examined the impact of international donors channeling more than $6 billion to the Palestinians in the West Bank and Gaza Strip between the Oslo agreements in 1993 and 2005, the bulk of which was dispensed after 2000. This phenomenon is not restricted to the Occupied Territories. Jewish organizations such as Keren Kayemet (Jewish National Fund) fund water infrastructure in Israel. This funding of water infrastructure via grants and gifts from external sources makes costs appear lower than they really are and obscures calculations of economic efficiency. However, the allocation of the costs of wastewater treatment is highly problematic. Though commonly treated as sacrosanct, Schlimtzek and Fischhendler (2009) show that, at least in the Israeli-Palestinian case, the polluter pays principle may be neither efficient nor equitable.

A further problem with the standard definitions of economic efficiency is the failure to take into account uses of water that fall outside the monetized economy, among them the provision of ecological services and much Palestinian irrigation. The West Bank contains over 500 springs, most of which have been used by local villagers over the centuries, partly for household water, but mostly for local irrigation networks. The construction and maintenance of these networks is labour intensive but does not rely on much capital. Such irrigation networks contribute to food security even when their overall flow appears small. Almost as important, their operation reinforces the social capital that organized the systems and provides an opportunity for use of otherwise unemployed labour.

**Socially and politically equitable water management**

Equitable use stands as a fundamental principle of the United Nations (UN) Convention on the Law of the Non-Navigational Uses of International Watercourses (Vinogradov et al. 2002). Equitable use must be distinguished from equal use. It does not mean equal quantities need to be allocated to each party. It does mean that allocations and other measures should aim to have an equivalent impact on each party. In the Israeli–Palestinian context, the principle
of equitable use has several consequences. The Palestinian economy is far more dependent on agriculture than is the Israeli, whether assessed as the share of gross domestic product originating from agriculture or from the perspective of local livelihoods. The value of additional water provided to Palestinian farms (in economic terms, the marginal value product of an additional litre of water) is therefore significantly greater than the value of additional water provided to Israeli farms. As indicated above, this difference may decline in the future but will probably remain important for the next decade or two. The FoEME Proposal therefore incorporates measures to reflect the present situation as well as to allow for gradual modification to match the evolution of the respective economies in the future.

The FoEME Proposal also takes into account concerns for political equity in water management. Israeli and Palestinian societies differ from each other in many ways, starting from the different levels of economic development that each has achieved. They also differ in their general approaches to management of fresh water. With passage of its water law in 1959, Israel nationalized all water in the name of the public, and it went on to build both physical and institutional infrastructure to implement a centralized form of governance for water. In the Palestinian territories, water management is largely decentralized. The Palestinian Authority (PA) does not yet constitute a state and lacks independence vis-à-vis Israel in its preparation of legislation. The Palestinians were given only a weak institutional structure as a result of the Oslo agreements and, complicating things even more, the PA has had to accommodate internally to other sources of power in the exercise of social control (Trottier 1999, 2007; World Bank 2009).

**Ecologically sustainable water management**

Ecological sustainability is not a simple concept. More often than not, it is defined by the absence of obvious or measurable unsustainable characteristics, such as declining water tables or flow rates or increasing levels of contaminants. Alternatively, it can be envisioned as the state of a water body at a stage before human intervention significantly altered the ecosystem. In a few places, notably for states in the EU, specific criteria may be established (Reichert 2011). However defined, ecological sustainability is inherently a social construct that emphasizes some aspects of an ecosystem rather than others. The values of society for which the ecosystem is of interest, and the values of the scientists writing on ecological sustainability, contribute to the selection of those aspects that will be emphasized.

In recent years, the development of criteria of and standards for sustainability has passed from educated trial and error to use of tools that provide indications of what is needed to maintain a water body in a state that satisfies one or another set of human values for ecological “goodness” (Postel and Richter 2003; Millennium Ecosystem Assessment 2005;
Katz 2011b; Smith and Zhang 2011). Notably, it is now common for surface water bodies to be managed by a set of objectives that include not just a minimum flow rate but also seasonal changes in flow rate that emulate natural conditions. It is more difficult to develop parallel criteria for aquifers but, at a minimum, falling water tables and increases in salinity or higher concentrations of trace elements are signs of impending trouble. Safriel (2011) has documented the huge losses of ecosystem services that resulted from drainage of the Hula Swamp in the north of Israel. After drainage, nitrates that had been held in mineralized soil were released and compromised, fires broke out in the underlying peat, and numerous species were lost, including at least seven that became extinct. Safriel (2011, 153) concluded that:

If the understanding of the role as well as the limitations of ecosystem services in water provision and regulation had prevailed two generations ago, the contemporaneous history would have been different. The whole Jordan Valley watershed ecosystem could have remained intact with the full diversity of its services functional, while water demands that could not be met by the local ecosystems would have been satisfied with freshwater generated by wastewater treatment and seawater desalination projects that could have been in place much earlier.

At present, Israel has a few physical determinations of ecological sustainability, as with “red” and “black” lines for determining minimal water levels for Lake Tiberias and a factor for ecological services in its projections of future water demands. Both of these are routinely ignored. Some Palestinian scientists recognize the importance of water in their ecology (Schoenfeld 2005; de Châtel 2007), but up to now there is no process for taking this into account. Most scientists agree that Israel has been withdrawing water from the West Bank aquifers at rates that are not sustainable (Alatout 2008; Zeitoun 2008; World Bank 2009).

But just what is sustainable? Alatout (2000) emphasizes “the political grounding of water estimates, an issue seldom considered in literature on water balances in the Middle East” (p. 59). He shows that even those Israeli hydrologists who later became part of the peace movement maintained a discourse of abundance at a time when that suited the political interests of Zionism and later switched to a discourse of scarcity after independence. As he states (p. 76), “The technical language of water potential cannot but be embedded in political meaning.” This observation is coherent with the findings noted by Feitelson (2002) of the changes in Israeli and Palestinian negotiating positions on water, and by Milman and Ray’s discussion of the impacts of hydrological uncertainty on political decisions (2011).

This sort of bias is not unique to the Arab-Israeli conflict. Any production of scientific claims is necessarily embedded in a social and political context. Therefore, the transformation of a
scientific claim into a scientific fact does not rely only on the intrinsic value of the science. It results from a complex process that includes economic, social and cultural influences (Latour 1987). Political influences also play a crucial role (Trottier and Fernandez 2010). For example, the importance of protecting the environment has always been put forward by competing stakeholders who had a political or a business interest in whether or not particular infrastructure would be developed (Garb 2004). We will return to this issue in the final section of this chapter.

**Practical and implementable water management arrangements**

An agreement concerning water management is both practical and implementable when both parties have the institutional, social and financial means to translate it into practice. Many of the water laws adopted by developing states over the last 20 years do not show these characteristics. Among other things, they commonly define water as public property when, in reality, it is managed according to other locally elaborated, typically communal, property regimes, and they almost always ignore local practice. (See Box 5-1.) The Oslo agreements and the ensuing Palestinian water law were no exceptions. They created the Palestinian Water Authority (PWA) as a regulatory body entrusted with implementing the provisions of the agreement concerning water (Trottier 1999, 2007). That approach was appropriate for Israel, which, by its Water Law of 1959, had effectively nationalized all its water and was comfortable working within that centralized context. Meanwhile, over 70 per cent of the water actually used by Palestinians was, and still mostly is, managed by local or farmer-based institutions. In effect, and with the support of some Palestinian officials, the Oslo agreements attempted to project Israeli-like water institutions onto the Palestinians (World Bank 2009). Few Palestinians even knew about this component of the Agreement, and they continue to abide by the existing grassroots institutions, which, as shown by evidence in the area (Trottier 1999) and elsewhere (Ostrom 1992; Yoder 1994; Mabry 1996), are generally perceived as effective and fair, if not always as environmentally sensitive as one would want today.
A Modern Agreement To Share Water Between Israelis and Palestinians: The FoEME Proposal - Revised Version

CHAPTER 5: PRINCIPLES FOR DESIGNING AN INSTITUTIONAL STRUCTURE

Box 5-1. Transferring models of governance

“There is a growing body of literature demonstrating the limitations of transferring ‘successful’ models of governance (for example, the Tennessee Valley Authority or the Murray Darling Basin Commission) to entirely new contexts: it is not that lessons cannot be learned through the comparative study of river basin governance; rather, the development of effective institutions and policies is a negotiated process involving civil society and the state. . . .

“Institutional bricolage is an active, conscious creative process of adapting norms, values and social arrangements to fit new purposes, while also reflecting and being shaped by deeply embedded unconscious principles. Social scientists often accept the popular dichotomy between ‘modern’ and ‘traditional’, ‘formal’ and ‘informal’ institutions. Formal modern (bureaucratic) institutions are seen as more effective at resolving conflicts and rationally managing resources compared to informal or traditional institutions. This dichotomy is a false one: institutions formed through a messy bricolage process often survive both because they are perceived as legitimate and ‘moral’, and because they are often dynamic and effective as judged by the participants’ expectations. On the other hand, bureaucratic institutions designed on the basis of abstract external principles lack legitimacy, their operational principles are unacceptable from the perspective of many of the people they are supposed to service, and they often prove ineffective when imposed from outside.”

Source: Merrey, D.J. and S. Cook (2012, 6 and 8).

In summary, the search for consensus on goals must find a way to work between the top-down management of water in most of Israel and the bottom-up management in most of Palestine. The FoEME Proposal suggests that we can achieve that intersection by a process of ongoing mediation, with the only bottom lines being the parallel needs for equity and for sustainability. If those bottom lines seem to place economic efficiency in a secondary position, that position merely reflects the pattern shown in other transboundary water agreements, where some concept of fairness typically trumps calculations of efficiency (Ingram et al. 1995; Syme et al. 1999; Wolf 2000; Blomquist and Ingram 2003).

Reaching Those Goals

The purpose of this section is to describe several key ways that the goals identified above can be accomplished. Rather than operating at the more general level, as with the widely
accepted principle for equitable and reasonable use, we focus here on operational principles that are particularly relevant to the FoEME Proposal

- equal water rights
- equality in other rights and in responsibilities
- priority to demand management over supply management
- acceptance of the historic standing of local forms of water management
- continuous monitoring of quantity and quality in all shared water and mediation among conflicting uses, demands and practices.

**Equal water rights**

An appropriate definition of rights to shared water relies on recognition of the mutual interdependence of all riparians — in this case, Israelis and Palestinians — in sustaining the quality and quantity of the shared water. Water rights must therefore be seen as a bundle of options and obligations. Each riparian has the right and the responsibility to access water, use water, treat water and release waste water, as well as to set the permitted limits for access, use, treatment and release. Moreover, each riparian has the parallel responsibility to maintain the quantity and quality of flow in all shared water sources within limits set (and perhaps changed) by natural conditions. Studies make it clear that such rights are not generally available to Palestinians (Abu Eid 2007; Klawitter 2007).

Parallel rights and obligations for the citizens and the institutions of Israel and Palestine imply that existing patterns and volumes of water use have some standing within the bundle of options and obligations just described. This standing does not extend so far as to give those patterns and volumes permanent status. However, they can be altered only after due consideration of impacts, and the changes must be implemented gradually to permit time for adjustment.

**Equal roles in management**

Israelis and Palestinians must have equality in all rights and responsibilities related to the management, development and use of shared water. The Oslo agreements created the Joint Water Committee (JWC), composed of equal numbers of Israelis and Palestinians, to function on a consensus basis when making decisions about water. However, the JWC role is truncated: it only makes decisions concerning Palestinian water management and development in the Occupied Territories. It has no role with respect to the management or development of shared waters carried out by Israel. Clearly, the current institutional design
fails to satisfy the principle of equality in rights and responsibilities. In contrast, the set of institutions in the FoEME Proposal has been designed from the start to accommodate this principle. Just as with the objective of equity, equality in rights and responsibilities does not mean that each party can expect to receive an equal volume of water. It does mean that each party will have equal standing within each of the institutions for joint management of shared water bodies.

**Priority to demand management**

There is enough water in the region shared by Israelis and Palestinians to satisfy all of their needs and to provide a high quality of life, but far less than enough to satisfy all their desires. Therefore, the main focus of water management for both Israelis and Palestinians must shift from supply management to demand management. Water managers must spend at least as much effort finding ways to conserve water as they do finding new sources of supply. This is not a minor operational change. Ongoing priority to supply management pervades water agencies in the Middle East, including both Israel and Palestine, even when opportunities abound to reduce water use (Brooks, et al., 2007). Nowhere in the entire Middle East is there a government agency that is tasked primarily with water demand management and that is given the bureaucratic status and the budget to make its role effective (Brooks and Wolfe 2006).

Demand management is a broad concept that requires attention to both quantity and quality, as well as to timing of use (Brooks 2006). In operational terms, priority to demand management means that, when a request is expressed for more water, attention must be paid first to determining whether the proposed use of water can occur without increasing withdrawals. All requests for funding of new supply must be considered against policy and program options that reduce the need for additional water, that reduce the quality of water required for the end use, or that shift the timing of use to off-peak periods.

The practice of water demand management is complicated because of the need to pay attention to what is coming to be called the energy-water nexus (Granit 2010; Siddiqi and Anadon 2011; Routhausen and Conway 2011). This term reflects the fact that, on the one hand, it takes energy to extract, process and deliver water, and, on the other hand, water can be a source of energy (e.g., hydropower) and is widely used as a cooling agent in thermal generation of electricity as well as in the extraction and refining of petroleum. In some cases, as with the conservation of hot water, energy savings and water savings are complementary; in other cases, as with reclaiming waste water so it can be reused, they are competitors; the greater the degree of treatment, the more energy it takes to produce useful water. Recent work shows that the amount of energy needed to make water available can be significantly reduced (US GAO 2011).
Finally, though water use and pricing of water within a state are within the sovereign authority of that state, both parties must recognize that efforts to reduce the use of water through demand management are so fundamental to their respective futures that they are appropriate issues for negotiations between them.

**Acceptance of the historic standing of local forms of management**

Local, communal forms of water management have been all but extinguished in Israel, but they remain common in Palestine. Despite evidence that they are operating efficiently and equitably, at least within a defined group (Ostrom 1992; Ostrom and Gardner 1993; Mabry 1996; Ostrom et al. 2002), communal forms of water management are often treated as vestiges of the past that have to give way to centralized institutions managed by the state (Trottier 2008). The Israeli pattern of top-down centralized management may appear convenient to officials in the PWA as a replacement for the existing diverse collection of local systems. However, those local and communal management institutions, whether formal or informal, interact with the flow of water — abstracting it and releasing it. They are so prevalent that any proposal to ignore them will make the agreement unimplementable. Moreover, ignoring them makes any agreement illegal with respect to international law concerning the rights of indigenous peoples over natural resources. Therefore, the FoEME Proposal incorporates processes to give local and communal forms of water management standing before the bodies that will deal with shared water. These processes, which are described more fully in Chapter 6, convey what are called “soft” or informal water rights for those groups. Though some specific cases of local or communal water management may be demonstrably inefficient or inequitable, such defects have to be corrected at the level and by procedures where they exist. They cannot be corrected within the context of the FoEME Proposal.

**Continuous monitoring of quantity and quality in all shared water and mediation among competing uses, demands and practices**

In the FoEME Proposal, continuous monitoring and ongoing mediation constitute the main management tools to ensure that the goals of equity, efficiency and sustainability are achieved. This principle is not just a technical detail; rather, it is the basis on which decisions will be reached concerning adjusting withdrawals from each well or reservoir or modifying use of water from a spring. It has many implications, including the need for fair treatment of water users who find themselves required 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. Practices that are not directly linked to water, but affect water availability and quality, must also be considered. For example, urban developments that increase the area covered by impermeable surfaces or farming practices that allow polluted water to flow into aquifers must be challenged as undesirable land-uses that require coordination between water management and land management officials.

Monitoring is not an innovation in water management, but mediation is. As conceived in the FoEME Proposal, the two are essential complements for shared water management. Mediation implies discussions with the groups involved and solutions devised according to the principle of subsidiarity, i.e., at the most adequate organizational level, which is normally the lowest possible level. For example, a farmer-managed institution using well water for irrigation would be the most appropriate body to propose a new schedule of extraction in order to minimize the loss of crops while respecting new, lower extraction rates. Ongoing mediation could allow a similar group to request a halt to neighboring urban development in order to protect a spring recharge area. Most importantly, ongoing mediation means that rulings or regulations can be appealed by any actor involved, whether scientist, officer of a non-governmental organization or member of the institution that manages water, and whether these institutions are state, private or communal. This mediation process is explained further in Chapter 6.

Scientists, Experts and Citizens

The FoEME Proposal breaks with what has come to be called the “double delegation model” of public administration. 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). The double delegation model underlies the proposed resolution of issues related to fresh water by the Geneva Initiative, and, at its most fundamental level, it is the rejection of that model in the FoEME Proposal that explains why our proposal was rejected by the Geneva Initiative.

The problem is not that the views of scientists are irrelevant; rather, it is that science is not so objective as commonly assumed, and scientists are not so independent from other influences as commonly believed. Ophuls (2011, 134-135) has expressed the problem neatly:

> Science may indeed provide us with true opinion concerning certain aspects of human nature and the natural world so that we can choose a rule of life that does not flout reality. But it cannot tell us what reality ultimately is, and it cannot choose the rule for us.
Scientists have a critical role to play in identifying options for water management, but their role as scientists stops short of determining which is the best option. Political, social, economic and environmental values differ between and within societies, and those differences lead to different preferences for water management (Brooks and Trottier 2010a, b). We do not mean that one type of management is better than another; 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 any agreement.

Until now, the Israeli and Palestinian water establishments are dominated by hydrologists, hydraulic engineers, and other physical scientists, leavened by a few economists. In contrast to other social scientists, and to conflict resolution specialists, most of whom react favourably to the FoEME Proposal, physical scientists, engineers and quantitative economists prefer something closer to the model of water as a pie that can be cut into pieces, which is just what the FoEME Proposal rejects.

To compound the problem, some Israeli scientists invoke the doctrine of First-in-Time / First-in-Right (FiTFiR), which is now partially or totally abandoned in many parts of the world (Bourne, cited in Salman 2010). Even if FiTFiR is still in force in the western US and in the Canadian province of Alberta, it has no role to play in the West Bank after 45 years of military occupation. By definition, occupation implies a transfer of power away from the occupied community, and, in this case, decisions made by Israeli forces, together with the greater availability of technology and capital, have given Israeli farmers and settlements an initial position that is anything but just (Lonergan and Brooks 1995; Jagerskog 2003; Lautze et al. 2005, 2009). Somewhat similarly, some Palestinian commentators argue that all of the water in the Mountain Aquifer is Palestinian because most of that water originates in rain over the West Bank. However, this claim is inconsistent with the entire body of international law on shared water resources since the 1950s, which says location of rainfall is not the determining factor for ownership. Rather, each riparian party should get a reasonable and equitable share and the shares can only be determined through negotiations.

The FoEME Proposal advocates a more nuanced and more flexible management structure for water that is shared by Israelis and Palestinians. It allows for interaction between state and non-state actors and for social and economic developments over time, on the one hand, and integrates those considerations with geologic, hydraulic, and engineering constraints, on the other hand. FoEME also argues that a process to achieve that nuanced and flexible structure can be adopted even though formal peace negotiations are not at the stage of putting a Final Status Agreement on the table. This structure and process are described in the following chapter.
CHAPTER 6: THE STRUCTURE OF AN ISRAELI-PALESTINIAN AGREEMENT
ON JOINT MANAGEMENT OF SHARED FRESH WATER

In the context of African transnational river basins, recent years have seen a proliferation of treaties establishing formal river basin management organisations, supported by international donors and based on international law. The argument of this chapter suggests that encouraging local action-oriented investment and innovation, supporting and building on local capacities to solve problems, will be far more effective than attempting to impose alleged ‘universal’ values or organisational forms.

Merrey and Cook, 18

Before presenting the details of the proposed institutional structure in this chapter, we must emphasize that we are offering a draft structure and we welcome suggestions for improvements, a subject to which we return in Chapter 8, where we discuss next steps.

The proposed structure aims to integrate the various human institutions that now interact with a water drop through its journey. It is designed to divide power along several axes

- between the Israeli and Palestinian governments
- among several joint Israeli-Palestinian institutions
- between scientific and political dimensions of management
- among institutions working at levels from local to international

Though it divides power, it gathers the institutions around agreed-upon principles and priorities, as detailed in Chapter 5 and elsewhere in this report.

Proposed Institutional Structure

The institutional structure proposed for joint Israeli-Palestinian management of shared water is shown in Figure 6-1. The flow of activities within the structure is shown in Figure 6-2.
Figure 6-1. Organization chart for institutions in the FoEME Proposal

Figure 6-2. Flow chart of activities and decisions in the FoEME Proposal
The structure allows for the general principles of shared water management, but goes beyond, them to emphasize equality in all rights and responsibilities related to joint management of shared water. As noted in Chapter 5, this equality does not mean that each side will receive an equal volume of water. It does mean that each will have equal standing within the institutions for joint management (as shown in Figure 6-1) and equal opportunity to participate in decision-making processes.

Two key bodies lie at the heart of the proposed structure, the (BWC) and the Water Mediation Board (WMB). The BWC reports to the two governments; it must respond to political processes and be guided by political directives. It does have final decision-making power, but its decisions are highly constrained, as explained below. Notably, the BWC can accept or reject, but not alter, a recommendation from any of its subsidiary bodies or from the WMB. In contrast to the BWC, the WMB has no direct link to senior political bodies. To the contrary, it must respond to the concerns of affected groups and organizations and be guided by the goals set out in Chapter 5. Both the BWC and the WMB must take into account the guidance they receive from the Office of Science Advisors (see below).

Bilateral Water Commission

The BWC will replace the existing Joint Water Committee, but will have responsibility for all shared water, not only the shared water lying in what is likely to be included in the future State of Palestine. It differs considerably from the present JWC because of the equal standing of the two parties. At present, the Palestinian Authority (PA) has no say in Israeli management of shared water lying in Israel while Israel's agreement must be secured within the JWC to make decisions concerning water lying in the territory of the PA. In the BWC, both parties will have equal rights and responsibilities over all shared water, no matter where it lies. The BWC will report directly to the Israeli and Palestinian governments with a mandate that is critical, but limited: critical because it determines how much, when, and where fresh water can be withdrawn or released; limited because it can only act upon the advice of advisory groups, and because it must allow for mediation when challenges are made to its decisions.

Most importantly, its mandate will be to

- establish, on the basis of the recommendations set by its advisory bodies (described below), limits for withdrawals, standards for levels of treatment and targets for releases of water from aquifers.
- grant permits for new drilling projects on the basis of 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 to develop alternative sources or to reduce demands for water.\(^\text{15}\)

- approve site and scale, as well as distribution of new sources of shared water, for example, with regard to disposal of waste water from treatment plants receiving water from both sides of the border or a desalination plant treating shared saline water.

- ensure that water quality standards, as put forward by relevant authorities in Israel and Palestine, are respected or reconciled when dealing with shared water.

- maintain liaison with other government agencies and ministries that have activities or responsibilities that affect or are affected by shared 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 request a new recommendation. 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 but has more tools to produce a compromise.

It is premature to be definitive about the internal structure of the BWC (or any other component of the structure shown in Figure 6-1). As an example of how it might be designed, we suggest that the BWC could be composed of seven members, three selected by each of the two governments plus one member selected by the six national members from any state other than the two parties. This seventh member would serve as chair. Appointments to the BWC could be for three years, with a maximum of six years (two terms) of service. If one of the three national members were to be renewed or replaced each year, the result would be that, in any normal year (i.e., one with no resignations or other losses), one member selected by each government would be a “veteran.”

Decisions of the BWC will be made by majority rule, provided that at least two members from the three selected by each Party are in favour of any decision. This voting rule ensures that three members from one party plus the non-regional member cannot form a “majority” to impose a resolution on the other party. At the same time, it allows for resolution even when substantial disagreement remains among the members of the BWC. We recommend that decisions of the BWC be final and enforceable, but, of course, as with any quasi-

\(^{15}\) Formal international law indicates that confined aquifers underlying two or more states can be treated much like any other transboundary body of water. However, current opinion suggests that special provision needs to be made to account for the non-renewable character of confined aquifers (Eckstein 2005).
independent government body, its decisions could be appealed to the judiciary of one or the other of the two states.

A similar authority has already been proposed for the Mountain Aquifer because it is critically important to drinking water supply yet is probably the most vulnerable of the region’s major water resources (Feitelson and Haddad 1998, 2000; also see Annex C). Because of this body of previous work, such an authority could be instituted sooner than the BWC (to which it would eventually report) and thus serve as a pilot project. This possibility is discussed further in Chapter 8.

As with any other joint commission, the BWC should produce an annual report that describes its activities over the previous year, identifies strengths and weaknesses in its operations, and makes recommendations as to how to maintain the former and reduce the latter.

Finally, it is important to re-emphasize that the proposed structure plays a role only for shared water, as defined in Chapter 2. In any case involving non-shared water, the Israeli Water Authority (IWA) and the Palestinian Water Authority (PWA) would have full responsibility and play the roles they do today. At the same time, a process must be instituted in both Israel and Palestine to ensure that policy proposals likely to affect shared water, such as with land use, are routinely brought to the attention of the Bilateral Water Commission.

**Water Mediation Board**

The Water Mediation Board (WMB) will promote and direct negotiation and mediation processes for those issues that cannot be resolved within other water management bodies dealing with shared water. It will not have judicial authority, but will seek positions that are acceptable, if not optimal, for communities or institutions that bring issues before it. The WMB will accomplish this by investigating any grievance, even if it does not originate from a project or activity of the BWC. It will receive concerns or complaints from 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. Finally, it will mediate in cases of disagreement between the BWC and any of its subsidiary bodies.

