Water

THE BLUE GOLD OF THE MIDDLE EAST

SPECIAL BULLETIN
July 2002

Introduction

The Middle East has a long history of dispute over water resources, with the Palestinian-Israeli dispute at its core. Israeli control over the water resources is a consequence of the military power it used in the 1967 War. The region's water crisis is not merely a question of supply. It has always been linked to power structures in the region, which maintain inequality among those who share the water. To date, all negotiation attempts on the reallocation of the water supply have failed because they were not based on the right of the equitable and reasonable utilization principle.

Although the pretext is security, the desire of Israel to control water resources is, in fact, one of the main reasons why Israel is reluctant to transfer more territory to the PA. In 35 years of occupation, a growing population and ongoing settlement expansion have increased the burden on the limited water supply and worsened the already tense political relations.

Owing to its complexity and significance to both the Israelis and Palestinians, the water issue has been delayed to the final status negotiations together with other critical issues such as Jerusalem, borders, refugees, settlements and security, which have yet to be resolved. This special bulletin intends to shed light on the present water situation in the Middle East with special emphasis on the conflict between the Palestinians and Israelis.

Historical Background

With the occupation of the West Bank and Gaza Strip (WBGS) in June 1967, Israel greatly improved its hydrological position. The occupation of the Golan Heights gave Israel control of most of the headwaters of the Jordan and their control of the West Bank provided access to the Jordan River and to three major aquifers. Soon after the occupation, Israel issued Military Order (MO) 92 (15 Aug. 1967), transferring the authority over water resources to the area military commander. MO 158 (19 Nov. 1967) forbade the unlicensed construction of new water infrastructures, and MO 291 (19 Dec. 1968) confiscated all water resources, declaring them state property. In 1982, the Israeli Water Company Mekorot took control. Palestinian wells were destroyed and supplies dried up by widespread digging and pumping from deeper wells for Israeli use. In 1986, Israel reduced the quotas for the amount of water to be pumped from wells in the WBGS by 10%, which resulted not only in widespread scarcity but also in a drop in the water table and increased salinity. Additional loss of available water due to leaky pipes is estimated at 30%.

In the context of the peace process water was considered an interim issue. The Palestinian Water Authority (PWA) assumed administrative responsibility for water resources but Israel maintained overall control of all water, including the Palestinian water supply. While Palestinians had asked for 450 million cubic meters (mcm) of water annually, Oslo II provided only 28.6 mcm for immediate domestic use. Any increase was subject to the availability of new water resources. The future needs of the Palestinians on the WB were estimated at 70-80 million cubic meters/year (mcm/yr) (Oslo II, Art. 40).

Today part of the problem in solving the water dispute is that the Oslo peace process institutionalized Israel's almost total control over Palestinian water use and planning, as well as its discriminatory allocation system.

PASSIA
Palestinian Academic Society for the Study of International Affairs, Jerusalem

