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The Status and Perspectives of the negotiations on the Jordan River Basin

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Abstract

The Jordan river is an international water course that is shared hydrologically by Israelis, Jordanians, Lebanese, Palestinians and Syrians. Of all these riparians, Palestinians are the only side that have been denied the utilization of the waters of the Jordan River waters and are facing a serious water crisis not due to the lack of water accessibility rather than availability. Israel is currently utilizing more than 80 % of the Palestinian water resources and thus inducing water scarcity that is impacting the economic, environmental and social fabrics of the Palestinian society. The situation is exacerbated by the fact that Jewish settlers are utilizing 80 mcm of Palestinian water resources annually. More than three million Palestinians are currently allocated 286 mcm of water per year for all purposes while 6 million Israelis utilize close to two billion cm of water annually. About one fourth of the Palestinian communities do not have access to public water networks. For agriculture, Palestinians are restricted to irrigate 10 % of their cultivable land while Israel is irrigating half of its cultivable land. In Gaza, Palestinians are forced to over-pump the shallow coastal aquifer leading to sea water intrusion and consequently, deteriorating water quality. Palestinian communities are living under suppressed demand for water and are experiencing severe water shortages.

According to Oslo II agreement, Israel recognized the Palestinian water rights, but these are to be negotiated in the permanent status negotiations. However, so far, no negotiations have taken place to enumerate the Palestinian water rights. The Oslo II agreement included arrangements for delivering an additional 28.6 MCM for the Palestinians to meet their immediate needs for domestic water use during the interim period. Regrettably, less than 12 mcm of additional water has reached the Palestinians which are not enough to meet the growing needs of the population which is still experiencing shortage of water supply.



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In this paper, the author shall address the hydro-geopolitical settings along the River Jordan describing the history of the Arab-Israeli water dispute and highlighting the status of the current negotiations. It is realized that water is a particularly critical, as well as emotional, point of dispute among the riparians, but finding a common understanding of water issues in the Middle East would go far to enhance the possibilities of achieving stability in the region. It is proposed here that “equal utilization” of the water resources between Israelis and Palestinians and “Basin wide management” among all Jordan river basin riparian countries offer a just and sustainable basis for resolving the historic water conflicts.

Introduction

Water is recognized as a nascent source of conflict in the region especially along the Jordan River basin, which is an international watercourse shared between Israel, Jordan, Lebanon, Palestine and Syria. During the past 50 years, several projects have been executed which altered the flow of the river as well as the quality of its waters. The current allocation of the Jordan River waters are not the outcome of agreements, negotiations or equitable principles. Rather they reflect the asymmetries of power in existence and the abilities of the strong to impose their wills on the weak. The full control of Israel over the headwaters of the Jordan River has reduced the Arab water shares in the River basin far beyond those that any rational allocation system consistent with basic international law governing trans-boundary resources.

Eight years ago, the Middle East peace conference was inaugurated at Madrid. Water was a major issue on both the bilateral and multilateral tracks, where a special working group was established. The regional parties met in both official and unofficial capacities



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to advocate the need for solving the water issue and included several aspects including joint management, data exchange, human resource development, enhancing water supplies, water conservation, equitable utilization, water banking, reallocation of water and prevention of environmental degradation. While a peace treaty has been accomplished between Israel and Jordan in which the water dispute between the two states was resolved, the water conflict between the other riparians is still unresolved.

The hydro geopolitical settings

Figure 1 shows the international Jordan River drainage basin, which is a naturally-defined area that cannot be artificially sub-sectioned. It is 360 kms long with a surface catchment area of about 18,300 km² of which 2,833 km² lie upstream of the lake Tiberias outlet. The headwaters of the Jordan River, the Dan in northern Israel, the Banias in the occupied Golan Heights and the Hasbani in the southern Lebanon, feed Lake Tiberias; Syrian and Jordanian waters (most importantly the Yarmouk and Zerka Rivers), meanwhile, Palestinian and Israeli springs feed the Jordan River below Lake Tiberias.. The riparians of the Jordan River are Israel, Lebanon, Syria, Palestine and Jordan. In the absence of irrigation extraction, the Jordan River System is capable of delivering an average annual flow of 1,850 MCM to the Dead Sea.