Members of the WMB will be well-trained in mediation tools and practices, and their main role in the above-noted situations will be to examine the arguments of the parties involved in the complaint or conflict and attempt conciliation. In cases when either the conciliation process fails or the alleged impact cannot be proven or disproven by the evidence at hand, the WMB will be empowered to investigate independently. To this end, the WMB will be able to organize open forums or public hearings when they seem likely to allow for a greater
variety of opinions to come to the table or where the Board has reason to think that some views have been ignored or suppressed by one of the parties to a dispute. The Board can also commission scientific investigations in order to verify claims, for example, concerning the source of pollution or the reasons for reduced flow that would be brought as a case for complaint. The results of the scientific investigations will be public.

The WMB will approach the parties implicated by the entity bringing up the complaint to hear their sides of the case, and will attempt a conciliation process between the complainant and these parties. In cases when either the conciliation process fails or the impact alleged by the entity bringing up the complaint is not proven to be attributable to the entity or entities incriminated, the Water Mediation Board will be responsible for investigating the complaint independently. The Water Mediation Board will be asked to identify experts, with recognition of the need for cultural as well as technical knowledge in order to make appropriate recommendations. Its investigations will include economic and other social science analyses to consider losses that any community or group claims to suffer.

The WMB would be required to keep and make available to the public records of all its public hearings, as well as all recommendations it makes to the BWC or to any of the groups with which it interacts. Throughout the process, the WMB will have at hand the results from monitoring and other studies provided by the Office of Science Advisors.

The internal structure of the WMB could be similar to that suggested above for the BWC, with appropriate adjustments for number of members, term length and opportunity for renewal. The national members might be nominated or selected by the respective ministries of justice.

The WMB will use a wide range of measures to seek an agreed decision, as by consultation with whichever institutions and/or communities are involved, its own independent studies, public hearings and the like. The objective is to reach a mediated decision that is acceptable to all parties. At that point, the process can go in two directions. If the decision of the Water Mediation Board involves redistribution or timing of existing flows or other internal changes, its decision will be binding. If, however, its decision involves one of those areas within the mandate of the BWC, as defined above, it will have to present its recommendation to the BWC, which can, as with any other recommendation, either accept it or reject it, but not change it. And, to repeat, if the BWC rejects the recommendation, it must return it to the WMB together with its explicit reasons for rejection and await a revised recommendation.

Office of Science Advisors

The Office of Science Advisors (OSA) will consist of two “Senior Science Advisors,” one each seconded from an appropriate agency in the respective governments, plus supporting staff to provide competence in physical, biological and social sciences. Their office will
have responsibility for reporting to the BWC on relevant issues related to water quality and quantity and for recommending appropriate withdrawal licenses and drilling limitations to the BWC. In addition to their other roles, the two Senior Science Advisors will be expected to have access to and to provide the BWC with commentary on four broad sorts of information

- water quantity data (including mapping)
- water quality data
- ecological limits on water withdrawals and wastewater disposal
- adequacy of supply of water of appropriate quality

The OSA is not expected to maintain an independent database, but to ensure access to databases maintained by agencies of the Israeli and Palestinian governments, as well as those of any relevant international bodies. The Office will be expected to stay up-to-date with new developments for water information and analysis, as with NASA’s Gravity Recovery and Climate Experiment (GRACE), which can detect changes in the level and volume of ground water. An excellent model can be found in the ways in which ground water is treated in the EU’s Water Framework Directive (Reichert 2011), even if full application of those regulations and quality controls may be more than is needed for the Israeli-Palestinian situation. To be sure, different data bases may not agree on key numbers, and different models may give different results. Such problems are common in science, and, just as with other advisory bodies, the OSA will have to make informed choices between them.

The OSA will also monitor flow rates and patterns necessary for maintaining the ecological health of shared watersheds. Recent developments in how to estimate flows required for maintenance of ecosystem services point the way for the Office to proceed with this part of its mandate (Garrido and Livingston 2003; Postel and Richter 2003; Millennium Ecosystem Assessment 2005). The Office must also find ways to guarantee a minimum domestic allocation, corresponding to a “human right for water,” to every household. There is a large amount of literature available to support such allocation, including some from this region (Assaf et al. 1993; Gleick 2000a; Brooks 2007; Abu Eid 2007; Klawitter 2007).

A final duty for the OSA is to advise the BWC on the efficiency of water use by groups seeking to justify existing levels of withdrawals or applying to increase them. The section on demand management in the previous chapter emphasized that many dimensions involving both quantity and quality of water use must be considered in the determination of allowable withdrawals, and both technical and political choices must be considered (Brooks 2006). The key point is that management of shared water will not be successful

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16 http://www.nasa.gov/topics/earth/features/india_water.html
unless all parties establish a climate of trust, which means that they must be confident that withdrawn water is being delivered with minimum losses and used in efficient appliances by domestic, industrial, and agricultural consumers. Such efficiency is assuredly not the case at this time for either Israelis or Palestinians (Brooks et al. 2007; FoEME 2010; Becker et al. 2010.) Therefore, the OSA will have to establish some guidelines for judging water use efficiency, with appropriate provisions for the income of the water-using community and the time and money needed to establish more efficient systems. Evidence from other countries suggests that the OSA will need not only to develop a program but also establish a special section to work on programs in support of water demand management (Brooks and Wolfe 2006).

The OSA is expected to offer strong support to the process envisaged in the FoEME Proposal. This process depends upon scientific guidance that uses all of the tools available to hydrologists, geologists, economists, ecologists and geographers, among others. The views of experts from all these disciplines should be integrated into the comments, critiques and recommendations made by the two Science Advisors. To the greatest extent possible, general reports from the OSA should be made public, as they may well contribute usefully to literature on water management. However, specific recommendations from OSA to the BWC and the WMB should not appear as independent public documents but rather as portions of the reports from those, more senior, bodies.

Ultimately, though, options need to be identified and choices need to be made by the members of the BWC and the members of the WMB. All scientific information involves selection among assumptions and varying degrees of uncertainty, and these characteristics of even the best science are notably true for information related to aquifers. Moreover, “ambiguous interpretations exacerbate these uncertainties, and explain how each country’s water-management culture combines with [them] to create contrasting views on groundwater availability.” (Milman and Ray 2011, 631). In short, it is impossible for any decision-making process or management structure for water to avoid either the need to make choices in the face of uncertainty or the responsibility to consider the social and political implications of different choices. There is no purely scientific resolution for water problems!

**Local Water Management Board**

The Local Water Management Board (LWMB) will identify and register all bodies that manage water resources locally and redistribute the water, regardless of whether they follow private or communal property regimes. The criterion 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, which are often different from formal rules. For example, there are traditional villages where the rules remain oral yet are observed scrupulously within the community. In effect, the process of registering local water institutions serves to give them standing in subsequent interactions with the bodies described just above.
A further duty of the LWMB is to assist the Water Mediation Board in ensuring that local groups or institutions managing water sources in question are consulted fully during any investigation under the auspices of the WMB.

The key role of the LWMB is to bring to the attention of the BWC and the WMB local systems for managing water that are not formalized and may not even be known to government water authorities. Identifying and describing these local systems is not a simple task. Too often, experts from developed countries where water law is based on liberal principles assume that private property regimes exist at the local level. However, local management of natural resources and particularly of springs and ground water is at least as likely to be based on some form of communal property (Trottier 1999; Agarwal 2003; Bakker 2007). Recognition of local property rights systems is also complicated by their tendency to evolve over time. This capacity for change is an important aspect of their resilience in the face of climatic, seasonal, and demographic variability. When recognition does not permit evolution of communal property regimes, it risks depriving them of their adaptive capacity (Boelens 2009), to the detriment of the goals we are seeking to achieve.

Because the FoEME Proposal is intended to precede, not follow, a Final Status Agreement, Israeli settlements create a special problem with respect to standing. There is no obvious way of dealing with them: on the one hand, they exist and in some cases include many people; on the other, they are not recognized as legal under most interpretations of international law. Resolution of this issue will have to wait for a Final Status Agreement on borders. Illegal settlements of course have no standing with the Board or any other agency shown in Figure 6-1.

A possible structure for the LWMB would be to build it around four members, two selected by the Palestinian Ministry of Local Governments, and two by the Israeli Ministry of Social Affairs. Devolution of member selection to local governments should be considered. For example, within three years of its creation, the registered local management bodies might each be given one vote, and thereafter their governing bodies would elect future members of the LWMB.

**Other possible management bodies**

A number of other management bodies could be considered as possible extensions of the concepts represented by the institutional structure described above. (See bottom line of Figure 6-1). One of them, the Mountain Aquifer Authority, has, as noted above, received a great deal of attention through a decade-long analytical process led by Eran Feitelson from Hebrew University of Jerusalem and Marwan Haddad from An Najjah University in Nablus.17

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17 This work was funded largely by Canada's International Development Research Centre and CRB Foundation, and was carried out through a series of intensive meetings of international water specialists meeting in Israel and Palestine,
Many of the concepts that appear in the FoEME Proposal were first developed as a model for ways to promote joint management of the Mountain Aquifer, and this work remains the most fully elaborated with respect to the design of a joint management regime for a transboundary aquifer. Annex C provides more details.

Another possible body is a Cross-border Streams Authority to manage cross-border rivers and streams. As mentioned in Chapter 2, a number of rivers originate in the West Bank highlands and flow westward to the Mediterranean Sea, or, in one case, eastward to the rift valley. Almost all of them are shared water, but management principles for them should not vary a great deal from one to the other, hence the idea of a single authority to manage all of them. Other possible management bodies could be considered in the future. Each will have to be considered on its own merits. The main point is that, if dealing with shared water, these bodies may operate in a quasi-independent way but should ultimately be responsible to the BWC.

**From Concept to Practice**

It is a big step to move beyond the abstract discourse of international water law to its practical application in specific regions and with specific institutions that can successfully mediate among competing claims over shared water resources. It is no surprise that criticisms of the FoEME Proposal have been raised; the most important of these criticisms will be reviewed in this section.

Perhaps the most common criticism is that the FoEME Proposal is not fully formed. Certainly we agree that further work is needed to convert the concepts and the institutions outlined above into real processes and real agencies. Though some innovation appears in each of the proposed components of the FoEME Proposal, most of them have been tried elsewhere. Only the Water Mediation Board introduces more than a modest amount of innovation. More than any of the other components of the FoEME Proposal, its concept and design need further exploration. Further, but beyond the scope of this document, estimates are needed of the cost of implementing the FoEME Proposal at early and later stages of development, plus identification of appropriate sources for funding and cost sharing.

Another criticism might claim that this Proposal is too optimistic. Doesn’t it rely on too much trust for two peoples with such different approaches to water management and such a long history of conflict? This criticism has to be faced directly. We accept that Israeli reductions in withdrawal would be “quite unprecedented” (Lautze and Kirshen 2009, 201)

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with follow-up work by Eran Feitelson of Hebrew University and Marwan Haddad of An Najah University. The process followed by the participants is summarized in Annex C, as is the substance of the Feitelson-Haddad proposal.

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A Modern Agreement To Share Water Between Israelis and Palestinians: The FoEME Proposal - Revised Version
and that the status quo on water is favourable to Israel. Seldom has a nation voluntarily reduced withdrawals after establishing a “prior use” to that water. However, much of the Israeli increase in water use since 1967 comes from Palestinian sources under conditions of occupation, and that proportion has no legal or moral justification. (In contrast, another part of the increase comes from desalinated water and reclaimed waste water, which are largely free of those charges.) Moreover, Israel has the economic strength to absorb losses of water, most of which would almost surely fall mainly on the agricultural sector (Lonergan and Brooks 1995; Lithwick 2000; Jagerskog 2003; Lautze and Kirshen 2009). At present, Israeli government proposals avoid any suggestion of such cutbacks except for reasons of climate change, a force that is important but not likely large enough to affect Israeli-Palestinian peace negotiations (Feitelson et al. 2012). However, the agricultural sector is slowly losing the status it once had in Israel. Growing environmental consciousness, higher prices for water in both urban and rural areas, and the gradual replacement of fresh water by reclaimed water for irrigation are likely to mean substantially lower rates of fresh water use on Israeli farms and orchards in the future than today. Israel has a sophisticated economy that is resilient enough to accommodate the ensuing trade-offs and to provide temporary subsidies to adversely affected people.

Professor Nadav Shelef (2010) elaborated on the point that even after some peace agreement between Israel and Palestine distrust will not disappear. Water will continue to be seen as a national security issue by both sides. Deadlock could then arise on the BWC with all decisions pushed over to the WMB, which is supposed to be an instrument for mediation, not arbitration. We agree that both sides have suffered deep wounds from the conflict, and that distrust will continue. This is why we propose that decisions be made not at the state-to-state level, but at lower levels where the issues that typically arise (such as priority to domestic water) are much less polemical among either Palestinians or Israelis. If necessary, the Water Management Board will be able to call upon scientific expertise to dispel the prevalent idea that water problems are systematically caused by “the other side.”

A related criticism is that neither Israel nor Palestine would be prepared to hand over control of water allocations to as-yet untested bilateral bodies. While such bodies might end up functioning very effectively, in practice their effectiveness will depend upon the adoption of a cooperative mindset by both sides, with either side potentially being able to make such joint bodies dysfunctional. From a practical perspective, this concern can be partly answered by suggesting a staged approach to implementation of the FoEME Proposal, as discussed in Chapter 8. Of course, no one can deny that, if they so choose, the two governments could set up the Commission and the Board to fail by appointing members who will act on narrow, nationalist grounds. The same potential defect appears in any joint commission and, indeed, for many internal bodies with members selected by a political
process. However, we think such deliberate sabotage of the process is unlikely because there are so many complementary interests. For example, water quantity for Palestinians can be achieved with waste treatment plants that simultaneously provide better water quality for Israelis. In addition Dombrowski (2010) has shown that many water disputes can be resolved by bringing a wider range of issues into the bargaining process. As well, the BWC could, as part of its mandate, maintain liaison with other parts of the government to search for linkages between issues in the water sector and issues in other sectors (for example, urban development). Finally, we call as evidence the experience cited in Chapter 5 to show that former antagonists found ways to cooperate effectively around water issues. In the words of Munther Haddadin (2011, 184-85), former Minister of Water and Irrigation in Jordan, speaking about the process for designing Annex 2 on water in the Israeli-Jordanian peace treaty:

[Israelis and Palestinians] realize that conflict would not bring about more water for them but would create a zero-sum game. Conversely, cooperation can yield a positive result from which all parties can benefit.

Chenoweth raises another political issue (written communication, 22 June 2011):

Getting both sides to cede sovereignty over the shared water resources to these joint bodies is a neat way of avoiding making volumetric or percentage allocations of the shared water resources, but it still doesn’t alleviate the need to eventually allocate in some way the water from these resources... Furthermore, from a national water planning perspective, a degree of certainty over a modest share of water is better than uncertainty over a larger share of water as the certainty allows planning and adaptation, such as the investment of significant resources in the building of infrastructure, something that would not be undertaken in the face of high uncertainty.

This criticism is more difficult to answer. In part, the last point can be answered by saying that each side will have full certainty of all unshared water. Further, our proposal grants the BWC powers over shared water that are less sweeping than those of the present JWC over Palestinian water. Both sides have a lot to lose physically and economically (e.g., by excessive drilling or inadequate waste treatment) if the current lack of agreement continues (see Chapter 4), and even more to lose if the situation deteriorates into a competitive one.

Chenoweth’s point on certainty is also important. We agree that the mediation process will have to incorporate recommendations that specific establishments or operations in certain areas be guaranteed a certain volume and quality of water for a limited period of time. For example, before making a new investment, some firms might want to ensure their water supply for the next, say, five years, long enough to obtain a return of capital in the case of a private investment and long enough to satisfy benefit-cost considerations in the case of a
public investment. Though such guarantees would have to be made cautiously, and always be time limited, they are a reasonable way to protect investment and promote economic development.

Professor Hillel Shuval (2010) elevates this question of certainty to an issue of national sovereignty. He argues that the FoEME Proposal takes the process of reallocation of the shared resources out of the hands of the two national governments and replaces it with what he calls an open-ended process that is not directly or fully controlled by them. In his view, the FoEME Proposal deprives both Israel and Palestine of sovereignty over their water resources. Shuval argues that no joint management agency should have the authority to reallocate water resources because such reallocations bring up sensitive political and legal issues. He also states that the new agency should not have any authority that conflicts with existing laws of either country or with existing peace agreements. He believes that joint management must adapt to political-legal reality while nevertheless assuring a high level of cooperation between Israel and Palestine. He does acknowledge the importance of cooperation: to achieve efficient and equitable management of the shared water resources; to prevent over-utilization; to enforce strict conformity with agreed upon water reallocations; to control pollution; and to assure environmental sustainability.

The main difference between Professor Shuval’s view and ours is over what will be acceptable to the two sides. He believes that they will want a narrow and fixed definition of rights to shared water; we believe that they will come to accept a broader and more flexible definition—not at first, perhaps, but, over time, as they consider the difficult situation they face for both socio-economic development and restoring water use to levels that are sustainable. At no point do we suggest that the borders between Israel and the future State of Palestine can be at issue in discussions about water. To the contrary, those borders must be defined in detail in the Final Status Agreement, and that document will indicate what water is shared, and what is not. However, since none of the proposals for final borders are hugely different from those after the 1948 war, the distinction between shared and non-shared water cannot be greatly different from what appears in Chapter 2. Whatever the details, the point is that subsequent provisions for joint management apply only to the former.

Professor Shuval’s arguments imply that Israel and Palestine can each have its cake and eat it too. It is just not possible to make an agreement about how to manage internationally shared water without surrendering some (ideally, small) part of national sovereignty. We agree that reallocation of water is a sensitive political and legal issue, but how can a joint management authority not deal with it? The very concept of joint management becomes meaningless if it starts from a restriction that all existing laws must remain in place — all the more so after nearly 50 years of military occupation of large parts of what will be the future State of Palestine.
Finally, there is one criticism of the FoEME Proposal that is true but premature. Some critics argue that the proposed structure for joint management is untested. We agree with the statement but respond that the existing water disputes and conflicts are already on the table. In part, this criticism can be answered by adopting a staged approach, as by starting with establishment of a Mountain Aquifer Authority. It can also be answered, in part, by studies to show how similar structures have worked in other jurisdictions. Finally, we contend that resolving water issues independently should be less contentious than doing so as part of a final status agreement that must also deal with refugees, Jewish settlements, and the status of Jerusalem. All of these points are discussed more fully in Chapter 8.

More broadly, we assert that the process of developing mutual respect and appreciation in water negotiations is already the norm. As emphasized in Chapter 5, internationally shared water has more often been a stimulus to cooperation than a source of conflict. In his review article, Aaron Wolf (1999) reports that almost all the international negotiations over water allocations over the past century or more have proceeded on the basis of each side recognizing the “needs” of the other side(s), rather than on a priori principles or rights. In quite a different context, Syme et al. (1999) found in Australia that, in decisions that required balancing the allocation of water between environmental and human uses, local judgments of “fairness” (along with local participation in decision making) played a distinctly greater role than concern for economic efficiency.

In the Middle East, the “Picnic Table Summits” managed water in the Jordan Valley during the nearly 45 years Israel and Jordan were still nominally at war, a history that shows that it is possible to find ways to manage shared water (in this case, a border river) jointly even in difficult political circumstances. The agreements reached between Israel and the PA about water show that agreements over water are possible even when other issues remain unresolved. True, imaginative and even ambiguous wording was needed in the agreements reached about water by the Government of Israel and both the Palestinian Authority and the Government of Jordan over the past 15 years. As well, the wording had to reflect Israel’s hegemonic position in the region (Fischhendler et al. 2012). Nevertheless, agreement was reached.

In further response to the criticism that the FoEME Proposal is untried, we say that it is only untried as a whole. With a partial exception for the WMB, every part of it can be found in water agreements that are in operation elsewhere in the world at the national, regional or international level. Indeed, to a modest degree, the structure we propose is modelled on the International Joint Commission, which governs water use along the United States-Canadian border, and which is briefly described in Box 6-1.
The International Joint Commission (IJC) was created by the Boundary Waters Treaty in 1909. Though most of its activities involve the Great Lakes-St Lawrence River System, which contains one-fifth of the world's fresh water, the IJC also has some responsibilities for any water body that flows along or across the national border between Canada and the United States. In a few areas, the IJC has direct management responsibilities, but in most cases it shares responsibilities with the two national governments and with those states and provinces along the particular body of water in question. (Both Canada and the United States are federal nations; in each, management of water is mainly delegated to the provinces and states.) The Commission itself has three members appointed by each of the two national governments, and it works with 20 boards that assist its responsibilities. Those responsibilities include maintenance of water flows, reduction of water pollution, and air quality in boundary areas. When requested by the two national governments, the IJC has the power to permit or reject proposals for water works including dams, treatment systems, and conservation measures.

Wolf (1999) argues that, “The major barrier to water’s role as an agent of peaceful relations is the lack of a widely accepted measure for equitably dividing shared resources” (1999, p. 10). We think this statement is too pessimistic. Wolf himself (citing Rothman 1995) recognizes that, “negotiations ideally move along three stages: the adversarial stage, where each side defines its positions; the reflexive stage, where the needs of each side bringing them to their positions is addressed; and, finally, to the integrative stage, where negotiators brainstorm together to address each side's underlying interests." We suggest that there is an intermediate stage between the adversarial and the reflexive. In this stage, which might be called “the protective stage,” the sides recognize the need for mutual protection of water resources, and reach agreements on emergency measures, prior notification, and information sharing.

Box 6-2 offers some examples of recent agreement by states that find themselves at the protective stage when they reach agreement on exchanging data, early warning systems and not much else. Notably, Gerlak and her colleagues (2011) have found that data and information sharing are more common and more varied than generally recognized, though they caution that agreement to share does not always mean that information is shared or that, even if shared, that it will be used.
Box 6-2. Selected transboundary agreements for aquifers that avoid more difficult issues

Several recent international agreements for aquifers illustrate the existence of a protective stage. For example, in 2010, Argentina, Brazil, Paraguay and Uruguay, the four nations overlying the huge Guarani Aquifer, signed an agreement that, on the one hand, ensures that each nation can act independently within its own territory, but, on the other hand, has clauses emphasizing sharing data and avoiding harm to one another. Somewhat similar are the agreement in 2000 among Chad, Egypt, Libya and Sudan for data sharing and modelling on the Nubian Sandstone Aquifer and the agreement in 2002 among Algeria, Libya and Tunisia for consultation on the Northwest Sahara Aquifer System.

There are examples of more intensive management programs either proposed or in existence for transboundary aquifers (Wolf 1998, 1999, Feitelson and Haddad 2000, Kliot et al. 2001, Varis et al. 2008, among others.) Moreover, much of the work of creating a common water database has now been accomplished through the efforts of EXACT\(^{18}\), a program created in the Oslo phase of peace talks and GLOWA, a project supported by the German government\(^{19}\). As well, the various bodies that make up the FoEME Proposal can use models, such as WEAP, which was developed by the Stockholm Environment Institute\(^{20}\), (Yates et al. 2005) for scenario construction and evaluation of alternatives. Already, the Government of Jordan has decided to shift its national water master plan to a WEAP base, and the Palestinian Water Authority (PWA) is considering a similar move. Indeed, every few months, another model is described that will have to be considered by any joint management regime. For example, in 2008 a group of researchers at the National Technical University of Athens published a management tool called PRODIM to reduce the risk from drought for agriculture in the Mediterranean Basin (Tsakiris 2008).

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18 The Water Data Banks Project of the Executive Action Team (EXACT) of the Multilateral Working Group on Water Resources consists of a series of specific actions to be taken by the Israelis, Jordanians, and Palestinians that are designed to foster the adoption of common, standardized data collection and storage techniques among the Parties, improve the quality of the water resources data collected in the region, and to improve communication among the scientific community in the region. For further information, see: [http://www.exact-me.org/](http://www.exact-me.org/)

19 GLOWA refers (in German) to Global Change and the Hydrological Cycle. It focuses on medium- and long-term water availability in several parts of the world, including the Jordan River Basin. Its project in the Jordan River has recently come to an end. ***

20 WEAP (Water Evaluation and Planning system) is a model that was developed by the Stockholm Environment Institute and is specifically designed for situations where data and funds are limited. For further information, see: [www.weap21.org/index.asp?doc=16](http://www.weap21.org/index.asp?doc=16)
What now remains to be done is to move the FoEME Proposal from concept to practice. More specifically, how can we get the FoEME Proposal onto key political tables on both sides of the Green Line? And how can we ensure that water is first, not last, among the major issues to be resolved in a Final Status Agreement. These questions are answered in Chapter 8, the final chapter. Before that, Chapter 7 presents three case studies of actual water problems in Israel and Palestine to illustrate how current arrangements are failing both sides and how the FoEME Proposal could resolve these cases to the benefit of both sides.
CHAPTER 7

CASE STUDIES - ILLUSTRATING APPLICATION OF THE FoEME PROPOSAL

There is no “one-size-fits-all” solution to water management, despite efforts to find simplistic, “universal” answers. Water conservation and efficiency practices offer one set of tools to reduce pressures on scarce water supplies. Every basin is different, and therefore the mix of demand-side and supply-side solutions will vary according to what is hydrologically, economically, socially and politically possible.

Gleick et al., p. 795

The following three case studies elaborate the conclusions of Chapter 4 about problems arising from current water-sharing arrangements developed from the Oslo II negotiations, and then go on to illustrate how the FoEME Proposal could resolve or greatly lessen those problems.

- The first case, Al Auja spring in the Jordan Valley, is based on field research carried out by Dr. Julie Trottier in 2011 and on background studies undertaken over the past decade by other scientists.

- The second case focuses on pollution of the Hebron-Besor–Wadi Gaza Basin. It is based on work carried out by FoEME over several years with local communities, the Israeli and Palestinian water authorities, and international donors, as well as on studies published by academics from the region.