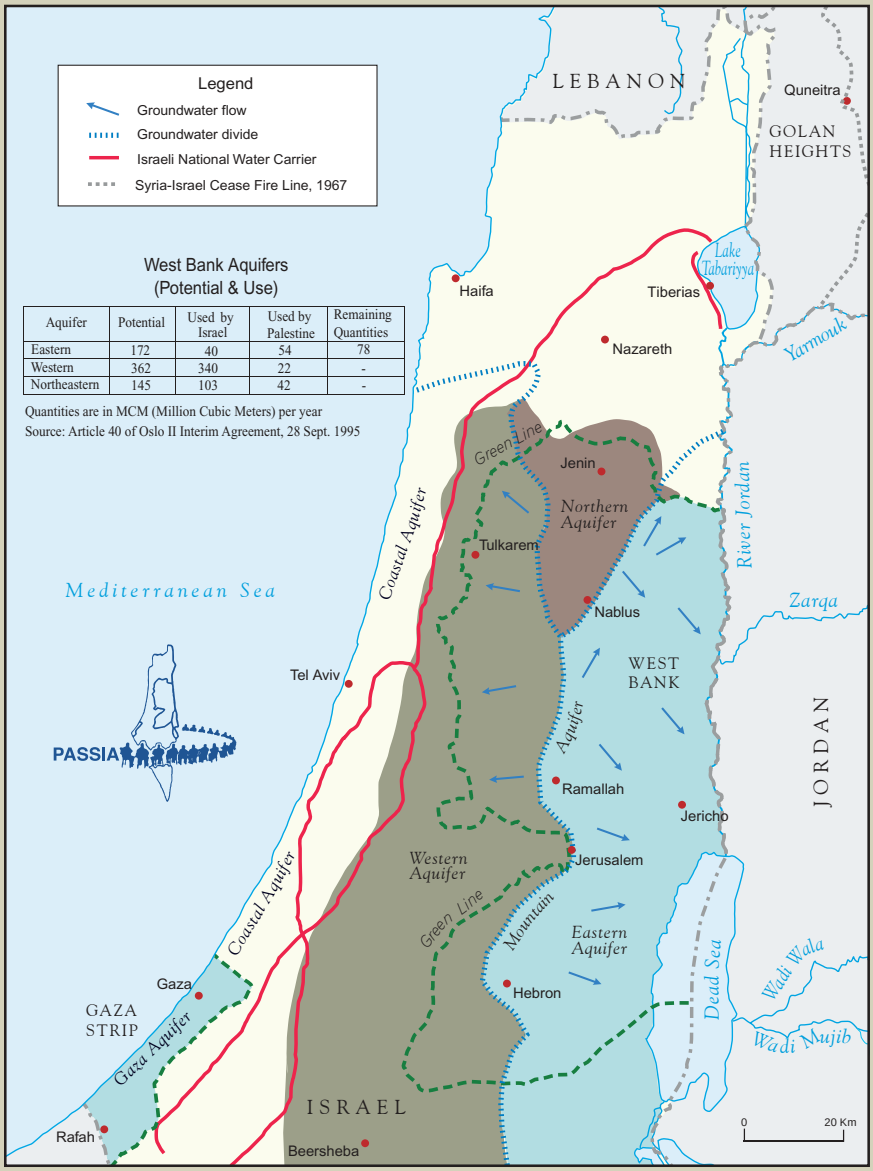
Water Resources in the Region

▶ *Surface Water*

The main regional surface water system and the only permanent surface water source for Palestine is the **Jordan River** (JR) and its tributaries (see Map 2). Five riparians[1] share the waters of the JR, Jordan, Israel, Syria, Lebanon and the West Bank (WB). To date, Israel diverts 75% of the river's water before it reaches the West Bank.

The JR derives its waters from three main rivers that originate in Syria, Lebanon and the Occupied Golan Heights (OGH). The **Hasbani River** originates in Syria and parts of it flow into Lebanon with an average flow of 140 mcm/yr. The **Dan** and **Banias** Rivers originate in the OGH and both flow into the Jordan above Tabariyya Lake having average annual flows of 250 and 120 mcm respectively. The **lower JR** is fed from rainfall, groundwater flow and western wadis of the West Bank, Syria and Jordan, and by the Yarmouk River which originates in Syria, borders Jordan, Syria and the OGH with average flows of 420 mcm/yr.

Map 1 - Water Sources




Jordan River


Banias River


Dan River

Adapted from: 'Water and War in the Middle East' Info Paper No.5 , July 1996, Center for Policy Analysis on Palestine/ The Jerusalem Fund, Washington D.C.
The Aquifers' boundaries are approximate, Adapted from Gvirtzman, 1994

[1] *According to international law, a riparian country or state means "that parts of that country/state's territory is located within the river basin area;" in the recent codification of International Law these are referred to as "Drainage Basin States" or "Watercourse States."*

Table 1 shows that the bulk of the water in the JR is used by Israel, while Palestinians are denied access to their share of the water.

Before 1967, Palestinians made use of JR waters through 140 pumping units, which were either destroyed or confiscated by Israeli authorities immediately after the occupation in June 1967. In addition, large irrigated areas of the Ghor used by Palestinians were closed as a military zone and later given to Jewish settlers.

Table 1: Current Utilization of the Shared Waters of JR Basin (mcm/yr)		
Israeli Use	130	from the Upper Jordan
	420	diverted from Tabarriya Basin Area to reach the Negev through the Israeli National Water Carrier
	90	used in the Tabarriya Basin Area
Syrian Use	160	from the Yarmouk River
Jordanian Use	90	from the Yarmouk
	30	to be transferred by Israel according to the 1994 Israeli-Jordanian Peace Treaty (20 from the JR main stream and 10 from desalinated water)
	200	from Zarqa River and the eastern wadis
Palestinian Use	denied	nothing

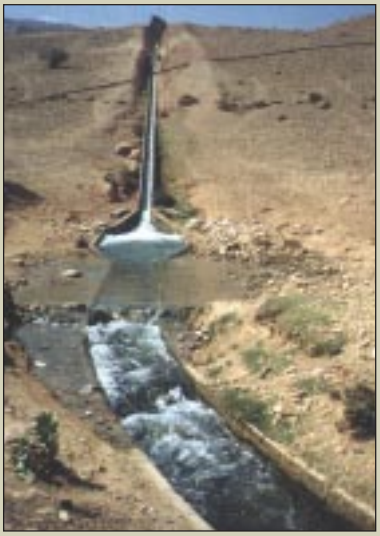
Sources: Palestinian Water Authority. http://www.unu.edu/unupress/unupbooks/80859e/80859E02.htm#Hydrography; Al-Kloub, B. and T. Al-Shemmeri, *Application of Multi-Criteria Decision to Rank the Jordan-Yarmouk Basin Coriparians*. 1996.