As a result of Israel's occupation of the Golan Heights, Israel controls the headwaters of the Jordan River. At present, Israel is drawing an annual 70-100 million cubic meters (mcm) from the Yarmouk, and is piping 1.5 mcm per day from Lake Tiberias in its National Water Carrier. Today, both the Jordan River and its tributaries in the north, notably the Dan, are flowing at dangerously reduced levels, mainly due to several projects that have altered the character of the river. Redirecting the greatest part of the River to the Negev via Israel's National Water Carrier dropped the water level considerably. To stem the increasing salinity of the Sea of Galilee, Israel diverted the saltiest of its tributaries into a canal which skirts the lake and empties into the River Jordan. Since 1965, Israel has been dumping close to 60,000 tons of salts into the river each year. The high salinity of the river is seriously threatening the river's ecosystem and makes the river water scarcely suitable for irrigation. Now, the flow of the Jordan River in the Dead Sea has been reduced to less than 200 MCM of poor quality water annually.

In addition to the conflict over the Jordan river water, Israelis and Palestinians have another conflict over the ground water resources. The groundwater regime in the West Bank is a multi-aquifer and sub-aquifer system (Aquifer System) which is mostly



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recharged from rainfall on the West Bank's mountains (Figure 2). The structure of the hydrological system is complex. The axes of the main structural anticlines divide the groundwater to the west, to the east and to the north. Accordingly, the hydrological system related to the West Bank can be divided into three major aquifer systems, the Western, the Northeastern and the Eastern Basins.

The annual renewable freshwater water of this aquifer is estimated at 679 MCM according to Oslo Agreement. Due to lack of studies and researches on the water issue conducted by Palestinians, the figures for the safe yield estimates of the different basins rely on Israeli published reports and studies. It is believed that the figures concerning the Western and Northeastern basins are underestimated while those related with the Eastern Basin are overestimated. Nevertheless, a brief description of each of these aquifers will be presented.

The Western Aquifer System, the largest, has a safe yield of 362 MCM per year (of which 40 MCM are brackish). Eighty percent of the recharge area of this basin is located within the West Bank boundaries, whereas 80% of the storage area is located within Israeli borders. Groundwater flow is towards the coastal plain in the west, making this a shared basin between Israelis and Palestinians. This source is mainly used for municipal supply because its water is of good quality. Israelis exploit the aquifers of this basin through 300 deep groundwater wells to the west of the Green Line, as well as through Mekorot (the Israeli water company) deep wells within the West Bank boundary. Palestinians, on the other hand, consume only about 7.5% of its safe yield. They extract their water from 138 groundwater wells tapping the Western Aquifer System (120 for irrigation and 18 for domestic use) in Qalqilya, Tulkarm, and West Nablus. There are 34 springs with an annual discharge of about 2 MCM.

The Northeastern Aquifer System has an annual safe yield of 145 MCM (of which 70 MCM brackish). Almost 100% of the basin is recharged by precipitation falling within the West Bank area. But the water then flows underground in a northerly direction into the Bisan (Bet She'an) and Jezreel Valley. Palestinians consume about 18% of the safe yield of the aquifer through 86 agricultural and domestic wells in the Jenin district and East Nablus (Wadi Al Far'a, Wadi El Bathan, as well as Aqrabaniya and Nassariya) for both irrigation and domestic purposes. There are 24 springs with an annual discharge of about 3.3 MCM.

The Eastern Aquifer System has an annual safe yield of 172 MCM (of which 70-80 MCM brackish). It lies entirely within the West Bank territory. The Palestinian farmers tapped its water until 1967, afterwards, Israel expanded its control over this aquifer and began to tap its water to supply Israeli settlements implanted in the area. This aquifer is mainly drained by a group of springs. There are 56 springs with an annual discharge of about 55.5 MCM. There are 122 Palestinian groundwater wells in this aquifer system (109 for irrigation and 13 for domestic use). In several parts of the basin, wells have been



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over pumped leading to drop down in the water table and deterioration of its quality. In the past few years, the Palestinian wells at Ein Samia in Ramallah and Tequa in Bethlehem have shown drastic drops in the water table level reaching 30 meters annually. This will lead to far reaching consequences.