- The third case focuses on the treatment of waste water in the Tulkarem District and the flow of the waste water into Israel. It too is based on work carried out by FoEME and on studies published by academics from the region.

The first case study shows how, in the absence of a joint agreement for regulation and monitoring of water sources, uncontrolled drilling in one area can adversely affect water flows in another area. The latter two case studies demonstrate how, in the absence of a joint agreement to resolve wastewater treatment at source (in these cases, in the West Bank), Israel may decide to construct treatment plants on its side of the Green Line and charge the Palestinian Authority (PA) for the costs. All three studies demonstrate that unilateral
solutions are politically, economically, and environmentally problematic, and that they would be better resolved through the joint processes suggested in the FoEME Proposal. Indeed, such an approach is suggested in a recent study (Abramson et al. 2010, 39):21

Common ground appears to emerge from a recent contingent valuation study in which both Israelis and Palestinians reveal common water use and riparian restoration preferences, as well as comparable willingness to pay for proposed restoration efforts. These surprising results – especially that despite vast economic hindrances, Palestinians have revealed similar willingness to contribute financially to stream restoration – indicate the seriousness of regional health issues and demonstrate a foundation for future cooperative restoration efforts.

Though we designate these three problem areas as case studies, they are each truncated in an important way. We can describe the geography and hydro-geology of the area, and we can relate the difficulties that have arisen to block agreement on measures to reduce or eliminate the problem, but we can only indicate how those problems might be handled if the FoEME Proposal were accepted and in operation. In Chapter 6, we outlined the design of the institutions that would be needed for the Proposal to work, and we identified the powers of each body. However, we deliberately refrained from elaborating details about structure and procedure. We recognize (and put special emphasis on this point in Chapter 8) that more study and even experimentation are necessary before one can say with confidence how the several bodies in the FoEME Proposal will act in any specific case. Therefore, in the case studies we suggest how we think they would act and the processes we think they would follow, to reach a final recommendation that can be accepted by the two governments and by donors (who are ultimately the ones that have to provide funding, supervise construction, install systems, and manage operations).

**Auja Spring**

Al Auja lies 12 km north of Jericho City along the Jordan Valley’s main road. (See Figure 7-1.) The town dates back to the Roman period, when it was part of the Roman city of Archillas. It has an area of about 10 square kilometres, and, in 2011, a population of about 4,500 people. The main source of income used to be irrigated agriculture, along with some commercial activity. The main water supply for the village comes from the formerly large Auja Spring, with the flow devoted to irrigation. The household reticulation network was constructed

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21 Contingent valuation is an economic technique that seeks to determine preferences of people for objectives that are not available in the market. The process typically consists of asking people in a highly controlled experiment what they would be willing to pay to achieve a specific goal, such as river restoration.
in 1980 and was partially rehabilitated in 2011 by the PWA with funds from American Near East Refugee Aid. It is supplied by Mekorot (Israeli national water company) and is entirely independent from the spring. The community lacks a sewage network as well as any place for the disposal of their solid waste. Waste water is disposed in cesspits. The village has great potential for local eco-tourism; the springs of Auja are well reputed, as is the natural beauty of the area.

**Figure 7-1. Auja Spring and nearby area**

The Auja spring, once an abundant spring that provided 9.2 million cubic metres of water a year (one of the biggest in the Jordan Valley) has seen its flow drop sharply over the past few years, devastating Al Auja's agriculture-based economy. Local inhabitants claim that the drop in flow results from deep drilling in well fields near the spring. Israel claims its drilling takes water from a deeper aquifer, and the drying up of the shallow spring is a result of the long period of drought, as well as numerous shallow wells sunk by the Palestinians. However, the conflict over the Auja spring cannot be reduced to an issue of water sharing between Israel and Palestine.

The current arrangement (Oslo II), which tends to see Israel and Palestine as the sole two actors vying for the same water, makes it impossible to resolve Al Auja's water crisis. Each side blames the other, with little or no data sharing on the ground. The water from the spring and that in the reticulation system have, so far, been managed in completely different ways: the spring is the object of a communal property regime, whereas the water flowing in the reticulation network is the object of a public property regime.
Resolution of the problem with current water sharing arrangements

As with other public property regimes, the legitimacy of the existing regime governing the management of the Auja spring is based on local history and local means of relating that history. In the beginning, water from the spring simply flowed in the wadi. A dirt channel was constructed by Bedouin families who had oral agreements concerning ownership of the land and who cultivated wheat. During the last decade of the 19th century, Jerusalemites started purchasing land in the area to invest in agriculture. They did not move to the area, but hired labour to develop stone channels to irrigate fields further downstream, and progressively developed an accompanying water rights system whereby water was channeled to plots according to a time rotation. Landowners thus became water rights holders. As a result, distinct social groups came to exist: Bedouin families that owned land which they cultivated; absentee landowners; labourers hired to live on the land all year long; and seasonal labourers. Following the waves of refugees arriving in 1948 and 1967, the population of Al Auja soared, reaching around 17,000 inhabitants in the 1970s. Shareholder agreements progressively replaced the previous system of water use: a shareholder is entitled to a piece of land and the accompanying water rights in exchange for half the crop he manages to produce. The remaining half, of course, goes to the landowner.

Sharing a spring on the basis of a time rotation is a widespread management system in the area (Trottier 1999). Today, use of the Auja spring flow is divided into 362 hours of flow over a period of 8 days. Most of the time allocations entitle the holder to half the water from the spring, as the flow is divided at some point into two canals of similar capacity. A minority of the time allocations entitle the holder to the full flow where the uptake is found before the bifurcation. Al Auja's water user association used to collect yearly fees to maintain the canal. This entire system entered a crisis over the past three years when the spring dried up. In 2009, it flowed for only 90 days, in 2010, for 60 days and in 2011 for 16 days.

Sharecroppers in Al Auja respect the property rights over water of the local landowners and consider this local property rights system quite legitimate, although it favours some families and leaves others much less well off. Why do landless sharecroppers find this system legitimate, especially considering that the PA passed a law in 2002 stating that water is public property? Significantly, no one interviewed in Al Auja in September 2011, except for the mayor, knew of the existence of this law. Instead, Al Auja's inhabitants adhere to the local property rights system for reasons that can only be understood by considering the creation of this system over time, as detailed below.

- Al Auja inhabitants consider that their sharecropping arrangements depend on the maintenance of these water rights, whether they are sharecroppers or landowners.
They consider this form of sharing water equitable because, thanks to the 8-day rotation, it evenly distributes abundance in times of good flow and scarcity in times of low flow. The fact that, within this evenness, time allocations vary among the villagers is considered legitimate because it is linked to the history of the development of the spring and resulting property rights.

Refugees and displaced people, who treasure the title deeds to their lands elsewhere, will not challenge the legitimacy of the land deeds held by local land owners.

Most importantly, this water rights system was created locally over time by the inhabitants themselves rather than being imposed from above.

Deeper wells began to appear in the area surrounding Al Auja in the 1960s. Two distinct well fields were developed, either one of which could affect the flow of the spring: the Auja-Naaran well field, where the wells are operated by Mekorot; and the Ein Samia well field, where the wells are operated by the Jerusalem Water Undertaking (the once-independent Palestinian water utility, based in Ramallah, that now reports to the PWA). In the Auja-Naraan field, a first well was drilled in 1964 by the Jordanian authorities. Between 1976 and 1980, eight more wells were drilled either close to the spring or in a nearby area, all drawing from the Ma'ale Efraim Basin (Rimmer 2011). In the Ein Samia field, a first well was drilled in 1964 and a second one in 1965-1966 when the area was under Jordanian rule. Between 1980 and 2000, three further wells were drilled, the latest one funded in 1999 by GTZ (the German Technical Cooperation Agency, a German aid agency) for the benefit of the PWA that operates it (Rimmer 2011).

In 2011, the Palestinian Authority (PA) constructed a new earth dam with a reservoir capacity of 700,000 cubic metres to collect rain water and water from the spring in case it flows again. Built by the Palestinian Ministry of Agriculture, the dam is supposed to be managed according to the 2002 Palestinian water law, under which water is a public property. Available water would be sold to farmers who would be billed according to the volume they consume. None of the farmers interviewed in this study agreed with this form of management. All considered that they needed to calculate the volume of water based on delivery time that their water rights formerly gave to them. In their view, this volume of water was their right and they shouldn't have to pay for it. In September 2011, the municipality declared that the new system for charging for water by volume was going to be put in effect, but, as it turned out, the dam was still completely dry, so this proclamation never led to an actual confrontation between the ministry and the villagers.

As of September 2011, the villagers had not paid their fees to the municipality for five
years for the drinking water that is provided through the reticulation network. Although it charges $0.93 per cubic metre, Mekorot does not bill Al Auja villagers directly. Rather, it bills the PA for the water it supplies Palestinian municipalities. As Israel collects custom duties over products entering the Palestinian territory on behalf of the PA, it simply deducts whatever debts the PA may have incurred for water deliveries from Mekorot before sending the funds to the PA. (See Box 7-1.) The municipal council is unable to fine water consumers who do not pay their household water bill because, according to one interviewee, “they cannot sue everyone.” In contrast, said the same interviewee, if someone tampers with a water metre, the council manages to inflict a fine because “it is only suing one person at a time.” The inability of the municipality to recover fees for household water does not bode well for its intention to implement a new water property rights system based on the 2002 Palestinian water law, even if the new reservoir does fill with water over the winter.

Box 7-1. The Oslo Offset Mechanism

Because Israeli authorities of one kind or another surround the West Bank and the Gaza Strip, Israel has been allowed to collect taxes and customs duties on behalf of the Palestinian Authority (PA), and to transfer those funds, together with appropriate accounting, to the PA. However, under the Oslo agreements, Israel is allowed to deduct from the funds transferred any debts owed to Israel from the PA; it is that deduction that is generally called the Offset Mechanism. This mechanism was originally used mainly to collect debts, as in the case of drinking water supplied by Mekorot to inhabitants of Al Auja.

In 2003, the Government of Israel decided to include the costs of unilateral wastewater treatment within the scope of the Offset Mechanism agreed in Oslo. That is, costs borne by Israel to build infrastructure and to treat waste water originating from Palestinian sources were deducted from transfers that Israel made to the PA of taxes and customs levied by Israel on the Palestinians. Until then, the costs of treating Palestinian-source sewage had not been included in the Offset Mechanism.

This extended use of the Offset Mechanism was also part of a general Israeli policy of increasing unilateralism in response to the second Intifada (Schalimtzek and Fischhendler 2009). At this point, Israel still obtained the PA’s approval for such deductions via the JWC. But in 2006, following the election of the Hamas-led PA government in Gaza, Israel turned “the wastewater Offset Mechanism into a unilateral mandatory offset in order to pay for the construction and O&M of the emergency plants on the Alexander and Hebron streams” (ibid., 626).
Fortunately for villagers, water does still flow in the reticulation network of Al Auja, albeit intermittently, even though they are not paying their water fees. Thanks to the Offset Mechanism described in Box 7-1, Mekorot maintains the water supply, but the conflict between local villagers and the PA continues unresolved: the villagers do not pay the municipality for their drinking water, yet they keep being supplied with it.

A cursory observation of the situation, where settlements have lush agriculture next to dried up Palestinian fields, leads many to blame Israeli wells for grabbing Palestinian water. This conclusion is understandable, but, inasmuch as Israeli settlements receive water from Mekorot, it may not be accurate. Hydrological data cannot demonstrate that the disappearance of the Auja spring is a result of the wells that were drilled in either the Auja-Naraan or the Ein Samia well field (Rimmer 2011). That is, hydrological data can neither exclude nor confirm interaction between the upper unconfined aquifer and the lower confined aquifer. Therefore, other kinds of data must be sought.

Happily, such data are available. First, climatologic data show that rainfall in the 1960s was similar to that in the 2000s, yet the spring flowed in the 1960s. Therefore, it is not logical to blame the present drought for the disappearance of the spring. Second, at one point, the pump broke down in the most recently dug well of the Ein Samia field, operated by the PWA; the spring started flowing again and continued to flow until the pump was repaired. Third, next to the spring lie remains of an old well, excavated when the region was controlled by Jordan. It is blocked but one can hear the water flowing below the ground. Hearing this, residents blame the loss of flow in the Auja spring on the most recent well. Although the well is used by the PWA, it was drilled in that location because of permission granted by the Joint Water Commission, where decisions can only be made if both Israelis and Palestinians agree.

Resolution of the Problem with the FoEME Proposal

If the FoEME Proposal were in operation, the following scenario could unfold. The Local Water Management Board (LWMB) would recognize the existence of the Auja spring users association and would recognize the communal property regime the association has constructed to manage water. The LWMB could also hear the comments and views of the residents of the area, and, to the extent possible, help them to formulate their conclusions in a more detailed manner—for example, by linking observations with specific dates. Once the community association was recognized officially, it could go to the Water Mediation Board to lay its case, blaming the wells of the Auja-Naaran or Ein Samia fields for the disappearance of the Auja spring. The fact that some of these wells are operated by Mekorot and others by the PA would be irrelevant to the case they lodge. Only once some determination of the source of the problem, would it become relevant.
The LWMB would assist the Al Auja spring association in ensuring that independent hydrological studies are carried out. Once the scientific studies were completed, some level of uncertainty might persist, just as is the case today, because these aquifers are rather complex. The Mediation Board would then propose a negotiated solution on the basis of the principles guiding the shared water agreement: economic efficiency, equity, sustainability, and implementability. It could request the Jerusalem Water Utility to decrease the pumping from a well in the Ein Samia well field in order to test whether the spring would flow again. Later, perhaps, in order to allow some flow in the spring, it could propose an alternative way to provide the needed drinking water. It could propose, for example, a decrease in irrigation carried out in the local settlements, who use chlorinated water supplied by Mekorot, and an attribution of that volume of water to the PWA to make up for the reduced withdrawal in the Ein Samia well field. This proposal would not be made on the basis of national labels, but rather on the basis of the principle of equity. Loss of irrigation water has a much more harmful effect on Al Auja villagers than on settlers, partly because of income disparities and partly because of the lack of alternatives for generating revenue. Further, because PWA wells are entirely devoted to drinking water, the FoEME Proposal requires that a reduced withdrawal rate must be compensated, at the local level, by access to an alternate water source of appropriate quality.

Contamination of the Hebron-Besor–Wadi Gaza Basin

The sewage problem in the Hebron-Besor–Wadi Gaza Basin originates in the West Bank, then flows into Israel via the Hebron Stream, and continues via the Beersheva–Besor streams into the Gaza Strip, where it empties into the Mediterranean Sea through Wadi Gaza. (See Figure 7-2; note: Aza is Arabic for Gaza.) Asaf and her colleagues (2007) provide a useful case study of the nature and extent of the pollution in this basin, which is the largest in Israel or Palestine. Israel is both a downstream recipient of Palestinian pollution and an upstream contributor to contamination that reaches the Gaza Strip. In addition to sewage, waste water originating in the city of Hebron and the nearby Israeli settlement of Kiryat Arba (together over 180,000 inhabitants) contains toxic industrial waste and sawmill waste. Because these materials clog sewage pumps, they need to be separated from other waste water in any long-term treatment solution. Inside Israel, Jewish and Bedouin settlements south and east of Hebron, as well as agriculture and industrial sites along Beersheva Stream and Besor Stream, add to the contamination. The contamination problem originating in the Hebron area was recognized at the outset of the Oslo process as one of the main cross-border wastewater problems to be solved jointly by Israel and the PA, with the US government committing a major sum towards its resolution. Nearly two decades later, the optimal upstream solution agreed by all — a wastewater treatment plant in the Hebron area —
has yet to be implemented. After years of delay and argument, US Agency for International Development (USAID) withdrew its support, and, in response, Israel unilaterally constructed an emergency plant downstream that all sides agree is environmentally and politically unsatisfactory. The current situation is one of mutual recriminations that cloud the future.

Resolution of the problem with current water sharing arrangements

After the Oslo agreements were signed, USAID committed $45 million to the building of a wastewater treatment plant in Hebron and began planning the project. Disagreements soon arose among USAID, Israel, and the PA about various aspects of the plan. USAID intended that treated effluent from the plant would discharge into Hever Stream, which flows from Hebron eastward toward the Dead Sea. Israel opposed this option for environmental reasons and insisted that the effluent should be used for agricultural irrigation. Israel also demanded that any surplus effluent expected in the rainy periods be pumped to Hebron Stream flowing westward into Israel, and that a pipeline be built along Hebron Stream to carry any excess or untreated sewage from Hebron to the Green Line, where it would be treated in an Israeli plant. Moreover, Israel argued that USAID should provide the funds for these additional components of the project. Local Palestinian communities raised their own objections to the proposed plan, including USAID’s proposed site for the plant.

As a result of all the objections, a new planning process was initiated, but it only led to further delays and increased costs. Deteriorating relationships between Israel and the PA from the late 1990s onward were beyond USAID’s control, and they made negotiations even more difficult. After the second intifada broke out in 2000, prospects for any joint solution faded almost completely. In 2003, following a fatal attack on USAID personnel in Gaza, USAID froze all water and infrastructure projects in the West Bank. Meanwhile, local authorities along the heavily polluted Beersheva Stream were putting pressure on the Israeli government to implement a unilateral, downstream solution to treat the wastewater as it crossed the Green Line into Israel. A precedent existed for such unilateral action: in 2001, the Israeli local authority of Meitar had used its own funds to construct a small-scale treatment plant (Schalimtzek and Fischhendler 2009). It was this Meitar experience that led to Israel’s extension of the Offset Mechanism in 2003 so as to allow it to recoup future expenditures from the customs duties and taxes that it collected on behalf of the PA.

In 2008 Israel constructed catchment pools just inside the Green Line, and an emergency wastewater treatment plant (“Shoket”) farther downstream at a cost of $30 million. It unilaterally charged the PA for the construction and maintenance costs through the Offset Mechanism. The PWA protested that it was an illegal deduction and demanded that Israel deduct the benefits it accrued from using the treated Palestinian wastewater, which
would reduce significantly the Israeli offsets (FoME 2008a, citing Attili 2008). The Israeli Water Authority (IWA) responded that it would continue to deduct the costs of unilaterally treating Palestinian wastewater until an upstream solution was found; it added that the United States should re-invest the $55 million it had withdrawn five years earlier to build the Hebron treatment plant (ibid.).

Unhappily, the wastewater treatment plant built by Israel could not cope with the amount of sewage crossing the Green Line (12,000 cubic metres per day), and, to make matters worse, effluent from Hebron's stone mill industry clogged the Israeli plant. The only real solution to the area's wastewater problem was treatment at source. Through the JWC, Israeli repeatedly requested that Palestinian authorities stop Hebron's stone mills from discharging their effluent into Hebron Stream. Indeed, in 2008 a sludge treatment plant ("Hagar") had been built with European Union aid to make it possible to separate the stone-cutting industry's effluent from Hebron's household sewage. However, because of lack of staff and machinery problems (later resolved), the Hagar treatment plant only began operating in July 2009, and then only partially. Furthermore, less than ten out of Hebron's 150 stone mills actually used the facility. The rest continued discharging their waste into the public sewers, dumping it on open land, etc. (International Management Group 2010). The Palestinian authorities (including Hebron Municipality) could not get the stone mills to change their practices. Enforcement was also a problem, but only partly because of the inability of Palestinian police to enter Area C, where much of the illegal dumping takes place. Even in areas under Palestinian control, enforcement is negligible, and a quarter of the stone mills claimed that they did not even know of the sludge treatment facility (ibid., 17-18, 22).

The IWA warned the Palestinian Water Minister: “Failing to fulfill your obligation (by law and according to the Water Agreement) compels us to take immediate steps to separate the stone sawdust from the wastewater [in Israel]. Under the existing circumstances, the cost of such action is significantly higher than that of preventing the wastewater from being disposed in the stream” (IWA letter, 13 August 2009). The IWA warned that these costs, running to several million US dollars, would be passed on to the PA through the Offset Mechanism. Partly in response to this threat, the Hebron Municipality and the PWA prepared a proposal for a separate sewage system to be funded by the EU. However, they described this as an “emergency project . . . not intended at this time as a solution to address the wider environmental impact of the sludge” (International Management Group 2010, 19).

In July 2011, after their demands remained unanswered and pressure mounted from local authorities along Beersheva Stream, the IWA decided to triple the capacity of the Shoket plant from 9,000 to 30,000 cubic metres per day and to construct another facility for storing the treated wastewater, with the costs to be borne by the PA through the Offset Mechanism (IWA Meeting Protocol 2010). Israel took this step even though new funding had meanwhile
been committed by the World Bank and other donors, and planning had begun for constructing the wastewater treatment plant in Hebron. (USAID was no longer involved in the project.) However, operational problems at the Hagar sludge treatment facility, and the inability of Palestinian authorities to force Hebron’s stone-cutting industry to use it, led the donors to stop further planning of the Hebron wastewater treatment plant.

Without resolving the problem of separating Hebron’s stone mill effluent from its domestic sewage system, it is clear that any future wastewater treatment plant would become clogged, as happened with the Shoket plant built by Israel. To address this issue, an EC-sponsored evaluation report (International Management Group 2010) proposed a comprehensive solution, including separation of the sewage systems, upgrading the Hagar pre-treatment plant or building a new one, and putting in place a variety of economic, administrative and other measures, some of which require coordination with the Israeli authorities, as with enforcement against illegal dumping in Area C. Such plan could have ensured that most, if not all, of the discharge from the stone mills would reach the pre-treatment facility.

For now, Hebron’s industrial and sewage effluent continues to pollute the Hebron Stream and to flow across the Green Line, clogging Israel’s efforts to treat it downstream. The Israeli Civil Administration has threatened to stop the export of stone from Hebron (as it has done in the past) in order to force Palestinian authorities to prevent the industrial discharge into Hebron Stream. Such a move would have disastrous consequences for Hebron’s economy and worsen the already bad relations between the Israeli and Palestinian water authorities. FoEME, through its contacts with the various parties, is promoting at-source solutions of the type described above as an alternative to those consequences.

**Resolution of the problem with the FoEME Proposal**

It is hard to think of a more contentious problem than that presented by the disagreements over waste water in the Hebron-Besor–Wadi Gaza Basin. The two sides remain far apart in their proposals, and not just about details but also about the whole approach. To complicate the issues, Israel is both a downstream and an upstream riparian — the Besor Stream is downstream from the Hebron Stream and upstream from Wadi Gaza. Even the borders are in dispute because of the large number of Israeli settlements and their population growth. It is hardly surprising that potential donors have thrown up their hands and walked away from the area.

The issues would be no less difficult under the FoEME Proposal, but the institutional approach would be very different, and the likelihood of a resolution much greater. Neither of the parties would be fully satisfied but they might well accept the resolution as better than the current situation and much better than what is likely to be the situation in the
absence of agreement. The key difference from the present would be the availability of a quasi-independent body that could

- stand outside the specifics of the current dispute
- analyze alternative ways of resolving the problems
- identify the benefits and costs of each alternative so that they can be compared
- make a formal recommendation as to the best alternative
- consider challenges to that recommendation, provided that they are supported by new or additional scientific or socio-economic information

If the Hebron-Besor–Wadi Gaza situation had been brought to the BWC, as described in the FoEME Proposal, it is unlikely that there would have been so many false starts by donors and such rancorous disputes between Israeli and Palestinian teams. The problems would have been presented to the BWC, which would in turn have passed it to the Office of Science Advisors (OSA) for study and analysis. In addition, given the range of concerns indicated by the discussions to this point, it is very likely that individual communities or local groups would want to express their own views on appropriate actions. Therefore, a parallel set of enquiries could be initiated in the LMB. These would in time lead to presentations before the WMB, which would be empowered to listen to, study, and even hold hearings on the concerns of local groups and communities.

The process as described could culminate in submissions from three directions: one each from the Israeli and Palestinian Water Authorities, another from the donor(s). Indeed, given the history of action, or lack of action, in the Hebron-Besor–Wadi Gaza Basin, and the complexity of the problems, it would be surprising if there were only three submissions. Nevertheless, with the FoEME Proposal, there would at least be one body, the WMB, where all views could be considered and from which a recommendation could emerge for submission to the BWC. As explained in Chapter 6, the BWC could either accept the recommendation, which would be the end of the dispute, or reject it for explicit reasons, in which case the dispute would go back to the WMB for further review and a new recommendation.

The only possible challenge to a decision of the BWC is from one or the other of the two governments themselves, and about this process it is impossible to speculate, except to say that it is apt to reflect power politics rather than sustainable water management. Obviously, nothing prevents those governments from ignoring, delaying or changing the decision recommended by the BWC. Nor does it prevent the donors from simply walking away from the whole affair, as they have done at several points in the past. However, two conditions should make them hesitate to do so. For one thing, the whole process of the FoEME Proposal
is designed to be as public as possible, so any failure of the two governments or the donors to accept recommendations from the BWC will also be public. Further, given the nature of the process, those recommendations likely would be the best compromise available, and there would be a significant risk that alternative ways to resolve the process could be worse.

### Contamination of the Zomar-Alexander Basin

The Zomar-Alexander Basin begins east of Nablus, the West Bank’s biggest city, and continues via Wadi Zomar to the Palestinian city of Tulkarem. After this point, it crosses the Green Line into Israel, where its name changes from Wadi Zomar to Alexander Stream, and continues flowing westward through northern Netanya before reaching the sea. (See Figure 7-2, above). The Alexander has been described as a small stream with big problems.

Water pollution, mainly from the Palestinian communities, is significant and a great threat to those communities. Many Israeli communities also suffer from the pollution, and Schalimtzek and Fischhendler (2009) indicate that they tried to develop comprehensive restoration of water throughout the basin, but that they were frustrated by the upstream Palestinian pollution of Zomar Stream, which is the Alexander’s main tributary. The upstream portion of the basin contains not only untreated sewage but also effluent from industrial sawmills, tanneries and olive oil mills. Some of the effluents are toxic, and waste liquor from olive oil mills absorbs so much oxygen that most animal life dies and only a few plants survive. To compound the problem, between Nablus and Tulkarem all this waste flows through the recharge area for the Mountain Aquifer with resulting contamination of ground water (Tagar et al. 2005; Aliewi et al. 2008).