▶ *Groundwater*

While surface waters apart from the JR, consisting mostly of runoff in the wadis, are seasonally dependent and hardly exploited, groundwater is a major source of water for all uses. Because of the semi-arid to arid climate in the ME, dependence on it is inevitable and it is considered a key factor in economic development. Currently some 85% of WBGS groundwater is exploited by Israel, supplying about 40% of Israel's water.

Lake Tabarriya

Because Palestine is not allowed to utilize the JR waters, groundwater is ***the only*** source for Palestinian supply. Israel controls all aquifers in the country, of which two major ones are shared with Palestine: the Northeastern Aquifer and the Western Aquifer (see Map 1).



The groundwater is found in shallow, intermediate, and deep-seated aquifers ranging in depths from tens to several hundreds of meters and is extracted through wells that were mainly drilled prior to 1967. Additionally there are a number of natural springs that provide between 50-60 mcm/yr, which is mainly used in agriculture.

The annual replenishment of the principal aquifer basins occurs primarily from the rainfall on WB mountains that does not evaporate or run into the wadis. About 83% of the recharge areas for these basins lie within the WB. Table 2 provides data on the annual replenishment of these aquifer basins and their utilization by Israel and Palestine (see also figure 1). The 1995 Interim Agreement between Israel and the Palestinian Authority (PA) estimated the annual recharge of the Eastern Aquifer Basin at 172 mcm/yr, the Northeastern Aquifer Basin at 145 mcm/yr and the Western Aquifer Basin at 362 mcm/yr.

In the past the Gaza Coastal Aquifer was partially recharged from the Wadi Gaza coming from Hebron but Israel stopped its flow. It has an annual safe yield of 55 mcm, but is being over-pumped at a rate of 110 mcm/yr.

Al-Auja Spring Water

Table 2: Israeli vs. Palestinian Utilization of the WB Aquifer Basins (mcm/yr)					
Aquifer Basin	**Annual Recharge**	**Israeli Water Use**	**Settlement Water Use**	**Palestinian Water Use**	**Total Water Use**
Western	362	340	10	22	372
Northeastern	145	103	5	42	150
Eastern	172	40 from wells	50	54	144
Coastal Aquifer	250	260	0	0	260
- of which Gaza	*55*	*0*	*5-10*	*110*	*120*

Sources: http://www.wws.princeton.edu/~wws401c/geography.html#mountain; Article 40 of the Oslo Agreement II.

Map 2 - Jordan River Basin (Water Balance and Use)

Source: Adapted from the Johnston Plan

The approximately 202,000 Jewish settlers on the WB constitute only 9-10% of the WB population and the 6,000 Jewish settlers in Gaza .6% of Gaza's population. (Figures do not include the 200,000 settlers in East Jerusalem) (PASSIA, *Settlements - Special Bulletin*, 2001). While in Israeli settlements there is enough water to fill swimming pools and water greeneries, some 200,000 Palestinian villagers are not even connected to a water network and have to rely on rainfall, springs and water tankers. Part of the Arab land has been turned into desert. Jewish settlers and the Israeli army regularly destroy Palestinian water pumps, pipes, cisterns and tanks, and pollute their wells and aquifers.

Swimming pool in a Jewish settlement

Palestinian Children filling water at a spring

In addition to their use of the WB groundwater, Israel has another five aquifer basins that provide approximately 60% of Israel's productivity from groundwater. Figure 2 illustrates Israel's relative percentage productivity from groundwater aquifer basins.

