

Water, Conflict, and Cooperation: Ramallah, West Bank

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Abstract

Conclusions of this case study on Ramallah imply that an effective water management strategy will have a dual intent: incorporate “trickle-up” municipal level water management strategies and integrate conflict reduction measures. This study finds that Ramallah’s cooperation with the Palestinian Authority and environmental NGOs has a strong influence on water management and water conflict alleviation. Palestinian municipal and regional water management processes, can potentially contribute to effective water management and water conflict reduction between Israelis and Palestinians. The study focuses on Ramallah, a centrally located, mid-sized town in the West Bank. This research uses interviews of Palestinian water managers and researchers, gathered in the West Bank throughout the summer of 1999, as well as secondary sources.

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Abbreviations

IPCRI Israel-Palestine Center for Research and Information

JWU Jerusalem Water Undertaking

PHG Palestinian Hydrology Group

PNGO Palestinian Non-Governmental Organization

lcd liters per capita per day

mm millimeters

mcm million cubic meters

NIS New Israeli Shekel

NGO Non-Governmental Organization

PA Palestinian Authority

PWA Palestinian Water Authority

WBGZ West Bank/Gaza

*Palestine is synonymous with West Bank and Gaza

ONE

Introduction

Objective

Peace in the Middle East can be achieved by an option not yet explored: water pipes. Commonly known as *argeeleh* in the West Bank, this usually ornate glass vessel, brass piping, and snake-like mouth piece is enjoyed by millions in the Arab world and other countries for smoking fruit flavored tobacco. Whether the flavor is apple or strawberry, all can agree that the social atmosphere of a circle of *argeeleh* smokers can provide a forum for idle chat or serious conversation. The friendships that form and are solidified around these circles of smoke are as deep as they are long lasting. What better way is there to host a delegation of hard line Palestinians and Israelis on Middle East peace talks?

Perhaps there is another way. An indirect way of positively affecting the peace process is through focusing on a most important component of the water pipe, the water. Without the water, the filtration process and signature gurgling sound would not be possible. This research *explores the relationship between Palestinian municipal and regional water management processes, identifying how these processes can contribute to effective water management and reduction of water conflict intensity*. Water management and conflict reduction alone will not solve the Palestinian-Israeli conflict, but are two of this conflict's many components. If water management issues and the Palestinian-Israeli water conflict are resolved, it will not necessarily lead to ever lasting peace in the Middle

East, but improved water supplies and contribution to the Palestinian-Israeli peace process is possible.

In this research, water management means any strategy or process that will allow for the distribution of sufficient quantities of water. In a few words, conflict means disharmony of interests, dispute over incompatible interests, or a difference in preferred outcomes. A more precise definition used by this research is described by Homer-Dixon as “ethnic clashes arising from population migration and deepened social cleavages due to environmental scarcity” (Homer-Dixon 1999:5) such as land and water in the case of Palestinians and Israelis. On a different level, conflict reduction means any measures taken toward lessening the intensity of a conflict through Libiszewski’s model for international water conflicts (see Chapter Two). According to Libiszewski’s model, processes within institutional infrastructures have the potential to weaken a conflict’s intensity. Other factors also have the potential to reduce conflict intensity, but processes within institutional infrastructures of the Palestinian Water Authority (PWA) and Jerusalem Water Undertaking (JWU)¹ are the focus of this research. The case study suggests that Ramallah’s enhanced cooperation with the Palestinian Authority (PA) and local environmental Non-governmental organizations (NGOs) have the potential to contribute to effective water management on the regional and municipal levels, as well as contribute to reducing tensions associated with the Palestinian-Israeli water conflict.

The research concludes that an effective water management strategy will have a dual intent: to incorporate special emphasis on trickle-up municipal level water management strategies and to integrate conflict reduction measures by reconceptualizing planning as a simultaneous tool for effective water management and contribution to

conflict reduction. Effective water management strategies in the West Bank will include an emphasis on municipal level information, collaboration at all agency levels, and close cooperation with environmental NGOs. One can also utilize this two-pronged approach in other areas of the world facing issues of water or environmental conflicts.

Significance

Two significant reasons for exploring Palestinian municipal-regional water management processes, and its potential contribution to effective water management and Palestinian-Israeli water conflict reduction are: *1) Palestinian-Israeli-Near East region benefits and 2) Global applications.*

The first area of significance for this research is the benefit to Palestinians, Israelis, and the Near East region. This research may illuminate ways for effective water management and reduced political and natural resource tensions in the Near East. The current time period, 2000, for the water issue, and location, is one of the more critical points in the history of the Israeli-Palestinian conflict and the entire “peace process.” May 1999 marked the deadline for the Interim Self-Government Arrangements for Palestinian self-rule. The interim agreement is a five-year, step-by-step process in which the Palestinian Authority will slowly acquire control of Gaza and West Bank towns, while deterring “political violence” in exchange for limited Israeli withdrawal from Gaza and the West Bank (Jofee 1996:82-83). However, the May 4, 1999 Oslo Agreement deadline for declaration of an independent Palestinian state was not met, primarily due to international pressure to avoid giving the Israeli right-wing a propaganda victory ahead of

¹ See Appendix III for profiles of PWA and JWU.

the scheduled May 17, 1999 Israeli general elections (Middle East Economic Digest 1999; Economist 1999; Abukhater 1999).

As of October 30, 1999, some progress had been made in the Palestinian-Israeli peace process. These accomplishments include a passage-way between Gaza and the West Bank that provides access to both areas with minor interference by Israeli authorities; release of Palestinian prisoners by Israel; and additional West Bank land transfers to the Palestinian Authority, from Israel. U.S. President Bill Clinton was scheduled to meet with Israeli Prime Minister Ehud Barak and Palestinian leader, Yasser Arafat in Oslo, Norway, November 1 and 2, 1999 to further the objectives of the peace process. Arafat and Barak set a deadline for February 2000 to reach a framework for solving the final status issues that include: who is to control Jerusalem; the fate of Jewish settlements in Gaza and West Bank; borders; and the question of an independent Palestinian state (CNN 1999); security, refugees, and water (Elmusa 1997). This period is also significant at the local level because the Jerusalem Water Undertaking (JWU) is in the middle of finalizing its water master plans. Ramallah was part of the land turn over, of approximately 13% of the West Bank by the Israelis. The peace process is moving more forward now with Ehud Barak as Israel's Prime Minister than it had with Benjamin Netanyahu, a process that officially began in 1993 in Oslo, Norway. The five-year interim period set aside for this process was scheduled to end in 1999. However, the peace process is far from over. September 13, 2000 is the new deadline for a full peace treaty between Israelis and Palestinians (Middle East Economic Digest 2000).

Water

Two problematic water issues exist in the Israeli and West Bank regions: a water crisis and a water conflict (Wolf 1995:170). Homer-Dixon's concepts of environmental scarcity and conflict are transparent in the potential conflicts over access to water resources in the Israel and West Bank regions. These conflicts center on water shortages and underlying Palestinian/Israeli tensions over political autonomy. Chapter Four further elaborates on water scarcity in absolute and relative terms. Both the crisis and the conflict focus on groundwater, which is the largest source of water for Israel -- 60% of Israel's total water needs, originating in the West Bank (Wolf and Ross, 1992 as in Ohlsson). The water conflict hinges on the argument that availability of the water to West Bank Palestinians, particularly pricing and distribution, is controlled by policies of the Israeli occupation in the West Bank and has not been equivalent to the more favorable water policies applied to Israelis and Israeli settlers (United Nations 1992: 32-33). In addition, the water crisis and conflict are not unique to the West Bank and Israel. Similar transboundary situations vis-à-vis water can be found between Pakistan and India, the United States and Mexico, and Sudan and Egypt, to name a few. For this research, transboundary issues will also include issues that cross cultural boundaries.

What is unique about the study area is that Palestinians contest the legality of Israel's occupation of their homelands, which has raised issues of the right to self-determination under international law and the nature of Palestinian autonomy in the region (Van Dervort 1998). When an area is under occupation by an antagonistic or hostile political and military entity, basic governmental infrastructures are generally inadequate and confusing. Though 'Palestinian control' is in effect in Ramallah, how

much, how effective, and how it functions amidst a sea of areas that are not under full control by the Palestinian Authority, makes Ramallah a most interesting city to observe. Israeli and Palestinian sovereignty issues can both complicate and illustrate the situation of the water conflict.

Ramallah's central location in the West Bank (Map 1, page 112, Appendix IV) and its hosting of several Palestinian Authority ministerial offices make Ramallah an increasingly important city because these two factors contribute to the growth of Ramallah in terms of population size and administrative importance. First, when an area's population increases so does the demand for water. Whether or not new housing facilities are built, more people who migrate into the area will add to the existing natural population growth rate, and increase demand on the scarce water resources. Preparations for Ramallah's anticipated population growth rate and rising water demand must immediately be met by Ramallah's water administrator, Jerusalem Water Undertaking (JWU). Second, Ramallah's central location in the West Bank makes it a highly traveled-through area by people who are traveling from any location in the West Bank. Whether people are going to Nablus in the north, Hebron in the south, Jericho in the east, or Bethlehem located ten kilometers south of Jerusalem, Ramallah is where the main road and expressway intersect.

Palestinian Authority ministries are now located or are moving to the Ramallah-El Bireh areas. El Bireh is a town so closely associated with Ramallah that they are commonly referred to as twin cities. One reason for the Palestinian ministries to move to the Ramallah area is that Ramallah is now in "Area A" or completely under Palestinian jurisdiction. An example of "Area B" is Bethlehem, which is jointly administered by

Israel and the Palestinian Authority. An example of “Area C” is Tel Aviv, which is under full Israeli control (Map 2, page 113, Appendix IV).

Among the advantages of being located in a fully Palestinian controlled area is the greater freedom in the building of a ministry’s structure and freedom to travel within the city, and to other cities outside Israel proper. With the establishment of many of the Palestinian Authority institutions in the Ramallah area, the political influence of the city becomes stronger. As more of the decision-makers, policy-makers, and support staff live and work in Ramallah, the priorities for better services such as roads, schools, banks, shops, water and sewage will be given to Ramallah. Ramallah’s central location in the West Bank and its emergence as a Palestinian Authority administrative center are why its location make Ramallah significant to this research.

Global applications have much to gain from lessons in this case study in the areas of 1) environmental resource scarcity-security-conflicts-cooperation (SSCC); 2) municipal-regional relationship issues; and 3) regional planning in areas of political, racial, and religious conflicts.

Environmental resource SSCC draws from theories arguing that resource scarcity leads to some form of security issue, escalating to a type of civil, not necessarily international, conflict (Homer-Dixon 1999). Examples of an SSCC situation could involve fisheries, wildlife, land, oil, minerals, or water.

Municipal-regional relationship issues are a way to address local-national needs. In this case study, the local level is the municipality of Ramallah, and the regional or national level is the West Bank. The working relationship of these two levels is important for effective policy design and implementation strategies. The recently formed

Palestinian Authority must address the difficulties involved with coordinating national and local water management processes. This may prove difficult as the Palestinian Authority aspires to be a sovereign government but only has limited autonomy right now under the auspices of the Israeli government.

Fragile governmental infrastructures render regional planning, such as urban, water, environmental, transportation, etc., even more difficult, since a framework within which to work is missing or confusing. For example, urban planners in Cape Town, South Africa deal with residential desegregation (Saff 1998) – a process that may continue to benefit from lessons learned from the Palestinian water planning process. In Cape Town, race relations were affected by planning processes that aided or hindered the political transition of the time period after Apartheid. The situation between Palestinians and Israelis is not so much about race, as it is about religion, culture, land, and resources, but the same formula of evolving infrastructure exists. Places like Cape Town may find the Palestinian experience useful for their continued evolution toward multi-racial tolerance. Likewise the Palestinians can benefit from the South African experience.

Guided by information gathered through interviews of Palestinian water management related professionals in the West Bank over the summer of 1999, the division of chapters is derived from those interviews. Integrated throughout the body are the main points from the summaries and conclusions from the interviews. Please see Appendix I for further details of the interviews conducted.

Organization of Thesis

Chapter One INTRODUCTION explains the objective, significance, and organization of the research. *Chapter Two* ANALYTICAL FRAMEWORK presents an international water conflict model that aids in the conceptualization of water management processes, conflict, and cooperation. *Chapter Three* HYDROPOLITICAL HISTORY introduces a brief overview of international conflicts related to water in the Near East, such as the 1967 War. *Chapter Four* WATER SCARCITY, CONFLICT, & MANAGEMENT discusses these three characteristics of the West Bank and Ramallah, and the actors' relationships and decision-making policies. *Chapter Five* ENVIRONMENTAL NGOs explores potential roles of NGOs in the water management process. *Chapter Six* CONCLUSIONS & OPTIONS summarizes, analyzes, and speculates what is learned from this research and introduces future research directions.

As a reminder, this research attempts to answer two interrelated questions:

1. How does the relationship between municipal and regional water management processes contribute to
 - a) Effective water management
 - b) Water conflict reduction, and
2. What, if any, policy options can be proposed?

These questions are addressed by three types of major actors and their planning processes: at the regional/national level: Palestinian Water Authority; at the municipal level: Jerusalem Water Undertaking; and two environmental NGOs: Israel-Palestine Center for Research and Information (IPCRI) and Palestinian Hydrology Group (PHG).

Primary and secondary sources were used to approach these questions. Inspired by secondary sources for working definitions on conflict, cooperation, sovereignty, and a framework for transboundary water conflicts, Chapter Two, 'Analytical Framework,' provides a conceptual vehicle for analyzing this research. Before diving into the whirlpool of water conflict and management, it is necessary to overview the hydropolitical history of the Near East, in Chapter Three 'Hydropolitical History.' Also informed by secondary sources, Chapter Three describes the 1967 War as a culmination of tensions regarding water diversions and irrigation projects that involved Israel, Egypt, Jordan, Syria, Lebanon, and what is now the Palestinian Territories of the West Bank and Gaza. Primary sources debut in Chapter Four, especially in the section on management. Here, perspectives of various water related professionals describe the current state of water management in the West Bank. The need for Chapter Five, 'Environmental NGOs,' did not become apparent until a few months after the completion of field research. The influence of NGOs in the case of the Palestinian-Israeli water conflict and water management is significant and mainly drawn from secondary sources. The final chapter, Six, 'Conclusions and Options,' is a culmination of the five previous chapters. Interwoven primary and secondary research, and analysis, summarize the research, attempt to answer the questions posed in Chapter One, and introduce several policy options for effective water management and conflict reduction. This research is guided by the responses of primarily Palestinian water management professionals in the West Bank. Please consult Appendix II for a list of interview questions, summary of interviews, and the list of interviewees.

T W O

Analytical Framework

Introduction

Power, coercion, and sovereignty can lead to situations of conflict and cooperation. In this chapter, a modified version of Stephan Libiszewski's model (1999) describes how transboundary water conflicts can be alleviated or exacerbated by various factors. According to Libiszewski's model, institutional infrastructure processes can have a weakening effect on the intensity of a water conflict. This is traditionally made possible through collaboration between conflicting parties within this institutional infrastructure; for example, the Israeli national water carrier, Mekorot, and the Palestinian regional level water administrator, Palestinian Water Authority (PWA).² Established in 1996, the PWA is a branch of the Palestinian Authority, aimed to ensure efficient management of available water resources (Background Information 1998). Collaboration among different Palestinian institutions is also essential. For example, between PWA and Jerusalem Water Undertaking (JWU), cooperation is essential for effective policy implementation.

The water conflict between Israel and the West Bank can be seen as an intrastate dispute or even as a transboundary dispute between two political entities, depending on how one views the political status of Israel and the West Bank. This study refers to the Israel-West Bank water conflict as a transboundary conflict. Regardless of one's political disposition, all can agree that the water conflict involves areas across a boundary, the

Green Line. The Green Line is the armistice line held between Israel and its neighbors between 1948 and 1967 (Wolf 1995). In what follows, this study draws on the concepts of sovereignty, cooperation, and conflict acknowledging the debate on technical cooperation and environmental scarcity. Building upon ideas of power and coercion, this research shapes a model of transboundary water conflicts, focusing on the influence of institutional infrastructure.

Literature Review

Principles of Sovereignty, Cooperation, and Conflict

The definition of **sovereignty** has spawned its own debate and an exhaustive study of this controversy is beyond the scope of this project. Examined here are a few relevant notions of sovereignty. With the development of the Montevideo Inter-American Convention on the Rights and Duties of States (1933), international legal jurists have conceptualized sovereignty as consisting of four major components: 1) Permanent population; 2) Defined territory; 3) Operating and effective government; and 4) Capacity to enter into relations with other states (Van Dervort 1998:328). Thomson (1995:213), defines sovereignty as either ‘...the state’s ability to control actors and activities within and across its borders,’³ or ‘...the state’s ability to make authoritative decisions – in the final instance, to make war.’⁴ The first definition focuses on control and the latter definition on authority. Thomson goes further and describes the various dimensions of sovereignty: control, authority, recognition, coercion, and territoriality. To add to the evasive definition of sovereignty, Barkin and Cronin (1995) posit sovereignty as being evolutionary and not constant. Changing interpretations of legitimacy fuel this

² Actor profiles in Appendix III.

evolutionary status of sovereignty. Barkin and Cronin also make a distinction between state and national sovereignty; the former emphasizing the link between sovereign authority and a defined territory; and the latter stressing a link between sovereign authority and a defined population.

The details of how Palestinian sovereignty compares to Israeli sovereignty are not presented in this study. However, the study recognizes that the issue of sovereignty is important to the discussion of conflict and cooperation because leverage in power relations of conflict and cooperation crucially depends on the form of sovereignty. Power is defined as the ability to influence others and control outcomes in a way that would not have occurred naturally (Mingst 1999). For example, states have power in relation to each other and in relation to those within the state. This form of sovereignty is embodied in the institutional infrastructures to be later explained in the section on Libiszewski's model of water conflicts. Furthermore, cooperative efforts among Palestinian governmental institutions and non-governmental organizations (NGOs) enhance the networking abilities of these alliances to mobilize resources such as information and support, making a bigger splash on water politics.

Cooperation

To understand cooperation, it is necessary to define collaboration and coordination first. Gray (1989:15) defines collaboration as a process rather than a prescribed state of organization; a temporary and evolving forum for addressing a problem. Coordination is a more static concept, referring to formal institutionalized relationships among existing networks of organizations, while cooperation is informal tradeoffs and attempts to establish reciprocity in the absence of rules (Mulford and

³ Liberal interdependence theorists subscribe to this view of sovereignty.

Rogers (1982) as in Gray 1989). In the context of environmental issues, characteristics of cooperation, according to Rogers, are likely to include 1) Multiple decision-making fora; 2) Involvement of multiple actors; 3) Multiple issues; 4) Technical complexity; 5) Scientific uncertainty; 6) Power and resource disparities; and 7) Public/political arenas for problem solving. Rogers (1993) distinguishes the relationship between cooperation and conflict by clarifying that the presence of cooperation does not automatically diminish conflict, nor does the absence of cooperation imply the presence of conflict. According to these definitions of cooperation, collaboration, and coordination, all are relevant concepts when dealing with the complex issue of water conflict. For this study, ‘cooperation’ and these definitions are used.

Conflict

Varying Levels of Conflict

Recall the definition of conflict discussed in Chapter One, “ethnic clashes arising from population migration and deepened social cleavages due to environmental scarcity” (Homer-Dixon 1999). The four geographic and conceptual levels of conflict used in descending geographical order are the Middle East conflict, Arab-Israeli conflict, Palestinian-Israeli conflict, and the sub-conflict of Israeli-Palestinian water. In terms of geography and politics, the encompassing conflict is the Middle East conflict. The Middle East conflict can be characterized as a series of conflicts that add to the wider atmosphere of tension prevailing between Israel and neighboring Arab states. Two possible starting dates for the Middle East conflict are the early 1900s during the decline of the Ottoman Empire, and 1947 when Great Britain relinquished what is today Israel

⁴ Realism school of thought follows this latter definition.

proper and the Palestinian Territories of the West Bank and Gaza. Within this overall conflict are numerous issues that feed conflicts even among and within the Arab states, such as economic strength (Egypt and Saudi Arabia); minority issues (Kurds in Iraq); struggles among Sunni and Shi'ite Muslims, and Christians, as well as Jews; and oil issues between Kuwait and Iraq.

The Arab-Israeli conflict is but one of the dimensions of the larger, inclusive Middle East conflict, but often considered central to the various levels and dimensions of Middle East conflicts (Joffe 1996). The Arab-Israeli conflict is peppered with its own set of hostile events, specifically between Israel and the neighboring Arab countries. Two of the cornerstone conflicts were the Six Day War, also referred to as the 1967 War,⁵ and the 1973 Yom Kippur War, also known as the Ramadan or October War (Roskin and Berry 1997). In short, the 1973 conflict was a military offensive by Syria and Egypt against Israel to reclaim the Sinai, Golan Heights, and West Bank, which were seized by Israel in the 1967 War. Today the Golan Heights, an area between northern Israel and southern Syria, is the location of a territorial conflict that threatens the sovereignty and security of both Israel and Syria. Israeli military occupies an area in southern Syria, and Syria demands Israel's pull-back. Syria and Israel are in the process of peace negotiations about many issues, particularly the legacy of the conflicts in 1967 and 1973.

Further toward the center of this storm is the Palestinian-Israeli⁶ conflict, characterized by the tensions between Israelis and Palestinians, including the 1967 and 1973 wars. Today, peace negotiations focus on five main issues: Palestinian refugees, Israeli settlers, defining the borders, the final status of Jerusalem, and water. This

⁵ See Chapter Three for more information.