Israeli efforts to clean up the Alexander Stream have been largely successful (Abramson et al. 2010). However, because most of the pollution originates upstream of the Green Line, these solutions can never be more than partial.

### Resolution of the problem with current water sharing arrangements

After the Oslo agreements were signed, GTZ committed several million dollars toward resolving the sewage problems in the Zomar-Alexander Basin, including construction of wastewater treatment plants in Nablus (East and West) and in Tulkarem, as well as upgrading and connecting local sewage networks in the area. However, “these donor-funded projects were long-term ones while Israeli local authorities were looking for an immediate solution” (Schalimtzek and Fischhendler 2009: 622).

In 1999, following pressure by local communities along the polluted Alexander Stream, the Israeli government constructed a small “emergency” treatment plant at Yad Hannah, just
opposite Tulkarem. This was originally meant to be part of the mutually agreed on solution by the mayors of Tulkarem and Emek Hefer. In a Memorandum of Understanding mediated by FoEME, they had prepared a plan to treat pollution in the Zomar-Alexander Basin through joint Israeli-Palestinian downstream solutions, including jointly-planned wastewater treatment plants and conveyance of West Bank sewage by pipes into Israel for treatment. The treated water from the plants was to be allocated to both sides, but construction costs would be borne by the German donors. This solution was more comprehensive than earlier ones and thus better from an environmental perspective (ibid., citing JWC 2000). This plan was supported by both the Palestinian and the Israeli governments.

After both sides had agreed in principle, various obstacles delayed implementation. In the JWC, Israel objected to the location of the treatment plants suggested by the PA and at first insisted that the planned Palestinian wastewater projects should also serve Israeli settlements, a demand that the PA refused (ibid., 624). Israel also made technical demands regarding treatment levels, which the Palestinians said were too high. In 1999 the new Yad Hannah treatment plant was linked to pipes carrying Tulkarem’s sewage across the Green Line; four years later sedimentation pools were constructed in Tulkarem to enable pre-treatment before the wastewater was piped to the plant on the Israeli side, but the pools were later closed because of poor maintenance. In addition, the plant in Yad Hanna had difficulties coping with erratic size of flows of wastewater arriving through Wadi Zomar as well as the load of heavy metals and other toxic elements that necessitated special treatment. The situation deteriorated after 2000 when the second Intifada broke out. In 2003 Israel shifted the operating and maintenance costs of the Yad Hannah plant to the Palestinians through the Offset Mechanism described above (ibid.).

As Israel applied unilateral downstream solutions to the wastewater flowing across the Green Line, the Palestinians shifted to unilateral upstream solutions, to be funded by the Germans (ibid., 624). However, according to the GTZ, the increased restrictions imposed by Israel in response to the second Intifada obstructed the large projects planned in Nablus and Tulkarem. Israel claimed that the repeated delays were due to the Germans’ poor coordination with the military authorities and to the Palestinians’ “indifference, deceitful conduct and malintent, which result in no progress on sewage issues despite the availability of donor funding” (Tagar 2004, 11-12). Despite those claims, progress was evident. By 2004, Germany had committed $50 million to wastewater solutions in Tulkarem, including rehabilitation of the municipal sewage network and the old treatment plant. In 2005 the new treatment plant was launched, and in 2006 the GTZ rehabilitated three collection ponds to pre-treat 60 per cent of Tulkarem’s wastewater before it flowed across the Green Line. In 2008 a Memorandum of Understanding was signed by the Israeli and Palestinian representatives in the JWC for a “phased approach” for Tulkarem’s sewage problems, including a sewage network connecting eight additional villages in the area (FoEME 2008a).
In spite of this progress, untreated sewage remained a major problem for Tulkarem, and downstream, for Israel. To address the increasing quantities of wastewater flowing across the Green Line, Israel announced a planned upgrade of the Yad Hannah facility at an estimated cost of $50 million — presumably to be borne by the PA through the Offset Mechanism (FoEME 2008b). This step followed pressure from the local authorities who complained that the emergency plant in Yad Hanna was failing to treat the cross-border sewage to acceptable levels. The Palestinians argue that these complaints are unfair. They note that the GTZ had committed to install new pumps in the pre-treatment ponds and that the municipality had committed to maintaining the ponds better than in the past. In response to the Israeli plan, they prepared a plan for the Greater Tulkarem area that included a pre-treatment plant to be completed by 2011 (Aliewi 2008). That plant would improve the quality of the water flowing into Israel and thus considerably lower the pressure on the Yad Hanna plant.

In December 2010 the PWA announced that it had received Israeli approval by the JWC for the “Zomar Valley regional wastewater project,” including new sanitation networks for nine towns and villages and expansion of Tulkarem’s sewage network. Plans for a new treatment plant in Tulkarem were being prepared. Until the time of writing, approval for this plant has been held up in the JWC because of Israeli objections regarding the proposed location. Specifically, Emek Hefer Regional Council objected to the site proposed adjacent to the Green Line, fearing that the Israeli inhabitants would suffer from odors and mosquitoes if the plant was not properly maintained, as had occurred earlier with the pre-treatment pools.

Progress is more evident upstream. In 2004, a new $25 million wastewater treatment plant for Nablus West was approved in the JWC but construction was delayed while the two sides argued over the details (Tagar 2004: 10). Israel insisted that the plans include reuse of the treated water for Palestinian agriculture, which the Palestinians apparently resisted at first. In 2008 the two sides signed a Memorandum of Understanding on a low-cost Nablus West treatment plant. In December 2010 the PWA announced that it was preparing an “integrated plan” for reuse of the treated water from the Nablus West as well as the Yad Hanna plants, for agricultural purposes — as originally agreed after the signing of the Oslo agreements. Construction of the Nablus West treatment plant began in January 2011 and should be completed some time in 2012.

The case of the Zomar-Alexander Basin demonstrates how, despite initial goodwill on both sides and joint commitment to comprehensive solutions, implementation has turned out to be fraught with crises and delays. Many of these obstacles have been removed and progress made in recent years. However, disagreements remain on who should pay for the treatment of Palestinian waste water inside Israel, and on siting of treatment facilities adjacent to the Green Line. In both Tulkarem and Nablus, initial agreements on jointly-planned wastewater treatment plants gave away to unilateral solutions, although these too required approval...
by the JWC. Part of the problem also stemmed from processes established under Oslo that elevated local-level problems to higher levels and even to the JWC. A more appropriate approach is exemplified by the Memorandum of Understanding between the mayors of Tulkarem and Emek Hefer Regional Council, which was mediated informally through FoEME and involved the German sponsors. Even though both sides had agreed on a mutual solution, and had a committed donor to fund and build it, they were unable to overcome the mutual mistrust that increased after the second intifada. The Zomar-Alexander Basin wastewater problem could not be kept “outside the conflict.”

Resolution of the problem with the FoEME Proposal

In many ways, the impasse in the Zomar-Alexander Basin is an ideal example of how the institutions in the FoEME Proposal could work to resolve a problem that has proven to be intractable under the current arrangements. Clearly, there are common objectives and a great deal of overlap among the steps proposed for achieving those objectives. Nevertheless, it has been impossible to bring either the objectives or the steps together in a way that is both scientifically sound and politically acceptable, at least not without one side or the other, and likely both, feeling as if it were the loser in a zero-sum game.

Under the FoEME Proposal, the BWC would have to approve the location and scale of any treatment plant dealing with wastewater that comes from a shared water body or that flows across a border, which is the situation for wastewater treatment plants in the Zomar-Alexander Basin. The BWC must also approve the allocation of the treated water. The various proposals would go to the OSA for review and evaluation of physical and biological impacts, as well as to the WMB and the LWMB for economic and social considerations. Through a back-and-forth process that should not take longer than about six months, at least in the absence of other more pressing priorities, the BWC would announce a decision that includes the location and scale of the wastewater treatment plant(s), as recommended by the WMB, along with the recommended allocation of treated waste water and a proposed plan for disposal of any remaining waste products. It might also comment on the technology selected for wastewater treatment, as some might work more effectively, and others less effectively, in the context of the proposed resolution. And it might equally well either comment on, or insist upon, demand management restrictions that would have the effect of reducing the volume of waste water to be treated and therefore the cost of the infrastructure to be built.

The happiest result is for the recommendation of the BWC to be accepted, and the decision be communicated to the two governments and the donors. It is reasonable to expect such a result in this case where the Israeli and Palestinian positions were never far apart. However, if either side is unhappy with the result, or some community or some organization wishes to appeal the result, it can bring its case to the WMB, as described in the previous case study.
CHAPTER 8

MOVING FRESH WATER FROM LAST TO FIRST
IN THE PEACE PROCESS

The main lesson learned during and after the conflict is that water can promote cooperation between adversaries as well as between allies. Both Jordan and Israel realize that their water needs cannot be met by the entire yield of the Jordan River system. They further realize that conflict would not bring about more water for them but would create a zero-sum game. Conversely, cooperation can yield a positive result from which all parties can benefit.


In their updated foreword to _Myths, Illusions and Peace_, Dennis Ross and David Makovski (2010) speak of the need for the Obama Administration to focus first on borders and settlements and leave the other final status issues of refugees, and Jerusalem to a later stage. The authors do not mention that there is a fifth core issue, fresh water, which is intrinsically linked to territory and which has historically been a force toward ameliorating conflict between nations, rather than causing conflict (Wolf 1998, 2000; Gleick 2000b; Kliot et al. 2001, Jägerskog 2003). Conflict is not so much an extraneous force that occasionally interferes with water management but rather an inherent force that is an ongoing and inevitable part of water management (Wolf 2012).

The FoEME Proposal provides a concept for sharing fresh water between Israel and the Palestinian Authority (PA) — eventually the State of Palestine — and outlines the design of a joint management agreement to achieve four primary goals: efficiency, equity, sustainability and implementability. But concept and design are only the first steps. Could such an agreement get to the political table — and do so in ways that allow it to be taken seriously by the two peoples, the two water establishments, and the two governments? The toughest barrier for the FoEME Proposal may lie not with convincing people of its virtues but with getting people, and particularly Israelis, to look at it in the first place. This chapter first deals with the question of when it could happen, and then focuses on how it could happen. Underlying the logic of both parts of the chapter are shared interests that should provide incentives for Israelis and Palestinians to recognize the benefits of coming to come to the table and of dealing forthrightly with the FoEME Proposal.
Water in the Peace Process

Since the start of the Oslo process in 1993, solving the water issue has been held hostage to lack of progress on the other core issues of the peace process. (See the quotation in Box 8-1. Schalimtzek and Fischhendler focus specifically on wastewater treatment plants in the region, but their statement applies to all aspects of water and the peace process.) The stalemate is especially remarkable, given that almost all parties agree that water issues are solvable and will result in the Palestinians receiving a larger proportion of shared Israeli-Palestinian water (Hadi 2003; Shuval and Dweik 2007).

**Box 8-1. The Peace Process and Environmental Progress**

“Whenever hopes of peace were high, less emphasis was put on issues of security and ‘high politics,’ leading to the planning of environmentally superior solutions. These conditions allowed rational concepts such as efficiency and effectiveness to shape the choice of the cost-sharing principle. On the other hand, as the conflict worsened, the sides withdrew to defensive positions, emphasising ‘high politics’ issues, such as avoiding concessions over Jerusalem, independent WWTPs [waste water treatment plants] to increase water shares before final status negotiations and objecting to joint projects….

“These results challenge the current literature, which emphasises efficiency, effectiveness and equity as the main considerations behind the choice of the [Polluter Pays Principle], leading to an optimal economic and environmental solution. This implies that the economic and environmental rationalism that tends to dominate the environmental debate is inadequate to explain the basis for environmental decision making under conflict conditions. These conclusions are pertinent to many other transboundary environmental cases that are also characterised by strong political and economic asymmetries.”

Source: Schalimtzek and Fischhendler 2009, 627 and 629.

Water continues to be an important part of the Israeli-Palestinian peace process. It is inconceivable that any peace agreement could be successful in the absence of attention not just to sharing fresh water but also to sharing management of fresh water. Happily, current Israeli and Palestinian official positions are not far apart (See Boxes 3-4 and 3-5.) Moreover, in a poll conducted for FoEME in 2011, nearly half (49 per cent) of the adult Jewish public agrees that Israel should hold negotiations on water, even in the absence of an ongoing
peace process. (A more complete description of the results of this poll appears in Annex B.) The survey also shows that less than 20 per cent of Jewish Israelis define themselves as being ideologically “left,” yet nearly half support negotiations on water. Evidently, at least 30 per cent of the support must come from people from the political centre or right. The implication is that water agreements are seen as beyond party politics by a significant and widely distributed portion of the Jewish public. No comparable analysis of public opinion with respect to water is available for Israeli Palestinians or for Palestinians living in the West Bank or the Gaza Strip.

For these reasons, it is not unrealistic to assert that Israel and Palestine can deal with water first, in advance of any Final Status Agreement, and that such a stance will have significant public backing. The next section indicates why they should do so.

**Rationale for Resolving Water Issues Now**

Territory and water are closely linked — ecologically, geographically and politically. In this arid part of the world, territory without water has little value, and no peace agreement that hopes to be successful can deal with one in the absence of the other. Therefore, FoEME believes that advancing water as a first priority not only makes ecological sense but also makes political and economic sense. True, eventually water and territory have to be linked, but an agreement on water can be achieved on the basis of interim borders, based, as in this report, on the Green Line.

The political benefit is evident from the many places where cooperation in dealing with water has helped to resolve national conflicts. In the Arab-Israeli context, the role of water in improving relations between Israel and Jordan (Haddadin 2011) could equally apply to Israel and Palestine. An agreement on fresh water between Israelis and Palestinians could boost political confidence among citizens and among their political leaders and thus constitute a concrete step toward a Final Status Agreement between the State of Israel and a nascent State of Palestine. Indeed, there is already a history of successful negotiations over water conducted between Israel and the PA, or, in other cases, between Israel, the PA, and Jordan (Feitelson 2002; Fischhendler 2008a; 2008b; Fischhendler et al. 2012). Those negotiations were not easy, and both creative and ambiguous wording were necessary, but in most cases resolution was eventually achieved. At other times, of course, as with the cases discussed in Chapters 4 and 7, agreement was not reached.

At the local level, FoEME’s 15 years of experience with both regional and community cross-border water cooperation have provided examples of confidence building. The Good Water
Neighbours Project\(^\text{22}\) demonstrates that the more frequent and intensive the cooperation, the greater the mutual understanding — and the greater the understanding, the more acceptable the results. This assertion is supported by a host of other, more academic projects, among them the Mountain Aquifer study and GLOWA–Jordan Valley project that have been described above. It is further supported by statistical evidence suggesting that Israelis and Palestinians want much the same thing from their water resources (Abramson et al., 2010). Differences relate more to political claims than to social and economic objectives.

The discussion between Israeli Environmental Protection Minister Gilad Erdan and Palestinian Water Minister Shaddad Attili at a meeting in Ashdod on 13 December 2011 implies that the timing is right for action. They agreed that today’s approach to water management must change and that cooperation between the two entities on water must grow stronger. Dr Attili had previously spoken for the Palestinian community in saying, “We look forward to the day when a new forum will allow us to interact with our Israeli counterparts as respected partners and equals, working jointly to solve problems in the interests of all.”\(^\text{23}\) According to press reports, Erdan went on to say that negotiations must occur on the basis of needs instead of rights.\(^\text{24}\) The FoEME Proposal fulfills this requirement in that it caters to needs.

As for economic benefits, the Palestinian economy and, especially, Palestinian agriculture have been constrained, since the 1967 war, by limited access to fresh water (Lonergan and Brooks 1995; Alatout 2000; Hadi 2003; Zeitoun 2006; Baltutis 2011). According to a recent World Bank report (2009), over 110,000 jobs could be created in the Palestinian economy if more water could be provided to the Palestinian agricultural sector.

In particular, there is an urgent need to reform or replace current water sharing mechanisms, which have failed both peoples by not providing sufficient water to the Palestinians and not preventing Palestinian waste water from reaching Israel. Zeitoun (2007) suggests that half-way agreements, such as the water-sharing arrangement reached in Oslo, lead to containment, not resolution, of the conflict. A water accord based on cooperation to share water fairly between both peoples, and between people and nature, will yield benefits for both sides. Palestinians will get more water in their homes for household purposes, and water made available for agriculture can enable employment for many people. Israelis will benefit from greater donor support for Palestinian investments in sewage treatment and the

\(^{22}\) [http://foeme.org/www/?module=projects&record_id=32](http://foeme.org/www/?module=projects&record_id=32)  
consequent rehabilitation of streams that originate in the West Bank and flow through Israel. For example, after even partial rehabilitation of Yarkon Stream, parks and other recreation areas were built along its banks in Tel Aviv. Even the Jordan River, which today carries little more than untreated and under-treated sewage, might be restored to ecological health by returning some fresh water to its course, with follow-on benefits from religious visits and tourism (Gafny et al. 2010; Baltutis 2011).

FoEME has long maintained that water issues need not wait. We now assert that they cannot wait and that they should not wait. They cannot wait because under the existing situation neither side is making the best use of its aquatic resources, with adverse results that range from economically costly to ecologically destructive. They should not wait because an agreement to share water peacefully will be a model to show that agreements can be reached between Israelis and Palestinians. Water would be only the first, with others to follow.

Moving Negotiations Along

The FoEME Proposal does assume a significant level of goodwill and trust on both sides, virtues that are not always evident after the series of failed peace plans. However, we believe that the apparent absence of good will and trust lies mainly at the political level, and that it does not characterize the majority of Israelis and Palestinians, who have shown in many ways that they are willing to live in peace with their neighbours and even to make sacrifices in order to achieve that peace.

In Chapter 6, we suggested that two states trying to negotiate a treaty on water go through four stages: adversarial, reflexive, protective, and integrative, and, further, that Israeli and Palestinian negotiators are now in the protective stage. They know what is possible, and, perhaps, even necessary, for shared management. However, each is still trying to gain the maximum for one side. Much can be accomplished in the protective stage, but the two sides cannot stop; they must move toward and eventually to the integrative stage. That movement is exactly what FoEME intends to accomplish with this proposal. It is designed to be operative both before and after a Final Status Agreement is signed and to provide not just household water but also water for industries and for agriculture.

Next Steps

If there is agreement that water issues can be resolved in advance of a Final Status Peace Agreement, what can be done to take the FoEME Proposal from concept to negotiations? A
series of doable and time-limited steps is suggested below. However, one step not directly related to the FoEME Proposal, but critical to its success, must come first.

**Prerequisite: immediate allocation of water to meet household needs of Palestinians**

As noted early in this report, prior to moving forward on the FoEME Proposal, it is essential to ensure that all Palestinians have enough good quality water for their household needs, at the international standard of 50 to 100 litres of water per person each day, about half of it potable (Assaf et al. 1993; Gleick 2000a). This situation cannot be resolved by arguing from averages. It is true that many Palestinians have more than this minimum standard, but there are pockets, located mainly in more rural areas, where the availability of water is well below the standard. Because of its focus on long-term resolution of water issues for Israelis and Palestinians, the FoEME Proposal does not advocate any specific position on where that water could be found. However, a good starting point can be found in the report by Assaf and her colleagues (1993), which was one of the first Israeli-Palestinian reports on water. The need is evident, and it should not require more than a few days of good-faith negotiations to work out some arrangement to provide access to adequate volumes of good-quality water in every Palestinian home.

**Step 1: additional research**

The first step is to develop a schedule for additional research needed to supplement the current Proposal and to respond more formally to the criticisms made of it (See Chapter 6 for a summary of criticisms and interim responses to them.) For example, it would be helpful to identify other areas where institutions similar to those described in the FoEME Proposal are operating, and to evaluate their success. It is certainly necessary to refine the proposed manner in which the Water Mediation Board will function. Mediation is a process that recognises the fact that a dispute involves parties with unequal power. It specifically caters to protecting the weaker party. The Water Mediation Board will undertake mediation and negotiation in order to elaborate equitable arrangements that satisfy the principles that underlie the FoEME Proposal. The structure of the WMB is already the object of further research.  

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25 Because of its interests in resolving water issues in the Middle East, Université Paul Valéry in Montpellier, France, has funded a one year post-doctoral position to undertake research on the Water Mediation Board, including a review of similar bodies already in operation and how they inform the design and mandate of the Water Mediation Board described in the FoEME Proposal.
may be easier than it seems. Israeli and Palestinian farmers may be glad to cooperate on allocation issues, while most environmental groups will agree on the desirability of increased water prices for consumption above basic needs. It will be much more difficult to get farmers to agree with environmentalists, as they see very different futures for many hectares of land and many cubic metres of water. Just as with political issues, there may well be more agreement across national than across sectoral lines.

A second aspect of the FoEME Proposal that needs further research is the role that WEAP can play in enabling the mediation process. As indicated in Chapter 7, WEAP is a model for exploring scenarios for water use and water policy that is coming to be more widely used in the Middle East. Moreover, it is expressly designed to cope with situations where data are limited and the alternatives controversial.

Still another possibility for research is to undertake gaming simulation exercises to get a better idea of how the FoEME Proposal would play out in different situations. It would be logical to build a simulation based on one of the case studies described in Chapter 7. A variety of more or less structured games have been created to explore the viability of proposed organizational arrangements or public policies; the FoEME Proposal has elements of both. (See publications from the Society for Technical Communication: http://intercom.stc.org.) The gaming could extend into something like the moot court that lawyers use to gain experience.

The research outlined above will require funding, but only in modest amounts. Once a plan and the funding are in place, it should be possible to complete this supplementary research in 12 to 18 months. However, it should be clear from the start that this research is intended to influence public policy. As Carden states in his assessment of development research (2009, 3):

> After all, systematic access to evidence-based research advice can dramatically improve the chances of deciding and carrying out policy that achieves intended results and attracts durable public support.

It is significant that the quotation comes from a chapter entitled “Making Research Count.”

**Step 2: communication and public consultation**

In parallel with the short-term research phase, a communications and public consultation program should be started to promote two ideas among Israelis and Palestinians: first, that an agreement on fresh water is not just possible, but advantageous for both peoples, right now; and second, that a model exists for the institutions and processes that will be required to implement that agreement. The need for an agreement sooner rather than later
is definite. In contrast, the specifics of the FoEME Proposal are a model, a good model, but not the only possible one. In this step, the public will not simply be informed but will be expected to contribute ideas and criticisms of the FoEME Proposal; if appropriate, those ideas and criticisms will be reflected in the final Proposal.

All of the means for conveying ideas to citizens — community meetings; focus groups; brochures; debates, etc. — can be called into play. Special attention should be given to non-governmental organizations (NGOs), particularly those that study political parties and political processes, as well as to environmental NGOs, because water use and land use have important implications for environmental protection. A special team should be developed to deal with the media.

Costs will be greater than those in Step 1, but, given the availability of electronic communications, the amounts will still be modest.

The importance of the public consultation step cannot be overstated. After carrying out fieldwork-based reviews of 23 development research projects funded by Canada’s International Development Research Centre, Carden stated (2009, 55) that “communication contributed to every success.” He went on to say:

*Effective communication is a long-term, organized process of engaging with policymakers and with the public — heeding their concerns while keeping them abreast of the research under way, and highlighting its utility and pertinence to their interests.*

Of course, the communications and public consultation process began several years ago; that phase culminated in the November 2010 conference in East Jerusalem when the first version of the FoEME Proposal was launched. Step 2 should build on that earlier experience and, armed with the revised version of the Proposal, make the effort more forceful and more confident.

**Step 3: integration**

Toward the end of Steps 1 and 2, an integration step lasting several months will be needed, with several specific objectives:

- The first is to prepare a third and final version of the FoEME Proposal.
- The second is to prepare a frank assessment of the likely degree of support from the Palestinian and Israeli publics, divided by region, class, sector etc., with notes on any key issues that seem to raise public concern about implementing the FoEME Proposal.
- The third is to do a parallel assessment of the likely degree of support from
Palestinian and Israeli policymakers, as well as notes on any key issues that are likely to raise concerns for them.

- The fourth, and most important, is to prepare draft legislation and regulations, including suggested time frames for staged implementation.

**Step 4: moving into the political arena**

Finally, immediately after the integration phase suggested in Step 3, the final version of the FoEME Proposal and the FoEME argument for an agreement will need to be taken directly to the political parties in Israel, the Gaza Strip and the West Bank. In parallel, they must also be taken to active players in the Israeli and Palestinian negotiating teams and to groups, such as the Geneva Initiative, that may be able to influence them.

A reasonable time frame for Steps 1 through 4 is 18 to 24 months. Should Step 4 be successful, a formal agreement could be signed within another few months, after which the two national governments should be given 12 to 24 months to have something like the FoEME Proposal operational.

This timeline could change if the FoEME Proposal is implemented in stages, starting with a pilot project. Because possible institutional designs for joint management of the Mountain Aquifer have been explored at length in previous work, and because the Mountain Aquifer is most immediately in need of such institutions (Feitelson and Haddad 1998, 2000), the ideal pilot would seem to be the establishment of a Bilateral Mountain Aquifer Authority more or less along lines described in Annex C. A successful pilot project would address concerns that the FoEME Proposal is untried. The obvious drawback of starting with a pilot project is that it would delay implementation of the full proposal for at least five years.

**Special attention to the Gaza Strip**

Special attention outside the framework of an overall agreement on shared water is necessary to deal with the water problems in the Gaza Strip, an artificial political entity that was created by forces outside the control of the original residents and that is now overpopulated. Though there is disagreement about this matter, most analysts do not believe that there is a great deal of shared water flowing through or under the Gaza Strip. (Wadi Gaza is the one major exception.) Nor do they believe that Israeli actions are limiting aquifer flows under the eastern border of the Gaza Strip.