Gaza Coastal Aquifer

The main Gaza Aquifer is a continuation of the shallow sandy/sandstone coastal aquifer of Israel (shared aquifer). About 2200 wells tap this aquifer with depths mostly ranging between 25 and 30 meters. Its annual safe yield is 55 MCM (GTZ, 1998), but the aquifer had been over-pumped at the rate of 110 MCM resulting in a lowering of the groundwater table below sea level and saline water intrusion in many areas. The main sources of salinity are deep saline water intrusion from deeper saline strata, sea water intrusion, and return flows from very intensive irrigation activities

Historical Background of the Arab-Israeli Water Dispute over the Jordan River basin

It is extremely important to look at the roots of the water conflict in the Jordan River basin in order to come up with a fair and equitable solution. The water conflict goes back to the year 1875 when the Zionist Movement started its plans to create a Jewish homeland in Palestine. The plan considered the control over water resources so that the proposed state can absorb 15 million Jews. After the declaration of the British Mandate in 1922, the Jewish Agency formed a special technical committee to conduct studies of the utilization of water and irrigation of unarable and desert land. Most of the studies conducted were used to evaluate water plans designed by both the Jewish Agency and the United Nations Partition Plan of Palestine. The Arabs found it imperative to protect their water resources and, thus, began designing their own plans. Rising political tension in the region and the lack of a solution acceptable to all parties exacerbated the situation, which eventually exploded into several rounds of wars between Arabs and Israelis.

Two important water-related events characterize the British Mandate period from 1922 to 1948, namely the Rutenberg Concession and the Ionides Plan. In 1926, the British High Commissioner granted the Jewish-owned Palestine Electricity Corporation, founded by Pinhas Rutenberg, a 70-year concession to utilize the water of the Jordan and Yarmouk Rivers to generate electricity. The concession denied Arab farmers the right to use the water of the Yarmouk and Jordan Rivers upstream of their junction for any reason whatsoever, unless permission was granted by the Palestine Electricity Corporation. In 1937, the government of Great Britain assigned M. Ionides, a hydrologist, to serve as the Director of Development for the East Jordan Government. His actual task was to conduct a study of the water resources and irrigation potentials of the Jordan Valley Basin. This study served as the main reference in the preparation of the proposed United Nations Partition Plan of Palestine. Published in 1939. The Ionides Plan made three



recommendations. Firstly, Yarmouk flood waters were to be stored in Lake Tiberias. Secondly, the stored waters in Lake Tiberias plus a block quote quantity of 1.76 CM/s of the Yarmouk River water, diverted through the East Ghor canal, were to be used to irrigate 300,000 dunums of land east of the Jordan River. And finally, the secured irrigation water of the Jordan River System, estimated at a potential of 742 MCM, was to be used primarily within the Jordan Valley Basin. The Jewish agency was not satisfied with the findings and recommendations of Ionides.

Following the 1948 war, Israel launched a Seven Year-Plan aimed at diverting the Jordan River water south toward the Negev desert. In September 1953, the construction of the National Water Carrier began. The diversion originated at the Banat Yacoub Bridge in the demilitarized zone between Israel and Syria. After Arab objection to the excavation process, a temporary freeze on the work was announced and the United States presented a plan as yet another attempt to solve the region's water dispute. The Johnston plan, which was prepared under the supervision of the Tennessee Valley Authority included water distribution quotas for the Jordan Valley Basin among the riparian states as shown in table 1.

Table 1 Water allocation according to Johnston's Plan of 1955

	First Johnstone plan	Revised Johnston	Present use (90's)
Syria	50	132	153
Lebanon	-	35	5-10
Jordan	829	720	255-290
Total Arab states	879	887	413-453
Israel	426	375-475	675-700*

- *including water of the West Bank*

Source: Soffer1994

The period between October 1953 and July 1955 was a stage of negotiating and bargaining over the allocation of the Jordan River waters. By the end of 1955, the Johnston Plan had become more favourable to Israel, whose share rose to 450 MCM, while Jordan's share dropped to 720 MCM. The failure to reach a regional agreement reinforced each country's inclination to proceed independently. In 1958, Israel reinitiated the National Water Carrier project but with some technical changes; also, the Seven-Year



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Plan was replaced by a Ten-Year Plan. Arab reaction to Israel's National Water Carrier was to build dams on tributaries of the Jordan and Yarmouk Rivers, thus reducing the water flow to Israel. In 1965, Syria began building dams to divert water from the Banias and Dan Rivers in the Golan Heights. Israel sent its fighter planes to destroy the work sites. No regional water plans were devised after the Johnston Plan of 1954, which allocated the water between the riparians based on the irrigable areas within the watershed line. A West Ghor canal was included in his plan to provide Palestinians with Jordan River water that translates into 250 MCM per year. This project was never implemented..