Figure 1: Status of the Utilization of the West Bank Aquifers

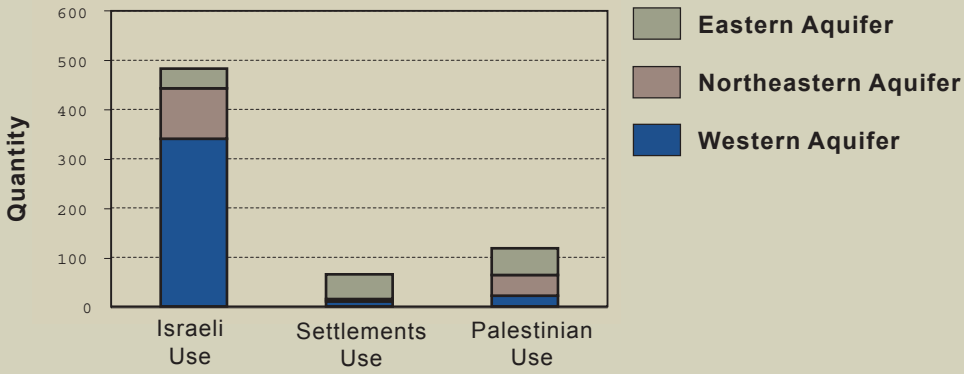
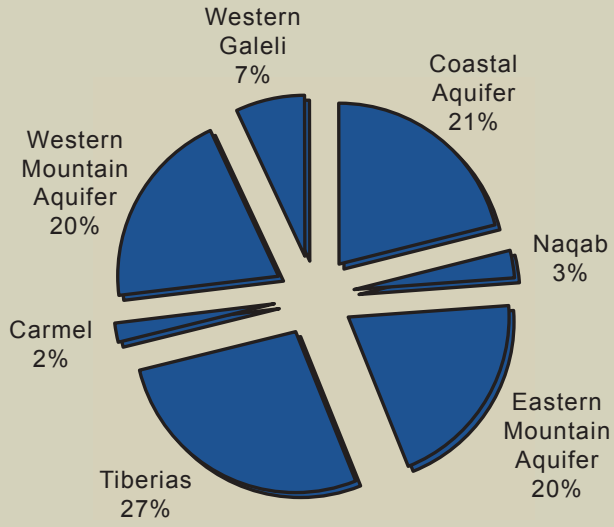


Figure 2: Relative Percentage Productivity from the Groundwater Aquifer Basin In Israel



Source: Israeli Ministry of Agriculture, *Hydrological Services Division, Annual Report 1995*

Present Consumption in the Region

Table 3 is a comparison between the present water consumption in some Middle East countries. While the Palestinian per-capita consumption per day is estimated at 50-70 liters (with some areas receiving the meager amount of 19 liters), Israel's consumption is 350 liters, about five times higher. The minimum water consumption per person recommended by the World Health Organization (WHO) is 100 liters per day.

Table 3: Water Supply for Various Uses in the Region (mcm/yr)

Country	Domestic	Agriculture	Industry	Total
Jordan	78	739.5	43.5	**870**
Israel	672	1,365	129	**2,166**
West Bank	57	89	Included in domestic	**146**
Gaza Strip	50	85	Included in domestic	**108**

Sources: For Jordan: *Middle East Regional Water Supply and Demand Development Study*, 1998, http://www.unu.edu/unupress/unupbooks/80859e/80859E02.htm#Hydrography; for Israel: *Statistical Abstract of Israel*, No. 51, 2000; for the WBGS: PWA, *Water Sector Strategic Plan*, 2000.

Agriculture comprised 24% of the Palestinian GDP in 1966, the same percentage as in 1980-85. (*Special Report: The Socio-Economic Impact of Settlement on Land, Water and the Palestinian Economy*, Washington, DC: Foundation for Middle East Peace, July 1998). Today, it contributes approx. 10-14% of the Palestinian GDP and generates some 25% of all Palestinian exports. Since the sector suffers from restricted water resources, over 90% of the cultivated WB area depends on rain-fed farming methods. In contrast, Israel irrigates over 50% of its cultivated land, although the agricultural sector contributes less than 3% to its GDP (MOPIC, *Valuable Agricultural Areas in the West Bank Governorates*, Ramallah, 1998).

Regional Water Demand Projections for 2020

The increase in the water demand with time is a consequence of many factors including natural population growth and economic growth of water consuming sectors. Table 4 provides data on the water demand projection for the three main economic sectors in Jordan, Israel and Palestine. Since aquifers are already overused, the only solution to provide enough water for the Palestinians is to reallocate the fresh water resources between Israel and Palestine. This reallocation must be fair and equitable, and must ensure the sustainability of the fresh water resources. Assuming that Israel accepts the principle of reallocation there will remain a water deficit for both parties that must be filled by new water resources such as desalinated water or the reuse of treated wastewater.

Table 4: Per Capita Annual Water Demand (mcm/yr)

	Israel	Palestine	Jordan
2000	105	50	74
2010	115	57	72
2040	145	83	86

Source: *Middle East Regional Water Supply and Demand Development Study*, 1998.

Critical Problems Associated with Water in Palestine

▶ *Inadequate Water Supply*

The continual shortage of water for all economic sectors in Palestine and the steady increase in water demand for drinking and irrigation have increased the risks of groundwater depletion and contamination caused by the over-pumping of old wells. The increased pumping has led to rising operating costs and the drying-up of existing boreholes.

Industrial and agricultural production is impossible without water. The water consumption per produced unit of crops is high, especially for vegetables and fruit. In Palestine, intensive agriculture is dependent on irrigation but there is little access to irrigation water.