Regardless of these caveats, the facts are that water quantity is limited and water quality is poor throughout the Gaza Strip, with health problems already evident and economic
development severely constrained (Bruins et al. 1991; Trottier 1999; Vengosh et al. 2005; Weinhalt et al. 2005; Shomer 2006; World Bank 2009). Some estimates indicate that less than 10 per cent of drinking water in the Gaza Strip meets international standards. An emergency joint Israeli-Palestinian commission should be established that would, first, evaluate existing hydrologic studies and reach a conclusion about the extent of shared water in the Gaza Strip, and, second, propose solutions to the existing quantity and quality problems. Of course, if the joint commission concludes that there is, in fact, a substantial amount of shared water in the Gaza Strip, that water would come within the scope of the FoEME Proposal (See Chapter 2, “What water is shared and what is not.”) In the immediate future, the Union for the Mediterranean has presented plans for a 100 million cubic metre desalination plant costing about US$450 million to Arab investors. The plans are being promoted by the Palestinian Water Authority and would be built in two phases, eventually serving almost all residents of the Gaza Strip.26

A Final Word

When Israel passed its 1959 law on water, many people maintained that it had created the world’s first modern water law. If Israeli and Palestinian negotiators can come to adopt the FoEME Proposal for joint management of shared water, we believe they will have created the world’s first post-modern water agreement.

The logic of the draft agreement is strong, and we firmly believe that any criticisms made of it around a negotiating table can be accommodated. However, the greatest barrier to the FoEME Proposal is not disagreement at the negotiating table but getting it to the table in the first place. At present, Israel is in a position of power, as it controls all of the major sources of water available to Israelis and Palestinians. Except for some concerns about water quality, Israel’s needs are well served by the status quo, even if that same position seriously constrains Palestinian well-being and Palestinian economic development — and leaves Israel open to increasing international criticism. On the other hand, Israel might see that its longer term goals would be well served by coming to the table with many options open.

In conclusion, we suggest careful attention to the three-part aphorism ascribed to Rabbi Hillel, who lived at the start of the first millennium and was perhaps the greatest of the Jewish sages. He began by asking: “If I am not for myself, who will be?” This can be seen

as support for the Israeli position. However, Hillel did not stop there; he went on to ask: “If I am only for myself, what am I?” This is an equal statement of support for the Palestinian position. And Hillel concluded with a third question: “If not now, when?” That is exactly what the FoEME Proposal asks.

A path-breaking final agreement on water for Israelis and Palestinians is within reach. Moreover, this agreement can serve as a model for dealing with water conflicts elsewhere. Though specifically applied to water shared by Israelis and Palestinians, the general goals, the emphasis on ongoing monitoring and mediation, and the search for models that can be implemented on both sides of a border are relevant to any place in the world where transboundary water divides rather than unites two or more peoples.
ANNEX A: PAST WATER SHARING PROPOSALS FOR THE JORDAN RIVER BASIN

The management of reticulation (local piped water) networks in Jerusalem was already the object of international politics in the 19th century (Lemire 2006). However, until the 1920s the bulk of water used in the region went to irrigation and was the object of local politics only. Intricate local property rights systems had been observed in many localities, such as Jericho, for centuries. The perception of water in the Jordan Basin as an international problem of quantitative allocations arose in the 1920s when the French and British government established their mandates over the remains of the Ottoman Empire.

This annex will review the series of attempts to reach agreements over water resources specific to the Jordan Basin. The discussion begins with the British-Palestine Mandate of 1922, which established the region (excluding Trans-Jordan) as a distinct political unit. It also marked official international recognition of the historical connection of the Jewish people with the land of Palestine, and it spawned the development of a Jewish agency to assist with the administration of Palestine. It may be useful to refer to Box 3-3 in the text as it highlights the sequence of activities and proposals related to water management over the period 1922 to 1955.

The 1920s

Though it was not part of the mandate, in the minds of many Zionists the British-Palestine mandate document implicitly provided for an independent Jewish state. Soon after, a number of national development agencies and projects were created, including the Jewish-owned Palestine Electricity Corporation, which was founded by Pinhas Rutenberg. In 1926, British authorities granted the corporation a 70-year concession to the waters of the Jordan and Yarmouk rivers for the purpose of generating electricity, and subsequently a dam was built at the confluence of the two rivers. It was through this concession that Arab farmers were denied the right to use the waters upstream of the junction of the two rivers for any purpose without the permission of the Electricity Corporation, permission that was never granted (Hosh and Isaac 1992). Although the hydroelectric plant was damaged and ceased to operate following the 1948 war, Wolf (1995) says that Israel later used the Rutenberg concession to argue for a greater share of Yarmouk River water.

The 1930s

During the first half of the 1930s, the issue of fresh water became secondary to questions about the capacity of the land to support a higher population. Not surprisingly, concerns
about the absorptive capacity of Palestine grew as Jewish immigration and settlement in the region and, concurrently, Arab opposition, increased (Lonergan and Brooks 1995). The first regional water supply project in Palestine was implemented in 1935–36 and involved supplying water to the western Galilee (Fishelson 1989). After this project, the British assigned Michael George Ionides to be Director of Development for the East Jordan Government for the express purpose of assessing the water resource and irrigation potentials of the Jordan River Basin. The Ionides Plan contained three primary recommendations (Naff and Matson 1984; Hosh and Isaac 1992):

- Yarmouk River floodwaters would be diverted along the East Bank of the Jordan River and stored in the Sea of Galilee;
- Stored water, along with a small quantity of Yarmouk River water, would be diverted through a new canal (the East Ghor Canal) to provide irrigation for lands east of the Jordan River; and
- Irrigation water of the Jordan River would be used primarily within the Jordan River Basin.

In 1938, Walter Clay Lowdermilk, a director of the US Soil Conservation Service, was sent to the region to examine the potential for greater land conservation. He felt that, with appropriate management, the water available in the Jordan River Basin could sustain a much larger population than existed at that time. His initial idea included the formation of a regional water authority based on the Tennessee Valley Authority (TVA) in the United States.

**The 1940s**

In 1944, Lowdermilk published his comprehensive plan for the region, entitled *Palestine: Land of Promise*. The plan proposed that, by exploiting unused water resources adjacent to Palestine, particularly the Litani River (in Lebanon) and Yarmouk River, water could be diverted for irrigation throughout the Jordan Valley and south to the Negev (Lonergan and Brooks 1995). However, there was a major problem with use of the TVA as a model: it ignored the social capital produced by the local property rights systems that were used to manage irrigation water in most of the region. Indeed, the Lowdermilk plan served to make these systems invisible when national water plans were elaborated or when international negotiations concerning water were undertaken.

A few years after its founding in 1937 as the national water agency for Jewish villages and cities, Mekorot also prepared a plan for resolving the water resource problems of Palestine. Its plan proposed a “national” water resource project that focused on irrigation and hydroelectric development, and incorporated both surface water (from the Yarmouk, the Yarkon, and the
Jordan, as well as springs and floodwaters) and ground water (Fishelson 1989). The plan had an element of expansionism in that it also suggested that the Mandate border be redrawn to include the headwaters of the Jordan River: the Hasbani River (in Lebanon) and the Banyas Stream (from the foot of Mount Hermon/Jabel Sheich on the flanks of the Golan Heights), as well as the Dan Stream, which was already within the Mandate. As well, the plan suggested that the Mandate border be extended eastward to include territory for a conduit along the shores of Lake Hula and upstream on the Yarmouk River (affecting both Syria and Jordan) to allow for a set of impoundments to store water for irrigation (Fishelson 1989; Wolf 1995).

Zionists strongly supported both the Lowdermilk and Mekorot plans. The World Zionist Organization asked James B. Hays, an engineer who had worked on the TVA in the United States, to draw up development plans based on Lowdermilk’s ideas. Hays agreed with Lowdermilk’s arguments about the capacity of Palestine to support a larger population, and he published his plan in a book entitled TVA on the Jordan. This plan comprised seven elements:

- Development of groundwater resources;
- Development of the Upper Jordan River’s summer flow for irrigation of nearby lands (including diversion of the Hasbani River for irrigation);
- Diversion of Yarmouk River waters into the Sea of Galilee and their storage there;
- The Mediterranean Sea–Dead Sea (“Med-Dead”) Canal that had first been proposed by S. Blass, then working with Mekorot (Lonergan and Brooks 1995);
- Recovery of the Jordan River’s winter flow for irrigation of the coastal plain;
- Reclamation of the Hula marshes (an area flooded by winter flow from the Jordan River) by constructing a series of drainage canals to control flood water, recharge aquifers, and convert the marsh into fertile irrigation land;
- The use of flood water for irrigation in the Negev.

The disagreement as to the number of people the region could support and the types of water projects needed to provide for population growth was never resolved. Instead, the United Nations Partition Plan of 1947 and the subsequent 1948 War changed the locus for decision-making and set the stage for water conflicts over the next few decades.

**The 1950s**

The first formal plan for water management in the post-independence period in Israel was the MacDonald Report in 1951 (Wishart 1990). This report outlined the conflicts between Jordan and Israel and proposed that any water withdrawn from sources in the Jordan Valley
remain in the valley. The proposal also included the Hays Plan component of diverting the Yarmouk River into the Sea of Galilee (Hosh and Isaac 1992). However, the Arab states were concerned about sharing a reservoir with Israel, even though it was a much cheaper alternative than building independent storage capacity outside Israel (Kally 1993). They favoured a plan proposed by M. Bunger, an American engineer working in Amman for the Government of Jordan, which involved the construction of a high dam on the Yarmouk to provide water storage and hydroelectric capacity. The dam was to be built at Maqarin as a joint project between Jordan and Syria. It would also use the winter flow from the Yarmouk to generate electricity for both Syria and Jordan, with 75 per cent going to Syria (Wishart 1990). Construction of the dam began in 1953, but Israel raised strong objections to development of the Yarmouk because it would affect flows into the Jordan River, and pressured the United States to withdraw funding for the plan (Hosh and Isaac 1992).

Anticipating that bringing several of these proposals together might alleviate some of the conflicts among riparians on the Jordan, the United Nations Relief and Works Agency asked the TVA to develop a “unified plan.” In 1952, the TVA requested Charles T. Main, Inc. to combine all the work previously conducted by the various parties into one plan. Borrowing the key objectives of the earlier Ionides and MacDonald proposals, the Unified Plan was based on irrigation by gravity flow, which implies that all water will be used within the watershed where it originates. It also included drainage of the Hula marshes, storage of Yarmouk River water in the Sea of Galilee, a Med-Dead Canal proposal, and dams on the Hasbani Stream and Yarmouk River for irrigation and power (Lonergan and Brooks 1995).

In parallel with discussions about a regional water plan, Israel undertook some unilateral projects on the Jordan River. In 1953, Israel began construction of its National Water Carrier at a site in the demilitarized zone north of the Sea of Galilee. Syria responded by sending troops to the border and, according to Cooley (1984), firing artillery shells at the construction site. Syria also protested to the United Nations, and the Security Council responded by ordering that work in the demilitarized zone be halted. Israel then moved the intake site for the National Water Carrier to the Sea of Galilee, a move that, as Wolf (1995) notes, was “doubly costly” for Israel. The salinity of the Sea of Galilee was higher than that of the Upper Jordan; as a result Israel had to divert saline springs away from the lake and into the Lower Jordan. In addition, the water now had to be pumped up 250 m from the intake location before heading southward.

Although tensions had been temporarily relaxed by the Israeli decision to move the intake site for the National Water Carrier, the pressing need for a regional solution to problems involving the Jordan River remained. As well, pressure was increasing from the US Congress to resolve the issue of Palestinian refugees. As a result, in 1953 Eric Johnston was appointed by US President Eisenhower as a special ambassador to lead a mission to propose multilateral
water development of the Jordan River Basin. Shuttle diplomacy among Syria, Lebanon, Jordan and Israel took place over the next two years. The West Bank was included in Jordan’s share of water, and the Gaza Strip was ignored because it was then part of Egypt and not in the Jordan Valley. In this case, diplomacy came very close to succeeding, as described in a pair of articles by Phillips and colleagues (2007a, b). What came to be known as the Initial Johnston Plan had three major components:

- Water storage included proposals from earlier studies to construct a dam near Maqarin and a diversion structure to store winter flows from the Yarmouk River in the Sea of Galilee.

- Water distribution focused primarily on providing water to Jordan’s East Ghor Canal, which would then supply most of the surface water to that country.

- Water allocations were based on ensuring that Arab states receive enough water to meet their irrigation needs, with the remaining water divided between Jordan (the Yarmouk) and Israel (the Jordan).

Not surprisingly, the Initial Johnston Plan was not acceptable to either Israel or to the Arab states. Israel considered the allocations it was to receive under the plan insufficient and argued that a regional plan should include all water sources of the region, including the Litani River. The Arab states remained concerned about the storage of Yarmouk River water in the Sea of Galilee as well as the high allocation given to Israel. Accordingly, both groups prepared alternative proposals. The Israeli proposal, prepared by Joseph Cotton, an American engineer, included an allocation to Israel of 55 per cent of Litani and Jordan waters (compared with 33 per cent under the Main Plan). The Cotton Plan also allowed for the use of Jordan River water outside the watershed (for irrigation in the Negev). The Arab League’s Technical Committee Plan was consistent with the Main Plan in that it required that all water be used within its watershed, but it reduced Israel’s share to 20 per cent and did not include the Litani River. In spite of these differences, all of the parties recognized the need for regional cooperation for efficient utilization of water resources. The primary disagreements were limited to the size of water allocations and the transfer of water outside the watershed (Lonergan and Brooks 1995).

Using the two counterproposals, along with a recently completed hydrographic survey commissioned by the Jordanian government, Eric Johnston submitted a revised set of proposals in 1955. This Modified Johnston Plan allowed for inter-basin transfer within the context of the allocations to each country and incorporated many of the engineering features of the Main Plan. However, disagreements remained over allocations and international supervision. The Arabs were in favour of direct supervision by an international body, whereas Israel preferred supervision by a small body of engineers from the region. Even so, by late
1955 Johnston could report that: “They [the riparian states] have made it clear . . . that the technical and engineering aspects of the plan . . . are now satisfactory to them,” and went on to say that the negotiations had reached the “one inch line” (as cited in Garbell 1965). Israel did grant formal political support to the Modified Johnston Plan, and it was accepted by the Arab League’s Technical Committee (Haddadin 2011). However, the plan was never formally implemented, largely because the Arab states feared that their signature might be taken to imply formal recognition of Israel, which at the time was unacceptable to them (Lonergan and Brooks 1995). Wishart (1990) concludes that the Arab states had little to lose by not entering into the agreement. In practice, all of the riparian states unofficially accepted the Modified Johnston Plan, with the exception of Syria, which did not reject it, but simply failed to act on it. Looking at the same data after some 50 years, Phillips and his colleagues (2007a, b) agree that the 1955 Modified Johnston Plan does make sense in terms of more recent international water law. However, they caution that its workability does depend on creating additional sources of water through desalination, wastewater recovery, or imports. It also recommended that water banking be introduced as a way to share the gain in years of adequate rain and the pain in years when rainfall is less than adequate.

For a time the Modified Johnston plan provided a workable arrangement for water sharing for the Jordan Basin, but, in the absence of formal adoption, its influence gradually declined (Lonergan and Brooks 1995; Elmusa 1995). Today, it is doubtful whether either Israel or Syria would accept the Johnston Plan because each has built its water system in ways that give them more water than their allotments under that proposal. Any Palestinian government would certainly reject any version of the Johnston plan because, with most Palestinians living in areas then under Jordanian control, the Palestinian share was simply included in the Jordanian share. The FoEME Proposal also rejects the Johnston Plan for three reasons: first, as indicated above, we believe that the approach of fixed quantitative allocations is misguided; second, because of the absence of a clear Palestinian share; and, third, because all water in the Jordan Basin is treated as if available for human uses with none left for ecosystems.

1955 to 1990

Between 1955 and the beginning of the Oslo process, there was little discussion about shared water agreements. Countries in the region continued to develop their water resources, commonly at the expense of other countries. Plans for the multipurpose dam (now called the Unity Dam) on the Yarmouk River were revived by Jordan and Syria in the early 1970s, but were again postponed when neither Jordan and Israel nor Jordan and Syria could reach agreement. Even after Israel withdrew its objections to the dam, difficulties between the other parties continued, with Jordan arguing that it was paying most of the costs but not
receiving a commensurate share of the benefits. Only in 2001 did the two nations come to agreement. The Unity Dam began partial operation in 2008 and was finally completed in 2010.

**Early 1990s to the Present**

Starting in the 1990s, a number of activities were initiated to establish workable relationships for water management either between Israel and the Occupied Palestinian Territories alone or among all the Jordan Valley entities. Among these activities are the following

- *Interim Agreement between Israel and the Palestinian Authority on the West Bank and Gaza (“Oslo II”) signed in September 1995, which included Article 40 of Annex III (Water and Sewage) and its associated Schedules 8 through 11 (respectively Joint Water Committee, Supervision and Enforcement Mechanism, Data Concerning Aquifers, and the Gaza Strip).*

- *Declaration on Principles for Cooperation on Water-Related Matters and New and Additional Water Resources, signed by Israel, Jordan, and the Palestinian Authority in 1996.*

- *Water Resources Working Group, set up in 1992 as one of six “technical” multi-party discussion forums during the Oslo period of the peace process with the mandate to deal primarily with water quantity issues.*

- *Environment Working Group, which commenced at the same time and dealt with, among other things, water quality issues.*

- *Executive Action Team (EXACT) of the Water Resources Working Group, created in 1992, with the mandate to work toward adoption of standardized data collection and storage techniques in the region, thereby improving the quality of water resource data and communication among the scientific community in the region.*

The Interim Agreement and the Declaration of Principles remain in effect, but the two multilateral working groups ceased most operations at the time of the second intifada in September 2000. In partial contrast, during the second intifada, the Government of Israel and the PA signed two agreements, one not to damage each other’s water infrastructure and the other on standards for sewage treatment. Both agreements have been observed fairly well by official security agencies, but not at all by the more radical of Israeli settlers, who have repeatedly destroyed local Palestinian water facilities. EXACT has continued to operate and to produce reports ([http://www.exact-me.org/](http://www.exact-me.org/)).
In addition, much “second track” (non-diplomatic) literature emerged from academic institutions and from non-governmental organizations during, and even after, the Oslo period of active Israeli-Palestinian negotiations. As one notable example, a team of Palestinian and Israeli academics, plus some international development and legal experts, met periodically during the last half of the 1990s to produce a model agreement for joint management of the Mountain Aquifer (Feitelson and Haddad 1998, 2000; also see Annex C). At this same time, the first Israeli-Palestinian efforts to draft acceptable water-sharing plans began to be published (Assaf et al. 1993; Shuval 2007). Not all “second track” activities originated in the region. An imaginative effort to study the potential of market criteria to mediate water relationships between Israel, Jordan and Palestine was led by a team from MIT in Cambridge, Massachusetts (Fisher 2002; Fisher, Huber-Lee et al. 2005).

Somewhat later, the Israeli-Palestinian non-governmental organization known as the Geneva Initiative launched a process to prepare an Article on fresh water that would be included in a draft Final Status Agreement. That process turned out to be contentious, mainly because the draft Article prepared by Brooks and Trottier (2010a, b) broke with conventional approaches for sharing water. All of the participants in the discussions recognized that some form of water sharing was essential as part of a peace plan, and that the Palestinian population needed significantly more water than it is currently getting. However, they differed sharply on the means to get there. In an ironic twist, the differences were much more disciplinary than national — that is, they divided social from physical scientists rather than Israelis from Palestinians. The Brooks-Trottier draft Article (the document which later became the FoEME Proposal) was presented by the authors to the Geneva Initiative but lost out to another, more traditional proposal prepared by Hillel Shuval and Shaul Arlosoroff (http://www.geneva-accord.org/images/PDF/water.pdf). The question of why one proposal was preferred by the Geneva Initiative over the other is discussed in the Preface and Chapter 5.
ANNEX B: ANALYSIS OF PUBLIC OPINION RESEARCH IN ISRAEL ON WATER

The following question was asked as part of a quantitative public opinion study. The research was commissioned by Friends of the Earth Middle East and was conducted on 1-2 June 2011 and 14-15 June 2011. Dahlia Scheindlin developed the question formulations and the analysis presented here; data collection was conducted by New Wave Research, among a sample of 500 adult Jewish Israelis, through a telephone survey. The margin of error is +/-4.5%.

Question:

Now we’ll talk about the issue of water in the Middle East. In the absence of a diplomatic process, water arrangements between Israel and the Palestinians are insufficient, and Israeli experts say that there is not enough water for the daily needs of Palestinians.

Thinking about this situation, in your opinion, should Israel hold targeted negotiations with the Palestinians just on the issue of water, even though the diplomatic process has not been revived?

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<td>25.4%</td>
<td>15.7%</td>
<td>10.7%</td>
<td>62</td>
</tr>
<tr>
<td>Central</td>
<td>23.7%</td>
<td>32.6%</td>
<td>15.5%</td>
<td>20.1%</td>
<td>8.1%</td>
<td>126</td>
</tr>
<tr>
<td>Tel Aviv</td>
<td>15.7%</td>
<td>31.4%</td>
<td>23.9%</td>
<td>19.3%</td>
<td>9.7%</td>
<td>112</td>
</tr>
<tr>
<td>South</td>
<td>23.8%</td>
<td>20.7%</td>
<td>28.3%</td>
<td>20.0%</td>
<td>7.2%</td>
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<tr>
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<td>8.4%</td>
<td>23.7%</td>
<td>60.5%</td>
<td>7.4%</td>
<td>20</td>
<td>19</td>
</tr>
</tbody>
</table>

### Analysis:

- A small plurality of the adult Jewish public supports Israel holding targeted negotiations specifically on the issue of water, although there is no peace process. At present, 49% (nearly half) support such negotiations, compared to 43% who do not support such negotiations.

1. “Haredi” is an informal term that refers to those who define themselves as Ultra-Orthodox. “Religious” is equivalent to Orthodox. “Traditional” is equivalent to all other Jewish groups including Conservative (Masorti), Reform, and Reconstructionist.
Younger people are less supportive of holding negotiations about water – a slight but absolute majority of 51% among 18-34 year olds does not support water negotiations, compared to 43% who do; among the oldest respondents (55+), an absolute majority of 52% support targeted negotiations, compared to just over one-third (36%) who do not. This age trend corresponds to numerous other surveys in recent years showing more hard-line attitudes among younger people and more dovish attitudes among the oldest respondents. The middle range, 35-55 year old respondents, shows a trend similar to the older people, in this case: 51% support water negotiations, 42% do not.

Respondents who define themselves as religious reject negotiations at higher rates than almost any other group: 62% do not support water negotiations, compared to just over one-quarter (27%) who do. Seculars support negotiations with an absolute majority of 55%, compared to 39% who reject negotiations; traditional respondents break down almost evenly (49% support, 43% reject — similar to the total population). These variances reflect the most consistent trend in Israeli polling regarding political attitudes — religious people are consistently more right-leaning than seculars, and traditional respondents are very much in-between.

Variation by income is minor; the highest educated respondents are somewhat more likely to support negotiations than the lowest educated (this finding is not a consistent trend in Israeli polling on political attitudes).

**Interpretation:**

From numerous other surveys, we know that the ideological breakdown in the Jewish population is approximately: 15-18% Left, 25% Center, and 45% Right, with the remainder either a-political or preferring not to answer. Therefore, to some extent the notion that water agreements are necessary to provide sufficient water resources to Palestinians is seen as beyond politics by a portion of the Jewish public – since only 18% at best define themselves as “left”, while nearly half supported negotiations, at least 30% of the sample may be either centrists or right wingers; assuming that not every left-winger supports the negotiation option, the portion of center or right-wingers may be higher than 30%.

Yet the different levels of support clearly break down along very traditional and consistent political lines, with religious people behaving precisely as they tend to respond to any political or conflict related question, or a left-right ideology
question. Age in recent years has also become clearly correlated with political attitudes, with young people representing right-wing views significantly more than others, and older respondents representing more left-wing views. These trends indicate that, although water resources may not be as political as other aspects of the conflict, they are still seen as a political concession rather than a human right that transcends political ideology, for much of the Israeli Jewish public.
ANNEX C: ENVISIONING A MOUNTAIN AQUIFER AUTHORITY

Palestine and Israel share many resources, but especially water. The most important of these water resources is the Mountain Aquifer. In her preface to the book by Lonergan and Brooks (1995) on water as an issue for Israelis and Palestinians, Malin Falkinmark described the Mountain Aquifer as having been designed by an evil water god. Physically, it is a karstic aquifer (i.e., made up of soluble limestone) that is complexly fractured and permits relatively fast flow of water. Politically, it underlies the pre-1967 (and likely post-Final Status Agreement) border between Israel and the future State of Palestine. About 90 per cent of the catchment area for the aquifer lies on the Palestinian side of that border, but two of its three major sub-basins flow naturally to the Israeli side. The result is an aquifer that would be a political problem if it underlay the boundary of New York and New Jersey or the United States and Canada. In Israel and Palestine, the situation is that much worse because of more than 60 years of active hostilities, complicated by the isolation of Israeli from Palestinian researchers after 1948 and even more so after 1967 (Lonergan and Brooks 1995).

This annex will describe the process leading to and the results emerging from an Israeli-Palestinian study of the possibilities for joint management of the Mountain Aquifer. This study was financed mainly by Canada’s International Development Research Centre. However, because Canada does not offer economic support to Israel, support for Israeli research came from the CRB Foundation, which is based in Canada and Israel. The two co-leaders of the study were Dr Marwan Haddad of An Najah University in Nablus and Dr Eran Feitelson of Hebrew University in Jerusalem. Their study was conducted between 1993 and 2000, and drew on the efforts of many international experts from the fields of law, economics, political science, hydrology and hydrologic engineering. It still stands as one of the most rigorous studies anywhere of the options for joint management of a transboundary aquifer. The major published results from this study are listed in the bibliography at the end of this Annex.