⁶ The order of the two words is used interchangeably.

conflict has been ongoing since at least 1947, the time of the partition of the area that is now the West Bank, Gaza, and Israel proper; as well as the official establishment of the Israeli state in 1948. Some of the milestones in this conflict include the Intifada, also known as the Palestinian Uprising, in 1987, and the more recent peace process that began in 1993.

Water is an added dimension to the conflict between Israel and the Palestinians. This component of tensions between Israelis and Palestinians concerns who controls the water supply, and how it is managed and distributed. Not only is there an Israeli-Palestinian conflict, but an even wider matrix of conflicting riparians of the Jordan River basin: Israel, West Bank, Jordan, Syria, and Lebanon. But for the purposes of this research, the focus is on the sub-conflict around water between Israelis and Palestinians, exemplified and affected by the water management processes at the municipal level of Ramallah.

Two Debates: Technical Cooperation & Resource Scarcity

The current literature surrounding water, conflict, and cooperation have their own debates. What unifies all ideologies and theories is that they either agree or disagree that technical cooperation processes can reduce, if not resolve, larger political conflicts. For instance, in the case of the Palestinian-Israeli conflict, technical cooperation on water management matters will not only yield better water, but will also strongly influence the resolution of the political conflict. Theoretically, if Palestinians and Israelis work together on a technical, scientific level, where hard facts form the language, then both sides are more likely to cooperate because they will be working without having to satisfy

many political egos or please constituents. The conflicting parties will instead be focusing on the task at hand: effective water management.

Technical Cooperation Processes Resolve ‘High Political’⁷ Conflicts. In the spirit of political scientist David Mitrany’s functionalism school of thought (Mitrany 1966) where form follows function, this argument states that technical cooperation such as joint water management planning can have substantial spillover effects on the larger, encompassing Israeli-Palestinian conflict as well as the Middle East conflict (Wolf 1995).

By contrast to the previous approach is the assertion that *only ‘High Politics’ can resolve surrounding political conflicts.* As the argument suggests, Lowi (1995) contends that an overall political settlement of a conflict should trickle down to positively influence a sub-conflict over water. Spillover effects from joint activities like water planning will not significantly decrease the level of conflict. Drawing from the classical political realist tradition, state actors, power relations, and military power are the focus and later translate to the abilities of institutional power.

Another ongoing debate is that natural resource scarcity such as water either directly causes conflict or is not so instrumental. *Environmental scarcity causes conflict.* Homer-Dixon argues environmental scarcity contributes to civil conflicts, not necessarily interstate conflicts. Such civil conflicts can eventually trigger interstate conflicts, for example, in the form of migrating refugees.

Environmental scarcity does not cause conflict. This argument suggests that the lack of a resource such as water or territory is not the sole cause for conflict, but forms a part of a series of factors that contribute to a situation of conflict. For example, in the

⁷ Term used by Miriam Lowi (1995) to describe top level political conflicts such as the Israeli-Palestinian conflict.

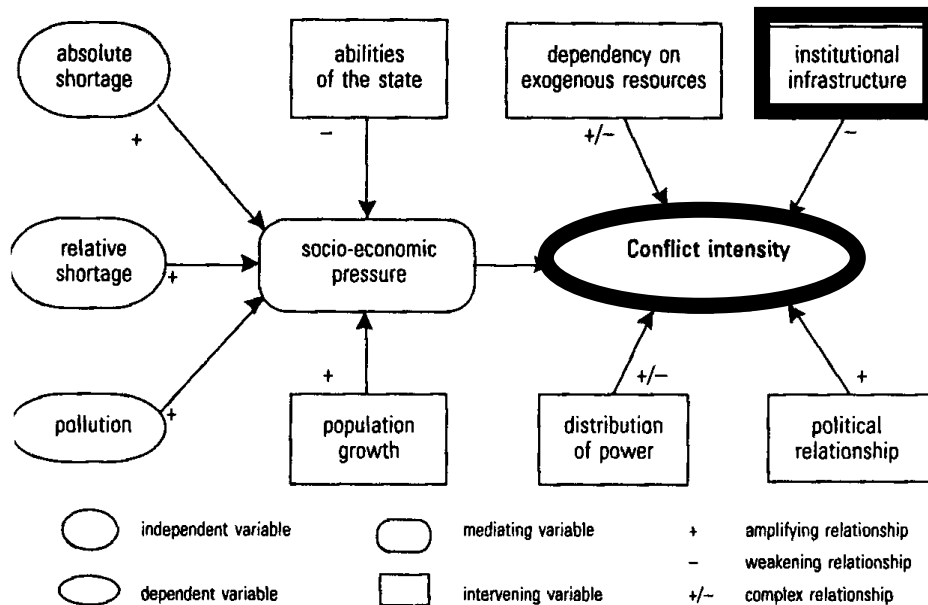
case of Israel and Palestine, religious differences among Jews, Muslims, and Christians add to the air of animosity.

Just like the conflict over water resources and territory, the effects of technical cooperation and environmental scarcity are prominent debates in the area of water, conflict, and cooperation. Their influence is recognized but not elaborated here. However, these debates, and the elements of power and sovereignty take shape in the following working model of transboundary water conflicts.

A Model for Trans-boundary Water Conflicts

The framework for this case study is Libiszewski’s model for trans-boundary water conflicts (Figure 2.1). This model organizes some of the factors influencing intensity of a conflict.

Figure 2.1 A Model for Transboundary Water Conflicts (Libiszewski 1999)



Libiszewski’s name for this model is “international water conflicts.” However, this study refers to the model as “transboundary water conflicts.” The model is

applicable to a recognized boundary situation – as in the case of the West Bank-- and is altered as necessary for the purposes of this study. Referring to cultural and sovereign state borders between Israel proper and the West Bank, the model is used as a transboundary water conflict model in this case study. Because of the model's applicability, it is used as this study's framework.

The model's main utility lies in its ability to explain, though not measure, conflict intensity. This is the dependent variable that is influenced by all the other factors. Though important, the model does not address how a conflict intensity level is measured, nor is not within the scope of this study. The primary concern is with how the level of conflict can be affected. A basic way to measure the level of the water conflict and overall political conflict is by the amount of understanding the Israelis and Palestinians have on the issues of water and sovereignty and their willingness to resolve the conflicts based on needs. Since an interim agreement has been initiated, the willingness to resolve the conflict is relatively high. Mutual understanding of the conflict has been attempted and is continuing to be achieved. Therefore, as a rough measure of conflict intensity, the water conflict and surrounding political conflict intensity can be rated as low to medium. Keep in mind the complicated overlapping relationship of the water and political conflict. The focus is on the variable called 'institutional infrastructure' because it has a weakening effect on conflict intensity and is the only other such variable besides 'abilities of the state' that has a weakening effect on conflict intensity. The latter is currently difficult to analyze because the Palestinian Authority's state-like abilities are still evolving, while the current water-related institutional infrastructures are already in place. Furthermore, 'abilities of the state' refer more to the official government of Israel, which includes far more than Israel's water management agencies like Mekorot.

Likewise, ‘abilities of the state’ refer to the Palestinian Authority as a whole, assuming they are an official state or an entity functioning as a sovereign state. Examining the dynamics of these more encompassing institutions, such as ‘abilities of the state’ as well as other elements of the model would undoubtedly add to the richness of this research. Unfortunately, only one variable, ‘institutional infrastructure,’ of the model is fully assessed in this study.

Transboundary water conflicts can be analyzed within a socio-economic and political context. Libiszewski (1999) stresses that an area’s water scarcity and supply crises are dependent on its level of development, the lifestyle, and the area’s ability to respond to shortages. In the following, he highlights six factors that affect conflict intensity in the context of this case study:

1) *Institutional infrastructures between the conflicting parties* are important because it is within these institutions that the conflict is discussed and hopefully resolved. This is a challenge for Israelis and Palestinians because the Palestinians are currently forming and reshaping their institutional infrastructure and must work on both dealing with issues, such as water conflict and management, and establishing and defining the roles of their new institutions. Precise examples of such institutions in this study are bilateral Palestinian-Israeli institutions, the Joint Water Committee (JWC), and the Multilateral Working Group; Palestinian institutions, Palestinian Water Authority (PWA) and the Jerusalem Water Undertaking (JWU); Mekorot; and environmental NGOs such as the Palestinian Hydrology Group (PHG) and Israel-Palestine Center for Research and Information (IPCRI).

2) *Dependency on exogenous resources* in this case means water, expertise, and financial resources originating outside the boundaries of Israel proper and the West Bank.

Palestinians, particularly in Ramallah, have their own water resources from the Eastern Aquifer in the West Bank, their own springs, and water harvesting. But as we will see later in Chapter Four, Ramallah must purchase nearly half of its water supply from an exogenous resource, Mekorot, the Israeli water company. Even though the origin of the water purchased from Mekorot is from the Western Aquifer in the West Bank, the dependency is on Israel's control of that water source. Furthermore, water resources that feed into Israel's water pipes are connected to other neighboring Arab countries. The Jordan River not only serves Israel proper and the West Bank, but also Jordan, Syria, and Lebanon. How these other riparians manage their portion of the Jordan River, directly affect all other riparians. Recently, Jordan expressed interest in purchasing water from Turkey, but together with Israel, Syria, and the Palestinian Authority. One of the main reasons for purchasing the water as a group is to keep the price tag low (Anatolia 2000). NGOs such as Save the Children's Fund, international organizations such as the World Bank, United Nations, United States Agency for International Development (USAID), and German Technical Cooperation (GTZ) are some examples of external sources for expertise and finances for water management research and development.

3) *Ability of the state* depends on economic, social and institutional factors, GDP, economic diversification and the efficiency of the state's or nonstate administration. International recognition of a state and its effective sovereignty also influence a state's ability, or in the case of Palestinians, a future state, and its abilities to act upon issues within and outside of its borders. All of this enables more industrialized nations to cope with water problems better than less industrialized countries, who are largely dependent on agriculture, and in turn highly dependent on water. Industrialized countries treat water

problems as a cost factor more than a barrier to development and therefore have the luxury of maneuvering societal compensation and compromise when needed.

4) *Population growth* places pressure on water resources. Rising water demand and water pollution, in addition to the existing demands for housing, education, and social services, all add to the difficulty of a less wealthy country's ability to act. For example, the highest population growth rate in the Middle East is in the West Bank, 4.1%, compared to 1.81% in Israel (CIA 2000) to 3.3%, in Saudi Arabia, 2.7% in Syria, and 1.9% in Egypt (PASSIA 1999: 227). The West Bank's high population growth rate exceeds the West Bank's ability to provide adequate and quality water compared to these other listed countries with more economic power.

5) *Distribution of power between riparian states* refers to the military and political dominance of these states. For instance, an upstream politically dominant state will exercise that dominance through economic sanctions or military might. Upstream and downstream either literally means one area receives the water runoff from the area that is the headwaters of that water source, or figuratively that one area is not the primary controller of the water resources. Dominance can also be demonstrated through technical decisions of water use, such as water diversion projects as was the case of Syria diverting some of Israel's water sources in the 1960's (See Chapter Three for more details). In contrast, if the politically dominant state is downstream, it has the option of military might to persuade the politically weaker upstream state to change water use patterns. In this case, Israel controls the Western Aquifer ("upstream") and the West Bank both receives water from Israel's water carrier and taps what it can from a water poor Eastern Aquifer ("downstream").

6) *Political relationships and longstanding conflict* can intensify the issue of water along with the broader, unresolved, historic conflict between Israelis and Palestinians. The overall political conflict between Israel and Palestinians is the main reason such a water conflict exists today. Abel (1997) speculates that such overall political conflicts can be resolved or at least addressed through indirect means, like the technicalities of the sub-conflict on water.

Libiszewski's "institutional infrastructure" variable has a weakening relationship on the conflict intensity. This means that processes within the institutional infrastructure have the ability to weaken conflict intensity. Libiszewski suggests conflicts are best resolved within an existing infrastructure (1999:129). For example, the overall water conflict can be alleviated through the processes within the institutions of Jerusalem Water Undertaking and the Palestinian Water Authority, as well as through diplomatic negotiations. Diplomatic negotiations between Israel and the Palestinian Authority are only as good as the processes and policies within these institutional infrastructures. If these processes, within the existing and emerging Palestinian institutional infrastructures on the municipal level can be understood and improved, perhaps the conflict intensity can be reduced. However, understanding the dynamics of institutional infrastructure and conflict is not sufficient and could work against the goal of conflict alleviation by stalling or reversing the peace process. Prolonging the water conflict through these institutions must be prevented through progressive measures to lessen the conflict.

Returning to the notion of sovereignty, Palestinian sovereignty is not yet fully realized, let alone completely recognized by Israel or by many in the international community. According to the definitions mentioned earlier in this chapter, the Palestinian Authority is moving toward a state of sovereignty. What this may mean for

water management and conflict reduction is that the more sovereign an entity, the more coercive power this entity may have. In other words, the more sovereign the entity, the more persuasive it will be in defending its position in a situation of conflict. Sovereignty may be good for conflict reduction, but is it good for effective water management? Sovereignty over natural resources such as land and water suggest that sovereignty does make for more effective water management. However, two case studies of two villages in the Bethlehem and Tulkarem district show that local control of water is strong, and connecting to the PWA decreases local power to the extent that some Palestinians prefer to remain connected to Mekorot (Trottier 1999). Such an instance lessens Palestine's state building efforts and its move toward sovereignty (Trottier 1999).

Libiszewski's Limitations

Libiszewski's model does not address various levels of institutional infrastructure, such as municipal and regional, and does not go into detail on how institutional infrastructures can weaken a conflict's intensity. In fact, depending on the decision-making by people within the institutional infrastructures, an intensifying of the conflict can also occur. For example, the former Israeli Prime Minister Benjamin Netanyahu and Palestinian leader Yasser Arafat worked within their respective institutions towards an Israeli-Palestinian peace. When peace talks were stalled, tensions heightened, thereby intensifying the conflict. The unfilled gap of how institutional infrastructures can weaken conflict intensity can begin to be filled by this case study's examination of local and regional level water managers. Ramallah is one example of how JWU and PWA can affect the Israeli-Palestinian water conflict, to be elaborated further in later chapters.

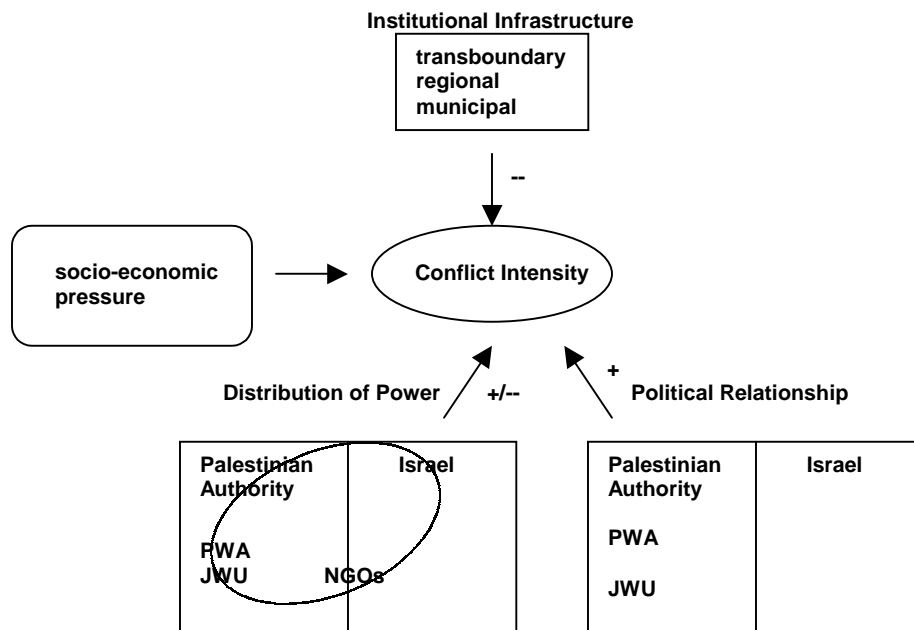
Focusing on Institutional Infrastructure

Institutional infrastructure here means the institutions or actors in the water management sector: Palestinian Water Authority, Jerusalem Water Undertaking, and two specific environmental NGOs, IPCRI and PHG. How can these institutions weaken the Israeli-Palestinian water conflict intensity? Israeli Institutions such as Mekorot, the national water carrier, on a broader scale are also a part of the comprehensive institutional infrastructure, as well as third party institutions like the U.S. diplomatic missions. However, focusing on the capabilities of the Palestinian side of the equation – as done in this study -- can organize and clarify what the Palestinians can bring to the joint effort of dealing with the water conflict. The rest of this study examines what these institutions are doing or not doing, and could be doing to alleviate conflict and foster effective water management. Specific actions to be discussed are organizational roles, information flow, and public participation, and collaboration with each other. These specific aspects lead to the following question ‘Will water conflict intensity escalate if these or other actions are not carried out?’ Intuition suggests ‘No.’ A direct escalation of a water conflict intensity will not result, but a disorganized Palestinian infrastructure has a detrimental effect on their bargaining power which may indirectly harm any potential for water conflict de-escalation. Equally important, water management will be ineffective in efficiently supplying demand.

A refined version of Libiszewski’s model that would better fit the case of the West Bank and Ramallah would illustrate the various levels of “institutional infrastructure.” Looking at the original model on page 18, and the new modified model below, the levels within “institutional infrastructure” are municipal (Ramallah), regional (West Bank), and transboundary (Israel-West Bank). “Political relationship” can be

broken down to the relationship between the Israeli government and Palestinian Authority. The political relationship within the Palestinian Authority is broken down further to articulate the relationship between the regional water authority, PWA, and the municipal, JWU. The “distribution of power” block can again be subdivided into Israeli and Palestinian sections; the Palestinian section being further divided into regional and municipal levels. An NGO circle floats in this block to symbolize that power is not only distributed among Israeli and Palestinian governmental departments, but NGOs as well.

Figure 2.2 A Model for Palestinian-Israeli Transboundary Water Conflict



Summary

Sovereignty, cooperation, and conflict are interrelated, yet distinctive concepts that characterize Palestinian water management. By seeking to attain sovereign status apart from its host state of Israel, the Palestinian Authority can be an agent for cooperation in the area of water management by being leverage for cooperation and prevention for conflict. Overshadowing these concepts are the debates over whether technical cooperation can reduce conflicts and whether environmental scarcity triggers conflicts. More precisely embodied in institutional infrastructure, allusions to these debates, and the concepts of sovereignty, cooperation, and conflict point toward power and coercion exercised by the Palestinian Authority and Israeli government. Drawing from the interviews in the West Bank, supporting documents, and literature, the following chapters on Palestinian water management, and environmental NGOs discuss how information and cooperation within institutional infrastructures can weaken a conflict's intensity. Yet before pushing forward, we will take a step back and review western Asia's hydropolitical history in Chapter Three.

T H R E E

Hydropolitical History

Western Asia Hydropolitical Positions

One of the most prominent conflicts involving water in western Asia has been the 1967 War, also known as the Six Day War. This conflict is an important historical event that changed the Near East in almost every dimension of life. “The increase in water-related Arab-Israeli hostility was a major factor leading to the 1967 June War” (Gleick 1993). The Six Day War was a culmination of tensions regarding water diversions and irrigation projects. The Syrian government, within its borders, attempted to divert the Banyas River, one of the Jordan River’s tributaries. Such a diversion disrupted Israeli water needs and therefore prompted Israeli air force and army attacks on the site of the diversion (Grunfeld 1997). As a result of the six day conflict among Syria, Jordan, Egypt, and Israel, Israel gained control of the west bank of the Jordan River from Jordan - the area today referred to as the West Bank; the Gaza Strip and Sinai Peninsula from Egypt; and the Golan Heights from Syria. This chapter outlines positions of the West Bank, Gaza, Israel, Jordan, Syria, and Egypt to briefly discuss some of the intricacies of the Six Day War (Map 4, page 115, Appendix IV).

West Bank

The West Bank was politically a part of Jordan from 1948 until the 1967 War, when Israel expanded its territory. Three main reasons prompted Israel to acquire and maintain control over this area after the 1967 War. Not necessarily in order of

importance: First, control of this area would be a buffer zone between Jordan and Israel that could deter and withstand Jordanian advances. Second, Jerusalem and other West Bank cities are sentimental religious and cultural areas to the Israeli people. Third, West Bank aquifers are one of the main sources for Israeli water consumption.

Israel's control of the West Bank after the 1967 War severely limited Palestinian use of the water resources. Among these limitations is the forbidding of well drilling by Palestinians without a permit from Israeli authorities. From 1967 to 1995, only twenty-three permits have been granted. (Libiszewski 3.4.1 1995). As a result, Palestinian agricultural water consumption is the same in 1995 as in 1968 in absolute terms; only domestic water use increased by 20%, though not keeping pace with population (Libiszewski 3.4.1 1995).

Gaza

The Arab-Israeli War in 1948 pushed approximately 250,000 Palestinians into the Egyptian section of Gaza. The population increased by more than 300% and triggered resource-loss, and an unstable economic situation (Homer-Dixon and Kelly as cited in Goeller 1997). After 1967's Six Day War, Israel's occupation led to strict control of land, water, resources, and political dominance. In turn, "...there existed discriminatory restrictions on training and research, limited infrastructure and development, a lack of financial support for Palestinians, and severe prohibitions on travel and exports" (Goeller 1997). According to Homer-Dixon and Kelly, these discriminatory policies have resulted in political and economic isolation of the Palestinian population (as cited in Goeller 1997).