▶ *Overuse of Water*

If a **groundwater** aquifer is utilized more than its annual renewable replenishment then the groundwater level will gradually decrease. When the aquifer borders salt water, salt water intrusion is possible and may eventually lead to the permanent destruction of the aquifer. This is happening in Gaza now and possibly in the Jordan Valley area.

Since the occupation in 1967, Israel has drilled many new wells in the mountain aquifers within the WB in order to supply new Israeli settlements and their National Water Carrier system with water. Israel drilled deeper wells than those existing, especially in the Eastern Mountain Aquifer Basin in order to tap more than one aquifer at a time. This has negatively affected the quality and quantity of the water in Palestinian wells, forcing many farmers to abandon their agricultural land for lack of water.

The main problems connected with overuse of groundwater can be summarized as follows:

- Increased salinity in Gaza and the Jordan Valley
- Drying up of springs and shallow wells (This happened in Bardala and Jenin.)
- Increasingly higher pumping costs as the water table lowers
- Depletion of the aquifer due to continuous overuse

A similar problem exists with regard to **surface water.** Due to over-extraction from the JR, the river flow has dropped drastically over the past decades with some experts reporting an 80-90% drop. Today, the JR is incapable of replenishing the Dead Sea, which is slowly but gradually disappearing.

In early June 2002 the Knesset Inquiry Committee stated that the water crisis is likely to worsen in the next few years to the point of risking availability of drinking water.

The Dead Sea

▶ *Water Quality and Pollution*

A wide range of industries depend on water. For some industrial uses, the quality of the water is less important. But for others, like food processors, the adherence to high standards for water quality is vital in order to access national and international markets.

Wastewater discharged on cultivated land

Water quality is especially an issue in Gaza where the aquifer is threatened by sea water and salt groundwater intrusion due to over-pumping, by pollution from the nitrates in over used fertilizers, and by the infiltration of sewage and sand caused by poor infrastructure. To solve these problems purification of consumption water is needed, but it is very expensive. The salinity problem presently has no sustainable solution.

In the WB the water quality of the deep groundwater aquifers is generally good although there are indications of increasing salinity in the Jordan Valley area. The quality of surface water supply and water from shallow springs varies depending on the influx of sewage. There are very few sewage treatment plants in Palestine and the existing ones do not operate satisfactorily. Less than 40% of Palestinian households are connected to the sewage system and therefore wastewater is discharged into percolating pits or septic tanks which are emptied by vacuum trucks or discharged into the wadis, posing an environmental hazard to the underground aquifers.

Wastewater at Jalazone Camp

In June 2002 the Israeli Hydrology Service announced that some 15% of the water pumped from the coastal aquifer is unfit for drinking. The Western Mountain Aquifer was found to be of higher quality, but also polluted at certain spots, such as in the Tulkarem-Qalqilya and Hebron areas, mainly due to untreated sewage.

Agreements, Plans, Negotiations and Positions

▶ *Major Early Plans on the Jordan River*

One of the first plans related to the JR was the ***Franghia Plan*** in 1913, which proposed the use of the JR system for irrigation and electricity. Sponsored by the Ottoman Empire, the plan floundered with the fall of the Empire after WWI. In 1944, the United States recommended the ***Lowdermilk Plan***, which proposed the irrigation of the Negev Desert with the waters of the Jordan and Litani rivers, and the refilling of the Dead Sea through a canal from the Mediterranean Sea. The plan was abandoned following the change of circumstances in the JR Basin after WWII with the creation of Israel and the influx of large numbers of refugees.

Table 5: Unified (Johnston) Plan 1953-1955: Water Allocations to Riparians of the Jordan River System

	Lebanon	Syria	Jordan	Israel	Total
Hasbani	35				35
Banias		20		20	
Jordan (main stream)		22	100	375	497
Yarmuk		90	377	25	492
Side wadis			243	243	
Total Unified Plan	**35**	**132**	**720**	**400**	**1,287**

Source: Naff and Matson (1984) found in www.unu.edu/unupress/unupbooks/80859e/80859E06.htm

The aforementioned efforts to reallocate the JR waters were never ratified. In 1953 US special envoy to the ME, Ambassador Eric Johnston, proposed an allocation scheme based on the previous proposals. ***Johnston's Jordan Valley Plan*** is the product of his negotiating with representatives of Israel, Lebanon, Syria and Jordan for 24 months, which finally led in 1955 to a unified plan, that in his view, reconciled the demands of all the riparians. The plan was never adopted or ratified, partly because the Arab states (especially Jordan) did not need a comprehensive water development program that directly involved Israel in order to achieve their immediate development goals. Also, the Arabs did not agree to the criteria that were used for dividing the shares among the parties.