Organizing a Study

Given the characteristics and location of the Mountain Aquifer, the key issues are as much institutional as hydrological, as much political as technical. Happily, even before the start of formal peace talks in 1993, courageous analysts from both sides — notably the Israeli hydrologist Hillel Shuval and the Palestinian lawyer Sari Nusseibah — were beginning to argue for joint management of the aquifer, something for which there was at the time little experience anywhere in the world. Talks about research on joint management began with
some “corridor meetings” at the “First Israeli-Palestinian International Academic Conference on Water” — every word of that title had been carefully negotiated — in Zurich, Switzerland, late in 1992 (Lonergan and Brooks 1995).

The research effort is a good example of why aquifer analysis must be approached in an interdisciplinary way, particularly where joint management is concerned. Critical information on flow rates and directions, water quality, and sustainable yield can only come from physical science analyses, but the introduction of human concerns and alternative use patterns require that social science concepts be explored to determine how sharing of both use and management can be efficient, equitable and sustainable. Once the peace process started, this work was construed as an academic or “second track” activity complementing more formal, political bilateral and technical multilateral tracks. Some of the people who participated in diplomatic negotiations, especially on the Palestinian side, also participated as analysts in this study.

## Blocking Out the Study

Almost from the start, two options for management were rejected: (1) separation of management activities, because it is physically impossible to do so; and (2) domination by one side, because that would be ethically inappropriate and politically unacceptable. Therefore, all the research assumed the need to identify various forms of joint management, and analytical work could then explore what this would entail and how it might work.

Some conclusions were reached early in the nearly 10 years over which the studies were actively pursued:

- Tough issues such as quantity allocation and water rights could be put to one side for the moment.
- Technical management of the aquifer could be delayed; this management will, of course, be required but can be developed once institutional issues are resolved.
- No existing model for joint management was adequate.

Not much later, the research teams defined four basic models for joint management depending upon how extensive the mandate given to the institutions that would implement joint management. From least to most extensive, those four models are

- resource protection — to avoid loss of water quality
- crisis management — to respond to both crisis (such as a spill) and drought
- economic efficiency — to emulate the results that would come with a private market
integrated aquifer management, possibly with regulatory powers — to bring responsibility for equity, efficiency, and sustainability together within one formal structure.

The main body of the team decided that these partially overlapping models should be developed sequentially, starting with the less extensive models and gradually extending the mandate toward models that require higher degrees of cooperation. However, at some of the workshops, a minority view was expressed to the effect that, at times, history allows you to go for the whole thing, and that the team should not be timorous in recommending higher degrees of integration.

**Sequential Approach to Institutional Design**

Adopting a sequential approach and building on the presentations at the workshops, Feitelson and Haddad developed four models for a set of institutions that would provide greater or lesser degrees of joint management. All four models included some elements of the following: data collection and monitoring of flows by quantity and quality, research capability, short-term supply augmentation, and a formal system for conflict resolution. With those activities as a base, each of the four models was explored in sufficient detail to yield a rough picture of the nature and size of the institution required to deliver an effective joint management process, depending upon the breadth of its mandate. More detailed institutional design was neither appropriate nor possible. Not only was the research an example of learning by doing, so also would be the actual management process. Alternative models of public participation were discussed but not included in any formal structure. The result was a matrix of 19 functions that might be filled by institutions corresponding to the four models. Each was categorized, among other things, by staffing levels, necessary funding, and degree of cooperation required.

As the study progressed, the teams found that the most controversial issues are often sectoral, not national. If Israeli farmers suffer, so too will Palestinian farmers. If drinking water is compromised for Palestinian cities, so too will drinking water be compromised for Israeli cities. It also proved easier to respond to quality issues than to quantity allocation; indeed, quality issues stimulated cooperation. Finally, it was more productive to focus on the process of creating a management structure than on specific end goals.

It is difficult to summarize the product itself, as the reports show a number of possible options depending upon how wide a mandate the two governments wish to give to the institutions for joint management. In any event, the important point is that a model was developED — more appropriately, a range of models were developed — all of which could be expected to be technically feasible, economically and ecologically beneficial, and possibly, just possibly, politically acceptable.
The study was completed early in the year 2000. Though the recommendations of the study remain to be accepted, they have not been ignored. The gap between research and politics is perhaps narrower in Israel and Palestine than anywhere else in the world, with many of the same people or their students jumping from one role to the other and back again. Recommendations rejected today may well be back on the table at a more propitious time a few years later.

The research process that was initiated in Zurich in 1992 turned out to be as much personal as analytical. To quote from the preface of the Phase One report, published in 1995:

*Eighteen months ago we were strangers. However, over the last eighteen months we have discovered that our commonalities far exceed our differences, and not only in water issues. . . . In contrast to the impression often presented in various circles and publications, we have come to see that water can indeed become a basis for cooperation, as both sides stand to lose if they do not cooperate in protecting and managing their shared aquifers.*

**Bibliography**

The output of the project is represented by a number of reports, one after each of four international meetings, with all four published jointly by The Palestine Consultancy Group in East Jerusalem and The Harry S. Truman Institute for the Advancement of Peace at The Hebrew University of Jerusalem. Reports on the first and fourth workshops (1994 and 1998) were edited by Feitelson and Haddad; reports on the second and third workshops were edited by Haddad and Feitelson (1995 and 1997).

REFERENCES CITED


REFERENCES CITED


REFERENCES CITED


Fisheelson, G. 1989. The Middle East Conflict Viewed through Water: a Historical View. Tel Aviv: The Armand Hammer Fund for Economic Cooperation in the Middle East, Tel Aviv University.
REFERENCES CITED


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BIOGRAPHIES OF AUTHORS

Dr. David B. Brooks is a natural resource economist, recently retired from Canada’s International Development Research Centre (IDRC). He was the founding director of the Canadian Office of Energy Conservation and is now Director of Soft Path Research for the POLIS Project on Ecological Governance, University of Victoria, Victoria, British Columbia, Canada, and Associate in the Natural and Social Capital Program of the International Institute for Sustainable Development in Winnipeg, Manitoba, Canada. He was co-author of The Role of Fresh Water in the Israeli-Palestinian Conflict (IDRC Books 1994), and of Water Balances in the Eastern Mediterranean (IDRC Books 2000). He has also written a number of articles and essays on fresh water in the Middle East and North Africa. He can be reached at david.b.brooks34@gmail.com

Dr. Julie Trottie is research professor at France’s National Center for Scientific Research (CNRS). With formal studies in chemistry, politics and Islamic studies, she has focused her research for the last fifteen years on the politics of water in Israel/Palestine. She published Water Politics in the West Bank and Gaza Strip (PASSIA 1999), Water Management, Past and Future (Oxford University Press 2004), and A Wall, Water and Power: The Israeli ‘Separation Fence,’ Review of International Studies, 2007(33): 105-127. She can be reached at julie.trottier@univ-montp3.fr
A Modern Agreement To Share Water Between Israelies and Palestinians: The FoEME Proposal - Revised Version

The FoEME Proposal: Revised Version

The FoEME Proposal aims to address the water management challenges between Israel and Palestine. It proposes a framework for sharing water resources in a sustainable manner, emphasizing collaboration and mutual respect.

Chapter 1: Introduction

Chapter 2: Historical Background

Chapter 3: Current Water Management Practices

Chapter 4: Proposal Details

Chapter 5: Implementation Strategies

Chapter 6: Conclusion

The FoEME Proposal seeks to establish a new era of water management in the region, fostering cooperation and mutual understanding.
A Modern Agreement To Share Water Between Israelis and Palestinians: The FoEME Proposal - Revised Version

In the first place, the Supreme Water Council, a body consisting of the representatives of Israel, Jordan, and the Palestinian Authority, meets on an annual basis to discuss water issues. The Council has a mandate to ensure the equitable distribution of water resources among the three parties. The Supreme Council has been instrumental in the development of water-sharing agreements, which have been signed at various levels: national, regional, and international.

Israel and Jordan signed a historic agreement in 1995, which was a significant milestone in the history of water-sharing agreements in the region. The agreement was the result of years of negotiation and was seen as a major step towards regional peace. However, the agreement was not without its challenges, and a number of disputes arose over its implementation.

In the late 1990s, the Israel-Jordan Water Commission was established to oversee the implementation of the 1995 agreement. The Commission was charged with the task of ensuring that the agreement was implemented in an equitable manner and that the interests of all parties were protected. The Commission has been active in resolving a number of disputes that have arisen over the implementation of the agreement.

In recent years, the focus has shifted to the development of new water-sharing agreements. The Israeli-Palestinian Water Commission was established in 2003 to oversee the development of a new water-sharing agreement between Israel and the Palestinian Authority. The agreement was signed in 2011 and has been hailed as a major step towards regional peace.

A Modern Agreement To Share Water Between Israelis and Palestinians: The FoEME Proposal - Revised Version

FoEME was established in 2007 with the aim of promoting water-sharing agreements in the region. The organization has been instrumental in the development of a number of water-sharing agreements, including the 2011 agreement between Israel and the Palestinian Authority. FoEME has also been active in promoting the implementation of existing agreements and in resolving disputes that have arisen over their implementation.

The FoEME proposal is based on the premise that water-sharing agreements can be a powerful tool for promoting regional peace. The proposal calls for the establishment of a new water-sharing agreement that would be based on the principles of equity, fairness, and mutual benefit. The agreement would be designed to meet the needs of all parties and to ensure that water resources are managed in a sustainable manner.

The FoEME proposal is a comprehensive framework that addresses the needs of all parties. It is based on a shared vision of the future and on a commitment to the principles of equity, fairness, and mutual benefit. The proposal is designed to be flexible and adaptable, allowing for the development of new agreements as circumstances change.

A Modern Agreement To Share Water Between Israelis and Palestinians: The FoEME Proposal - Revised Version

The FoEME proposal is a significant development in the history of water-sharing agreements in the region. It represents a major step towards regional peace and a sustainable management of water resources. The proposal is a testament to the power of collaboration and the importance of working together to achieve common goals.

The FoEME proposal is a blueprint for the future. It provides a framework for the development of new agreements and for the implementation of existing agreements. The proposal is a call to action for all parties involved in the management of water resources. It is a reminder that water-sharing agreements are not just about water, but about people and the future of the region.
أحزناً، هناك اتفاق صحيح لإدارة المياه المشتركة في واقعية اتفاق FOEME. لكنه سابق لأوانه. بعض النقاد يقولون أن الهيكل المقترح للإدارة المشتركة لم يختبر بشكل صحيح. على التفاوض فيágب الأحيان كان حافزاً للتعاون أكثر من كونه مصدرًا للصراع. في استعراض مقالة آرون وولف عام 1999 بأن تقارير جميع المفاوضات الدولية حول حصة المياه خلال القرن الماضي أوزيد قد شردت على أساس اعتراف كل جانب "باحتياجات الطرف الآخر أو الأطراف الأخرى بدلًا من التركيز على الأسس المسبقة أو الحقوق. وفي سياق مختلف تماماً، فقد وجد سايم وأخرون 1999 في أستراليا أن القرارات التي تطلب تحقيق التوازن في توزيع المياه بين الاستخدامات البيئية والبشرية والأحكام المحلية فيما يتعلق "بالانخفاض" (جنبًا إلى جنب مع المشاركة المحلية في صنع القرار) لعبت دورًا أكبر من الاهتمام لتحقيق الكفاءة الاقتصادية.

المربع 6-1: اللجنة الدولية المشتركة:

تم إنشاء اللجنة الدولية المشتركة (IJC) من قبل معاهدة حدود ووترز عام 1909. رغم أن معظم أنشطة تشمل الحفاظ على وتدفق المياه، تم إنشاء IJC بناءً على معاهدة حدود ووترز التي تحتوي على خمس الموانئ العشبية في العالم. كما تتعليم بعض المسؤوليات عن أي كيان للمياه تتفق على طول أو عبر الحدود الوطنية بين كندا والولايات المتحدة. في عدد قليل من المناطق فإن IJC لديها مسؤوليات الإدارة المباشرة ولكنها في معظم الحالات تشاركها السلطات المحلية وتكمل الدول حول طول كيان المياه الخاص موضع النقاش. كل من كندا والولايات المتحدة دول اتحادية، ولا يمكن تفويض إدارة المياه بشكل رئيسي إلى المراكز الرسمية. في حالة ثلاثة أعضاء معيينين من قبل كل من الحكومتين الوطنيتين وتعمل مع 20 من المجالس التي تساعدوها في مسئولياتها وتشمل هذه المسؤوليات الحفاظ على تدفق المياه، والحد من تلوث المياه، وجوية الهواء في المناطق الحدودية. عندما طلبت الحكومتين الوطنيتين فإن IJC أصبح لديها القدرة على السماح بالوقت والرقم للمراقبة للأعمال المياه بما في ذلك السدود ونظم المعالجة ومفاصل الصرف.
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Chapter 6: Investments in the Private Sector and Long-term to Meet Cost-Benefit Considerations in Public Investments

Although such guarantees should be made with caution and are always determined in advance, they are a reasonable way to protect investment and promote economic development.

Professor Hillel Shoval notes that the FoEME proposal 2010 moves the issue of certainty to a national sovereignty issue and states that the FoEME proposal 2010 is made by Professor Hillel Shoval that he does not believe that an agreement should be reached between the two governments without a direct and full control. In his view, the FoEME proposal 2010 would establish an open process to redistribute the shared resources without the control of either Israel or Palestine, and would be a significant step towards sovereignty over the shared water resources. Shoval argues that the FoEME proposal 2010 is based on a clear and unambiguous definition of rights to the shared resources, and it would be possible to achieve a meaningful cooperation in managing the shared resources.

The main difference between the view of Professor Shoval and ours, is that more than the parties accept it. Shoval believes that they want a limited and unambiguous definition of shared water rights and we believe that they will accept a broader and more flexible definition, perhaps not at first, but over time, as they value the implementation of the Economic and Social Development and the Reuse of Water to reach sustainable levels. There is no point in referring to the possibility of the border between Israel and the future Palestinian state being included in the water issue. On the contrary, these borders must be clearly defined in the peace deal and this document will refer to what is being divided and what is not. However, since any of the final borders, the distinction between shared and non-shared resources will be different from those after the 1948 war. No matter what the details, the main point is that the subsequent management rules will be different from what is shown in Chapter 2.

Discussing Professor Shoval means that both Israel and Palestine can have their share and eat it too. It is not possible to conclude an agreement on international shared water management without surrendering a small part of national sovereignty. We agree that redistributing water is a sensitive political and legal issue, but how can the management body deal with it? The concept of shared management becomes meaningless if it starts with the restriction that all existing laws remain in place after fifty years of military occupation of large parts of what will be the future Palestinian state and more.

We agree with Professor Shoval's analysis that one can have his cake and eat it too. It is not possible to conclude an agreement on international shared water management without surrendering a small part of national sovereignty. We agree that redistributing water is a sensitive political and legal issue, but how can the management body deal with it? The concept of shared management becomes meaningless if it starts with the restriction that all existing laws remain in place after fifty years of military occupation of large parts of what will be the future Palestinian state and more.
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The chapter discusses the modern agreement to share water between Israelis and Palestinians, emphasizing the FoEME Proposal. The text highlights the benefits of joint management of water resources and the need for cooperation between the parties. It mentions the challenges and the potential for conflict resolution through joint projects.

The chapter also addresses the need for establishing a water-technical committee to address the complex issues related to water management. The text stresses the importance of securing long-term water supplies and the need for a reliable and sustainable source of water.

The chapter concludes with a call for increased cooperation and a commitment to finding common ground in the water management process.
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If a new agreement for the sharing of water between Israelis and Palestinians is to be successful, it is crucial that both sides are willing to make significant changes in their approach to water management. The FoEME Proposal advocates for a revised version that incorporates a number of key principles.

1. **Revised Water Sharing Agreement**
   - The FoEME Proposal suggests a revised version of the water sharing agreement to better reflect the needs and concerns of both sides.

2. **Enhanced Water Management**
   - The proposal highlights the need for enhanced water management practices, including the integration of water conservation and recycling techniques.

3. **Cross-Border Collaboration**
   - The FoEME Proposal advocates for increased cross-border collaboration on water management issues, emphasizing the importance of joint management and the sharing of resources.

4. **Institutional Framework**
   - The revised agreement proposes the establishment of a joint water management authority to oversee water allocation and usage, ensuring fair and equitable distribution.

5. **Environmental Considerations**
   - The proposal incorporates environmental considerations into water management practices, prioritizing the protection of water sources and ecosystems.

6. **Economic Integration**
   - The FoEME Proposal envisions economic integration as a key driver for sustainable water management, promoting partnerships and joint ventures in water-related industries.

By implementing these revised principles, the FoEME Proposal aims to create a framework that not only meets the current needs of both sides but also sets a foundation for long-term, sustainable water management. This approach is crucial in the context of increasing water scarcity and the growing importance of water as a strategic resource.

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A Modern Agreement To Share Water Between Israelis and Palestinians: The FoEME Proposal - Revised Version
A Modern Agreement To Share Water Between Israelis and Palestinians: The FoEME Proposal - Revised Version

The chapter discusses the FoEME Proposal and its key features in the context of sharing water resources between Israel and Palestine. The section highlights the importance of institutional frameworks and the role of international law in water management.

The FoEME Proposal aims to create a mechanism for joint water management between Israel and Palestine. The proposal comprises several components, including:

- A Framework for Joint Water Management
- A Joint Water Commission
- A Council for Water Use
- A Joint Water Authority

The proposal emphasizes the need for a comprehensive approach to water management, involving all relevant stakeholders. The chapter also considers the challenges and potential benefits of implementing the FoEME Proposal.

The FoEME Proposal is seen as a step towards overcoming legal and institutional barriers in water management. It seeks to create a framework for joint decision-making and cooperation in water management.

The chapter concludes by recognizing the importance of the FoEME Proposal in advancing water management in the region and promoting cooperation between Israel and Palestine.
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in the water management council an important role is to bring attention to the systems of the water management council at the local level that have not yet been made official and are not known to the local water authorities. The role of identifying and describing these local systems is not a simple one. In developed countries, where the law on water is based on liberal principles, experts assume that there is a local share of ownership, but at the same time, the local management of natural resources, especially groundwater, is expected to be based on a public system (Troitié 2003, Bakr 2007). In these circumstances, a simple exercise in identifying the local ownership systems is complicated, also because the determination of ownership systems can be affected by the passage of time. This ability to change is an important feature of its ability to cope with changes in climate and seasonal and demographic changes. When there is no opportunity to change public ownership systems, it risks losing its ability to adapt (Boyle 2009). As already stated, even if the FoEME agreement precedes the final status agreement, Israeli settlements would be a special issue in terms of water. There is not a single way of dealing with them. On one side, they are considered existing and in some cases, they are includes many people. In the other hand, they are not considered legally existing, according to most interpretations of international law. At present, most of the settlements are eligible to be supplied by Mekorot company, so it is not expected that they will turn to the water management council for assistance. Illegal settlements, of course, do not have a place in the council or any other institution as it is shown.

1-6 -

The possible structures of the local management council can be approximately four members: two elected from the Palestinian local authorities and two from the Israeli local authorities. It should also be taken into account that the delegation of the local authorities. For example, within three years of its establishment, the administrative councils of registered entities were given one vote, and afterwards, the council elected its future members.

The possible administrative councils:

It can be considered that the concept of the local management council is that it can be considered as an extension of the institutional concepts that are represented in the FoEME model, which was introduced in 1999, as mentioned above. (see the text below this shape). Great attention was given to a long-term research project in the Hebrew University of Jerusalem and JIB. They have developed many times as a model for sharing water management in the region of FoEME. The idea of a model for sharing water management in

The administrative concepts of the existing:

And can be considered that the concept of the local management council is that it is established through a number of administrative councils other than those from the local authorities and the local authorities. The role of the FoEME is to reinforce the existing concepts of the local management council. The members of the council are not elected. And according to their list, one vote for each entity and members elected in the council. After that, the council will elect its members for future terms.

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The efficiency is probably not the main concern at this time whether it is for Israelis or Palestinians (Brockes et al. 2010) and therefore, the science advisor’s office should place some emphasis on the guiding principles for assessing efficiency, with appropriate procedures for water management and the time and financial resources required to establish more efficient systems. And evidence from other countries indicates that the science advisor’s office will need more than just a program, but also to create a dedicated division for supporting demand management programs in the long-term. And the recommendations that the advisors hold in their hands.

And in the end, it will be necessary to determine the options that the members of the joint water committee and members of the water mediation council should do. All scientific information relates to the choice between assumptions and varying levels of uncertainty, and these characteristics even in the best of sciences are characteristics of the information related to groundwater layers. And in addition, “... the ambiguous interpretation leads to confusion, and explains how the culture of each country in the management of water ties them together to create different perceptions in the availability of groundwater.” (Melman 2011). In short, it is impossible for any decision-making or administrative organization to avoid decisions in the face of uncertainty or responsibility to consider the social and political effects of different options. There is no purely scientific solution to water problems!

The local council for water management

The local council for water management decides and registers all the bodies that control water resources locally and redistribute water regardless of whether it follows private or public ownership. The standard used for this decision is the use of local practices, which is the system by which the resources are actually managed by a group in certain situations that are often different from official regulations. For example: there are traditional communities where the rules are still oral and are treated with total control within the community. In fact, the registration process of local water institutions helps them to participate in the subsequent interactions with the mentioned bodies. Another task of the local council for water management is to help the water mediation council to ensure that all local groups or water source management bodies we are dealing with are fully involved in any implementation in the supervision of the water mediation council.

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لا يمكن الحصول على وإمداد لجنة المياه الثنائية بالتعليقات على أربعة أنواع واسعة من المعلومات:

- بيانات كمية المياه (بما في ذلك رسم الخرائط)
- بيانات نوعية المياه
- الحدود الإيكولوجية في سحب المياه والتخلص من مياه الصرف الصحي
- كفاءة المعرض من المياه ذات النوعية المناسبة.

ولا يمكن من المتوقع أن يكون لدى مكتب مستشاريّ العلوم قاعدة بيانات مستقلة، ولكن لضمان الوصول إلى قواعد البيانات التي تحتفظ بها وكالات الحكومتين الإسرائيلية والفلسطينية، فلا أنّ يقتضى من المكتب أن يكون على علم بكل جديد فيما يتعلق بالتطورات الجديدة لمعلومات المياه وتحليلاً، كما هو الحال مع تجربة تأسيس لجنة الأبحاث والمفاوضات (غريس)، والتي يمكن أن تكشف عن تقارير في مستوى وحجم المياه الجوفيّة. ويمكن الاطلاع على فوائد ممتازة في الطرق التي يتم التعامل

عن طريقها مع المياه الجوفيّة في دول الاتحاد الأوروبي في إطار الإعلان (رايشرت 2011). حتى لو
كان التطبيق الكامل لتلك الأنظمة ومراقبة الجودة أكثر مما هو مطلوب للحال بين الإسرائيليين والفلسطينيين،
للتأكد من ذلك، فقد لا توافق قواعد البيانات المختلفة مع الأرقام الرسمية، وقد تعطي النماذج المختلفة
نتائج مختلفة. مثل هذه المشاكل شائعة في العلم، وعامة مثل غيرها من الهيئات الاستشارية، سوف يضطر
مكتب مستشاريّ العلوم إلى اتخاذ قرارات مستنيرة فيما بينهم.

سيقوم مكتب مستشاريّ العلوم أيضًا بتشديد الجامعة التدفق والآراء اللازمة للحفاظ على الصحة البيئية
للمجتمعينوار المياه المشتركة. ومشكلة التطورات الأخيرة في كيفية تدفق الماء التي صنعت
خدمات النظام الإيكولوجي طريق المكتب للمضي قدما في هذه الجزء من نفوذه (جارد وليفينغستون
2011). و rus، الذي يعتمد أيضًا
العثور على سبيل المثال الحد الأدنى للحصة المحلية، والمقابلة لـ "حق الإنسان في المياه" في كل بيئة، وهناك
كم أكبر من النصوص والتقارير المتاحة لدعم تخصيص الحد الأدنى، بما في ذلك (عساف وآخرون
2007). على سبيل المثال، فإن النصوص والتقارير المتاحة لدعم تخصيص الحد الأدنى، بما في ذلك (عساف وآخرون
2007).

وأخير واجب مكتب مستشاريّ العلوم هو تقديم المشورة للجنة المياه الثنائية على كيفية استخدام المياه من
قبل الجماهير التي تسعى لتلبية المتطلبات الحالية للسماح أو تجعل على زيادة. يؤكد الجزء عن إدارة
الطلب في الفصل السابق أنه يجب النظر في العديد من الأبعاد التي تتعلق على كل من الكمية ونوعية
استخدام المياه في تحديد السماح به. يجب النظر في الخيارات الفنية والسياسية على حد سواء
(بروكس 2007). والتكلفة الأساسية هي أن إدارة المياه المشتركة لن تكون ناجحة ما لم يعمل جميع الأطراف
على إيجاد مناخ من الثقة، الأمر الذي يعني أنهم يجب أن يكونوا على ثقة في توفير المياه المحروسة بأقل
خسائر ممكنة. وأنها تستخدم في أجهزة كفاء من خلال مستهلكين منزلين وصناعيين، وراعيؤين. مثل هذه
بأنه تم تجاهل بعض وجهات النظر أو قمعها من أحد أطراف النزاع، ويمكن للمجلس تعيين لجنة تحقيق علمية أيضاً من أجل التحقق من المزاعم، على سبيل المثال حول مصدرين الثلوث أو أسباب انخفاض التدفق التي تقدم كحالات شكوى، وتستعرض نتائج التحقيقات العلمية على العلن.