Israel

The many possible causes for the Six Day War from the perspective of the parties involved make the summary of such an event a difficult task. However, the Israeli government's statements about the war may shed some understanding on the subject. According to Israel, some of the direct tensions that led to the 1967 war began in the Sinai Campaign of 1956, also known as Operation Kadesh. This eight-day Sinai campaign against Egypt was part of the anti-Nasser Suez Canal War waged by Britain and France (Joffe 1996:13). As a result of the Six-Day War, Israel gained control of the Sinai Peninsula. Shortly thereafter, Israel turned its attention to the Syrian water diversion projects.

In 1964 Israel opened the National Water Carrier, operated by Mekorot, and began diverting 320 mcm/yr from the Jordan River, while Jordan was continuing its East Ghor Project (Wolf as cited in Jordan1:6). A year later, the Arab states started construction on the Headwater Diversion Plan which would divert the Hasbani River into the Litani in Lebanon, and the Banyas into the Yarmuk River, for Jordan's and Syria's use. Such a diversion plan would have been a loss of 123 mcm/yr or 35% of Israel's water diversion, causing the salinity rate to increase in Lake Kinneret (Jordan1:6). Between 1965 and 1967, the Israeli army attacked the diversion construction in Syria, leading to two air battles. Then in the June 1967 War, Israel destroyed the Arab diversion construction, capturing the Golan Heights, the West Bank, Gaza Strip, and the Sinai Peninsula in six days (Jordan 1).

Israel gained more land, and therefore tighter control over natural resources. Israel's territorial control increased with the acquisition of the Sinai Peninsula, Gaza, the

West Bank, the Golan Heights, and East Jerusalem. Along with these territorial gains came the water gains. Through control of the Syrian Golan Heights, Israel controlled the headwaters of the Banyas Tributary. In the West Bank, significant gains in the present occupied area are an important source for Israeli water needs. Since the 1950's, between one-quarter and one-third of Israeli water consumption originated from the Yaqon-Tananim aquifer, in the western portion of the West Bank, through drilling within the Palestinian side of the "Green Line" (the 1949 Armistice Demarcation line) (Lowi 1995:149).

Jordan

Jordan and Israel have a long history in the struggle over water resources that involve the Jordan and Yarmouk Rivers. In the late 1940's through the 60's, disputes began when both Jordan and Israel began water development programs. The water development programs of Jordan and Israel had different goals in mind. Jordan was more concerned with irrigated agriculture and Israel with their growing population of immigrants. To irrigate land along the slopes on the eastern bank of the Jordan Valley, Jordan constructed the East Ghor Canal to tap the water of the Yarmouk River. Renamed in 1987 as the King Abdullah Canal, it has been extended three times. Though it has been extended and revived, the plan to build storage reservoirs on the Yarmouk River through the King Abdullah Canal was not implemented mainly because of Israel's political opposition and Jordan's financial problems (Libiszewski 1.3.1.2).

After the 1967 War, Israel occupied 20 percent (about 12 km) of the northern bank of the Yarmouk River as opposed to 10 percent (6 km) before the war (Associates as cited in Lowi 149). This change places harsh constraints for Jordan as this area of the

Yarmouk River is the country's only planned source of freshwater (Lowi 1995:149). Obstructing the building of a storage system to improve water diversions into the King Abdullah Canal heightened further obstacles in water relations between Israel and Jordan. Israel destroyed this dam during the Six Day War and in 1969 again flew an air raid against Jordanian water facilities as retaliation for repeated Palestinian insurgence from the Kingdom's territory. Jordan's relationship with its resident Palestinians became more abrasive after this incident and contributed to their expulsion by Jordan in 1970 (Wolf as cited in Libiszewski).

In the early 1990's, Jordan demanded redistribution of water resources from Israel. Jordan argued they have an unequal allocation due to the unequal geographical location that allows for Jordan's sufficient tapping of the Yarmouk. Jordan also viewed Israel's extraction of water from the Yarmouk River as a "violation of Jordan's vital interest" since the extraction prevents Jordan from building a long-aspired dam on the river. At the peak of Jordan's drought period, 1990, disputes rose over water allocations on the Yarmouk, and King Hussein stated in an interview that "water was the only reason that could again bring Jordan to war with Israel" (The Independent as cited in Libiszewski 3.2). Though this was just one statement, it is a sentiment that drives research and attentiveness to water conflicts.

Syria

In June 1953, Jordan and Syria agreed to share the Yarmouk River's water harnessed by a dam at Maqarin, initiated by the UN Relief and Works Agency for Palestine Refugees (UNRWA). Israel protested, arguing its riparian rights as a bordering state of the Yarmouk River were not being recognized. As a result, Israel began

construction of the National Water Carrier, operated by Mekorot, north of the Sea of Galilee and in the demilitarized zone. In turn, Syria placed armed forces along the Syrian-Israeli border and opened fire on the construction and engineering sites (Wolf 1995:45).

It is instructive to note that some of the most unlikely times engender cooperation, like the First Arab Summit in January 1964, organized with the purpose to discuss joint strategies on water among Syria, Jordan, Egypt, and Lebanon. The second meeting of the Arab Summit resulted in the Headwater Diversion Project (Wolf 1995:49).

Today, the ongoing dispute between Syria, Israel and Jordan regarding the proposed Unity Dam on the Yarmuk River is an opportunity for cooperation. These countries must first agree to each other's allocation of water before the World Bank can fund this water project (Wolf 1995:142).

Egypt

A series of events eventually triggered the 1967 War through Egypt's actions. Of the many, Syria encouraged Palestinian guerilla operations against Israel, through Jordanian territory. King Hussein turned to Saudi Arabia for help in keeping his country in order, while Egypt supported Syria's stance, resulting in tense Arab relations. Consequently, Palestinian raids triggered Israeli retaliations in Jordan, Saudi Arabia chastised Egypt for not aiding Jordan in such a time of need, and then Nasser of Egypt felt it his and Egypt's responsibility to prove his pan-Arab strength by taking a tough stance against Israel. The tough stance was demonstrated by Nasser's closing of the Tiran Strait and the UN Emergency Force to be withdrawn from the Sinai (Lorenz

1990:33). The Tiran Strait is the regular passageway for large vessels entering the Gulf of Aqaba (Parker 1993:43), and without a UN buffer, Israel and Egypt would be sure to clash.

Summary

The 1967 War was triggered by many variables, one of them being the control of water. By discussing each country's or region's position in this conflict, the various layers of tensions are unraveled. Water wars and environmental conflicts are championed to be the new threats in the future. From this one example in the past, water is only part of the complex web of tensions that fuel conflicts. The conclusions to such a debate on whether water or environmental conflicts cause war is not as important as how individual variables can be addressed and prevented.

Water is still an issue of contention among these parties, but the territories gained and lost thirty-three years ago leaves a legacy of tensions. Today, Syria and Israel are negotiating, with much difficulty, the question of Israeli withdrawal from the Golan Heights (Map 4, page 115, Appendix IV). Syria wants Israel to withdraw from the Golan to the pre-1967 War border when Israel captured the Golan. Israel disagrees because such a withdrawal would extend Syrian territory to the Sea of Galilee, a key source of water for Israel. Israeli Prime Minister Ehud Barak asserted his Israel's main concerns regarding the Golan Heights, "It is the water...early warning and security arrangements...and normalization of relations" (Washington Post 2000).

FOUR

Water Scarcity, Conflict, & Management

Introduction

When a group becomes dependent on another group's control of a natural resource, they are revealing a weakness that can be exploited. Scarcity of a resource heightens the desperation for security, creating tensions that either evolve into or contribute to conflicts. For these reasons and more, it is important to understand the dynamics of natural resource management processes and their connection to associated or potential conflicts. A living illustration of issues linking scarcity, security, and conflict is found in the Palestinian Territory of the West Bank. This chapter describes the experience of the West Bank and Ramallah first in terms of their water scarcity, then in terms of water conflict, and finally in terms of water management processes including policies and decision-making between the PWA and JWU.

Scarcity

West Bank

Water scarcity in the West Bank is best described through its climate, groundwater supply within aquifers, and consumption. Unless otherwise noted, the information for this section is primarily drawn from "Regional Plan for the West Bank Governorates 1998," prepared by the Palestinian Authority's Ministry of Planning and International Cooperation (MOPIC).

Climate in the West Bank is Mediterranean, with a rainy season beginning in October lasting until April. Precipitation is mainly in the form of rainfall, with snow days as few as two days per year. Though rainfall is the main source of water, it provides modest to moderate amounts, varying between 450-500 millimeters (mm) (Map 3, page 114, Appendix IV). This amount is 100-200 mm less than the dry, U.S. state of Arizona receives, 600-700 mm. The significant source for groundwater is rainwater, apart from the Jordan River Basin (Elmusa 1997). Since rainwater is one of the major sources for domestic water consumption and agricultural development, drought seasons cause serious damage. MOPIC estimates 5% of the 450-500 mm returns to the sea as surface runoff through the seasonal riverbeds, 30-40% infiltrates to the groundwater aquifers, and the remaining is lost through evapotranspiration. Only 30-40% of an already modest amount, 450-500 mm, does not leave much for groundwater recharge (Water and Wastewater 1998).

Groundwater is the main source for the wells from which water is pumped for both domestic and agricultural use in the West Bank. Groundwater technically means “subsurface water present in the saturated layers below the water table” (Elmusa 1997). As the holding area for the groundwater, aquifers are rock strata that are able to transmit and yield water to springs and wells. General location, yield and deficit, recharge rate, and over-pumping are used to describe the West Bank’s groundwater in this section.

In the Palestinian areas, the two main aquifer systems are the mountain and coastal, the former located in central West Bank, including Ramallah, and the latter in Gaza. The mountain aquifer (Map 4, page 115, Appendix IV), is subdivided into the northern, western, and eastern aquifers – the eastern aquifer underlies Ramallah.

These aquifers are the source for the wells and springs in the West Bank and supply more than 90% of the fresh water in the West Bank (PWA 1998). Yield estimates according to Article 40 of the Oslo 2 Agreement⁸ report each aquifer, Western, North Eastern, and Eastern as 362, 145, and 172 mcm/yr, respectively, for a total of 679 mcm/yr.

Consumption patterns from these three aquifers generally show Israeli consumption to be 365 mcm/yr more than Palestinians. The following table summarizes Palestinian and Israeli consumption and aquifer yields (Table 3.0):

Table 3.0 West Bank Aquifers Existing Consumption and Yield

AQUIFER	ISRAELI CONSUMPTION	PALESTINIAN CONSUMPTION	QUANTITIES AVAILABLE FOR DEVELOPMENT	TOTAL ESTIMATED YIELD OF AQUIFER
WESTERN	340	22	Not mentioned in Article 40.	362
NORTH EASTERN	103	42	Not mentioned in Article 40.	145
EASTERN	40	54	78	172
TOTAL	483	118	78	679

Source: Oslo 2, Article 40, 1995.
* All amounts in mcm/yr

Consumption & Population. The three aquifers described in the above table make up the Mountain Aquifer that is also the water divide running almost through the middle of the West Bank. Consumption compared to population in 1997, the population in the West Bank was 1,869,818 including East Jerusalem (PASSIA 1999) and Israel's population was 6 million (Israeli Central Bureau of Statistics 1998). However, combined with the population of Gaza and Palestinians living around the world, the total Palestinian

⁸ Oslo 2 sets a timetable for the extension of Palestinian rule to areas of the West Bank under Palestinian rule, as Israeli forces withdrew from particular areas in preparation for the Palestinian Council elections;

population comes to 3.2 million. It is important to consider the Palestinian Diaspora when making projections for water consumption because expected Palestinian returnees to the West Bank and Gaza add to the strain of water resources. Water consumption per capita per year is approximately 112 mcm in the West Bank and 404 mcm in Israel (PASSIA 1999).

Domestic average per capita water consumption in the West Bank is approximately 70 liters/capita/day (lcd). In its report, MOPIC stresses the high possibility of inaccurate data due to the unavailability of information. Figure 1, page 116, Appendix IV (“Water Availability”) summarizes water consumption that includes water losses, due to leaky, aging, water pipes. Ramallah district, which includes the city of Ramallah, is the lowest consumption rate, 60 lcd. Jericho is the highest, at 140 lcd. One explanation for this is that Ramallah has the least incidents of water losses in comparison to the other cities. Water availability throughout the West Bank does not meet demand so the deficit must be purchased from Mekorot. Bethlehem is the only exception, and consumes half of what is available (Figure 1, page 116, Appendix IV).

The PWA Interim Report Volume I 1998, reports the West Bank consumption rate as 50 liters per person for the 87% of the population that is served from a piped system. This amount is half the recommended World Health Organization (WHO) minimum of water for house connections in small communities. In addition, water loss due to leakage, unregistered connections, and inaccurate water meters are high, approximately 45%. By 2020, water distribution networks are recommended by the PWA to be expanded to serve 98% of the population through piped systems.

successor of Oslo 1 which set the initial stage for Palestinian self rule (Joffe 1996).

A few words on water *quality*. When compared to World Health Organization standards for water quality, domestic wells in the West Bank are not at international standards. For example, all three wells in the Tulkarem municipality exceed the allowable nitrate concentration, which indicates significant amounts of water pollution due to wastewater and fertilizers (Water and Wastewater 1998).

Without improved water planning and management, proper land use and waste management, the semi-arid West Bank has the potential for increasingly severe water shortages. Factors that contribute to water quantity and quality degradation according to MOPIC are:

- Very strict Israeli military orders on water abstraction: few wells were allowed to be drilled since 1967, while the existing ones were permitted to pump limited and inadequate quantities;
- Israel's refusal to allow Palestinian projects related to surface water bodies;
- Deterioration of groundwater quality due to pollution generated by activities related to pesticides, fertilizers, wastewater, and solid waste;
- Contamination of water in wadis (river/stream beds) and similar water courses;
- Insufficient water resources for future Palestinian needs;
- Insufficient water data and inadequate water networks and management;
- Inadequate control measures to ensure protection of significant aquifer recharge areas.

Ramallah

Climate in Ramallah is kinder than the rest of the West Bank, partly because it receives the second highest amount of rainfall (Map 3, page 114, Appendix IV). Also, due to its high elevation, among other factors, Ramallah enjoys cooler summer temperatures than its neighboring cities, making it an attractive summer getaway. Average minimum and maximum temperature is 48F / 9C and 80F / 28C respectively. Rain days average between 41 to 80 days per year, the rainiest season being from November to February. Mean annual rainfall is 694 mm/yr.

Ramallah is considered the commercial center for Palestinians, and as investors increasingly choose to live and invest in Ramallah, the demand for water will also increase. Ramallah's close proximity to Jerusalem, a tourists' center and disputed capital of both Palestinians and Israelis, make Ramallah a city subject to high migration from other Palestinian towns in which to live, work, and invest. The population number served by JWU is 212,499, as of 1998 (JWU 1999). The 1998 population served is 20,837 more than in 1995. The served population includes more than just the municipality of Ramallah, which has an approximate population of 18,297 (PASSIA 1999). JWU supplies water to the municipality of Ramallah, surrounding Palestinian villages and Israeli settlements in the Ramallah district.

Ramallah is located above the western and eastern groundwater aquifers, which make up the Mountain Aquifer in the West Bank. The Western Aquifer underlies approximately 65% of the Ramallah District and flows towards Israel proper in the west. The eastern groundwater aquifer underlies the eastern part of the Ramallah district and the flows toward the east and southeast (ARIJ 1996). Palestinians' close proximity to the

healthier Western Aquifer fuels the conflict of water rights. Ramallah is physically located above the Western Aquifer but does not have permission from Israel to draw from it.

Existing water resources in Ramallah originate from the Eastern Aquifer through the pumping of four out of six wells. A well dug in 1965 was abandoned because of technical difficulties, exacerbating the problem of access and distribution. The sixth is still under construction. Ramallah's water sources, since 1967, are unable to meet the demand of Ramallah's residents, therefore it is necessary to purchase the extra water from Mekorot, Israel's national water company⁹.

Supply from wells. Ramallah's water demand is not sufficiently met by what JWU can supply not only because of the limited real availability or what is allowed by Israel, but also because of poor physical infrastructure such as pipes and water pressure to deal with some of the extreme heights in the Ramallah area. For example, areas at high elevations are the hardest to supply with water, including Ramallah's 'downtown' area. This commercial area is the center of town that provides social gathering places such as restaurants, coffee houses, banks, shops for food, clothing, and house-wares. This is the heart of the city that sometimes goes without water for two to three days during the summer months because water pressure is not sufficient.

Domestic water *consumption* in Ramallah in 1998 was 138.7 liters per capita per day (lcd) (JWU Performance Indicators 1999). MOPIC's December 1998 report on the existing water situation in the West Bank reports Ramallah's domestic water use as 60 lcd (1998:25). MOPIC notes that its figures may be incorrect. The figures 138.7 and 60

⁹ See Profile of Actors in Appendix for more information on JWU.

are significantly different. Which one is correct? This demonstrates the need for improved information flow between regional and municipal level agencies. Finally, JWU produced 3,470,337 L from its own wells in Ein Samia in 1998, but purchased 7,178,667 L from Mekorot -- the difference for what it could not supply.

Scarcity issues are only part of the story. The next section on conflict describes the basics of the Israeli-Palestinian water conflict and its role in this study.

Conflict

Water wars may still be a subject for Hollywood to explore, but for many water experts, possible actors are already being scouted or the entire notion put to rest. In short, the Palestinian-Israeli water conflict is characterized by who controls the water resources, whether they are equitably distributed, and how it is sold. In the words of Sharif Elmusa, the water conflict is characterized by six specific categories: 1) the land-water nexus or control of hydrospace; 2) the maldistribution of water rights in the common resources and attendant water use gap between the two sides; 3) the encroachment by Israeli settlers on Palestinian water resources; 4) Israel's control of water institutions, information, and legal mechanisms; 5) out-of-basin transfer; and 6) future management of the common resources (Elmusa 1997). Another perspective, by Martin Sherman, presents the characterization of the Palestinian-Israeli water conflict with a table of the two opposing positions (Table 3.0).

Table 3.0 *Conflicting Palestinian and Israeli Positions on Water*

PALESTINIAN POSITION	ISRAELI POSITION
<p>1. The water of the Mountain Aquifer derives from precipitation over the 'West Bank'. Since 80-90 % of the aquifer's capacity is exploited by deep wells within Israel, this constitutes a serious threat to future Palestinian water requirements. In general, the Palestinians claim the priority of their rights to 'Palestinian' water, and demand full control over the Mountain Aquifer.</p>	<p>1. Israel has legitimate riparian rights to the Mountain Aquifer, major portions of which flow naturally into her pre-1967 territory. These rights are based on the principle of prior use going back over a period of six decades, during which much costly investment has been made in development of the present system.</p>
<p>2. Mass immigration of Jews from Russia and other countries will increase the consumption of water from the Mountain Aquifer, jeopardizing what the Palestinians see as their fair share of these waters. Arab leaders have initiated efforts aimed at curtailing Jewish immigration to Israel.</p>	<p>2. Arab calls for the termination of Jewish immigration are unacceptable interference in Israel's internal affairs. Indeed Israel considers the absorption of immigration from the Jewish Diaspora as the very foundation of the state's <i>raison d'etre</i>.</p>
<p>3. Palestinian development has been restricted by Israel curtailing Palestinian utilization of water resources, particularly for industrial and agricultural uses. Moreover the Palestinians claim that drilling of Israeli wells has resulted in lowering of the water table, causing several traditional springs and shallow wells used for domestic and agricultural purposes to dry out.</p>	<p>3. The Palestinians have not been deprived of the use of water. Since the end of Jordanian rule in 1967 hundreds of villages have been connected to piped water supplies. Close to 50 permits for new wells have been granted. Total water supply and per capita consumption has increased significantly under Israeli administration. Palestinian wells dried up due to drought and have nothing to do with Israeli water development, which taps far deeper water-bearing rock strata, unconnected to those which feed the shallow Palestinian wells.</p>
<p>4. Palestinians fear that even if a final peace accord is achieved, any conceivable division of water acceptable to the Israelis will leave the Palestinians quantities insufficient to facilitate normal population growth and the settlement of the Palestinian diaspora, under conditions that permit economic viability and development in urban, industrial, and agricultural spheres.</p>	<p>4. Israelis fear that even if a final peace agreement is achieved, once the Palestinians attain physical control over the aquifer, they will persist in pressing home their claims to its water. This is a fear exacerbated by the declared Palestinian intention of resettling large segments of the Palestinian diaspora in the territories to be evacuated by Israel. Because of the almost insurmountable difficulties in setting up adequate mechanisms of monitoring and enforcing the terms of any agreement without a physical presence in the region, there is a serious concern both as to a) unregulated over-pumping of the ground water which could cause the lowering of the water table, the intrusion of salt water and irreversible damage to Israel's water supplies; and b) serious pollution of ground water in the highly susceptible karstic aquifer, due to uncontrolled and untreated flows of urban sewage, and toxic agricultural and industrial waste water.</p>

Source: Sherman, Martin. The Politics of Water in the Middle East. St. Martin's Press, Inc. New York: 1999 pp. 27-28.

Elmusa's and Sherman's characterizations of the Palestinian-Israeli water conflict are in no way complete, but allow a preview of the general atmosphere of the situation. Focusing on groundwater, Israel controls the Western Aquifer, which primarily underlies the West Bank region and has the highest quantity and quality of water among the three aquifers in the West Bank. Palestinians are not permitted by Israel to tap water from the Western Aquifer directly, but must buy the water from Israel instead. Forbidden extraction from water originating in the West Bank, that Palestinians feel is rightly theirs in the first place, and then paying the Israeli water company for its distribution, all of which is exacerbated by water shortages, is the crux of the Palestinian-Israeli water conflict. Any infringement on Israel's control of its current water resources is perceived as a threat to its sovereignty and security.