▶ *Israeli Unilateral Measures on the Jordan River*

In 1951, Israel publicized its All-Israel Plan, based on the Lowdermilk proposals, which included the draining of the Huleh Lake and swamps, the diversion of the northern JR and the construction of a carrier to the coastal plain and the Negev. In the same year, Israel completed the drainage of the Huleh swamps and reclaimed land and water on its side of the JR.

Israeli National Water Carrier

Israel's primary unilateral effort to manage its water resources resulted in the National Water Carrier ("Carrier"), which has been fully operational since 1964, and is designed to bring water from the less arid north to the arid southern areas of Israel. It begins by diverting water from the JR above the northwest corner of Lake Tabarriya. The water is eventually pumped from the 213 meters below sea level of Lake Tabarriya to heights of over 150 meters above sea level. The Carrier includes 200 km of open canals, tunnels and pipes. Although planned to carry 320 mcm of water, the Carrier transported between 420-450 mcm each year in the 1980s. The Carrier is a vital managerial system in Israel and is interconnected with several other regional water management plans.

▶ *Provisions in the Framework of the Middle East Peace Process*

■***The Declaration of Principles (DoP), Washington, DC, 13 September 1993***

Annex III of the DoP established an institutional mechanism, the Israeli-Palestinian "Committee for Economic Cooperation," focusing on various areas including water. One of the anticipated outcomes was a "Water Development Program" prepared by experts from both sides which would set up a way for the parties to cooperate in the management of water resources in the WBGS and would encourage the preparation of proposals, studies and plans on water rights and utilization for each party. On the regional level the two sides agreed to cooperate in using the Dead Sea area and working on projects such as a Mediterranean Sea (Gaza)-Dead Sea Canal and regional desalinization plants.

The DoP is the only official document in which both parties agreed to undertake studies and prepare proposals on the **equitable utilization** of joint resources to be implemented during and beyond the Interim Agreement. It was considered the benchmark for future negotiations.

■ ***Gaza-Jericho Agreement, 4 May 1994***

The Oslo I Agreement, which only applied to the water and wastewater resources and systems in the Gaza and Jericho areas, tackled the water issue in the context of environmental protection and prevention of environmental hazards. It allowed for the drilling of new wells as long as they caused no harm to Israel's current water utilization. It confirmed the need to adopt, apply and ensure compliance with internationally recognized standards for acceptable levels of land, air, water, and sea pollution, and standards for solid and liquid waste treatment and disposal. A subcommittee was to deal with all issues of mutual interest; the institutional mechanism was an Environmental Expert Committee to be convened when the need arises. Oslo I focused more on the "no harm principle" and the continuation of current water entitlements than on substantive or procedural rules.

■ ***The Interim Agreement on the West Bank and Gaza Strip, Taba, 28 September 1995***

In the Oslo II Agreement both parties recognized the need to protect the environment, utilize natural resources on a sustainable and environmentally sound basis, and cooperate in sewage, solid waste and water issues. The agreement explicitly states that Israel recognizes Palestinian water rights, to be negotiated in the final status talks without further elaboration on the nature of these rights, or the principles governing the rights and obligations of both parties. Article 12 expressly recognized water as a natural resource.

Annex III, Appendix I, Article 40 of the agreement deals with water allocation but refers to the immediate needs of the Palestinians without considering the principle of equitable and reasonable utilization of the water resources by both sides. Amounts of 70-80 mcm/yr were allocated for the Palestinians with 28.6 mcm/yr identified as immediate needs. The two parties agreed to establish a Joint Water Committee (JWC) to serve as an institutional mechanism for the interim period, mainly to oversee the implementation of Article 40.

■ ***Israeli-Jordanian Peace Treaty, Arava/Araba Crossing, 26 October 1994***

In the Israeli-Jordanian peace treaty Article 6, the parties agreed to recognize their rightful water allocations from the Jordan and Yarmouk Rivers and the Araba/ Arava groundwater in accordance with the agreed upon principles, with the quantity and quality to be respected. They further agreed to find practical and just solutions to their water problems, not to harm each other's water resources, and to cooperate in regional and international research and development projects, investigating existing and new water resources, water availability, conservation of water resources, etc.

Yarmouk River

■ ***The Multi-Lateral Negotiations***

The Working Group on Water Resources (WGWR), established by the multilateral negotiation track with the US as gavel holder and Japan and the European Union as co-organizers, has established four broad agenda items addressing the availability of water data, water management practices, water supply, and regional water management and cooperation. The main activities to date are as follows:

➔The Regional Water Data Banks Project works to improve the availability and applicability of water data information to support the decision-making process for the Palestinian Water Authority, the Israeli Hydrological Service and the Jordanian Ministry of Water and Irrigation.

➔The Middle East Desalination Research Center (MEDRC), established in Oman in late 1996 to coordinate and sponsor research in the area of desalination.