سيناقش مجلس وساطة المياه الطرف صاحب الشكوى لسماع روايته للقضية، وسياحا التوقيف بين صاحب الشكوى وهذه الأطراف. في الحالات التي تفشل فيها الأمانة أو لم يثبت التأثير المزعوم من قبل طرف صاحب الشكوى والمنسوبي إلى الكيان أو الكيانات المذكورة، فإن مجلس وساطة المياه يكون مسؤولا عن التحقيق في الشكوى بشكل مستقل، وسيطلب من مجلس وساطة المياه تحديد الخبراء، مع الاعتراف بالحاجة إلى المعرفة التقنية والثقافية من أجل تقديم التوصيات المناسبة. وسوف تشمل تحقيقاتها تحليلات اقتصادية وغيرها من العلوم الاجتماعية لنشر الخسائر التي تدفع المجتمعات أو المجموعات أنها تعانى منها.

سيطلب من مجلس وساطة المياه الحفاظ على وإتاحة السجلات العامة لجلسات الاستماع، فضلاً عن جميع التوصيات التي توصى بها لجنة المياه الثنائية أو أي من المجموعات التي تتفاوض معهم. طوال العملية، سوف يكون في متناول يد المجلس نتائج الرصد وغيرها من الدراسات التي يقدمها مكتب مستشاريّ العلوم.

يمكن أن تتشابه البنية الداخلية لمجلس وساطة المياه لتلك التي اقترحها أعلاه للجنة المياه الثنائية، مع التعديلات المناسبة لعدد الأعضاء، وطول الأجل، وفرصة التجديد. قد يرشح الأعضاء الوطنيين أو يحدد من قبل الوزارات المسئولة المعنية.

سيستخدم مجلس وساطة المياه مجموعة واسعة من التدابير لاستصدار قرار متفق عليه، كالتشاور مع أي من المؤسسات أو المجتمعات المحلية المشاركة، ودراسات الاستماع العامة، وما شابه ذلك، والهدف هو التوصل إلى قرار يضمن مصالحة جميع الأطراف. عند هذه النقطة، يمكن للعملية أن تسير في اتجاهين. إذا كان القرار الصادر عن مجلس وساطة المياه يشمل إعادة التوزيع أو توفير التدفقات الحالية أو تغييرات داخلية أخرى، سوف يكون قراراً ملزمًا. وإذا أضطر على واحدة من تلك الأطراف أو مجموعة من الأطراف إلى تقديم توصيات، فقد يشتمل القرار على واحد أو أكثر من تلك المهن أو المجموعات، يمكن رفضها أو القبول، ولكن ليس تغييره وتكرارها، إذا رفضت لجنة المياه الثنائية، فإنها يجب إعادتها إلى مجلس وساطة المياه، وتتم في هذه المرحلة، ويتبعها صدور توصية منفقة.

مكتب مستشاريّ العلوم

يتتألف مكتب مستشاريّ العلوم من سنتين من "مستشاريّ العلوم العليا"، يتم انتداب كل منهما من وكالة مناسبة من الحكومات المعنية، بالإضافة إلى موظفي الدعم. ولل毽ب المسؤولية تقديم التقارير إلى لجنة المياه الثنائية بشأن القضايا ذات الصلة المتعلقة بتوزيع وكمية المياه وتقييد التوصيات المناسبة لسحب التراخيص وتشديد الحفظ إلى لجنة المياه الثنائية، بالإضافة إلى أدوارها الأخرى، في حالة توقع أن يكون لدى مستشاريّ
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فإن الدور الرئيسي لمجلس وساطة المياه في الحالات المشار إليها أعلاه أن يكون لفحص الحُجَج للأطراف المعنية في الشكوى أو النزاع ومحاولة التوافق. في الحالات التي يكون فيها إملاء مصالحة فاشلة، أو لا يُمكن إيجاد تفاهم متفق عليه، أو دحض الأدلة في التفاهم، سيتحمل مجلس وساطة المياه задачة تحقيق بشكل مستقل. تحقيقاً لهذه الغاية، يستطيع مجلس وساطة المياه على تنظيم مجامعات مفتوحة أو جلسات استجواب علنية عندما يبدو أنها ستساعد على الوصول لأكبر مجموعة متنوعة من الآراء أو لدى المجلس سبب للاعتقاد

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• Place extraction rates of groundwater, which is an irrenewable resource, so that it is used in balance with time and the capacity to develop alternative sources or reduce the demand for water.

• Agree on the location and size, as well as new sources of shared water, for example, to treat wastewater from treatment plants that receive water from both sides of the border or a common desalination plant.

• Ensure that water quality standards, as set by the authorities in Israel and Palestine, are met or agreed upon when dealing with shared water.

• Ensure communication with government agencies and other authorities with activities or responsibilities that affect or are affected by shared water.

If the joint committee cannot approve the recommendations it receives from any of its subcommittees, it cannot issue a substitute decision on its own. Instead, when it rejects a recommendation, it should explain the reasons for its rejection and ask for a new recommendation. If the joint committee - after two attempts - finds it impossible to reach an agreement, the issue will be referred to the Water Mediation Council (below), which is similar to the joint committee but has more tools to produce a settlement.

It is unlikely that we can be sure about the final structure of the joint committee (or any other element of the joint committee). As an example of how it could be designed, we suggest that the joint committee should consist of seven members, three appointed by each government with one member appointed by the six national members of any other state. This seventh member would hold the position of chairman. Appointments to the water committee will last for three years, with a maximum of two terms (six years). If one of the three national members wishes to renew or replace it each year, the result will be that, in any ordinary year (i.e., a year without resignations or dismissals), one member chosen by each government is the “senior.”

The committee will make decisions by majority vote, provided that two of the three members chosen by each side agree on any decision. This rule ensures that three members from one side, plus the member from outside the region, do not constitute a “majority” to impose a decision on the other side. At the same time, this rule allows for a solution when there is a fundamental disagreement among the members of the joint committee. We propose that the decisions made by the joint committee are final and binding, but, of course, as with any government authority, its decisions can be appealed to the courts of one of the sides or the other.

The international law of nations refers to groundwater between two or more states as another type of water body. However, the current opinion is that there should be a special law for the resources of groundwater between states that are not capable of renewal (Ackstein 2005).

1 The draft agreement may refer to an agreement that aims to regulate the shared water between the two or more states that are not capable of renewal. If it is not true that the joint committee must make decisions after one or more reviews.
يسمح الهيكل بالمبادئ العامة لإدارة المياه المشتركة، ويتعدى ذلك أيضًا للتأكد من المساواة في جميع الحقوق والمسؤوليات المتعلقة بالإدارة المشتركة للمياه المشتركة. كما لوحظ في الفصل 5، فإن هذه المساواة لا تعني أن كل جانب سيسحب على حجم مساو من الماء. إن هذا يعني أن كل طرف سوف يكون له على موقف متساو داخل المؤسسات الإدارة المشتركة (كما هو موضح في الشكل 1-1)، وتكوين الفرص في المشاركة في عمليات صنع القرار.

تكون مجموعتين أساسيتين في صميم الهيكل المقترح، لجنة المياه الثنائية (BWC) ومجلس وساطة المياه (WMB). تقدم لجنة المياه الثنائية تقريرها إلى الحكومتين، ويجب أن تستجيب إلى العمليات السياسية والاستشاد بالتفاصيل السياسية. ومع ذلك، فإنها تتخذ القرار النهائي، ولكن قراراتها مقيدة جداً، على النحو المبين أدناه. ويُختار الأعضاء فيها 통해 التصويت من أي من هيئة الفرعية أو من مجلس وساطة المياه. وعلى نقيض لجنة المياه الثنائية، لا يوجد لدى مجلس وساطة المياه صلة مباشرة بالهيئات السياسية العليا. وعلى العكس، يجب أن تستجيب لدواعي القلق من الفئات المتضررة والمنظمات والاستشاد بالأهداف المنصوص عليها في الفصل 5. ويجيب على كل من لجنة المياه الثنائية ومجلس وساطة المياه الأخذ بالتوجيهات التي يتلقونها من مكتب مستشاري العلوم (انظر أدناه).

**لجنّة المياه الثنائية**

ستقوم لجنة المياه الثنائية بين البلدين بحل محل لجنة المياه المشتركة، ولكن سيكون لها المسؤولية عن جميع المياه المشتركة، ليس فقط في المياه المشتركة التي من المرجح أن يتم تضمينها في دولة فلسطين المستقبلة. وهي تختلف كثيراً عن اللجنة المشتركة للمياه الحالية بسبب الموقف المتساوي بين الطرفين. في الوقت الحالي، فإن السلطة الفلسطينية ليس لها رأي في الإدارة الإسرائيلية للمياه المشتركة الواقعة في إسرائيل في حين يجب الحصول على موافقة إسرائيل في إطار اللجنة المشتركة للمياه في اتخاذ القرارات المتعلقة بالمياه الواقعة في أراضي السلطة الفلسطينية. في لجنة المياه الثنائية، للكلا الطرفين حقوق ومسؤوليات متساوية على جميع المياه المشتركة، بغض النظر عن مكان وقوعها. وترتفع لجنة المياه الثنائية تقاريرها مباشرة إلى الحكومتين الإسرائيلية والفلسطينية بشرعية حاسمة. لكنها محدودة: حاسمة لأنها تحدد مدى ومتى أي من الهيئات الاستشارية، لأنه يجب أن تسمح بالوساطة عند وجود التحديات التي تواجه قراراتها.

الأهم من ذلك، سوف يلتزم نفوذها إلى:

- وضع حدود لسحب المياه، على أساس التوصيات التي وضعتها الهيئات الاستشارية التابعة لها (موضّح أدناه)، ومعيار لمستويات العلاج، وأهداف لإطلاق المياه من طبقات المياه الجوفية.
- منح تصاريح للمناطق تحديدًا على أساس التوصيات التي وضعها الهيئات الاستشارية.
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FoEME

The FoEME Structure in the Proposal

The FoEME structure includes the following institutions:

- Israeli and Palestinian Governments
- Water Committee (Joint Committee)
- Water Management Council
- Local Council for Water Management
- Water Authority
- Water Authority
- Scientific Consultant Office
- Water Resources Council

The diagram outlines the decision-making process:

- Citizens' participation in the decision-making process through the local council
- Water management council making decisions
- Water management council submitting decisions to the joint committee
- Joint committee convening to reach a decision
- Final decision submitted to the government authorities

- Water management council providing scientific advice and recommendations

The FoEME proposal aims to achieve:

- Economic efficiency
- Social justice
- Environmental sustainability
- Water rights and access

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الفصل 6

بنية الاتفاق الاسرائيلي الفلسطيني حول الإدارة المشتركة للمياه العذبة المشتركة

في سياق أحواض الأنهار الأفريقية العابرة للحدود الوطنية، شهدت السنوات الأخيرة تكاثر المعاهدات المشتركة لمنظمات رسمية لإدارة حوض النهر، بدعم من الجهات المانحة الدولية وعلى أساس القانون الدولي. وحجة هذا الفصل تشير إلى أن تشجيع الاستثمار والابتكار المحلي، ودعم وبناء القدرات المحلية من أجل حل المشاكل سيكون أكثر فعالية من محاولة فرض القيم "العالمية" المزعومة أو الأشكال التنظيمية.

ميري وكوك، 18

قبل عرض تفاصيل الهيكل المؤسسي المقترح في هذا الفصل، يجب أن نؤكد أننا نقدم مسودة هيكلية، ونحن نرحب باقتراحات التحسين، وهو موضوع سنعود إليه في الفصل 8، حيث نناقش الخطوات التالية.

الهيكل المقترح يهدف إلى دمج مختلف المؤسسات الإنسانية التي تتفاعل الآن مع انخفاض المياه خلال رحلتها. وهو مصمم لتقسيم السلطة على عدة محاور:

• بين الحكومتين الإسرائيلية والفلسطينية
• بين العديد من المؤسسات الإسرائيلية الفلسطينية المشتركة
• بين الأبعاد العلمية والسياسية للإدارة
• بين المؤسسات التي تعمل على المستويات المحلية والعالمية.

على الرغم من أنه يُقسم السلطة، فهو يجمع المؤسسات حول المبادئ والأولويات المتفق عليها، كما هو مفصل في الفصل 5 وأماكن أخرى في هذا التقرير.

الهيكل المؤسسي المقترح

ويرد الهيكل المؤسسي المقترح لإدارة مشتركة بين الإسرائيليين والفلسطينيين للمياه المشتركة في الشكل 6-1. وتُظهر الرسم التوضيحي داخل الهيكل في الشكل 6-2.
ويختتم التقرير بتعليقات على الخطوات التالية التي يجب اتخاذها لتحويل اقتراح FoEME إلى الأمام من مجرد مفهوم إلى قبول قومي ثنائي. وتشير التقديرات إلى أن الأمر سبستغرق من سنة إلى ثلاث سنوات لاستكمال البحث لاستكمال تلك الأجزاء من اقتراح FoEME التي ليست مفصلة بشكل كاف. والأهم من ذلك اقتراحًا مفصلاً لمجلس وساطة المياه، ووضع استراتيجية لتقديم اقتراح FoEME أمام الجمهور الإسرائيلي والفلسطيني وحكوماتهم. وخلال هذه الفترة، قد يكون من الممكّن تنفيذ اتفاق جزئي مع نطاق أكثر تحديدًا ومكن أن يستند هذا النهج على التجربة مع هيئة المياه الجوفية الجبلية، والتي كانت موضوع دراسة واسعة النطاق في وقت سابق، قبل إنشاء لجنة المياه الثنائية.

يدعى كثير من الناس أن إسرائيل أنشأت أول قانون مياه وطني حديث مع اعتماد قانون المياه في عام 1961. إن الاقتراح في هذا التقرير هو من أجل الإسرائيليين والفلسطينيين لإنشاء أول اتفاق ثنائي للمياه يُسخّر أحدث بحوث دولية حول حل النزاعات ويستجيب لتغيرات الظروف الطبيعية والاقتصادية والاجتماعية. وتكون النتيجة اتفاق مياه "ما بعد الحداثة" والذي يمكن أن يتحول إلى اتفاق وضع نهائي بين دولة إسرائيل الحالية، ودولة فلسطين المستقبلية.

وعلى الرغم من تطبيق هذا الاقتراح على وجه التحديد على المياه المشتركة من قبل الإسرائيليين والفلسطينيين، فإن الأهداف العامة، والتركيز بشكل خاص على المراقبة المستمرة والوساطة، وتنوع الهيكل المؤسسي يمكن تطبيقه بأي مكان في العالم حيث المياه العابرة للحدود تقسم بلدانًا من أن تكون اثنين أو أكثر من الشعوب. ولذلك فإن العملية أكثر من ذلك بكثير في مجال العلوم الاجتماعية، وتسوية النزاعات عن العلوم الفيزيائية، وعلم المياه، وبطبيعة الحال فإن تلك الأنظمة تقدم السياق الذي يجب أن تعمل عليه في أي تصميم مؤسسي.

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في
والاستدامة، ويعززها الاهتمام بكفاءة استخدام المياه والقدرة على تطبيقها من قبل الجهات المعنية في
Israel وفلسطين. بين الشكل 1 ES الهيئة الرئيسية التي تشكل الهيئة المؤسسية لاقتراح FoEME
ويصل الشكل 2 ES على تدفقات من الأنشطة والمعلومات من تلك الهيئات. هيئة كابتن كابتن، كلا من
حكوماتها، يقودان العملية: لجنة المياه الثنائية (FoEME)، ومجلس وساطة المياه (WMB). وتتكون كل هيئة
من عدد متوازن من الممثلين الإسرائيليين والفلسطينيين بالإضافة إلى عضو واحد من خارج المنطقة، متوافق
على كل الجوانب. وفي حالة تطلب التصويت، فقد صُمِّمت قواعد ملحة هيئة أي من الجوانب على الآخر.

ستحل لجنة المياه الثنائية محل لجنة المياه المشتركة الحالية (JWC) وليس فقط الهيئة الفلسطينية، كما هو الحال مع لجنة المياه المشتركة الحالية، وسيتعين قرارات الهيئة الرئيسية
في معدات الاستخراج ووصول المياه وإزالة وعلاج مياه الصرف الصحي. وتستند قراراتها على صيغة من
هيئات فرعية، مكتب مستشاري العلوم، والتي تتكون من الموظفين المعنيين أو المندوبين من قبل الحكومتين.

عندما تجد لجنة المياه الثنائية نفسها غير قادرة على قبول قرار من مستشاري العلوم، أو عن أي جماعة أو
مجتمع يرغب في معارضة هذا القرار، يتحدد مجلس وساطة المياه الإجراءات اللازمة. ومجلس وساطة المياه
مجموعة واسعة من الأدوات المتاحة لتسليط الضوء على حل وتعاونًا ما بين التحقيقات العلمية إلى
المؤسسات العامة. كما يمثل مجلس وساطة المياه المشتركة من هيئة أخرى فرعية، مجلس المحلي لإدارة المياه،
الذي لديه أيضًا دور، إذا كان ذلك منسجمًا، لتشمل الهيئات المحلية أمام مجلس وساطة المياه. وكدور إضافي في
عملية صنع القرار من جانب واحد، لا يتخذ مجلس المياه الثنائية قرارًا من تلقاء نفسه، بل يُكتب قبول أو رفض التوصيات الصادرة عن مكتب مستشاري العلوم أو مجلس وساطة المياه، ولكن لا يُغيرونها. إذا رفض التوصية، فإنه يجب تقديم أسباب واضحة لرفضها وإرسال هذه القضية مرة أخرى لمزيد من العمل وتوصية جديدة.

ويمكن تقدير المسؤولية عن إدارة المياه في المناطق المختارة للهيئات الفرعية، مثل هيئة المياه الجوفية
الجبيل (إدارة الأرض المشتركة من المياه الجوفية الجبلية) وسلطة الجداول الساحلية (إدارة الجداول
الموجودة في الضفة الغربية والتي تتدفق من خال إسرائيل إلى البحر الأبيض المتوسط).

في النهاية، سوف يفتح نجاح العملية لا يعد النزاعات التي تم التوسط فيها بنجاح ولكن بعد النزاعات
التي تم حلها مفاوضات الأخ والطاء العادلة والتي لم تأتي إلى طاولة المناقشة من أجل وساطة رسمية.
ومن أجل الحكم على احتفالات النجاح، تم عرض مواد إضافية. يركز فصل واحد من الشك في التحقيقات
الحالية لتوفير المياه الكافية لبعض المجتمعات الفلسطينية في الضفة الغربية، لتعمل بشكل كافٍ معًا لمعالجة مياه
الصرف الصحي المضافة في الضفة الغربية، ومنع الإفراط في ضخ المياه من طبقات المياه الجوفية المشتركة.

فصول آخر يقدم ثلاث دراسات لإظهار كيفية التي تم بها التعامل مع القضايا الراهنة بالترابيات الحالية
وأيضاً، كما تتفق على ذلك. تم التناقل في عدد من
الانتقادات الأخرى أهمية من الإصدار السابق لاقتراح FoEME وعرض الردود عليها.

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الشكل 1-ES. الهيكل التنظيمي للمؤسسات في اقتراح

 FoEME
الشكل 2-6. الرسم البياني للأنشطة والقرارات في اقتراح

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الخلافات حول المياه بين الإسرائيليين والفلسطينيين كأم يهم عدد كبير من المؤسسات التي تنشر سياساتها على مدى متنوع من المجالات. بدلاً من محاولة تحديد "عادل" وتخصيص دائم للمياه للطرفين، فإنه يحاول دمج مختلف المؤسسات التي لها حق الوصول واستخدام واطلاق المياه في البيئة في إطار من شأنه أن يسمح بإدارة مستدامة وعادلة للموارد. في النهاية، فإن أكبر مشكلة تواجه الطرفين ليس كيفية اقتسام الموارد المائية ولكن كيفية استخدام الموارد المشتركة بطريقة مستدامة ومنصفة.

الإدارة المشتركة للمياه ليست سهلة أبداً، ولكنها صعبة جداً على الإسرائيليين والفلسطينيين بسبب سنوات طويلة من الصراع بينهما، ومعدلات أباع التنمية الاقتصادية المختلفة خلال تلك السنوات، والنهج المعاكس قاماً - تقريباً. إدارة المياه لديهم - إسرائيل إلى حد كبير من أعلى إلى أسفل، وفلسطين إلى حد كبير من أسفل إلى أعلى. في الواقع، وبالرغم من أن الاستراتيجية طويلة الأمد المفترضة في هذا التقرير ستزيد حديثاً من الوصول إلى المياه للأغراض المنزلية لأولئك الذين يستخدمون حالياً أقل من 50 لتر/يوم، فإنه يُخيم حالياً على الحركات المستقبلية نحو إدارة مشتركة الحاجة إلى زيادة فورية في الحصول على المياه من تلك الأجزاء من المجتمع الفلسطيني التي تقع دون مستوى المعايير الدولية للمياه والصرف الصحي المبني.

على الرغم من أنه لا يمكن تنفيذ الإدارة المشتركة تطبيقاً كاملة إلا في إطار الحدود الثابتة، فإن هيكيل اقتراحنا لا يتطلب تعريف مسبقاً عن تلك الحدود. على سبيل المثال، فإن مشروع "حزان المياه الجيدين" الخاص بـ FoEME يُقرب بين المجتمعات الفلسطينية والإسرائيلية لحل مشاكل المياه المشتركة على الرغم من أن الحدود النهائية لم تحدد بعد. بالإضافة إلى فوائدها المتمثلة في كمية مياه أكثر ونظافة أكثر، فهو نموذج يُؤهـل بائه الثقة الذي يدل على أن الإدارة المشتركة لا يمكن تصورها فقط ولكن يجب تنفيذها عملياً. وقد ظهر أيضاً أن الإدارة المشتركة للمياه المشتركة تخلق ديناميكية إيجابية خاصة، والتي تؤدي إلى مزيد من التعاون في عملية السلام.

بغض النظر عن الموقع النهائي للحدود، يجب أن يكون أي اتفاق لإدارة المشتركة للمياه واضحاً تماماً حول المساطر المائية التي يتم تقاسمها. نظراً لتنوع المسارات التي يمكن للمياه اتباعها من المصدر إلى المصب، والوصلات المحمولة بين جرامات المياه السطحية وجمادات المياه الجوفية، فإن تسمية مياه بأنها "مشتركة" هو على الأقل خيار سياسي بشكل جزئي. فإن الكتل العليا والشبهية من المياه الجوفية الجبلية تعتبر مياه مشتركة، ولكن الكتلة الشرقية هي فلسطينية. ويجرى تقاسم معظم مياه جداول المناطق الساحلية، لكن المياه الجوفية الساحلية ليست كذلك. وهناك حاجة إلى قواعد خاصة لتقاسم نهر الأردن. وهناك حاجة إلى قواعد خاصة لتقاسم نهر الأردن لان اتفاقية السلام الأردنية الإسرائيلية تجاهل الضفة الغربية. في العام 2014 سوف تقوم فومي بنشر نموذج دراستها "هيئة حوض نهر الأردن السفلي" والتي من شأنها الخوض في الاليات المحددة واللازمة لتقاسم واداء نهر الأردن السفلي مجمولاً. تم تقسيمها في معاهدة السلام بين إسرائيل والأردن لم تترك في لد الفلسطينيين الذين يعيشون في الضفة الغربية.

ن جوهير النهج المُنقح للمياه المشتركة بين شعبين ذوي سيادة يكمن في عملية وساطة مستمرة لاستخدام المياه على المستويات المثلى للإدارة، مع الخطوط الأساسية فقط كالاحتياطات المتحركة لتحقيق المساواة
ملخص تنفيذي

تمت مراجعته في 9 مارس بواسطة ماري ودافيدي

عادة ما تعتبر اتفاقيات المياه العابرة للحدود كاتفاقيات تخصيص، وعبارة أخرى، يتم التعامل مع المياه كما لو كانت كعكة تقسم بين الدول المتشاطئة. وهذا النهج يشمل الأرض أيضًا، هذا لأنه مستقرة، ولكن ليس للمياه، والتي لا تتحرك باستمرار فقط، عبر وخلال الحدود السياسية، ولكن يمكن استخدامها أكثر من مرة منذ وقت نشأتها ك أمطار حتى تجد نهاية مطافها كعودتها إلى البحر أو التبخر أو التسرب إلى المياه الجوفية العميقة. وعلى الرغم من أن التخصيص الثابت - وهو كمية محددة أو حصص مئوية لكل من الطرفين - يكون مفيدًا أحيانًا لتجنب النزاعات وحل مشاكل المياه، فليس من المناسب اعتماد وسيلة لضمان إدارة فعالة وعامة ومستدامة لتقاسم المياه على المدى الطويل. ويتم تغيير الأنظمة القديمة القانونية لتخصيص المياه تدريجيا، مثل الأفضلية للأسبق زمنيا، حتى في غرب أمريكا الشمالية حيث كان ينتشر هذا النظام. وفي أي حال، فإن وجودهم ليس له مبرر في هذه المنطقة بعد أكثر من 50 عامًا من الاحتلال العسكري للأراضي الفلسطينية. فإن النهج الأجدد تؤكد على واجبات استخدام المياه المشتركة بطريقة معقولة ومنصفة، وتجنب أذى الدول المجاورة. وتكمن الخدعة في تعريف هذه المصطلحات في السبل المقبولة والقابلة للتطبيق في ظروف محددة، وهو ما قد يؤدي إلى التركيز في هذا التقرير في قانون استخدام المياه / أصدقاء الأرض - الشرق الأوسط (FoEME).