In the multilateral dimension, the Multilateral Water Resources Working Group is a feature of the Middle East Peace process, specified by the Oslo Accords. Made up of Israeli, Jordanian, and Palestinian representatives (core parties), in coordination with donor parties United States, European Union, France, and Canada, its purpose is to facilitate technical cooperation on an international level, most recently through the Water Data Banks Project. Such a coordinated water data banks project establishes a common information source, designed by the three often water conflicting parties -- Israel, Jordan, Palestine -- to promote trust and accuracy of data and each other so that conflict may be in some way diverted. Unfortunately, there have been no formal meetings of the core parties since 1996 (Assaf 1999). Though no formal exchanges of the core parties have taken place, informal exchanges are possible though difficult to determine. Evidence of informal exchanges may be transparent within the work of NGOs in the region such as

Palestinian Hydrology Group (PHG). Discussion of how environmental NGOs like PHG have the potential to act as a catalyst in fostering improved cooperation among discordant parties is in Chapter Five.

On the bilateral track, between Israel and Palestine, the Joint Water Commission (JWC) was established in Oslo II, Article 40 in September 1995. The JWC combines an Israeli-Palestinian advisory board for the five-year interim period (1995-1999). Oslo II set a timetable for the extension of Palestinian rule to most of the West Bank as Israeli forces withdraw from determined areas in preparation for the Palestinian Council elections. Its predecessor, Oslo I, was the 1994 Declaration of Principles that outlined processes for Palestinian self-rule, Palestinian control of most of the West Bank; and an interim agreement that prepared for Palestinian council elections.¹⁰ The duties of the JWC range from coordinated management of water resources to exchange of information relating to water and sewage laws and regulations (Palestinian Water Authority). Inquiries were made by the author about the members and policies of the Joint Water Committee and the Multilateral Water Resources Working Group during field research in the West Bank. Few, if any interviewees could discuss concrete information. Those on or closely associated with the committee were never available for interviews, and those who were available were not open about those committees' processes. The minutes to the meetings were highly guarded and not easily open to the public without special permission.

¹⁰ For more details see Lawrence Joffe's *Keesing's Guide to the Middle East Peace Process*. Cartermill Publishing, 1996.

¹² Interview questions, summary & conclusions, and list of interviewees in Appendix II.

The Israeli-Palestinian water conflict hinders effective water management and yet may have something to benefit from management policies and options. To complete the story on water scarcity and conflict, we now turn to Palestinian water management.

Management

Categories such as technical, political, hydrological, and economic are just a few of the broader dimensions of Palestinian water management. This study focuses on water management's decision and policy making. Drawing from interviews (see Appendix II) of Palestinian water managers in JWU, PWA, and various research institutes and NGOs, four themes emerge from their perceptions of the status of Palestinian water management in terms of institutional infrastructure. PWA and JWU have the potential for reducing the water conflict and fostering effective water management through addressing 1) Cooperation; 2) Organizational roles; 3) Information flow; and 4) Public participation.

Palestinian Water Authority (PWA)

On the regional level of the PWA, **cooperation** comes in various forms: cooperation between two countries, between regions within a nation, and between governmental agencies within or across national borders. Issues regarding cooperation within the PWA are summarized in three categories: 1) transboundary efforts 2) inter-agency cooperation; and 3) cooperation with Ramallah's JWU.

Established in 1996 through the auspices of the Oslo Accords, two of PWA's several aims are to ensure efficient management of available water resources and to achieve the highest degree of cooperation between itself and all parties sharing common

interests (Background Information 1998). PWA's relationship is central to other Palestinian Authority ministries that are relevant to water sector issues. The flow of information is ideally two-way, based on the formal organization. The related ministries range from the Ministry of Planning and International Cooperation (MOPIC) to the Ministry of Local Government, which is responsible for local planning (Figure 2, page 117, Appendix IV).

Transboundary efforts toward cooperation are the actions fostered by the Palestinian-Israeli peace process outlined in Article 40 of the Oslo II Agreement, 1995. The Joint Water Committee (JWC) was established as a body with the purpose of dealing with all water and sewage related issues in the West Bank, for the interim period. Example issues include coordinated management of water resources and resolution of water and sewage related disputes. In the article itself, the definition of interim period is not specified, and it is widely understood that 1995-1999 is the interim period. However, perceptions on what should be accomplished within this period differ. As a result, the interim period may last longer than the originally planned five years or could come to an end with a signed peace treaty scheduled for September 13, 2000 (Middle East Economic Digest 2000). Another form of transboundary cooperation efforts took shape in the work of the Multilateral Water Research Working Group. The water group is one of five that work under a steering committee that is chaired by the United States and Russian Federation. The other working groups include arms control and regional security; environment; regional economic development; and refugees. The last meeting was in 1996 that declared principles on water related matters (February) and later in December

of that year for an agreement on a regional center for desalination research (PASSIA 1999).

Horizontal cooperation refers to cooperation with other ministries in the Palestinian Authority who are directly concerned with water management. On paper, intentions for working with other ministries such as the Ministry of Planning and International Cooperation (MOPIC), which is responsible for developing general policies, development programs, and physical planning on the national and regional levels is detailed in a 1998 report on the strengthening of PWA's planning capacity (NIVA 1998). Regarding water master plans, PWA's cooperation potential is to be linked to MOPIC and the Ministry of Local Government (MOLG) in the following four major ways:

1. Synchronization of the Water Master Plan in the context of the national planning framework;
2. Coordination of financial assistance to the water sector within the framework of the national development plans;
3. Monitoring of existing projects and programs and planning of new projects and investments;
4. Provision of compatible systems for planning data and information to be used in further national, regional, and local planning.

(NIVA 1998).

These four linkages for cooperation imply sound bases for effective water management. However, one year after the 1998 report, these forms of cooperation between PWA and MOPIC do not exist, and have not trickled down to JWU (Assaf 1999). Unclear organizational roles may be one explanation for the lack of cooperation. Yet, one case did exist where a MOPIC hydrologist was reviewing a recent PWA report in order to aid in its revision (Carmi 1999). The hydrologist commented that all PWA reports are

circulated throughout MOPIC for suggestions. What does this mean for horizontal Palestinian cooperation? The intentions for cooperation exist on paper, policy makers show interest in cooperation, but the actual implementation or perceptions on cooperation may differ.

Such observations lead to more questions such as who decides which projects and reports are the priorities, and to what extent is duplication of projects and reports a problem? Dr. Abdel Rahman Tamimi, of the Palestinian Hydrology Group, a Palestinian NGO dealing with water development, and Dr. Karen Assaf of the Palestinian Water Authority, both agreed that lack of cooperation among Palestinian agencies resulted in duplication of projects. When asked about the availability of the West Bank's water master plan, Dr. Assaf, mentioned that there may be more than one master plan being drafted because of this lack of cooperation. Money, efforts, and time are wasted when duplication occurs. Furthermore, implementation of plans will be ineffective if, for example, the PWA does not fully coordinate with JWU in Ramallah. The regional-municipal relationship must be strong or policies that originate from either the regional or municipal levels will be unheard and not implemented. Finally, lack of cooperation among Palestinian agencies weakens the Palestinian negotiating potentials in the Israeli-Palestinian peace process. Without unified efforts and voices, knowing and arguing the needs and rights of Palestinians will not be effective without Palestinian agency cooperation.

But since complaints regarding poor information flow between NGOs and the PA exist, the possibilities within the PA system are also suspect. Information flow is directly related to gathering of information. Without the sponsoring of the Interim Agreement's

Multilateral Working Group, Palestinians are not allowed access to data on Israeli controlled aquifers, such as the Western Aquifer. Palestinians are not permitted to conduct tests of water quantity and quality that are not associated with the eastern aquifer. Ms. Natasha Carmi, a hydrologist with MOPIC, conveyed in an interview that she would prefer to be in the field conducting analyses and research of the West Bank's water resources. However, she must remain behind a desk, critiquing reports instead because Palestinians are not allowed to conduct tests without Israeli permission. Carmi could be arrested if she were to challenge this policy. This example further asks what will be the new situation of water research, who has permission, and who grants it? Will 'joint management' truly mean equitable management and sharing of data by Palestinians and Israelis or will one side have more sovereignty over water resources than the other?

Organizational roles. The PWA is theoretically supposed to plan the national framework in which municipalities like Ramallah would insert their detailed water master plans (Daibes 1999). Another way to look at the significance of "trickle up" planning, a bottom-up approach, is that the municipal level processes have been occurring longer than the idea of a comprehensive regional water master plan. "Trickle-up" planning is the approach where policies and ideas from the ground, in this case the municipal level of Ramallah, would strongly guide the agenda of the top level, the regional level of the PWA. Hence the national plan's priorities should ideally draw from the municipal levels (Assaf 1999; Tamimi 1999). A reason for drawing inspiration from the municipal level planning experience is not necessarily because the municipal level is more accurate than the regional level plans, but the municipality levels are more experienced and closer to the implementation area. Ideally, two-way informing of priorities, needs, concerns, and

strategies would enrich both levels' planning and water management processes. At the least, an emphasis on drawing from the 'ground up' could improve water management.

There exists a general consensus that agencies ranging from the regional Palestinian Water Authority to the municipal Jerusalem Water Undertaking, of Ramallah, to NGOs like Palestinian Hydrology Group are unsure of their precise roles in water management. Based on interviews, written definitions of these roles and relationships with each other are inserted in their draft water master plans and reports – which may in time solve the vagueness. However, vagueness can also be considered an asset in terms of fluidity in an evolving system of processes and policies. Before the partial Israeli withdrawal from the West Bank, West Bank water management was very much decentralized and water planning done incrementally. The designing and implementation of long term, comprehensive, collaborative planning calls for a reconceptualization of the entire water planning process by water planning professionals. Comprehensive, collaborative planning are the keys to rethinking the water planning process.

Unclear organizational structures and roles within and among water management institutions such as PWA and JWU ill serve a party that is negotiating peace agreements. If actors in the newly established Palestinian water management sector are not yet sure of their own roles and capabilities, how can they know what to ask for in the peace agreements with the Israelis, let alone address those needs? Interviews with the various water related professionals relayed a sense of the tensions in the water, so to speak. Every person interviewed had the sound of urgency and frustration in their voice. Pessimism was the theme. Perhaps water managers and researchers are overworked, trying to do their jobs, and the lack of concerted efforts was only making things worse.

Such disorganization could be found anywhere in the world, but there are not too many other places in the world where concerted efforts are as needed as in Palestinian water management.

At the time of this study, there was no mention, from the interviewees, of cooperative working relationships between PWA and JWU except that they each govern different jurisdictions. An interesting point is that when asked if JWU takes orders from PWA, the answer was 'no' (Assad 1999). JWU is considered a not-for-profit, autonomous water supply utility that is non-governmental and not private (Assaf 1999; Saleh 1999).

As for the relationship between the PWA and JWU, no evidence exists of cooperation to shape each other's policies, so the need for rich information flow may not be realized. Involving the public with the planning process is not a part of PWA's current agenda (Carmi; Assaf; Diabes 1999) though it is mentioned in the draft master plan as a future strategy. No particular reasons were given except that it is too early in the planning process to include the public.

The PWA outlines eight key elements in their water management strategy. The key elements are 1) Secure Palestinian water rights; 2) Strengthen national policies and regulations; 3) Build institutional capacity and develop human resources; 4) Improve information services and assessment of water resources; 5) Regulate and coordinate integrated wastewater investments and operations; 6) Enforce water pollution control and protection of water resources; 7) Build public awareness and participation; and 8) Promote regional and international cooperation (Water Resources Management Strategy 1998).

While the PWA's goals are directed more toward state building, in contrast, JWU's objectives are to primarily supply its consumers with water: 1) Identify demand area up to 2030; taking into consideration population growth and available infrastructure; 2) Identify areas of population growth, industry, agriculture, and available infrastructure according to municipal plans; 3) Meet future water demand; 4) Assess present situation of JWU where rehabilitation is required; how will present system be incorporated in the future? 5) Conduct cost and operations analysis; make compatible with GIS; answer the questions what exists, what needs to be done, short and long term? (Khalil 1999)

PWA's points three, four, and seven, and eight somewhat address the issues of organizational roles, information flow, and public participation and cooperation. It is encouraging to witness these strategic points in writing. How they will be interpreted, implemented, and monitored is a next challenging step the PWA and West Bank will face.

Jerusalem Water Undertaking (JWU)¹¹

The water authority for the district of Ramallah, under the Israeli occupation and before, Jerusalem Water Undertaking (JWU), is misleading since the privately run company does not serve the Jerusalem population. The name is a legacy from before the 1967 War when the JWU did serve a portion of the Jerusalem population until that time, only to be pushed back by Israeli policies, toward Ramallah to serve the El Bireh and Ramallah regions. Today all of Jerusalem, both West and East, the latter being predominantly Palestinian, is served by Mekorot.

¹¹ Profile in Appendix III for further details.

To go back even further, in 1963, when Ramallah and most of the West Bank were under Jordanian authority, the Jordanian government made an agreement with the International Development Agency for a loan of \$3.5 million to develop drinking water projects throughout Jordan. One of these projects was the JWU. The JWU was established as a non-profit, independent, civil organization run by a Board of Directors, which includes representatives from the two municipalities served, Ramallah and El Bireh. The JWU maintains that independent status today.

However, the operations of the JWU were interrupted since Israel's occupation in 1967 and all works and projects relating to water and water resources became subject to the Israeli authorities. This order prevented any organization from work connected with the management, maintenance or development of water services or resources without the prior approval and licensing from the Israeli military authorities (Performance and Prospects 1995).

Mekorot is the plural of Makor in Hebrew, literally meaning "Sources" (Haskel 1999; Kally 1993). Mekorot, the Israel National Water Company is in charge of the construction, operation, and maintenance of the water plants and the licensing of the various sectors for the use of water, such as urban communities, industries and irrigation users (Alquds 1999; Israel-mfa.gov 1999). A self-proclaimed non-profit, public corporation founded prior to Israel's independence, between 1937 and 1938, Mekorot supplies approximately 80% of Israel proper's water (Alquds 1999).

Cooperation involving JWU refers to interagency cooperation with other Palestinian agencies such as PWA, MOPIC, other municipal level water administrators, NGOs, and if any, cooperation with Israeli agencies. Between JWU and Mekorot, both

negotiates and organizes water purchases. On the bi-lateral level with the Israelis, JWU does not directly participate in joint water management, but leaves that more to the Palestinian Authority. The Palestinian Authority (PA) is the overall Palestinian governing body, in which the Palestinian *Water* Authority (PWA) functions as the water resources manager.

Cooperation implies a reciprocal relationship. Regarding cooperation with Israel's Mekorot, JWU's relationship with Mekorot would not be described as cooperative but more like a "horse and carriage" (Alkan 1999). Since JWU must purchase water from Mekorot to make up for what it cannot itself supply, JWU for the most part must go along with Mekorot's policies. When asked about JWU's relationship to Mekorot, Mr. Assad explained that JWU is a consumer of Mekorot's water. Decided by Mekorot, it allocates a fixed quantity of water to JWU each year, and the amount cannot be reduced or increased. The cost in summer 1999 was 2.38 New Israeli Shekels (NIS), equivalent to US \$0.60 for each million cubic meter (mcm) which JWU claims costs more than if JWU produced their own water, 1.6-1.8 NIS per mcm. This amount may appear inexpensive, the difference being .68 NIS. The argument is not that the price is unreasonably expensive, but that it is an issue of price discrimination. Despite the water dependence on Mekorot, efforts are being made between the PWA and Israel for use of the Western Aquifer—the water source to which only Israel has access (Assad 1999). These negotiations are part of the overall political peace process, water being one of the final status issues.

Interviews suggest both PWA and JWU are currently drafting their master plans and how much input Ramallah, for instance, has in shaping the regional West Bank water

master plan does not seem to be much, in practice. As far as documentation on the details of collaboration between municipal and regional levels, none exist but are expected to emerge in the master plans. At the time of this study, there were no verbal or written indications of some form of cooperation between JWU and PWA. Cooperation with other cities' water administrators is also not evident.

Organizational roles of JWU are evolving toward greater clarity. JWU will eventually become the regional water administrator for the central West Bank, annexing Jericho's and Jerusalem's water management (Figure 3, page 118, Appendix IV). Currently, JWU's role is viewed as the water administrator for the Ramallah area and its surrounding townships of El Bireh, Bir Zeit, and other villages. This consolidation of local water utilities under one district utility, with the PWA as the higher authority, suggests some level of cooperation between local and regional levels. However, this is not yet the case. These proposals for consolidation are still on paper and are a future plan. In order for this restructuring and consolidation to be successful in operation, effective cooperation between local and regional levels is all the more imperative. If these plans are to become reality, the increased interconnectedness of both local and regional levels leaves little room for lack of cooperation. Their interdependence is both their strength and weakness. JWU's role in relation to other Palestinian Authority entities and within itself is in transition. The current structure is more simple and vague, and the proposed short and long term restructuring becomes more complex and precise (Figures 4,5,6, pages 119-121, Appendix IV). In relationship to local NGOs, evidence of collaborative efforts exists in reports (ARIJ 1996) in terms of using each others' resources. But as far as active policy shaping, no evidence suggests this is occurring.

Informational flow is a vital yet challenging issue because measuring it is difficult. Not until a complaint surfaces may it be evident that the transfer of information regarding matters such as physical infrastructure and consumer demand is not flowing through the appropriate channels fast enough, if at all. Extensive examples of this are not available because it may be considered an internal problem that reflects poorly on an agency's activities. The lag time may also be considered natural during this time of transitioning and defining of organizational roles – which may be one of the main reasons for current poor information flow. An incident occurred in 1999 where a report from a Palestinian Authority agency was requested by a Palestinian NGO. But the report was not delivered or even a reply given by the agency to whom the request was made. The staff at the Palestinian NGO that requested information described this incident as a common occurrence that delays deadlines and complicates work. They asserted that the secrecy of information and the lack of sharing is growing among the Palestinian agencies. This is only one specific incident, but an occurrence mentioned by several Palestinian water managers associated with the PA and NGOs that warrants further study.

Public participation in the planning process at JWU is non-existent. JWU General Director, Mr. Abdel-Karim Assad, rationalized that the consultation of Ramallah's residents may "lead to panic." The value of drawing from the public's concerns would benefit JWU's sustainability in the long run, serve as a check and balance to JWU's policies, and ensure the public's needs are made aware, and eventually met. Promoting democratic processes in the region could also result from such public participation.

The completion date for Ramallah's water master plan was December 1999. This master plan, which is Ramallah's first, is the final in a series of a first phase that included two interim reports, and a second phase, that included a second phase report. The main reason for the current possibility of the drafting of Ramallah's water master plan in 1999 is the funding from USAID and GTZ, encouraged by the potential of the peace process. Loose plans did exist before, but this is the first time long term planning has been attempted (Khalil 1999). Though PWA and JWU may not demonstrate a collaborative relationship in policy shaping and information, they are beginning to receive funding from a hierarchy, such as MOPIC. The diminishing of direct financing from donor agencies poses important questions for the new policies and planning for agencies like JWU.

Current water management strategies advanced by JWU, in Ramallah, include two emphases: expand the distribution network and develop water resources independent from Israel's Mekorot. With the expansion of a distribution network, a focus on wastewater reuse and treatment will be added to JWU's mandate. Development of water resources independent from Israel is considered necessary because currently 70% of JWU's water is purchased directly from Mekorot. JWU hopes to acquire independent water resources through drilling and searching for new sources within JWU's jurisdiction – the Eastern Aquifer. By October 1999, three new wells have been drilled in Ein Samia, where the four functioning wells are located (Assad 1999).

Summary

Scarcity and conflict determine Palestinian water management. The scarcity of water is due to the dry climate and groundwater aquifers with insufficient yield for the growing population. The conflict of water is a sub-layer of higher, political-regional conflicts, concerning the control over the richer Western Aquifer underlying Ramallah. Equitable allocation of water resources and national security are at the core of the water conflict. The West Bank's and Ramallah's water management is discussed in terms of four themes: cooperation, organizational roles, information flow, and public participation. Based on responses from interviewees, conditions under these four themes are sub-optimal or imply needed further studies in those areas.

FIVE

Environmental Non-Governmental Organizations

Introduction

Non-Governmental Organizations (NGOs) have an important role in international conflict prevention and resolution. Their roles are characterized by their effectiveness from their unofficial status that allows them greater flexibility than official actors in decision making. Additionally, their impartiality with respect to political objectives provides them greater credibility. Since NGOs often work at the local or grassroots level, they tend to have better access to informal sources of information. This informational advantage along with their credibility enhances their capacity to warn of developing conflicts and help prevent them. Environmental NGOs like the two discussed here, are a potential catalyst for informal exchange among discordant parties. NGOs' greatest drawbacks lie on their lack of authority and in the heterogeneity of approaches they adopt. In the area of water management Mawlawi (1993), demonstrates through examples that NGOs can add to the information base and foster coordination efforts among the different stakeholders. In other words, the NGOs discussed in this chapter have a built-in networking role in the forms of adding to the information base and coordination efforts among different stakeholders. This networking characteristic suggests NGOs, like the two in this chapter, have the potential to have spillover effects on the Israeli-Palestinian conflict, supporting the concept of functionalism mentioned in Chapter Two. The two environmental NGOs considered here are the Israel-Palestine

Center for Research and Information (IPCRI) and the Palestinian Hydrology Group (PHG), both illustrating the potential for NGOs to assist in conflict reduction and effective water management. The individual contribution of each organization is assessed and the limits of their effectiveness are also identified.