➔The Middle East Regional Study on Water Supply and Demand Development undertaken by Germany (1998) to determine long-term strategies for the development of additional water resources and future joint water resource management, considering issues such as population growth, water use and water quality.

➔A comparative survey of regulatory and legal frameworks of water laws, pricing and management in Israel, Jordan and Palestine, funded by Norway.

➔Optimization of Intensive Agriculture under Varying Water Quality Conditions, established in 1996 and managed by Luxembourg to demonstrate how brackish and saline water can be used to support sustainable farming. A demonstration farm at Beit Hanoun, Gaza, is led by Al-Azhar University and used to support technology transfer in the field of water use.

▶ *Israeli and Palestinians Positions*

The official Israeli position, reflected in their negotiation style in the last seven years, objects to equitable and reasonable utilization of the shared water resources. An official stated goal of the Israeli government has been "... to prepare legal and political bases which will guarantee Israeli control and administration of water resources in Judea and Samaria, regardless of the future political status of these areas." (State of Israel, *Cabinet Minutes*, 14 May 1989). The water issue is only discussed to serve the immediate needs of the Palestinians, but not as a permanent solution, which has been postponed for the final status negotiations.

Carrying water from a well

Former Israeli Water Commissioner, Meir Ben Meir, has repeatedly declared that the Palestinians could solve their water problem through importing water from Israel, that only water allocations and the right to water use would be negotiated, but not sovereignty over water resources, and that International Law does not apply to the Palestinians since they do not constitute a state.

In contrast, the **Palestinians** realize that the only resolution of the water issue is through the application of International Law and related UN resolutions whose principles they have vowed to respect. Equitable and reasonable utilization of the shared water resources is essential and currently far from being realized.

International Watercourses in the Context of International Law

According to International Law, Palestinians should have full sovereignty over all the Eastern Aquifer waters that lie beneath the West Bank, at least equitable water utilization of the Western and Northeastern Aquifers as these are recharged almost entirely from the West Bank, and equitable water utilization in the JR system as a riparian to it. In 1999 experts estimated the compensation for damages to Palestinian water resources caused by Israel, and for Palestinian water used by Israel over the years, at a minimum of $45 billion (Jad Isaac, *Water and Palestinian-Israeli Peace Negotiations*, Center for Policy Analysis on Palestine, 19 Aug. 1999).

▶ *Governing Principles*

In normal, conflict-free situations between states, the International Customary Law provides important rules for the use of shared water resources, including the following:

- duty to cooperate and to negotiate with a genuine intention of reaching an agreement
- prohibition to cause significant harm to the others
- duty of prior consultation
- equitable and reasonable utilization of shared water resources

In the case of the WBGS, Israel has failed to comply with the above-mentioned rules, which constitute part of the International Customary Law, by claiming that Palestine is not yet a state.

▶ *Rules and Conventions Applicable to Belligerent Occupation*

As an occupier, Israel has not complied with the rules applicable to a Belligerent Occupation that are encompassed in the Hague Regulations of 1910 and the Fourth Geneva Convention of 1949. The said rules oblige the belligerent to safeguard the natural resources of the occupied country and to provide the original citizens with their needs from these resources.

Ein Samia Reservoir

Since the beginning of the occupation, Palestinian water use was controlled by laws, rules and military orders imposed on them by the State of Israel. The enduring occupation has persistently deprived the Palestinians of their equal rights in the use of international water resources.

■ *UN General Assembly and Security Council Resolutions*

The UN General Assembly (GA) and Security Council (SC) have adopted and repeatedly reaffirmed numerous resolutions in relation to the Palestinian people's right to self-determination. An important aspect of that right is permanent sovereignty over natural resources including water. In 1972, UNGA Res. 3005 (Dec. 1972) recognized that the Palestinians' right of permanent sovereignty applies to the resources of the Occupied Territories. This has also been repeated in numerous subsequent UN reports. All UN resolutions have been guided by the principles of the UN Charter, reaffirming the applicability of the "Fourth Geneva Convention to the Protection of Civilian Persons in Time of War" of 12 August 1949 to the Occupied Palestinian Territory including Jerusalem and other Arab territories occupied by Israel since 1967. Furthermore, they have expressed a continuous concern regarding Israel's exploitation of natural resources, including the impact of Israeli

settlements on Palestinian and other Arab natural resources, especially the confiscation of land and the forced diversion of water resources. (For a full list of UN resolutions on Palestine related to Water see: http://domino.un.org/unispal.nsf and click "water" on the subject menu).