هيكل إدارة مشتركة لإسرائيل ودولة فلسطين المستقبلية وهو ما يسمح لحل دائم للقضايا المتعلقة بالمياه العابرة، ويقوم بذلك بطريقة فعالة لا تؤمّم ولا توسع استخدام المياه. وهذا يعني، تقاسم المياه من قبل القواعد التي تم تصميمها لحماية النظام البيئي من أجل مصلحة الجميع، ومن ثم توفير المياه إلى مختلف الأطراف بطرق تلبّي احتياجاتها، وكيف يكون من التنمية دون التحdong رئيسة الأطراف المشتركة بطرق معقول ومنصفة. وتتوقف على إدارة مستمرة للمياه المشتركة بطرق معقول ومنصفة.

يتبني اقتراح FoEME هيكل إدارة مشتركة لفلسطين المستقبلية وهو ما يسمح لحل دائم للقضايا المتعلقة بالمياه العابرة، ويقوم بذلك بطريقة فعالة لا تؤمّم ولا توسع استخدام المياه. وهذا يعني، تقاسم المياه من قبل القواعد التي تم تصميمها لحماية النظام البيئي من أجل مصلحة الجميع، ومن ثم توفير المياه إلى مختلف الأطراف بطرق تلبّي احتياجاتها، وكيف يكون من التنمية دون التحdong رئيسة الأطراف المشتركة بطرق معقول ومنصفة.

أولاً تلك المساحات المائية التي يتم مشاركتها من قبل الطرفين، ويحدد حقوق متساوية لكل تلك المياه. ثم يتمّ إدراجFoEME على إدارة مستمرة للمياه المشتركة في إطاره، وهذا يعني تقاسم المياه من قبل القواعد التي تم تصميمها لحماية النظام البيئي من أجل مصلحة الجميع، ومن ثم توفير المياه إلى مختلف الأطراف بطرق تلبّي احتياجاتها، وكيف يكون من التنمية دون التحdong رئيسة الأطراف المشتركة بطرق معقول ومنصفة.

وينتهي إلى أن هذا الاقتراح يعالج الصراع على المياه بطريقة جديدة. أنها ليست مجرد مسألة اثنين من المؤسسات المركزية، دولة وشبه دولة، التي تنشر سياساتها على أرض وطنية. فعلى الرغم من ذلك، يقوم الاقتراح بمعالجة
اتفاقيّة لتقاسم المياه المشتركة بين الفلسطينيين والإسرائيليين
مقترح فومي
نسخة معدلة

من قبل دافيد بروكس وجاليا تروتير

ب входة من نادر الخطيب، منقذ مهيار، جدعون بربرغر

اذار 2013

بدعم من الاتحاد الأوروبي والجمهورية التشيكية
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Executive Action Team (EXACT) Multilateral Working Group on Water Resources, 2008 Water Data Banks

http://www.exact-me.org

4 The website www.exact-me.org contains information on the EXACT project and its activities.

5 GLOWA (Global Change Research Program) is a multinational program that aims to understand the global water cycle and its impact on the environment.

6 WEAP (Water Evaluation and Planning System) is a tool developed by the International Water Management Institute (IWMI) that helps users plan and manage water resources in a sustainable way.
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1. Introduction: The Framework of the Agreement

The FoEME (Friends of the Earth Middle East) Proposal for a Modern Agreement to Share Water Between Israelis and Palestinians is a comprehensive initiative aimed at resolving the water conflict between the two sides. The agreement proposes a balanced approach to water management, focusing on fair and equitable use of shared water resources, embedded in a shared governance framework.

2. The Water Nexus: An Integrated Approach

As water resources are finite, a holistic approach is necessary to ensure sustainable and equitable access to water for all. The FoEME Proposal advocates for a system that recognizes the interdependence of water, energy, and food systems, and promotes integrated resource management.

3. The Role of International Law

The agreement is grounded in international law, particularly the United Nations Watercourses Convention, which establishes principles for the equitable and reasonable utilization of shared water resources. The FoEME Proposal seeks to implement these principles through a robust legal framework.

4. Promoting Water Diplomacy

The proposal emphasizes the role of diplomacy in resolving water disputes. It suggests the establishment of a multilateral forum for water negotiations, involving all stakeholders, to facilitate dialogue and reach mutually acceptable solutions.

5. The Need for Public Engagement

The FoEME Proposal recognizes the importance of public participation in water management. It calls for the inclusion of local communities in decision-making processes to ensure that the benefits of water sharing are realized by all.

6. Conclusion

In conclusion, the FoEME Proposal offers a forward-looking vision for water sharing between Israelis and Palestinians, emphasizing the need for a collaborative, rule-based approach that respects the rights of all parties. The agreement seeks to create a sustainable future where water is managed for the good of all, fostering peace and prosperity in the Middle East.
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1. Introduction

The FoEME proposal aims to establish a modern agreement to share water between Israelis and Palestinians, based on shared governance. The proposed structure includes a national authority to manage shared water resources. This authority is expected to handle legal and political matters, while a joint waterbody is responsible for technical and operational matters. The FoEME proposal includes a section on water management in the context of divided sovereignty, emphasizing the importance of shared water resources and the need for joint management.

2. Legal and Political Matters

The proposed national authority for water management is expected to address legal and political issues, including water allocations and usage. The authority is expected to ensure that water management is based on principles of justice and equality, and that it respects the rights of all stakeholders. The proposal includes a section on the importance of water management in the context of divided sovereignty, highlighting the need for shared governance and joint decision-making.

3. Technical Matters

The joint waterbody is responsible for technical aspects of water management, including water allocation, usage, and monitoring. The joint waterbody is expected to work closely with the national authority to ensure that water management is efficient and equitable. The proposal includes a section on the importance of technical data and analysis in water management, emphasizing the need for robust monitoring systems and accurate data collection.

4. Conclusion

The FoEME proposal for water management between Israelis and Palestinians is a significant step towards achieving a modern agreement to share water resources. The proposed structure includes a national authority for water management and a joint waterbody for technical matters, emphasizing the importance of shared governance and joint decision-making. The proposal includes sections on legal and political matters, technical aspects, and concludes with the need for robust data collection and analysis in water management.
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With this critique it is harder to deal. We can respond to the last part partially while saying that each side will have full confidence regarding all the non-shareable waters. Furthermore, our proposal gives the council a dual-side water management council in terms of shared waters compared to the joint water council of the PLO. Both sides stand to lose much both physically and economically (due to, for example, inefficient management or inadequate treatment of contaminated waters), if the current lack of agreement continues (see Part 2), even more so if the situation deteriorates to competition.

Also the point of Chou's concern is important. We agree that the supply allocation process is required to guarantee certain quantities of water to certain sources or activities, in certain regions, for a limited period. For example, before any new investment, companies need to ensure that they have water supplies for the next five years—time for a return on investment in private ventures, and enough time to consider cost-benefit and market factors in publicly funded projects. Although some of these obligations must be shared carefully and be limited in time, they constitute a reasonable basis for the protection of investment and stimulation of economic development.

Chou's argument raises the issue of sovereignty in the matter and confidence. He argues that the process of allocating shared resources between the two nations is subject to international law and cannot be managed by any new institution or activity without the consent of both nations and any international body. He believes that the new institution should not have any authority that contradicts the existing laws of these two nations or any existing peace agreements. He believes that joint management must be adapted to the political and legal realities, while ensuring a high level of cooperation between Israel and Palestine.

The significant difference between Chou's views and ours is in the question of what will be acceptable to both sides. He believes they will want a clear and definitive water allocation; we believe they will be content with a broader and more flexible allocation—perhaps not at first, but over time as they consider the difficult situation they face both in terms of social-economic development and the return of water consumption to a sustainable level. We do not propose that the borders between Israel and Palestine in the future will be a matter for dispute in the allocation of water. Instead, these borders should be defined in detail in the peace agreement, and the document will specify which waters are shared and which are not. Otherwise, even one of our proposals is not different from the borders after the war, the difference between shared and non-shared water may be limited.

But the proposals do not only deal with the shared waters themselves. The negotiations for the first round of joint water management are not only about the waters, but about the future borders of the two nations. It is also about the future economic and social development of the region, and the protection of the environment and sustainable development. In these negotiations, Israel and Palestine are not only negotiating the allocation of shared resources, but also creating a framework for future cooperation and peace in the region.
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6 פרק

לack of trust will not cease. Both sides will continue to view water as a national security issue. This may lead to a freeze in the implementation of the FoEME proposals, which are supposed to be a tool for reconciliation.

The WMB is supposed to be the body to make decisions, and the BWC will be responsible for the implementation of these decisions at the national level. However, more trivial issues (such as priority for domestic water) will be less contentious between Palestinians and Israelis.

Moreover, it is agreed that the two parties will not be able to transfer water management to two-way bodies that have never existed. While there is a chance that these bodies will operate very efficiently, their actual efficiency will depend on the adoption of a joint approach by both sides, where either side may cause the joint body to fail. From a practical perspective, this can be addressed through the introduction of FoEME stages to allow both governments to prepare joint water councils by nominating members from national and local interests. The same argument applies to all joint bodies and internal bodies in which the members are elected through a political process. Together, we think that such a focused approach is not reasonable when there are so many conflicting interests. For example, one can reach water targets for Palestinians in the establishment of utilities for flood control at the same time providing Israelis with improved water.

Furman (2010) showed that a wide range of water problems can be addressed through the FoEME model. In addition, Kappus, Rodriguez, and Kappus (2011), who adduce a number of examples in their book, show that, despite the complex and multifaceted nature of water problems, it is possible to find ways to work together effectively in this field. For example, in the case of water management, the Ministry of Water and Irrigation in Israel and the Ministry of Water and Irrigation in Jordan, led by Prime Minister bin Sharif, successfully found ways to work together effectively in this field. Therefore, we present evidence that the FoEME model can address many water issues through a wide range of practical solutions.

The FoEME model is a focused approach to national planning. More specifically, it is better to have a clear and well-defined level of uncertainty in a small part of the water than in a large part of the water, since the level of uncertainty allows planning and adaptation, unlike the investment of many resources in the construction of infrastructure, which is impossible in the case of uncertainty.

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Chapter 1.

A mechanism for joint water management in the shared aquifer between Israel and the West Bank. For details see Annex G.

Another possible body is a Council of Coastal Rivers which would manage the rivers at the border. As mentioned in Chapter 1, the rivers flow from the West Bank and flow towards the Mediterranean Sea or, in one case, from the east towards the Jordan Valley. Nearly all the water is shared, but the principles of management should not be so different. Therefore, it is the idea of one body managing them all. We could consider other management bodies in the future, and any such body would be formed according to its strengths. The key point is that in dealing with shared water, these organizations can act independently, but they will ultimately need to report to the joint body for water issues.

The Process

It is not easy to move from an abstract debate over water laws to its practical implementation in specific areas with specific organizations that can bridge conflicting claims over shared water resources. FoEME was not without criticism, as will be discussed below.

Criticism of the FoEME Proposal

A number of theFoEME principles are not well developed. Without doubt, the most common criticism is that the proposal, while acknowledging the need for further work to turn the concepts and institutions described above into real processes and agencies, most components of the FoEME proposal have been tried in other places. Only the Council of Water Bodies presents a more innovative approach. More than any other body, here is the need for a second look at the idea and the plan. Furthermore, but especially for the FoEME components of the proposal at an early stage, it will be necessary to estimate the implementation of the proposal, with identification of the appropriate sources of funding and sharing responsibilities.

Another criticism is that the proposal is too optimistic. It relies on a level of trust between two peoples that have different views on water management and a long history of conflict. Against this criticism, it is worth noting that Israeli restrictions on water use have been described as ‘unprecedented’ (Kirshen 2009, 201). The status quo with respect to water is good for Israel. The situation was not improved, however, after the establishment of the truce between Israel and Lebanon, even after the establishment of peace between Israel and the Palestinians. As mentioned above, the water flow to Israel from the West Bank does not justify the economic loss of water, which is generally accepted. In contrast, a significant increase in the water flow comes from treated and wastewater, which does not require these definitions at all. Furthermore, for Israel, the economic impact of losing water, which is generally accepted, is not an issue.

The economic factors also work in favor of Israel. Despite the relatively high costs of water in urban and rural areas, and the replacement of water resources with treated water, the recycling of fresh water for irrigation - these factors will probably lead to lower water use in Israeli and Palestinian plantations in the future. For Israel, the economy is strong enough to bear the losses and provide temporary support to those who are affected.

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Garrido and Livingston 2003; Postel and Richter 2003; Millennium Ecosystem Assessment 2005; Katz 2012 (FoEME 2010; Postel and Richter 2003; Millennium Ecosystem Assessment 2005; Katz 2012). The FoEME Proposal is designed to provide a framework for shared water management between Israelis and Palestinians. The proposal aims to ensure equitable access to water resources, promote water conservation and efficient use, and establish mechanisms for conflict resolution and cooperation.

The FoEME Proposal seeks to address the challenges faced by both parties in managing their shared water resources. It proposes a multi-level approach involving water management authorities, local communities, and international organizations. The proposal highlights the importance of scientific advisory boards in supporting policy-making and decision-making processes.

The FoEME Proposal also emphasizes the need for collaborative efforts in building trust and understanding, as well as the importance of integrating scientific knowledge into decision-making processes. It proposes the establishment of an advisory board comprising experts in various fields, including hydrology, economics, and social sciences, to provide expert advice and facilitate dialogue.

The FoEME Proposal further stresses the importance of public participation in water management decisions. It suggests the establishment of a local water council to involve local communities in the decision-making process, ensuring that their needs and concerns are taken into account.

The FoEME Proposal acknowledges the complexity of water management in the region and highlights the need for continuous improvement and adaptation to changing circumstances. It emphasizes the importance of regular monitoring and evaluation to assess the effectiveness of the proposed measures.

The FoEME Proposal is a comprehensive framework that aims to provide a sustainable and equitable approach to managing shared water resources between Israelis and Palestinians. It seeks to promote cooperation, build trust, and ensure the long-term stability of the region's water systems.
A Modern Agreement To Share Water Between Israeliies and Palestinians: The FoEME Proposal - Revised Version

The FoEME Proposal

1. Introduction

The FoEME Proposal is a comprehensive framework aimed at developing a modern agreement to share water between Israeliies and Palestinians. The proposal seeks to create a shared water management system based on mutual respect and cooperation.

2. The Proposal

The FoEME Proposal outlines a series of steps to achieve a mutually beneficial water management system.

3. Sections

The proposal is divided into several sections, each focusing on a specific aspect of water management.

4. Conclusion

In conclusion, the FoEME Proposal offers a path towards a more equitable and sustainable water management system for Israeliies and Palestinians.

5. References


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The Water Management Body (WMB)

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The structure for a new agreement in water sharing between Israelis and Palestinians (WMB) is presented in the FoEME Proposal - Revised Version. The agreement aims to ensure the sharing of water resources in a fair and equitable manner, taking into account the interests of all parties involved.

The FoEME Water Management Body (WMB) will be established to manage shared water resources. The body will be responsible for facilitating and mediating discussions on issues that have not been resolved, and will work with other bodies managing shared water resources.

The WMB will have no legal authority, but it will try to find acceptable positions for communities or institutions that are affected. It will investigate complaints and disputes, and attempt to find solutions. In cases where mediation fails or it is impossible to prove or disprove the claimed effects, the WMB will conduct an independent investigation. The WMB will also have the authority to call on experts, taking into account the need for cultural and technological awareness, to present appropriate proposals. The investigations will include economic analyses and other social sciences to consider the losses suffered by each community or group.

The WMB will require access to the public files of all its hearings, as well as all the recommendations it makes. The results of the investigations and other reports provided by the advisory board will be available to the WMB.

The WMB will elect a new chair every few years, with terms and opportunities for renewal. The chairpersons of the committees can be elected or nominated by the relevant authorities.

The WMB's internal structure will be similar to that described above in relation to WMB.

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![Image of a page from a document]
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The emphasis on equality and obligations relevant to the management of shared water. As mentioned in Part 6, equality does not mean that each side will receive an equal volume of water. Equality does not mean that each side will have the same status and the same opportunity to participate in decision-making processes.

In the heart of the proposed structure lie two central bodies, the Joint Water Committee (JWC) and the Joint Water Management Board (JWMB). The JWC reports to both governments; it is empowered in accordance with the BWC. The JWMB, on the other hand, enjoys a very limited decision-making role, as described below. There is no direct relationship between these bodies, unlike the JWMB which is elected from the appointed or the political leaders. Instead, it is required to address the issues that affect the groups and organizations that are affected, and to follow the guidelines of the JWC and the JWMB. The two bodies share the guidelines mentioned in Part 6, which are subject to the Ministry of Scientific Advisors (hereinafter).

The JWC, which is currently operational, is expected to replace the Joint Water Committee of the Palestinians. The JWC would be responsible for all shared water, not only for water expected to be included in the future Palestinian state. In its current state, the JWC is very different from the previous JWC, as the Palestinian side has no influence in the Israeli management of shared water. In contrast, the JWMB must approve the decisions regarding shared water located in the West Bank.

The right to use water will be equal and reciprocal between the two sides, regardless of the source of the water. The joint committee will report directly to the Israeli and Palestinian governments and will have critical but limited powers: critical because it will determine the amount, the date and the place of the permitted or released potable water; limited because it can act only on the advice of advisory bodies and because it cannot allow access in case of disagreement with its decisions.

The main activities of the committee are:

- defining the limits of use, standards for treatment goals, and releasing water from aquifers, which are subject to the guidelines of the advisory bodies (see below);
- granting approvals for new pumping projects on the basis of the guidelines provided by the advisory bodies;
- developing water supply plans for aquifers that, for reasons, are not replenished, such as those that cannot be used or reduced by alternative means; and
- establishing procedures to address issues affecting groups and organizations, and to follow the guidelines of the JWC and the JWMB.
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FoEME.  ES-1 - מבנה הארגונים בחשיבות מסוימת

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 Förk 6

מבנה הסכם ישראלי-פלסטיני לניהול משותף של מים מותקים

לפני הצגת פרטי המבנה הארגוני המוצע בפרק זה, עלינו לזכור כי מודרני במובנים רבים, שאלות קיומיות שקשורות לשליטה על המים, הן בתחום המים והסביבה, והן בתחום פוליטי, הן מקשなるות בבריאור – ופשיטות על ידיחברי בבראשה, פרק 8, שוג וענישם ענישים.

מבנה הארגוני המוצע שואף לשלוט על המִים והסביבה המותקננים והרייח במים עם רמות ברורות. המבנה מועדף לולא את הסכמים על המים על פי מסר צירפ.

- בינה המשפח הישראלי והפלסטיני
- בינה מוסר הארגונים הישראלי-פלסטיים
- בינה מוסר הארגונים הישראלית
- מוסר השכבות של הographedות על המים עבור צייר

למורג שמתנה זו מтки את הסכמיים, היא מתחדשת ומעניקה עדיפות

 Burbuz, בהנתן ליאור ברקר 5 לאורך זה.

מבנה ארגוני מועדו

mort 1-6 מתייחסים את המבנה הארגוני המועדף על ישראל-פלסטיים כמשקל של מיים משותפים.

רמות הפוליטיים במובהקאות או יותר מובאות בפרק 2-6.

המבנה המאוחר הוא המים של עקרונות כליל של ישראלים-פלסטיים, או מעבר על כל, הוא ש

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תקציר מנהלי

למרות שההצעה מתייחסת באופן ספציפי למים המשותפים לישראלים ופלסטינים, הרי שהמטרות הכלליות, הדגש הספציפי על בקרת וגישור שותף וסוג המבנה הארגוני מתאימים לכל מקום בעולם שבמיים חוצי גבולות מחלקים שני עמים במקום לאחד מהם. התהליך, אם כן, מצויה הרבה יותר בפתחם של מדעי החברה וישוב סכסוכים מאשר בתחום מדעי הטבע וההידרולוגיה, אף שתחומים אלו בהחלט מספקים את התוכן שבמסגרתו נדרשת כל תוכנית מוסדית לפעול.

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1. Overview

The agreement to share water between Israelis and Palestinians was discussed. It is based on two main bodies, each with representatives from the Israeli and Palestinian sides. These bodies, known as the WMB and the BWC, are composed of an equal number of representatives from both sides, plus one additional representative, agreed upon by the sides, who is not from the area. If there is a need for a vote, the rules are intended to prevent one side from dominating the other.

2. Decision Making

Decisions are made by the Joint Water Council (JWC), which is a binational forum. Decisions are based on expert advice provided by an authorized body, with representatives from both governments. If the Joint Water Council cannot make a decision or if the expert body or any group or community wants to oppose a decision, the Joint Water Council has the authority to make a decision and can take actions to promote a solution. The Joint Water Council is also responsible for the management of shared water, including water quality and distribution, as well as other related issues.

3. Local Bodies

Local bodies, such as the Water Management Body, are responsible for managing water in selected areas, such as rivers that flow through Israel and the Mediterranean Sea. The Joint Water Council is responsible for all shared water, whereas the Water Management Body is responsible for shared water that flows through Israel and the Mediterranean Sea.

4. Success

Success will be less evident in terms of the number of conflicts that are resolved, but more evident in the number of ongoing negotiations that are not brought to the formal table for discussions. To assess the likelihood of success, additional material is presented. One section focuses on the failure of the existing agreements to provide water to Palestinian communities in the West Bank, in particular with regard to water flowing from the West Bank and preventing overuse of shared aquifers.

5. Recommendations

FoEME recommends the following steps to promote the FoEME proposal:

- Conduct studies for two to three years to complete a comprehensive study and a draft proposal.
- Prepare a comprehensive study for the Joint Water Council and the Government of Israel and the Palestinian Authority.
- Conduct public consultations for FoEME and the draft proposal before presenting them to the governments.

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The FoEME proposal suggests an innovative approach to handling the water conflict. Instead of focusing solely on two national entities—Israel and the Palestinian Authority—the proposal addresses the conflict between Israelis and Palestinians as a multi-faceted issue involving numerous institutions and interest groups, each implementing different policies in varying contexts. Rather than defining water rights as absolute and fixed for both sides, the FoEME proposal aims to bring together the diverse institutions and interest groups involved in water management to create a cooperative framework that allows for equitable and sustainable water management.

In essence, the biggest challenge faced by both communities is not how to divide water resources, but how to utilize shared resources in an equitable and sustainable manner.

Shared water management is not an easy task, but it is particularly difficult for Israelis and Palestinians due to the prolonged conflict between the two peoples, their differing economic development trajectories over the years, and their divergent approaches to water management, which are almost diametrically opposed—Israel favors a concentrated approach (upward focus) and the Palestinians favor a dispersed approach (downward focus). Long-term strategies like those proposed in this report will undoubtedly bring about a significant improvement in water access for those communities whose current access is well below national and international standards for household and sanitary purposes.

While shared water management is possible only within defined borders, our proposal does not require a specific definition of these borders. For example, the "Neighborhood Path" project of Palestinian and Israeli neighbors makes it possible for them to work together on their shared water problems, despite the well-delineated borders. In addition to the clear benefits of cleaner and more abundant water, this project demonstrates that cooperation is not only feasible, but also leads to the establishment of an additional layer of trust.

Proving that shared water management can create positive dynamics, fostering additional cooperation in the peace process.

In any case, all agreements on shared water management must provide clear definitions for the shared water resources. Considering the complexity of water resources from source to destination, the various possible interactions between surface waters and underground waters, defining water as "shared" is at least partially a political choice. The western and northern aquifers are shared, whereas the eastern aquifer is Palestinian. Most rivers along the coast are shared, but the coastal aquifer is not. There is a need for specific rules regarding the Jordan River, given its allocation in the peace agreement between Israel and Jordan, with nothing left for the Palestinians on the west bank.

The new approach to shared water resources for two nation-states is based on a continuing process of adaptation to the changing water needs. This process will be based only on the similar needs for equality and sustainability, and will be subject to ongoing evaluation by stakeholders, who both monitor and control the resources and suggest improvements.

The proposal includes a framework for the institutions that will implement the FoEME project in Israel and Palestine. This framework shows the activities and information flow between these institutions. ES-1 and ES-2 are two of the suggested proposals, each contributing to the FoEME agreement.
תקציר מנהלים

הסכמי מים חוצי גבולות נתפסים בדרך כלל כהסכמי הקצאה. במילים אחרות, משאבי המים נתפסים כעוגה המיועדת לחלוקה בין המדינות ששוכנות על גדותיהם. התפיסה הזו מתאימה לקרקע, שהיא משאב קבוע, אבל לא למים, שהם משאב שאינו רק זורם לאורך, מעל ומתחת לגבולות פוליטיים, אלא שמיים בלתי ס לדברים,网红们通过出售这些商品赚取了令人难以置信的利润。网红经济的崛起，不仅催生了新的商业模式，也推动了数字经济的快速发展。
הסכם מים ישראלי - פלסטיני
צרעת יידי, גזור הארץ - מורזר התיכון
נרסה מחודשת

מאת דייד ב. ברוקס ו'גולי טרטייר
עם גורם ברומברג, נזרר אל החית, והנכת מחייאר

מרץ 2012
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A new version of an agreement for joint water management between Palestinians and Israelis

Proposed by James Power

Revised version

Written by David Brooks and Julia Trotter

With Gideon Bromberg, Na’der Al Heib and Monika Michal

With the participation of Nader Alheib, Moneer Mehairi

March 2012

With the support of the European Union and the Czech Republic

EcoPeace / Friends of the Earth Middle East

EcoPeace / Friends of the Earth Middle East
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CHAPTER 8: MOVING FRESH WATER FROM LAST TO FIRST IN THE PEACE PROCESS

EcoPeace / Friends of the Earth Middle East

 NAFTA Agreement for Sharing Water between Israelis and Palestinians - The FoEME Proposal - Revised Version

Draft translated

Agreement for the Joint Management of Water Resources between Palestinians and Israelis

Proposed by David Brooks and Julita Trotter

Introduction by Gideon Bromberg, Nader El Hitib and Monique Mahiari

With the support of the European Union and the Czech Republic

March 2012

Written and translated by Miroslav Vrbovec, ed. at lbiba multilingual, with the participation of David Brooks and Julita Trotter