Israel-Palestine Center for Research and Information

*Israel-Palestine Center for Research and Information (IPCRI)*¹² was founded in Jerusalem in 1989 and claims to be the only joint Palestinian-Israeli public policy think tank in the world. They describe themselves as an organization ‘devoted to developing practical solutions to the Palestinian-Israeli Conflict.’ The onset of the Intifada -- the Palestinian Uprising in 1987 and the associated social and economic upheaval with repercussions for both sides, led to the recognition of the need for collaboration between Israeli and Palestinian intellectuals in order to facilitate a smooth transition to peace. The original purpose for the establishment of IPCRI was to address the issue of Palestinian self-determination simultaneously with Israel’s security concerns.

The scope of IPCRI’s work is extremely broad and is not restricted only to issues of water management. Departments within IPCRI that in some way promote cooperation, information flow, public participation, and possibly aid in the defining of other institutions’ organizational role are:

1. The Strategic Analysis Department addresses final status issues such as: the future Israeli settlements, the future of Jerusalem, and the refugees issue.
2. The Law and Development Department addresses issues of civil society and commercial law reform.

3. The Environment and Water Department addresses issues such as land and water pollution, transportation policy, use of pesticides, other public health issues and the allocation of water.
4. The Pathways Into Reconciliation Department (PIR) this is a multinational peace education project, teaching skills to defuse, manage, and solve conflicts and educate towards universal values of peace, human rights and tolerance, as well as conflict-solving skills.
5. The IPCRI Intelligence Unit (IIU) IPCRI's newest department is preparing reports and papers of detailed assessments of likely Israeli and Palestinian negotiating opening positions as well as detailed analyses of likely Israeli and Palestinian bargaining positions and potential compromise positions. The Unit also deals with current affairs and developments in Israel and Palestine, which influence politics, and political decisions vis a vis the peace process.

In keeping with the goal of developing practical solutions to the many components of the Palestinian-Israeli conflict, IPCRI deals with issues ranging from Palestinian refugees' status, fate of Jewish settlements, Palestinian-Israeli economic development, and the issue of boundaries, to name just a few. IPCRI has an environmental section that came into existence about the time IPCRI was established. Dealing with the situation of limited water resources was very much within the scope of IPCRI's work then just as it continues to be a great importance today. However, in 1994, IPCRI expanded the environmental section to include more than just water issues.

¹² All information on IPCRI is taken from their homepage www.ipcri.org.

Conferences on various environmental issues emphasized Israelis' and Palestinians' interdependence. The need to promote professional and personal relationships among academics and among other NGOs was added to the agenda. This made IPCRI's positions somewhat unique since it was now required to coordinate efforts between other NGOs as well. This special position also made it feasible for IPCRI to have greater access to information and facilitate collaboration by providing a common platform for organizations from both factions. Another explicitly stated objective in this direction was to encourage cooperation among government officials from both sides. The objective of the new set of goals was to establish relationships between Israelis and Palestinians who work in the environmental arena.

In 1997, the scope of the IPCRI Environmental section was narrowed to two particular areas: the effect of environmental change and degradation on public health and the facilitation of research, training, and other forms of cooperation between Israelis and Palestinians in the environmental field.

IPCRI modus operandi is best illustrated through some examples. Using collaborative methods of information exchange, IPCRI works to encourage cooperation between Palestinians and Israelis in the environmental field. Some of the specific projects engendering collaborative information sharing, not necessarily limited to water, include the promotion of Israeli-Palestinian cooperation in the management of national parks and nature reserves. Such projects are jointly researched, then made available to both Palestinian and Israeli policy makers. This is one example of NGOs like IPCRI demonstrating potential for contributing to the reduction of conflict.

One broader and longer-term project that is also a part of IPCRI's collaborative information sharing approach pertains to environmental conflict resolution. In keeping with the spirit of this issue, in June 1999, a workshop in Jerusalem combined key Israeli and Palestinian environmental experts to develop the blueprint for a framework that will train mediators in the techniques of environmental conflict resolution. These efforts are intended to lead to the creation of an institutional framework from which those in the region can avail expertise in the event of environmental conflict.

IPCRI's contribution to conflict reduction is made possible through the information sharing attitude embedded in its work. How does this joint Israeli-Palestinian civil society organization contribute to the reduction of the trans-boundary water conflict? Through the collaborative process of confronting the issues, proposing a variety of alternative solutions, forwarding the solutions to the respective decision-makers, and stimulating discussion among experts and the public, NGOs like IPCRI are a vehicle for moving the current water conflict status toward cooperation. The training of both Israeli and Palestinian water policy-makers and decision-makers contribute to better water management and conflict reduction because primary information is exchanged and because both sides are encouraged to work together. Also, IPCRI's facilitation of and participation in workshops extends information exchanges regarding water management, and encourages collaboration among all stakeholders, Palestinian and Israeli alike.

The second NGO to be discussed is primarily Palestinian and located in East Jerusalem.

Palestinian Hydrology Group

The Palestinian Hydrology Group¹³ (PHG) is a ‘non-profit, non-government organization that protects and develops the water resources of Palestine.’ The mission of PHG states that through community participation, they strive to achieve justice in the service, allocation, and protection of the water resources of Palestine, since the sustainability of this resource is vital for the protection of the Palestinian nation, future generations, and the planet.

The primary focus of the PHG is water, but the improvement of the lot of the weaker and marginalized sections of society is among PHG’s stated goals. Also, PHG’s four objectives are:

- 1) Upgrade the socio-economic status of marginalized and poor communities;
- 2) Empower local communities, and lobby governments to guarantee community participation in projects and ensure justice in community service;
- 3) Help to build the infrastructure for the provision of water and environmental services; and
- 4) Support the role of women in society.

Operationalizing these goals occurs through PHG’s consultancy on water resources to water professionals, graduate students, journalists, politicians, local and international firms and decision-makers. Services such as water quality tests, for example, are provided to the community at a minimum cost.

Workshops and training also comprise PHG’s scope of work. Workshops have included Water Problems in the Arab World -- Cairo; Women and NGO Contribution –

Tunisia; Palestine Planning Workshop for capacity building in water and wastewater issue – Bethlehem. PHG, in cooperation with local and international institutions, has organized a number of training courses in the field of Water Resources Planning, Groundwater Resources Management, and Groundwater Information Systems. The target groups of these courses were water professionals working in the West Bank and Gaza.

PHG's objectives and scope of work place it in a strategic position to contribute to water conflict reduction and effective water management. Its unofficial status allows PHG to attend and contribute to various types of conferences without being limited by the ego of a government or its politicians. Impartiality is an interesting issue with PHG because it may naturally advocate the Palestinian perspective. However, if facts are based on scientific information, which may contribute to equitable water resource allocation, impartiality can be demonstrated and verified. Not being formally connected to the Palestinian Authority does allow PHG to exercise more impartiality, giving its opinion more credibility than that of a political institution. An unofficial status and impartiality, as well as an up to date information base presumably untainted by politics; and collaboration with other water agencies across boundaries also makes PHG an early warning signal for upcoming conflicts or issues that could lead to aggression. Furthermore, its broader agenda enables PHG to articulate its opinion and disseminate information to a wider segment of the Palestinians. Its ability to influence opinions in this manner also gives it a pivotal role in the more effective management of water and conflict reduction.

¹⁵All information taken from their homepage www.ipcri.org.

However, what strengthens NGOs can also be their weakness: absence of authority and the multiplicity and diverse nature of their approaches. Absence of authority refers to the absence of an agenda aligned with a government's biases. This is not to say NGOs do not have the potential to follow their own blind agenda, but are more likely to be objective in their purpose and practices when not connected to an authority like a government. This strength of not being connected to a central, agenda setting authority is also a weakness because unfocused policies and projects only make an NGO's work less useful. The multiplicity and diverse nature of NGOs' approaches is a strength in that diverse perspectives ensure more opinions, especially marginalized opinions, are realized and put into action. A weakness of such multiplicity is the possibility of duplication of work, and uncoordinated efforts. IPCRI and PHG are examples of water related NGOs that work to provide information and collaboration. IPCRI is Palestinian-Israeli and therefore represents an ideal form of collaboration between the two parties. PHG is Palestinian but collaborates with Palestinian Authority ministries, other NGOs, and the Palestinian public to further their form of sustainability in the West Bank and Gaza.

Significance of NGOs to Water Management and Conflict Reduction

Palestinian NGOs such as IPCRI and PHG have the potential to contribute to effective water management. By doing this they also contribute to water conflict reduction via improving information flow. More information provides basis for understanding that can eventually contribute to reduction in conflict. NGOs in the West Bank have been the surrogate regional water agencies in terms of research and services.

IPCRI and PHG have a special ability to be ‘messengers’ among water management agencies from the local to regional, to trans-boundary levels. Gathering, exchanging information, collaborating with various experts, universities, and international aid organizations are characteristics of NGOs that makes their role important. Through their publications, conferences, consulting, direct services to communities, NGOs are a powerful tool through their activism and service, as well as through their primary information gathering and analysis. These two examples existed before the Palestinian Water Authority and have complemented municipal level water agencies for some time. Without these NGOs and others like them, information on water resources would be even more incomplete than it is today, and collaborative efforts among international donor agencies, the newly formed Palestinian Water Authority, and countless other decision-makers and stakeholders would not be possible.

On local levels, the implementation of water management was and continues to be carried out by local water management agencies like Jerusalem Water Undertaking in Ramallah. How these NGOs interact with the newly formed Palestinian Authority and its water management department, the Palestinian Water Authority, is still unclear. A critical, supportive, collaborative strategy for NGOs with the Palestinian Authority and other NGOs would make for more effective water management.

Simultaneously working toward better water management, NGOs have certain characteristics that allow them to contribute to conflict reduction – unofficial status, and impartiality. They are also in a position to be the first to be alerted to possible escalating conflicts and issues of tension because of their proximity to issues on the ground. Being of an unofficial status creates an atmosphere of trust among skeptical stakeholders,

especially in the delicate political situation of Israel-Palestine. A less suspicious atmosphere makes information exchanges and technical collaboration more possible. Since NGOs are unofficial, impartiality is more likely in regards to a particular government's official position.

Summary

Palestinian civil society, in the form of water related NGOs, has the potential for contributing to effective water management and water conflict reduction via information exchanges and collaboration. Intense coordination efforts of all NGOs with government agencies both Israeli and Palestinian, and international would fully utilize this immense potential. NGOs such as IPCRI and PHG facilitate conflict resolution by complementing the dynamics of PWA and JWU. They do this by fostering information flows and collaboration, and providing checks and balances on the system. NGOs influence is a form of power they exert toward better water management, while they continue to maintain their own slice of autonomy in the water management sector. Their evolving roles in the Palestinian Authority landscape shape the changing of Palestinian water management and society.

SIX

Conclusions & Options

In the beginning of this study, a two-part question was posed: First, how does the relationship between municipal and regional water management processes contribute to 1) effective water management and 2) water conflict reduction? Second, can any policy options be proposed? A short answer to this question is that the municipal and regional processes are not yet as synchronized as expected or hoped. The relationships are still being defined and shaped. However, this study does offer some lessons, policy options, and directions that demand further study.

Chapter Six summarizes the key points of all chapters, discusses conclusions and implications, and explains several. It ends with options and forward looking comments and possible future research ventures.

Conclusions

Based on information gathered from interviews, water management in the West Bank is ineffective. Some of the many reasons for this ineffectiveness are exacerbated by the water resource *scarcity* in the region; the overall political Israeli-Palestinian *conflict*; the sub-conflict over trans-boundary water; lack of timely and adequate information flow among Palestinian municipal and regional level water managers, research institutes, and NGOs – in short, lack of underlying preconditions for effective *management*. What is needed to make regional water management more effective are 1) Resolution of the larger

Palestinian-Israel political conflict (Lowi 1995); 2) Efficient information transfers among all levels of Palestinian and Israeli agencies; 3) Municipal—regional water agency cooperation; and 4) an improved and more open planning process.

These needs can be met through tiered planning on the multi-national, trans-boundary, regional, and municipal levels. Focusing on how a municipal planning process affects the upper tiers is central to this research because of the lack of current research on exactly what is occurring on the ground level, and its significance to regional water planning. Some of the key and most recent literature on the subject of water politics and water management in WBGZ do not fully address local level water management and its effects on regional water planning, but only address mostly top-down effects.¹⁴ Furthermore, while a top-down approach to conflict reduction and water management is the most direct way to promote change, though in this case it is not the easiest because of the many actors and issues involved, and runs the risk of alienating and/or neglecting local level needs. To combat the inefficiencies of top down approaches, middle and local level pro-action is necessary. In the case of the West Bank, an example of a ‘middle level’ is a district that is comprised of several municipalities. The city of Ramallah is an example of a local level. Managers at the local level must be proactive in their planning process because only they know what is truly occurring on their level and must do their part in informing and shaping regional policies that will eventually affect them. Finally, emphasizing the importance of local water management effects on the regional level (for example, the West Bank) demonstrates how planning within constraints of occupation -- in this case Israel’s control over much of Palestinian affairs -- can still be accomplished.

¹⁴ Examples of key literature are Wolf 1995; Elmusa 1997; Kally 1993; Rogers and Lydon 1994; Lowi 1995; Homer-Dixon 1999; Sherman 1999; and Allan 1999.

This can be accomplished within the existing political infrastructure, while simultaneously working toward its reformation toward effective water management. Effective Palestinian water management will not unilaterally solve the political or sub-conflict on water from any tiered level, but a local level such as Ramallah's JWU can make its contribution to conflict reduction through a comprehensive water management process that simultaneously focuses on improved water management.

Options for Improving Water Management

Drawing from the above reasons for the ineffectiveness of water management and what is needed for addressing the reasons, four options emerge: 1) Improved information transfers; 2) Effective Palestinian-Israeli interagency and NGO cooperation; 3) Conceptualization of dual agenda planning; and 4) Movement toward public participation in the planning process. Such recommendations are only starting points in directions that can begin the enormous task of reshaping the West Bank's water management strategies.

1) Improved information transfers refer to data on water supply and demand on municipal and regional levels. This information must flow quickly and accurately from various levels of policy making, throughout all agencies that have a vested interest in water matters, such as the Ministry of Planning and International Cooperation, environmental NGOs, and Mekorot, Israel's national water company. Before information can flow among channels, sufficient access to information is necessary. Palestinian researchers and water managers must be given full access from the Israelis to relevant water sources so that appropriate studies can be conducted. Information flows from the municipal to regional levels are especially important because if knowledge of the situation on the actual ground is not fully understood, then comprehensive, useful

regional policies cannot be devised. How information can begin to better flow throughout all levels, particularly the municipal level, such as Ramallah, is that all reports, raw data, and documents be deposited in a central library for all stakeholders' use. This includes the drafts as well as the final drafts, and accommodation for review and dialogue in the form of position papers. Meeting organizers and chairs can be rotated among all entities that attend the meetings. Timely deposit is necessary and should be determined by the participating agencies and researchers. But this central library should not be the only way of efficiently transferring information. Regular meetings among appropriate personnel to ensure cooperation among various agencies could be held once a month, for example. The meetings could be held in somewhat of a parliamentary style so that each party will have equal time to express their interests, concerns, and information.

2) Effective Palestinian-Israeli interagency and NGO cooperation refers to the level of interaction among these various agencies with interests in water management. More meetings do not mean more efficiency, but it could be a measure for the level of cooperation. In addition to the official Multilateral Water Conferences, effective management could be fostered by smaller scale, more frequent meetings among several levels of personnel – not just top-level administrative officers, but for example, the engineers and surveyors that work on the ground from a day-to-day level. It is not the intention of these meetings to forever remain unofficial or to remove politics from water management issues. Meetings from the 'ground-up' that include significant input by engineers, hydrologists, planners, and consumers will color the political debate in a unique way that may highlight some perspectives not yet visited by strictly politicians.

What is the incentive for meetings between Israeli and Palestinian agencies? More effective and easier water management planning. Instead of guessing what the other side is doing, they can inform each other directly. This may still not be enough incentive, which is where the NGOs come into play. NGOs are a more direct extension of civil society and tend to have less of a political bias than a Palestinian or Israeli ministry. NGOs such as IPCRI and PHG would offer fresh perspectives in these meetings for cooperation, and may highlight the incentives for such cooperation when the respective government agencies fail to see the beneficial incentives. Organizing informal meetings between Israelis and Palestinians, for example, can be a way for “jump-starting” stalled peace talks. IPCRI’s reason for being is for ‘developing practical solutions to the Israeli-Palestinian Conflict’ and has potential for continuing the fostering of cooperation between the peace process. PHG as a primarily Palestinian environmental NGO, continues to have the potential of fostering cooperation of organizational roles and information flow between the local and regional levels of Palestinian water management. NGOs are not the sole answers to all the cooperation and conflict problems, but are a valuable component of the solution.

3) Conceptualization of “dual agenda” planning is the idea that a particular planning process, such as water management, can also aid in resolving and preventing various types of larger, more politicized conflicts. Planting the seeds of problem solving can be a long-term asset of West Bank water management planning. The water master plan on the municipal level of Ramallah was due at the end of 1999. Its implementation style is extremely important. Are the decision-makers and daily water managers

implementing these plans with the larger picture of the Israeli-Palestinian water conflict and future of the West Bank and Gaza in mind? To an extent, yes because one cannot walk down a street in Ramallah without seeing a blue camouflage-uniformed Palestinian Authority police officer, sitting watchfully in the back of a baby-blue colored jeep – a bold reminder of the young Israeli soldiers that used to do the same in Ramallah. The conceptualization of dual agenda planning can be put into action by speculating others' action and situational outcomes. This involves generating strategies by decision makers and planners, and would create the forum for realization that no action goes unfelt throughout the interconnected web of municipal-regional-Israeli-Palestinian water management.

4) Movement toward public participation in the planning process is a move that may take some time to emerge in the Palestinian planning process. Ironically, the main reason for better water management is the people, yet they are the last to be consulted. It is understandable that many other issues must be settled in order to have an organized and effective water planning process, such as what departments play what roles, what issues should first be addressed, and that involving the public so soon may prove to be chaotic. But as the PWA comes to better grip with their role in water management, incorporating public opinion will sustain their work, better satisfy the public's needs, and plant the seeds for democratic organization.

Since public participation is not quite on the agenda on this first round of master plans, steps to gradually introduce public participation in the next five years, for instance, could be made. Comparative studies of public participation methods around the world could be done in the mean time, so that tailored methods for Palestinian society can

be designed. How to integrate public participation in JWU's and the PWA's planning in the near future is in need of exploration.

If these policy options are not implemented, would conflict reduction and effective water management still result? Hindsight will truly answer that question, but if the choice is between these options, or no other courses of action, these options are a safer route to effective water management and water conflict reduction. Certainly, more innovative options will arise as this area is further explored.

Implications

Ramallah's JWU plays an important role in trans-boundary conflict reduction because it is one of the many components that comprise the institutional infrastructure that Libiszewski highlights as a weakening factor on conflict intensity. The other components include other municipalities in WBGZ, PWA, MOPIC, and all other related PA ministries. Though the conflict reducing actions may directly be exercised on the level of the PWA, the PWA will draw their information from what is occurring on the municipal levels in order to fashion a coherent, regional strategy. Therefore, the role of JWU as an aggressive actor in the trans-boundary water conflict is vital and would be best carried out immediately. It is important now for JWU to act upon this role of close policy maker and implementer with PWA because of the atmosphere of the ongoing peace talks between Israeli and Palestinian leaders. This atmosphere of solution searching provides a window of opportunity for innovative ideas to flourish and be implemented, not to mention funded by international donor agencies. The role of conflict reducer can be carried out by effective water management strategies through tiered planning, starting

out with the municipal level, moving up toward the regional (WBGZ), then onto the trans-boundary (WBGZ-Israel). Palestinian civil society, in the form of NGOs, are a part of this tiered planning in that they continue their research and action in the water-environmental sector since before the existence of the PWA, while complementing and critiquing the work of JWU and PWA. In concert, Palestinian civil society, municipal, and regional level water managers can aid in the reduction of the trans-boundary water conflict through the exercising of effective water management strategies.

JWU contributes to conflict reduction by fostering the efficient and adequate flow of information to the PWA, other PA ministries, other municipalities, universities, NGOs, and consumers. Without the effective flow of information from the municipal level of policy implementation to the regional level, policies and strategies on the regional level will lack coherence with what is actually needed on the municipal level; will lack coordination with other municipalities; and will therefore weaken the regional policies and strategies that represent the Palestinian population as a whole. Information such as the water yield of a well and its recharge rate; the population demand for water; the distribution network's well-being; the amounts of network water loss and water shortages; and consumer issues such as cost and quality of the water must be timely and current so that the PWA and other regional planning bodies can make the decisions and cases for their consumers. Regular meetings and reports, policy briefs and liaisons can foster effective flow of information from the municipal to regional level. Stakeholders in water management can become part of the dialogue through the sponsorship of local universities like Bir Zeit University and NGOs such as PHG, as mentioned in the previous chapter on environmental NGOs. Examples of public participation are

interviews and questionnaires, focus groups, public meetings, and the continued use of an open complaint system.

In order to decrease the internal Palestinian competition for information between Palestinian agencies, a re-conceptualization of shared water management is necessary. This process can be initiated by setting the example with a demonstration of a collaborative effort among several Palestinian institutions. For example, a consortium of NGOs, universities, PA ministries, and municipal water management institutions could meet four times a year to determine how they could work together to delegate tasks according to strengths of each member.