Pumping Station, Ein Samia

■ ***The UN Convention on the Law of Non-Navigational Uses of International Watercourses***

The Law of the Non-Navigational Uses of International Watercourses was adopted by the UNGA on 21 May 1997. It is considered a global framework agreement with the goal to ensure the utilization, development, conservation, management and protection of international watercourses. It codifies the general principles and rules of International Customary Law and progressively develops, modifies and alters existing laws. The Convention follows the ecosystem approach which emphasizes the need for integrated quality and quantity management covering surface and groundwater and their related ecosystems.

■ ***Research Initiatives on the Application of International Water Law***

Solomon Pools

A leading project in the field of applying International Law to water conflicts is a project entitled "Transboundary Water Resources Management: Using the Law to Develop Effective National Water Strategy: Poverty Eradication through Enforceable Rights to Water," established by the International Water Law Research Institute (IWLRI), Department of Law at Dundee University/Scotland. The project deals with three case studies, one concerning an upstream case in China, one a downstream case in Mozambique and one a case of transboundary groundwater in Palestine. The case study on Palestine seeks to investigate "equitable and reasonable utilization" through a practice-oriented and interdisciplinary approach to shared groundwater in Palestine. Its specific objective is to develop a Legal Assessment Model (LAM) for the case of transboundary groundwater aquifers and to verify the similarities and/or differences in groundwater compared to surface water. They hope to develop a generic model that could be applied to any Groundwater Transboundary State to assess its legal water rights and obligations.

Conclusions

Current levels of Israeli exploitation of Palestinian or 'shared' water resources - both surface and groundwater - leave the Palestinians with the lowest consumption rate in the entire region by far, and one dangerously beneath recommended levels. Israeli over-pumping has already caused pollution and long-term damage to the fragile coastal aquifer and its rising demand for water is likely to result in further over-pumping of the West Bank aquifers and yet harsher shortages amongst the Palestinians living there. Damage to groundwater sources can be irreversible, and is in some areas already expected to cause pollution and salinity for centuries. Without an equitable and responsible arrangement, Palestine's water situation will become catastrophic and have long-term repercussions on the regional distribution of water.

There are clear indications that the international watercourses in the region are neither equitably nor reasonably utilized among those who share the resources. With special emphasis on the Israeli/Palestinian case it is apparent that power structures have so far determined the allocation of international watercourses between the two parties. Palestine has a large water deficit, which has caused a delay in the economic and social development of the area.

Countless United Nations resolutions have been adopted in relation to Palestine's sovereignty over its natural resources. None of these have been enforced. Existing agreements between Israel and the PLO on water are unjust and inequitable and do not go beyond temporary solutions for crises nor do they create a sustainable and permanent solution.

Article 40 of Annex II of the 1995 Oslo II Interim Agreement deals with water allocations to fulfill the immediate needs of the Palestinians and gives no due consideration to the principle of equitable and reasonable utilization. This section emphasizes that Israel recognizes the Palestinian water rights in the West Bank but with no definitions of these rights. The basic principles governing the rights and obligations of both parties were not established. The negotiations of these rights were postponed for the permanent status agreement. Article 40 only allocated additional water to meet the urgent needs of the Palestinians. These will be developed from the Eastern Aquifer Basin and any other agreed upon sources as the Article indicates.

During the last seven years implementation of this part of the agreement was restricted and extremely slow. Decision making within the Joint Water Committee was unilateral, dominated by Israel. The dominant factor in the Israeli evaluation and rejection of the Palestinian projects and plans was the "no-harm principle." In the past six years the Palestinians developed only 12 mcm out of 80 mcm (Minutes of Meetings of the JWC between 1996-2000).

The repeated Israeli claim that these projects will cause harm to current Israeli utilization was a major obstacle for the successful implementation of the agreement. It will require prodigious efforts by the Palestinians and international mediators to engage the Israelis in the negotiations over water. Israel has continuously practiced a unilateral control over all water resources in the WBGS, not fulfilling its obligations as a belligerent occupier under International Law. Furthermore, the current utilization of the international water resources does not comply with International Law, specifically the principle of equitable and reasonable utilization. The continuation of the status quo is a clear and persistent violation of the principles of International Law.

It is strongly recommended that the Palestinians and the Israelis abide by the principles of International Law. The 1997 UN Convention serves as a guideline for a future agreement. This framework agreement is believed to ensure the utilization, development, conservation, management and protection of the international watercourse, and the promotion of the optimal and sustainable utilization for the present and future generations. The final agreement on water should include solutions and mechanisms for co-operation on the various international water resources. Neither Israel nor Palestine can afford the consequences of the continuing conflict over water as it is a major threat to peace.

Further Research Sources:

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For full text documents of agreements, understandings and peace treaties see:
http://www.mideastweb.org/history.htm
http://www.yale.edu/lawweb/avalon/mideast/mideast.htm
http://www.miftah.org/Documents.cfm

Water

THE BLUE GOLD OF THE MIDDLE EAST

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