Improved water management leads to prosperity in the forms of health, economy, environment, and political relationships with neighbors. With such prosperity, WBGZ will be empowered to rejuvenate itself into the ways of life preferred by Palestinians. Strong, local level information bases, policy and decision-making, consumer and civil society voices strengthen the preconditions for an independent, democratic, and equitable state. Much care must be given at this stage because, like many emerging new states, Palestine runs the risk of being overrun by power greedy individuals and groups that will gladly form a dictatorship to attain and maintain their power.

The dual-intent agenda, in this case, is effective water management coupled with conflict reduction measures or attitudes. When devising a water management strategy, simultaneously integrating conflict reduction and prevention measures is a dual-intent agenda. As a result, better water management for the immediate and long term can be achieved, and a long-term conflict reduction and prevention strategy will be addressed. An example of such a dual-intent agenda could be improved coordination efforts on

rehabilitating water distribution networks throughout the West Bank -- among all Palestinian water management agencies, local and regional, NGOs, research institutes, consumers, donor agencies like USAID, and the Israeli water agencies – and establishing a permanent judiciary board comprised of all necessary stakeholders where disputes or potential disputes can be mediated or defused.

State building or rebuilding is another possible result from effective water management and conflict reduction from NGOs. In terms of infrastructure, sufficient water quality and quantity are necessary for any group of people or national state to exist. Palestinians are now addressing the issue of their own state, in whatever form it may take. Whether an independent state or autonomous province of Palestine or none of these, emerge, appropriate water resources are necessary for health, industry, agriculture, daily living. With the recent erection of the Palestinian Authority, several administrative ministries are assuming the position of an emerging state. Now more than ever does Palestine require efficiently managed water resources for its growing populations, Diaspora returnees, and growing business sector. Without efficient water management, the building of a sustainable Palestinian state is not possible.

State building is a significant result because throughout the world, post-conflict reconstruction in places like Kosovo and East Timor are in need of establishment of safe drinking water, and water use for industry and agriculture. Central Asia's Aral Sea Basin must cope with the lowering of its water level and the pollution of its soil from fly-away salt, and insufficient water needs for human consumption and agriculture. So far the managing of this situation of Uzbekistan and its neighbors does not suggest any form of conflict, but the potential still exists. Prevention would be a useful strategy at this point.

Therefore, water management, coupled with a conflict reduction and prevention strategy would be most effective in state rebuilding in terms of infrastructure.

Past the Future

This study is only the beginning, and like so many other studies before it, poses more questions than it gives answers. Used as a springboard, the directions in which this research can be taken include a more thorough examination of Israeli water management, in all of Israel and its management policies with Gaza and the West Bank. Likewise, a more comprehensive study of Gaza and the West Bank's water management current situation and policies are in order. To make the study more complete, challenging, and complicated, a study of the region's riparians to the Jordan River should be included: Syria, Jordan, Lebanon. All of this can be studied in the context of urban and regional planning related to city master planning, transportation, economic and environmental development. More specifically, sovereignty of Israel and Palestine should be thoroughly revisited; a comprehensive study of the various NGOs in the Palestine-Israel region deserves attention; further examination of the Joint Water Committee and Multilateral Working Groups must be accomplished; and the semantics of cooperation, collaboration, coordination, and conflict should be demystified. Finally, the relationship between JWU and Mekorot leaves much to be explored.

Beyond these various research ventures, and the sweet taste of *argeeleh*, the need for effective water management and water conflict resolution must not be forgotten.

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Appendix I

Methods & Procedures

Appendix I

Methods & Procedures

Case Study

This research was conducted as a case study. It focuses on the West Bank city of Ramallah and this city's water management, in conjunction with the regional Palestinian Water Authority, may contribute to water conflict reduction and effective water management. O'Sullivan and Rassel (1995) define case study as a study that examines in some depth, persons, decisions, programs, or other entities that have a unique characteristic of interest. The case study of Ramallah proved challenging as the political situation there is unstable and in rapid evolution. Through interviews, and documents I collected information for this case study. Originally, the goal of this research was to examine the water management strategy of Ramallah and its contribution to effective water management and conflict reduction, in the context of the West Bank strategy. Using a viability matrix adapted from the work of Dr. Aaron Wolf (1995), I planned to measure the viability of the master plan, using Palestinian and Israeli experts' opinions and Ramallah's master plan itself. This original research agenda was quickly shelved when I discovered Ramallah's as well as the West Bank's regional master plan is still under construction. I then shifted to a more policy-oriented analysis, somewhat of a pre and post master plan posture.

Interviews

Interviews with Palestinian water management related managers and researchers were key sources of information.¹⁵ Interviews were important data sources because the Palestinian perspective on water management would be directly from Palestinian water managers, and it would be their latest perspective on the subject. All West Bank interviews were conducted during June-August 1999. The interviews were semi-structured and allowed the interviewee to lead the conversation, but in order to elicit relevant information, I prepared a set of base questions (see Appendix II) to provide a starting point for the interviewee. I chose interviewees guided by who dealt with water management policy-making, such as administrative heads of PWA and JWU, many of whom are hydrologists and researchers. Most if not all interviews were arranged through contacts that evolved into other contacts. This networking began several months before my visit to the West Bank, when attending a conference in Washington DC. My primary contact at this Washington D.C. conference was Dr. Sharif Elmusa, formerly with the Institute for Palestine Studies. Interviews through contacts limited the variety of interviewees because they all may be in the same pool of researchers that had connections to each other. This may have closed some doors for me if I did not have the appropriate contacts. Attending a conference in Jerusalem added to the opening of many doors..

Documents

Reports, booklets, articles that were voluntarily given to me by interviewees or upon my request supplement my interview information. Books and journal articles were consulted before, during, and after my visit to the West Bank. Guided by my original

¹⁵ See 'List of Interviewees' in Appendix II.

research proposal, the broader literature review served as a means for supporting my original research agenda, and evolved with my changing goals. I began with readings on larger categories associated with my research such as conflict and cooperation, water management in the near east, political history of Israelis and Palestinians, and the current peace process. Using articles and books as structure and supplements to the interviews, they stitched together this research project.

Limitations

This study attempts to analyze possibilities that trans-boundary water conflicts can be influenced through local level water management processes. The research focuses on one city, Ramallah, in the context of local water planning within the framework of the Palestinian Water Authority's regional water planning of the West Bank. Due to limited time, data, and finances of the researcher, a comprehensive study of all West Bank and Gaza cities were not possible. Interviews are limited to Palestinian water experts and decision-makers. Also, interviews with nearby Israeli settlements and military installations did not occur. Though I met with close to fifty people over the course of the summer, I record and use only twenty-four of the interviews. The other approximately twenty-six meetings were difficult to arrange because of their hectic schedules. All meetings were unable to be solidly scheduled in advance. I would request, a week or two in advance, for a meeting time, but was repeatedly told to phone the day of the tentative scheduled time to confirm the meeting. Often times, the meeting was delayed up to two to three times or cancelled indefinitely. Uncertainty pervaded even the advanced planning of a meeting. This meeting scheduling hindered the number of people I could have reached. Furthermore, I was limited to Palestinian agencies because of lack of

appropriate contacts and because the scope of my work could only focus mainly on Palestinian water management, given the short time frame of three months I was in the West Bank.

Appendix II

Summary & Conclusions

Of Interviews

Appendix II

Summary & Conclusions

Of Interviews

Interview Questions

The objective is to analyze current or proposed water management strategies (through the examination of water management plans) in terms of distribution in Ramallah (supply and somewhat of demand) and its relationship to water conflict resolution. The objective will be achieved through direct questions regarding the strategies and the filling in/designing of a matrix with which to analyze it.

1. Are there any current or recent local/regional water conflicts?
2. What are the current or proposed water management strategies for Ramallah/West Bank?
3. What are its components? Written report/documents available?
4. What are your perspectives on it (weaknesses/strengths etc)?
5. How successful are they so far or predicted to be?
6. Would you say these strategies aid in minimizing or preventing water conflicts?
7. What are the main demand/consumption issues? How are they being addressed?
8. What are the main supply/distribution issues? How are they being addressed?
9. What is the level of public participation in the decision-making process?
10. What cooperative efforts, if any, have there been or will be between Palestinians and Israelis; other Palestinian municipalities?
11. Technical-traditional vs. modern technologies used?
12. Economic-from where and under what conditions are these efforts being funded?
13. How is the Palestinian Authority handling water issues compared to Israel? How do you think Barak will handle the water issues between Israel and the West Bank?
14. Relationship with Mekorot (optimal, fair, strengths, weaknesses, etc)?
15. What should the 'performance criteria' be for the matrix?

List of Interviewees

May-August 1999

- Mr. Husni Abu-Asi (Hosny Sary)**, Mechanical Engineer, Jerusalem Water Undertaking
- Mr. Nassr Abu-Halawah**, Deputy Manager, Jerusalem Water Undertaking
- Mr. David Alkan**, former hydrologist–civil engineer for Tahal; currently director of A.D. Systems: Water, Environment, Nature Resources & Infrastructure.
- Dr. Tony Allan**, Professor of Geography, School of Oriental and African Studies, University of London
- Mr. Mohammed Amarneh**, Environmental Engineer, Jerusalem Water Undertaking
- Dr. Karen Assaf**, Hydrologist, Palestinian Water Authority
- Mr. Abdel Karim Assaf**, General Director, Jerusalem Water Undertaking
- Mr. Omar Awwad**, Geologist, Palestinian Water Authority
- Ms. Natasha Carmi**, Hydrologist, Infrastructure Group, Ministry of Planning and International Cooperation
- Ms. Fadia Daibes**, Deputy Programme Director, Palestinian Water Authority
- Mr. Ebrahim Dajani**, Environmental Engineer, MOPIC
- Mr. Joseph Delapenna**, Professor of Law, Villanova University.
- Mr. Ernest Doerring**, Director Water Resources Technical Assistance-Capacity Building, GTZ Palestine
- Dr. Shadi Ghaban**, Professor of Architectural Engineering, Bir Zeit University
- Mr. Anwar Elzian**, City Engineer, Ramallah Municipality
- Mr. Nidal Khalil**, Project Engineer, Jerusalem Water Undertaking
- Dr. Camille Mansour**, Director of Law Center, Birzeit University
- Mr. Khalil Nijam**, Assistant General Director, Ministry of Planning and International Cooperation
- Ms. Violet Qumsieh**, Director Environmental Unit, Applied Research Institute Jerusalem (ARIJ)

Mr. Emad Juma Qurt, Technical Section Foreman, JWU.

Mr. Annis Saleh, MSc, Researcher, Industrial Engineering, Palestinian Hydrology Group

Brother David Scarpa, Chief Scientist, Water & Soil Environmental Research Unit, Bethlehem University.

Dr. Abdel Rahman Tamimi, General Director, Palestinian Hydrology Group

Dr. Aaron Wolf, Assistant Professor of Geography, Oregon State University

List of Organizations Consulted

Applied Research Institute in Jerusalem

Jerusalem Water Undertaking

Ministry of Planning and International Cooperation

Palestinian Water Authority

Palestinian Hydrology Group

Interview Summary and Conclusions

Summary

Guided by the objective of this research -- to identify potential contributions to effective Palestinian water management and the Palestinian-Israeli water conflict -- several themes emerge from interviewing individuals in the water management process in the West Bank. These themes are grouped into two broad categories: 1) **Issues** concerning regional (West Bank) and municipal (Ramallah) water management; and 2) **Conflict and cooperation** within Palestinian Authority agencies, NGOs, and with Israeli agencies.

Among the many water management issues, this study is limited to three: unclear organizational roles, water supply, and poor information flow.

Beginning with *unclear organizational roles*, there is a general consensus that agencies ranging from the regional Palestinian Water Authority to the municipal Jerusalem Water Undertaking, of Ramallah, to NGOs like PHG are unsure of their precise roles in water management. Written definitions of these roles and relationships with each other are inserted in their various water master plans and reports, which may in time solve the vagueness – but that could take years and may never happen at all. However, vagueness can also be considered an asset in terms of fluidity in an evolving system of processes and policies. Before the partial Israeli withdrawal from the West Bank, West Bank water management was very much decentralized and water planning done incrementally. The designing and implementation of long term, comprehensive, collaborative planning calls for a reconceptualization of the entire water planning process

by water planning professionals. Comprehensive, collaborative planning are the keys to rethinking the water planning process.

Water shortages generally refer to the water supplied by Israel. Sixty per cent of West Bank water is supplied by Israel since it controls the most abundant ground water source, the western aquifer, and closely controls the digging of new Palestinian wells and the permission for rehabilitation. This limitation on water is a hindrance to Palestinian water planning and a source for conflict between Israelis and Palestinians, because Palestinians feel their right to ample control water sources is denied, making future water supply and demand projections difficult to make.

Information flow on items such as objectives, water table levels, reports on water demand in a particular area do not flow through all Palestinian agencies and concerned channels as quickly as possible. Despite repeated requests, documents arrive several months later to other Palestinian offices, if ever. Information flows between Israeli and Palestinian agencies are nearly non-existent except within the Multilateral Working Group. I do not feel at liberty to reveal the source for this point on poor information flow between Palestinian Authority agencies and NGOs. No specific incident of poor information flow can be reported through my fieldwork among Palestinian Authority agencies or between regional and municipal levels. But since complaints regarding poor information flow between NGOs and the PA exists, the possibilities within the PA system are also suspect. Information flow is directly related to gathering of information. Without the sponsoring of the Interim Agreement's Multilateral Working Group, Palestinians are not allowed access to data on Israeli controlled aquifers, such as the western aquifer. Palestinians are not permitted to conduct tests of water quantity and quality that are not

associated with the eastern aquifer. Ms. Natasha Carmi, a hydrologist with MOPIC, relayed to me how she would prefer to be in the field conducting analyses and research of the West Bank's water resources, but must remain behind a desk, critiquing reports instead because Palestinians are not allowed to conduct tests without Israeli permission. She could be arrested if she were to challenge this policy. Another example of this limitation extends to foreign researchers. A German hydro-geology master's candidate, Mark*, came specifically to the West Bank to gather primary data for his master's thesis regarding the water sources in the Jericho area. Mark commented that he was concerned about one particular field trip because he had to bring along Israeli hydrologists as well as Israeli equipment in order to examine a particular water source in the Jericho area. He was concerned that the local Palestinian residents may be less than welcoming to the Israeli research group, which could later translate into Palestinian locals' mistrust of Mark's intentions, therefore further thwarting his research and making Palestinian locals uncomfortable. These two examples further ask what will be the new situation of water research, who has permission, and who grants it. Will 'joint management' truly mean equitable management and sharing of data by Palestinians and Israelis or will one side have more sovereignty over water resources than the other?

Conflict and cooperation, per se, in terms of Palestinian-Israeli and Palestinian interagency-NGO do not arise in interviewees' responses as often as the water management issues. The interviewed Palestinian water managers regard the conflict on water supply as a highly contentious issue that is the basis for the Palestinian water crisis as well as a barrier to effective water management planning. Palestinian-Israeli cooperation is conducted formally through the Multilateral Working Group. The

* Real name withheld for his privacy.

Palestinian attitude toward cooperation is not very positive due to suspicion, distrust, and pessimism of Israeli water policy, according to the various water managers who I interviewed.

Conflict and cooperation within Palestinian agencies also exist. Conflicts exist in the form of unclear roles, duties, and information sharing. Cooperation that combines expertise, financing, and lessening of the duplication of projects could be improved.

General themes also emerge from the interviews. The idea of a comprehensive Palestinian water management process is new because of the recent Israeli occupation and its remaining legacy. Organizing and planning from a beginning stage by Palestinians themselves is the sentiment emanating from the PWA and JWU. In particular, focus is on rehabilitation of the water infrastructure: pipes and pumps, while water managers must be retrained with the newest technologies in water management. Both the regional and municipal levels rely heavily on donor financing and consulting for the planning process. Palestinian water expertise exists, but at the high rate of changing water management, foreign water experts are contracted for projects to supplement what is still lacking. Public participation on the municipal level is non-existent because of the predicted chaos it could bring (Assad 1999). Regional Water managers did not give any specific reasons for why public participation is not practiced on the regional level. (Assaf 1999; Daibes 1999). The amount of collaboration between the regional and municipal level leaves much to be examined. Before the establishment of the Palestinian Water Authority in 1996, there was no regional water authority with which municipal water managers could collaborate. The regional and municipal levels are currently reconfiguring their institutional infrastructures and policies, and processes.

Understanding how these reborn institutions interact with each other must be done with a bit of retrospect, for example six months during or after their reorganization, so that processes can be given ample time to be carried out and then studied. So far in this water planning process, collaboration is not so prominent. In the plans, language of necessary collaboration exists, but it is still too early to analyze its dynamics. One thing is for certain, while drawing the plans for water management is an enormous task, their implementation will be an even bigger challenge.

Conclusions

These themes are expected to characterize any beginning water management process, with or without a surrounding political conflict. What is unique about reconfirming expected assumptions of disorganization is evidence from the opinions of Palestinian water managers, not a foreign, removed from the situation researcher, and how these so-called obvious problems influence effective water management and water conflict reduction. After synthesizing the interviews into the above summaries, four main concepts emerge: 1) Unclear organizational structure and roles of water management institutions such as the PWA, JWU, and NGOs; 2) Lack of public participation; 3) Need for reconceptualization of planning; and 4) Characteristics of cooperation and conflict. These four concepts are problems of, or responses to, the state of water management in the West Bank.

Unclear organizational structure and roles within and among water management institutions such as PWA and JWU are ill serving to a party that is negotiating peace agreements. If the newly established Palestinian water management sector is not yet sure of its own roles and capabilities, how can they know what to ask for in the peace

agreements with the Israelis, let alone address those needs? Speaking with the various water related professionals gave me a sense of the tensions in the water, so to speak. Perhaps it is my own misunderstood perceptions, but every person I spoke with had the sound of urgency and frustration in their voice. Pessimism was the theme. Perhaps they are all overworked individuals just trying to do their jobs, but the uncoordinated efforts were only making things worse. Such disorganization could be found anywhere in the world, but there are not too many other places in the world where concerted efforts are as needed as in Palestinian water management. Examples of this disorganization are described in the body of the research, particularly the chapter on “Water Scarcity, Conflict, & Management.”

Speaking of concerted efforts, public participation is an extension of capitalizing on civil society, and an effective way to check and balance the ongoing of government, as well as provide the needs assessment for planning processes. Public participation is non-existent in West Bank water management in practice. Should this even be an issue in the West Bank? Do they need it just because it is a buzzword topic in the U.S.? PWA’s and JWU’s answer to that is [paraphrasing interviews] “No, we do not need public participation now. Maybe in the future.” This brings me to ask, “How much more effective would the planning process be with public participation?” That question deserves its own thesis. Perhaps public participation would do something for cooperation between water administrators and consumers on local levels. Water demand management complements supply management. Future water planning in the West Bank may find it useful to hold one of those constructively chaotic town meetings that could also address water loss issues openly.

Reconceptualization of planning processes is more of a remedy to the problem issues. Collaboration among Palestinian water management agencies, horizontally and vertically, along with Israeli water related agencies and, including but not limited to Palestinian NGOs would be a more efficient use of expertise and financial resources. Extending that collaboration to regional and urban planning processes, for example with Ramallah's municipality office, would better coordinate specific water consumption needs and water supply capabilities. Collaboration is only part of the reconceptualization. Recognizing and analyzing how particular planning policies and processes affect the water conflict and, overall Palestinian-Israeli political conflict is the second part of reconceptualization. The close relationship between water management and conflict must be understood. For instance, equal access to water data and coordination with Israeli water planners on the accuracy of the data would make water supply and demand projections more accurate, peace negotiations more progressive due to better information, and promote better understanding between Palestinian and Israeli water managers and consumers.

Regarding conflict, there is the issue of Israeli-Palestinian conflict and conflict among Palestinians. The first, which I expected to hear about often in the interviews and perhaps even witness some captivating arguments, rarely occurred. In fact, Palestinians did not have much more to say than, 'there is not enough water to meet demands and the Israelis are holding it back.' When I inquired about the Joint Water Committee or the Multilateral Water Resources Working Group, very few, if any, could give me concrete information. Those who are on the committee were never available for interviews, and

those who were available were not open about those committees' processes. The minutes to the meetings were highly guarded and not open to the public.

Cooperation among Palestinian water managers and researchers was minimal. There was only one instance of a PWA document being reviewed by MOPIC and supposedly circulated around to all other relevant ministries.

Appendix III

Profile of Actors

Appendix III

Profile of Actors

Trans-Boundary Actors: Palestinian Water Authority and Mekorot

Palestinian Water Authority

Established in 1996 through the auspices of the Oslo Accords, two of the PWA's several aims are to ensure efficient management of available water resources and to achieve the highest degree of cooperation between the PWA and all parties sharing common interests (Background Information 1998). PWA's structure consists of the head and four departments: 1) water resources and planning; 2) regulatory; 3) technical; and 4) administrative.

PWA's relationship is central to other Palestinian Authority ministries that are relevant to water sector issues. The flow of information is ideally two-way, based on the formal organization. The related ministries range from the Ministry of Planning and International Cooperation (MOPIIC) to the Ministry of Local Government, which is responsible for local planning (Figure 2, page 117, Appendix IV).

The policy of the PWA is derived from the principles of integrated water resources management and emphasizes a sustainable development of all available water resources including wastewater. Furthermore, the water policy of the PWA is supposed to be coordinated on a national Palestinian level and carried out on the appropriate local level. Such coordination should ensure that domestic, industrial, and agricultural

development and investments will be compatible with the quantity of water resources available and economically feasible (Water Resources Management Strategy 1998).

Mekorot

Mekorot is the plural of Makor in Hebrew, literally meaning "Sources" (Haskel 1999; Kally 1993). Mekorot, the Israel National Water Company is in charge of the construction, operation, and maintenance of the water plants and the licensing of the various sectors for the use of water, such as urban communities, industries and irrigation users (Alquds 1999; Israel-mfa.gov 1999). A self-proclaimed non-profit, public corporation founded prior to Israel's independence, between 1937 and 1938, Mekorot supplies approximately 80% of Israel proper's water (Alquds 1999).

Some of the future actions of Mekorot include improving effluent purification methods to meet demand; widening the desalination of brackish and sea water; providing a sophisticated maintenance procedure and control system, to optimize expenses; adjusting the water quality as required for different uses and standards (Israel-mfa 1999).

Multilateral Water Resources Working Group

As part of the peace process, this group provides a forum for discussing new ventures on water management and cooperation among Near East countries. The latest round of the working group took place in Tunisia, May 15, 1996 – attended by forty nations. Local solutions and joint projects in the Jordan River Valley, and sewage system improvement in Gaza are just a few of the multilaterals' projects. In the future, they hope to establish a regional water treaty (Joffe 1996:408).

Municipal Actor: Jerusalem Water Undertaking (JWU)¹⁶

The water authority for the district of Ramallah, under the Israeli occupation and before, is the Jerusalem Water Undertaking. The name is misleading since the privately run company does not serve the Jerusalem population. The name is a legacy from before the 1967 War when the JWU did serve a portion of the Jerusalem population until that time, only to be pushed back by Israeli policies, toward Ramallah to serve the El Bireh and Ramallah regions. Today all of Jerusalem, both West and East, the latter being predominantly Palestinian, is served by Mekorot.

To go back even further, in 1963, when Ramallah and most of the West Bank were under Jordanian authority, the Jordanian government made an agreement with the International Development Agency for a loan of \$3.5 million to develop drinking water projects throughout Jordan. One of these projects was the JWU. The JWU was established as a non-profit, independent, civil organization run by a Board of Directors, which includes representatives from the two municipalities served, Ramallah and El Bireh. The JWU maintains that independent status today.

However, the operations of the JWU were interrupted since Israel's occupation in 1967 and all works and projects relating to water and water resources became subject to the Israeli authorities. This order prevented any organization from work connected with the management, maintenance or development of water services or resources without the prior approval and licensing from the Israeli military authorities.

JWU's existing structure consists of a general manager and four divisions:

¹⁶ All information concerning JWU originates from JWU's "Performance & Prospects 1995" unless otherwise noted.

1) mechanical; 2) accounting; 3) technical; and 4) administration (see Figure 4, page 119, Appendix IV). The general manager oversees the work of the four divisions, and is directed by the board of governors. The board of governors is made up of representatives from each municipality and village council: Ramallah, Albireh, Deir Dibwan and the village of Kufr Malek. Although JWU serves forty-five communities, only these four are represented on the board. The scope of the board of directors' decision-making includes budgets, capital investments, planning priorities, services charges, and tariff rates (Saleh 1999).

The main responsibilities of the mechanical division are to ensure optimal running of the wells, pumps, and pumping stations, and to repair any malfunctions in the pumps and motors. The mechanical division is the hardware division, responsible for all mechanical and electrical designs, contractual documents, pumps and vehicle maintenance.

Since JWU is a private water company, its accounting division plays a vital role in its operation. The accounting section oversees the accounting, warehouse stores, inventory, book keeping, the preparation of financial statements, reports, payroll, end-of-year balance sheets and final accounts, as well as the receipt of payments from those consumers who wish to pay at the office of JWU.

The technical division has two sections, the network and meter. The network section manages water distribution, maintenance of lines, laying of new consumers' connections, answering emergency calls for network repairs, projects design, monitoring and supervision. The meter section deals with installation of new meters, dismantling

and maintaining used meters, recording the meter readings, distribution of water bills and collecting payments from consumers, as well as dealing with consumers' complaints.

Regarding improvements within the distribution system, unaccounted for, or lost water is 21.5%. JWU's general manager, Abdel-Karim Assad, feels it is realistic to bring this amount down to the teens. To achieve an unaccounted for water level in the teens, a pressure management project is underway which will result in a 2-3% reduction in water loss. This project is serving as a base project for other projects, and like many of the projects at JWU, is funded by GTZ or Deutsche Gesellschaft für Technische Zusammenarbeit -- German Agency for Technical Cooperation (Assad 1999). GTZ's mission is similar to the United States' Agency for International Development (USAID).

Proposals have been made by JWU for the short and long term reorganization of JWU's structure since 1995. The changes are a combination of the four divisions then later on breaking down the divisions into sub-sections. The restructuring is currently underway and the results should be implemented by early 2000.

Appendix IV Maps and Figures

Map 1 Basic Map of West Bank and Surrounding Area, Peace Now Settlement Watch Committee as in Edward Said's *The Politics of Dispossession*, Chatto & Windus Lmtd.: London, 1994.

Map 2 Interim Agreement Areas, West Bank Governates from National Policies for Physical Development," MOPIC, December 1998, p 20.

Map 3 Mean Annual Rainfall in the West Bank, from "Sensitive Water Resources Recharge Areas in the West Bank Governates," MOPIC March 1998, p 27.

Map 4 West Bank Aquifers, Source: The Jerusalem Fund and printed in The Center for Policy Analysis on Palestine, *Beyond Rhetoric: Perspectives on a Negotiated Settlement in Palestine, Part Two* (Washington: Sharif Elmusa, 1996), p.24.

Figure 1 Water Availability, Demand and Supply in the West Bank, from "Regional Plan for the West Bank Governates – Water and Wastewater Existing Situation," MOPIC, December 1998, p 28.

Figure 2 PWA's Relationship to Other PA Ministries, from NIVA's "Water Master Planning Cooperation—Palestinian Water Authority, Mission Report," 1998, p 19. (Norwegian Institutional Support Programme)

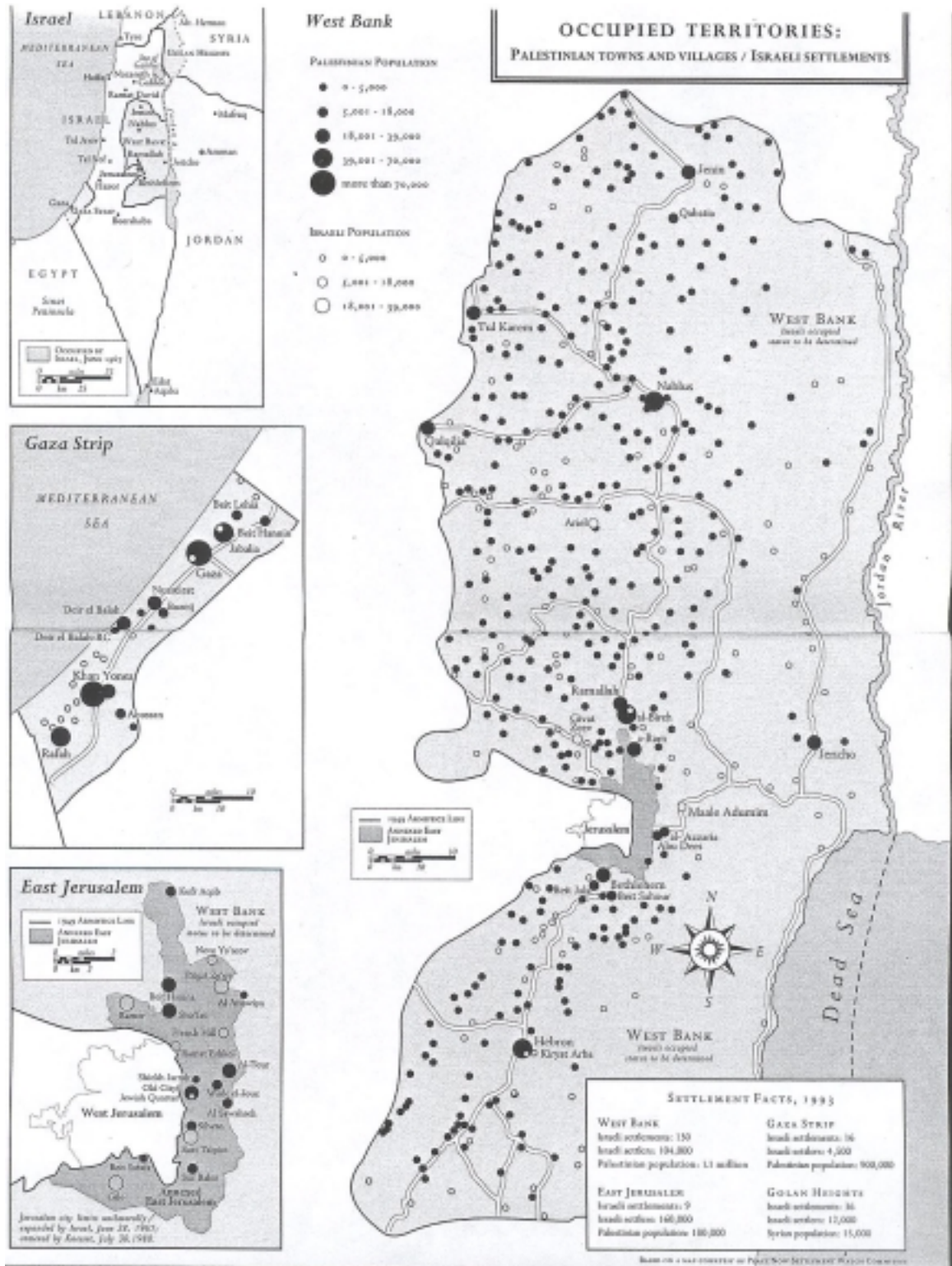
Figure 3 PWA's Proposed Water Sector Organization, Ibid. p 26.

Figure 4 JWU's Current Organizational Structure, JWU's Performance & Prospects, December 1995, p 11.

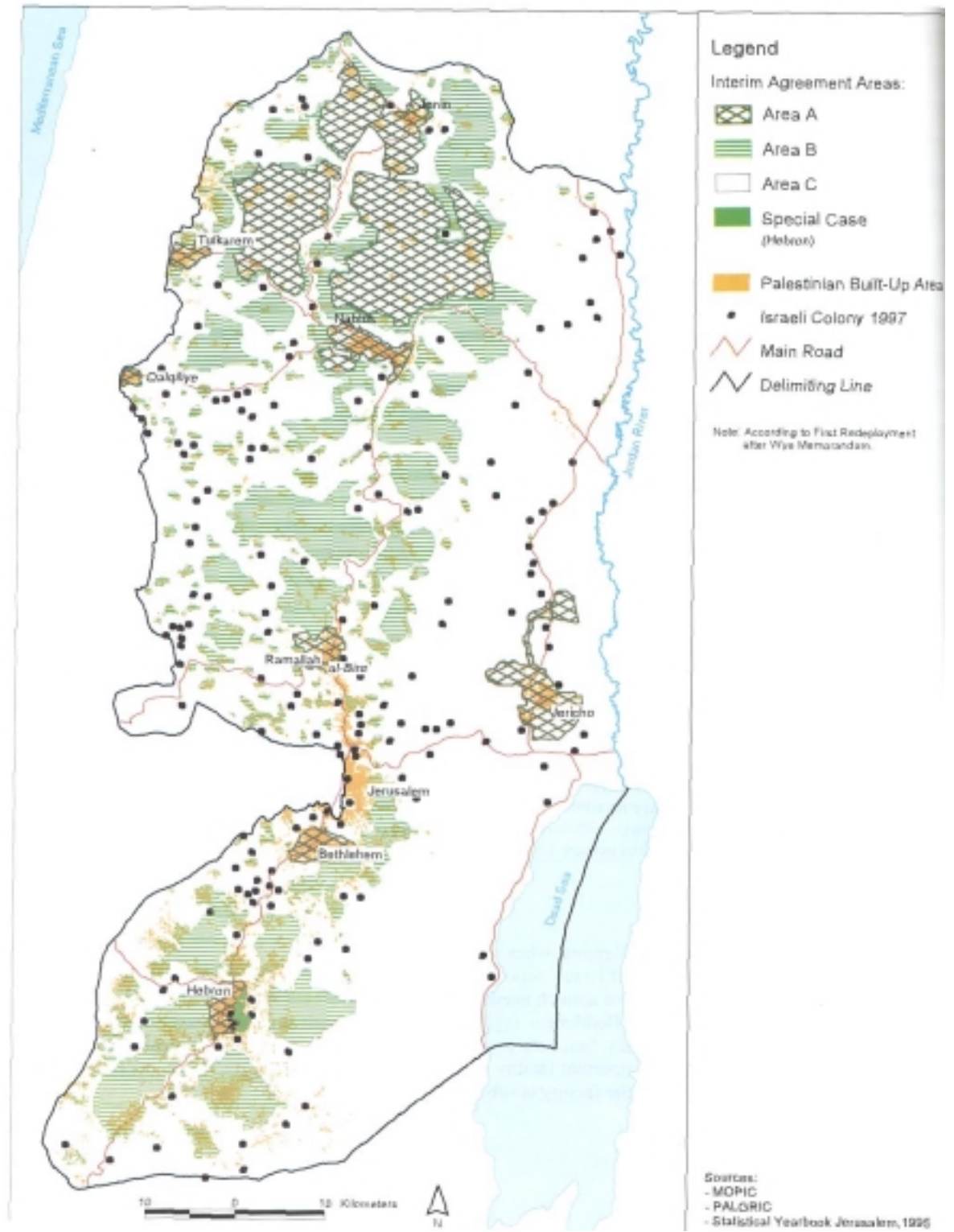
Figure 5 JWU's Proposed Short Term Organizational Structure, Ibid., p 14.

Figure 6 JWU's Proposed Long Term Organizational Structure, Ibid., p 15.

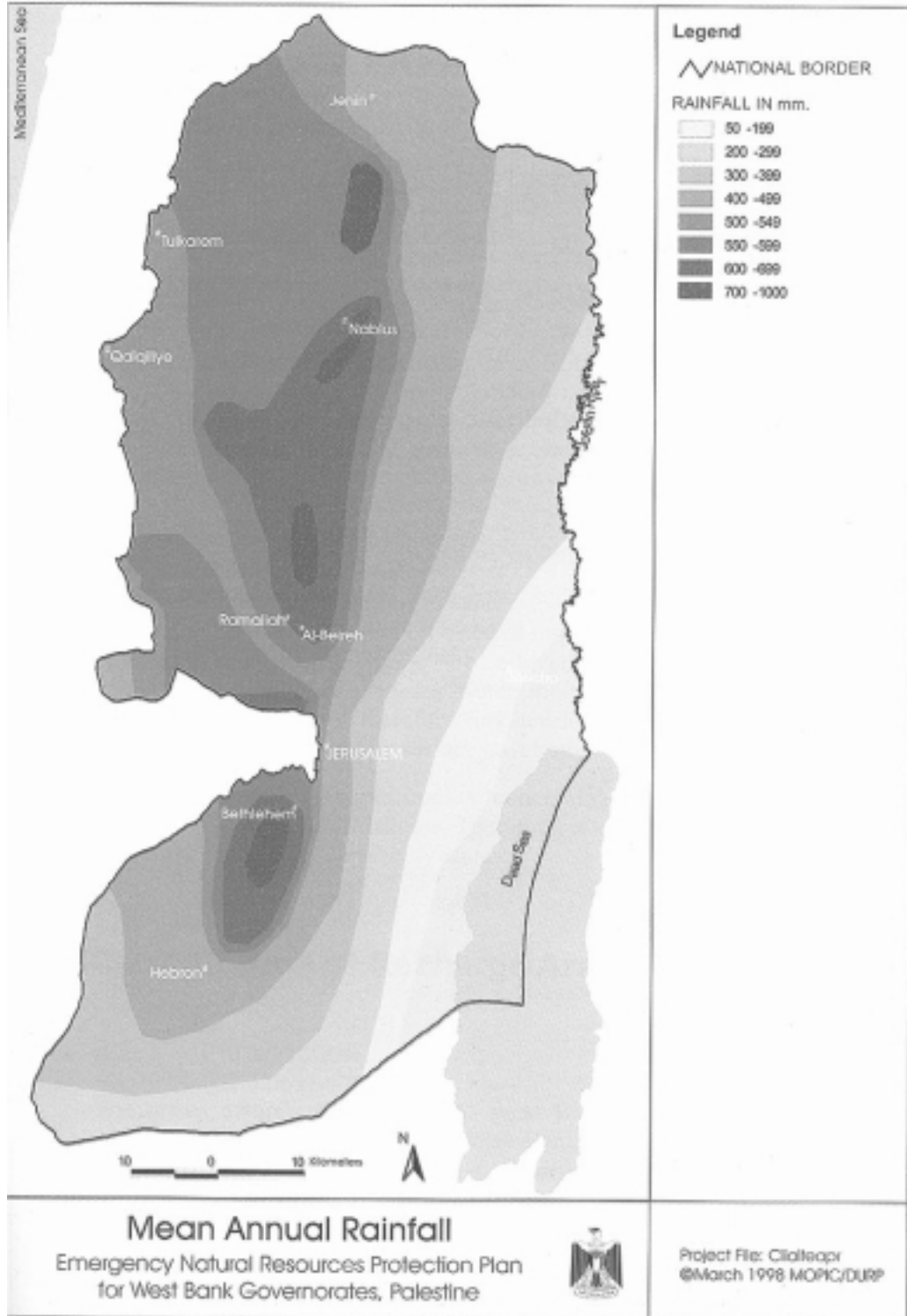
Map 1
Basic Map of West Bank and Surrounding Area



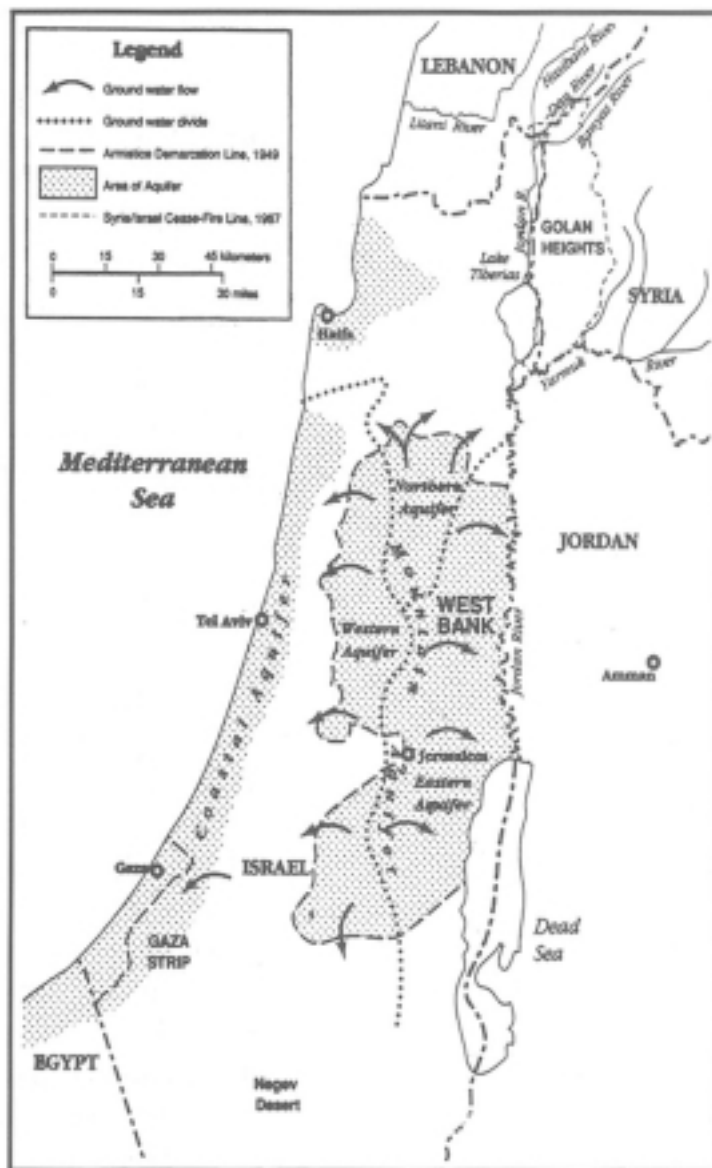
Map 2 Interim Agreement Areas, West Bank



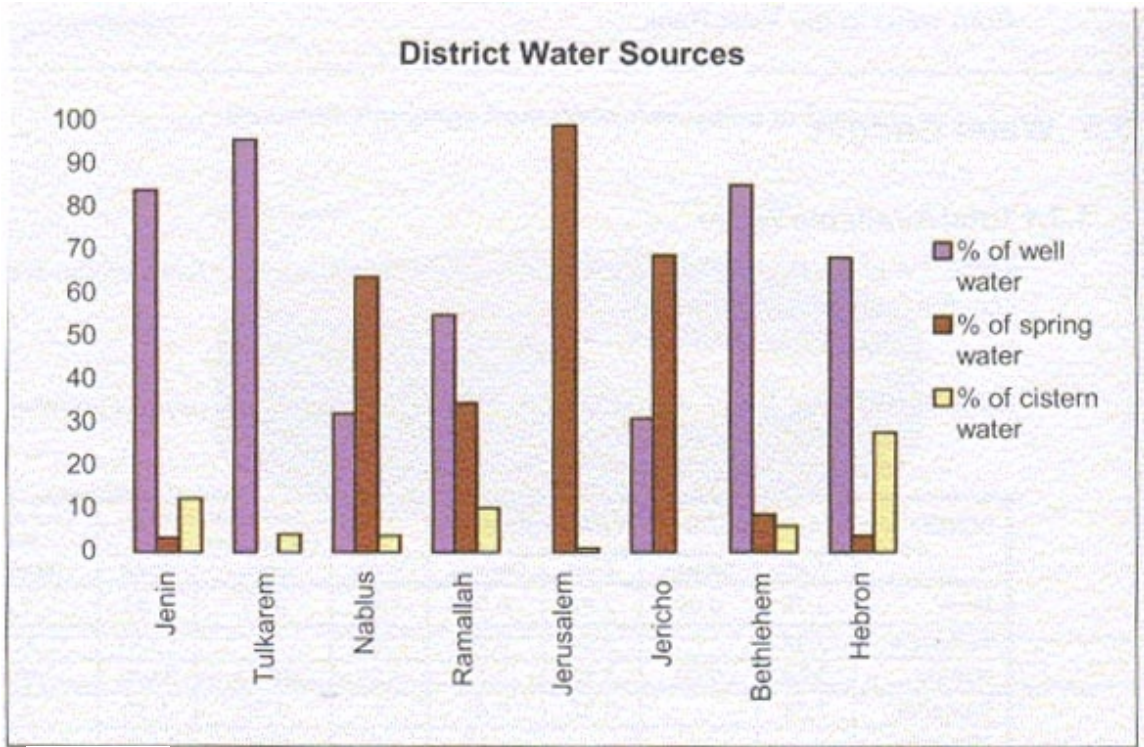
Map 3 Mean Annual Rainfall, West Bank



Map 4
Mountain and Coastal Aquifers in Geographic Palestine



**Figure 1 Water Availability, Demand and Supply
West Bank District Water Sources**



District Water Sources (Well Water, Spring Water and Cisterns)

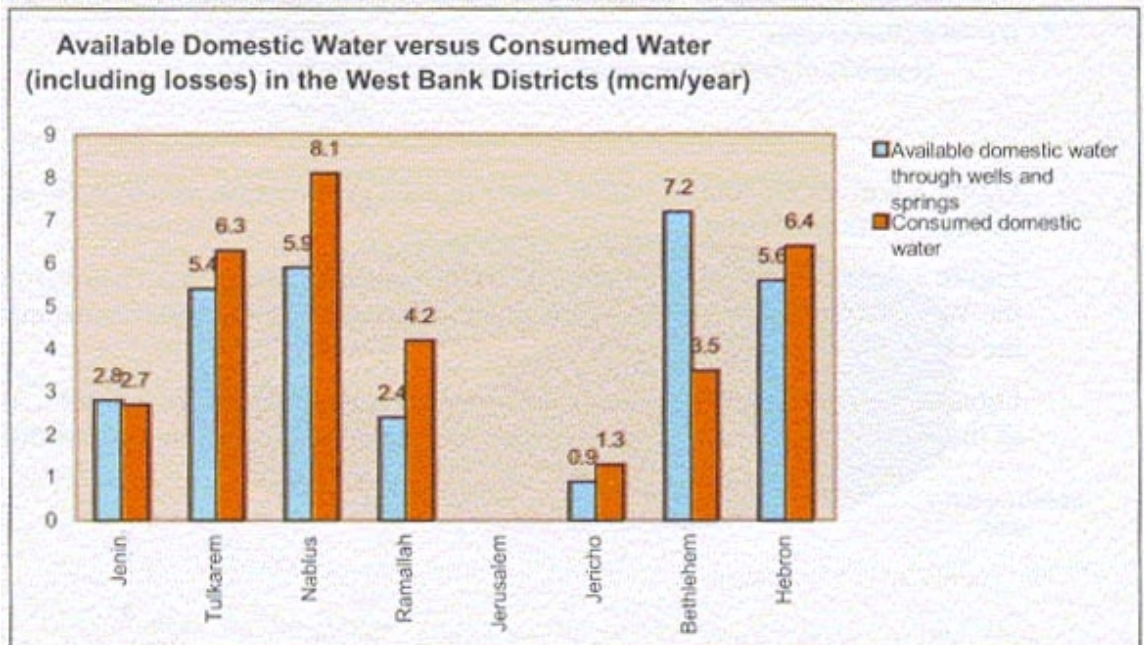
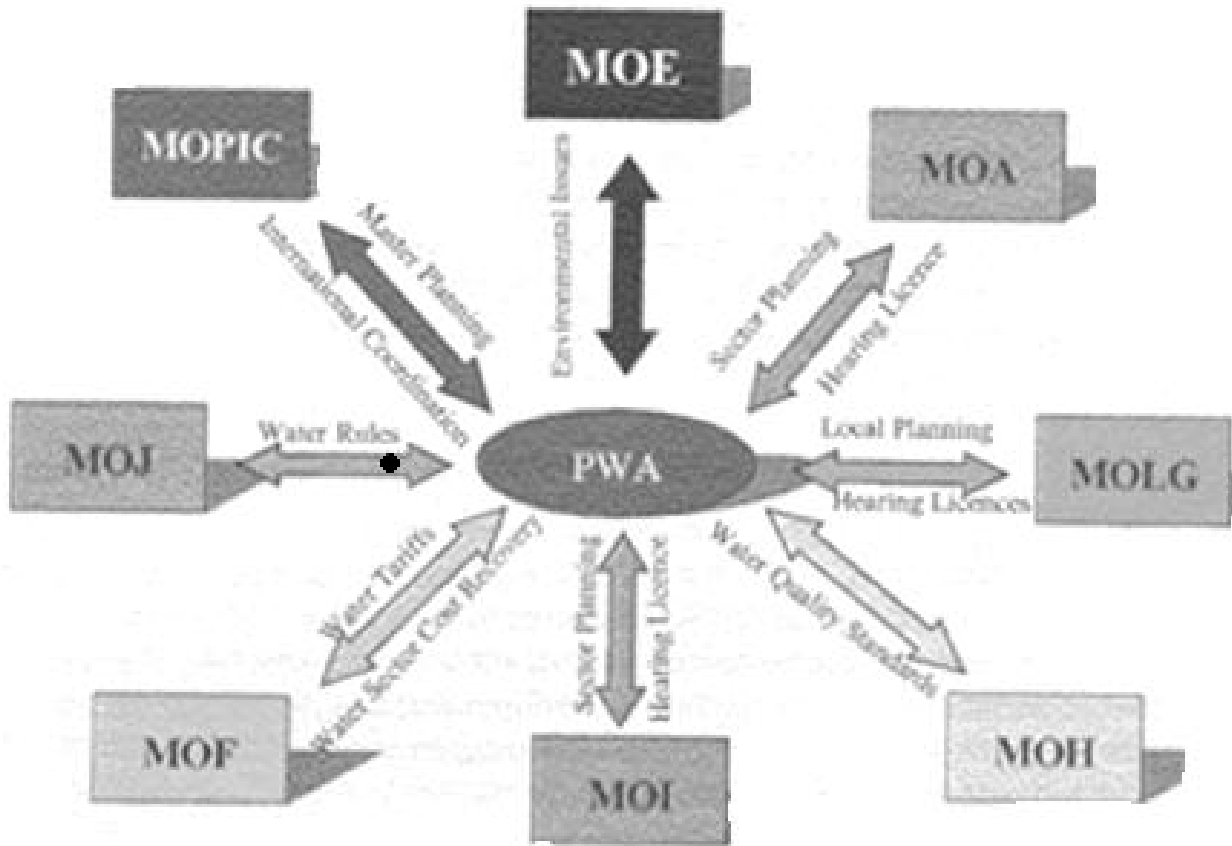


Figure 2

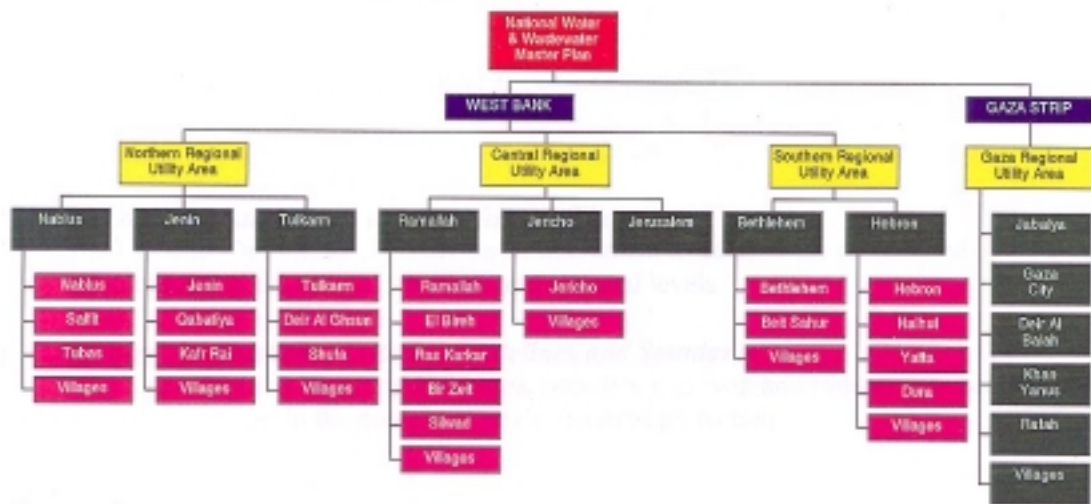
PWA's Relationship to Other Palestinian Authority Ministries



- MOE Ministry of Environment
- MOA Ministry of Agriculture
- MOLG Ministry of Local Government
- MOH Ministry of Health
- MOI Ministry of Industry
- MOF Ministry of Finance
- MOJ Ministry of Justice
- MOPIC Ministry of Planning and International Cooperation

Figure 3 Proposed Palestinian Water Sector Organization

Palestine: Water & Wastewater Master Plan Geographical Framework



Legend:

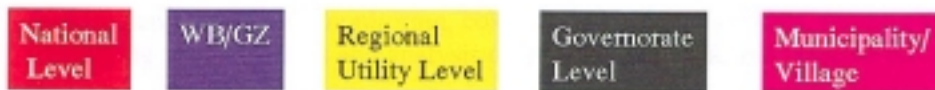


Figure 4
JWU's Current
Organizational Structure

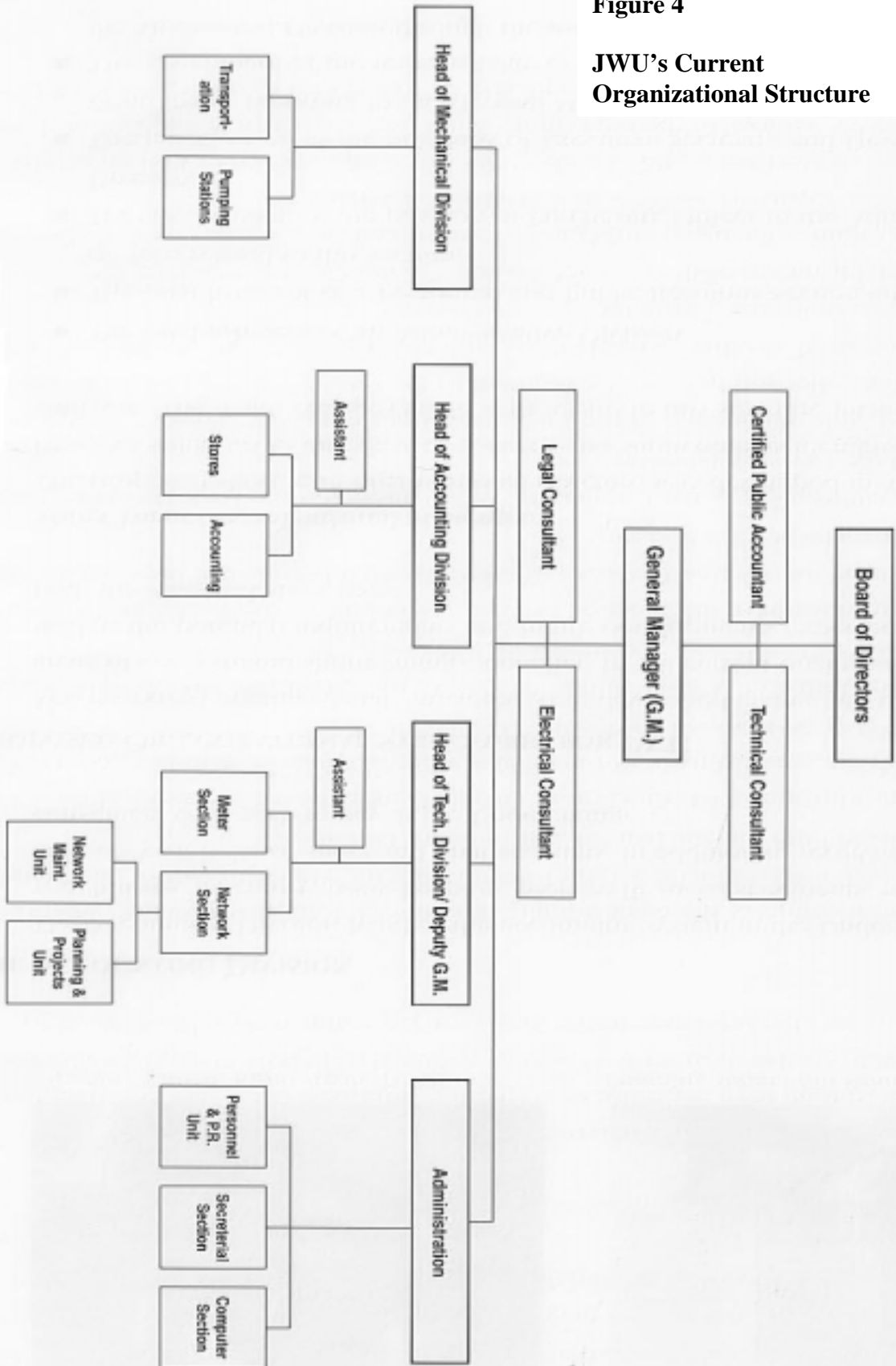


Figure 5
JWU's Proposed Short Term Organizational Structure

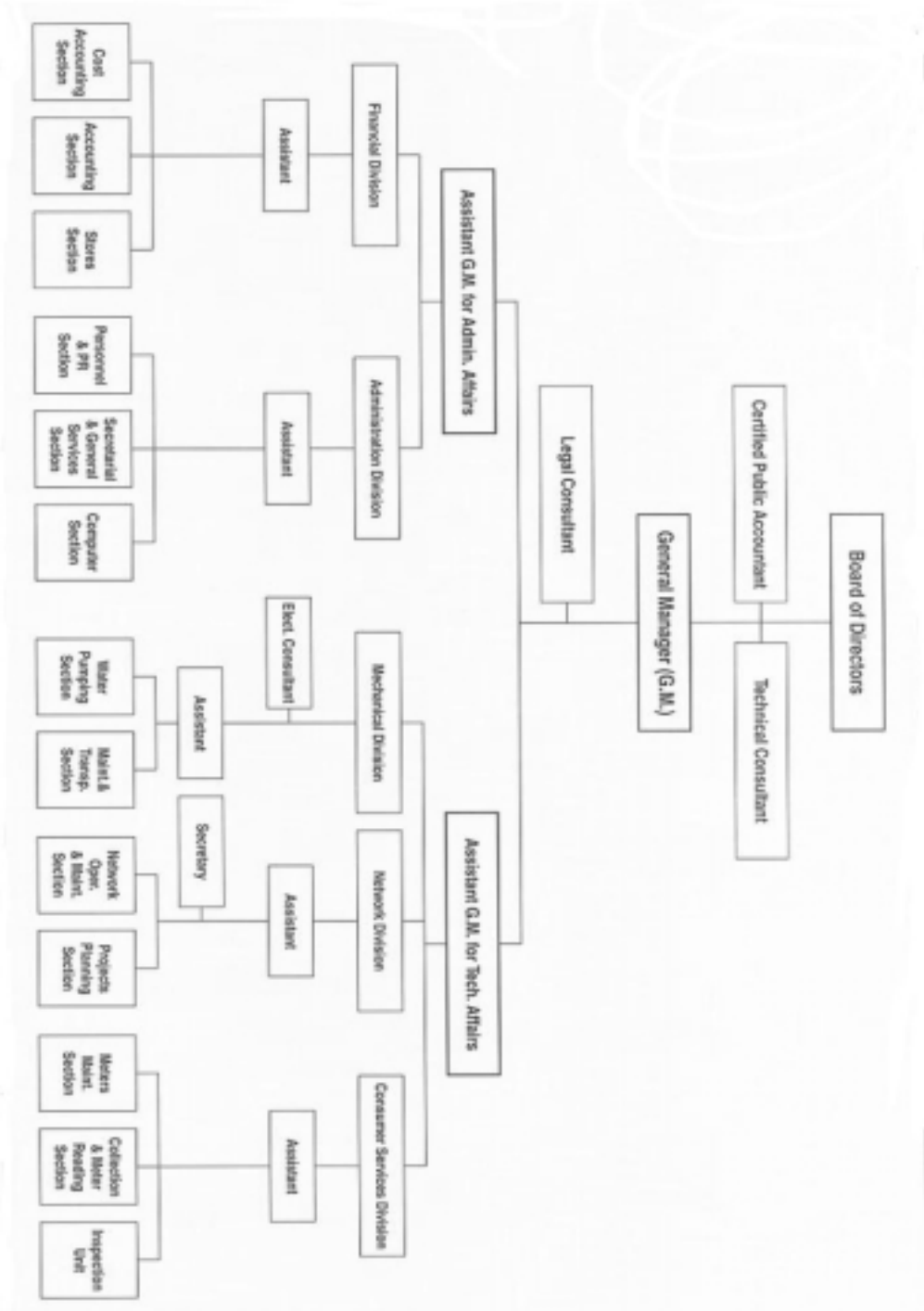
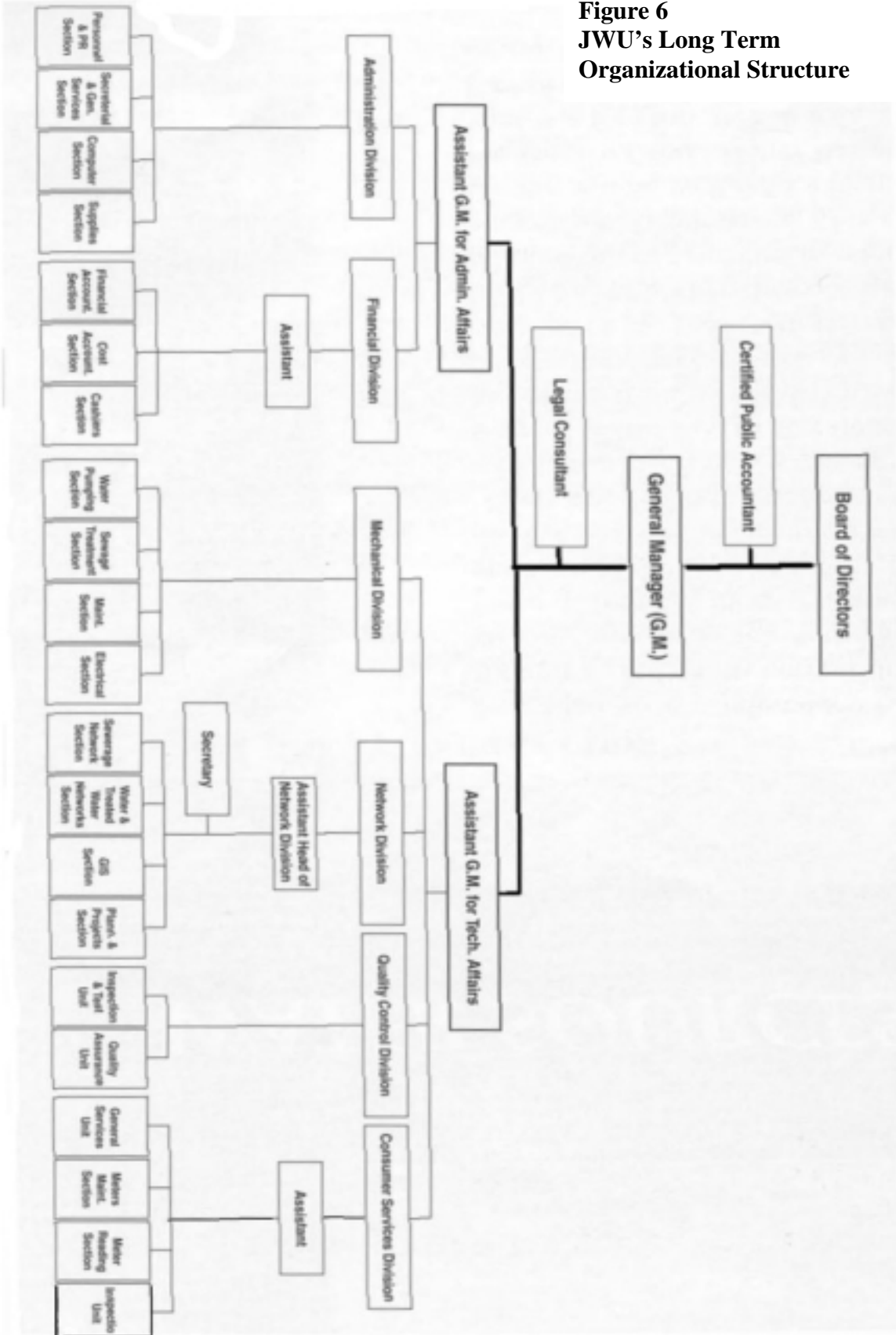


Figure 6
JWU's Long Term
Organizational Structure



V I T A

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