Palestinians are full riparians in the Jordan River basin and have historically used its water for irrigation in the Jordan Valley. Prior to the 1967 war, the Palestinians' use of the Jordan River was through 140 pumping units. Following the 1967 war, Israel prevented Palestinian farmers from utilizing the water resource of the Jordan River by closing large areas of Palestinian farm land in the area and imposing a number of military orders to control Palestinian water resources. On August 15, 1967, the Israeli military commander issued Order No. 92, in which water was considered as a strategic resource. This order was followed by numerous other orders aimed at making basic changes in the water laws and regulations in force in the West Bank. Under Military Order No. 158 of 1967, it is not permissible for any person to set up or to assemble or to possess or to operate a water installation unless a license has been obtained from the area commander. This order applies to all wells and irrigation installations. The area commander can refuse to grant any license without the need for justification. These orders were followed by numerous military orders- No. 291, No. 457 of 1972, 484 of 1972, 494 of 1972, 715 of 1977 and 1376 of 1991- to achieve complete control over Palestinian water resources. Immediately after the end of the war, Israel destroyed 140 Palestinian water pumps in the Jordan Valley and made it difficult to obtain permits for new wells. Despite the rapid increase in population and demand on water, Israel, since 1967, has granted Palestinians of the West Bank only five permits for new water wells. All were to be used exclusively for domestic purposes. New water wells for agricultural purposes in the West Bank were also restricted to three permits. Heavy fines are imposed by the Israeli Civil Administration for pumping beyond low quota levels. On the other hand, Israeli settlements receive continuous water supply, largely from wells in Palestine, and are provided service of greater quantity per capita than that received by Palestinians in the West Bank and Gaza Strip.



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Water in the Middle East Peace Process

Water is a hot issue in the Middle East peace negotiations. The basic problem in the Middle East Peace Process is that Israel so far assigned itself as the water commissioner of the area and approached the water conflicts with the Arab neighbors separately and not in an integrated manner. Its strategy is to strike a separate deal with each of its neighbors without any consideration to the geohydrological nature of surface and groundwater basins. Israel is using this tactic to ensure that it will have the overall control and responsibility for managing the water resources and providing its neighbors with certain quantities of water that are agreed upon. Certainly, such an approach is neither acceptable nor sustainable and violating the international laws.

Upon Israel's insistence, the peace process was divided into two tracks namely the bilateral negotiations and the multilateral talks. The bilaterals were intended to lead to peace treaties between Israel on one hand and each of the regional parties, namely Jordan, Lebanon, Palestine and Syria on the other. The multilateral track was intended to complement and support the bilateral track by promoting regional cooperation. A special working group was established for water resources in the multilateral negotiations. The bilateral talks of the Middle East Peace process have, so far, led to a peace treaty on water between Israel and Jordan and a declaration of principles as well as an interim agreement between Israel and the Palestinians which include a water component.

On the Israeli-Jordanian track, the peace treaty has resolved the water dispute between the two states based on mutual recognition of the “rightful allocations” of both parties to the Jordan and Yarmouk Rivers as well as the Araba groundwater. The agreement allows for the use of Lake Tiberias for storing Jordanian surplus rain flows from the Yarmouk and to be redrawn during the summer. It also maintained the right of Israeli farmers to draw water from the Nubian sandstone aquifers from the Jordanian territory in the Araba.



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Israel and Jordan have agreed to the construction of a diversion dam at Adasiya. Under the Jordan-Israel agreement, there is an average of 78 MCM and 47 MCM less water from the Jordan and Yarmouk rivers respectively than was allocated to Jordan under the Johnston plan. The peace treaty provides that Jordan and Israel will “cooperate in finding sources for the supply to Jordan of an additional 50 MCM/year of water of drinkable standard. It is worth mentioning here that Johnston plan also included the construction of a dam at the Maqarin area which will capture the winter floodwaters to be used by Jordan. Recently, Jordan and Syria finalized an agreement to start the controversial Al Wihdah (Unity) dam, which was considered as one of the precipitating causes of the 1967 war.). Israel until recently opposed to the construction of this dam.

There is no doubt that this bilateral agreement will not be a substitute for an integrated and comprehensive one that should include all riparians to the Jordan River basin. This treaty came to test in the summer of 1998, when Israel provided Jordan with poor quality water in exchange for the good quality water which Jordan stored in Lake Tiberias. This event led to a severe political crisis in Jordan. In the summer of 1999, Israel wanted to rescind from its obligations to provide Jordan with water during the summer claiming that it was facing a water crisis because of the drought conditions. This event led to a political crisis that was finally resolved by the leaders of Israel and Jordan but not without scars. Like all other Middle East countries, Jordan faced severe water crisis during the past two years of drought. Syria came to the rescue by providing Jordan with an average of 8 MCM annually.

The Syrian-Israeli Peace talks which had been resumed in January 3, 2000, were stalled again due to difference in positions. The difference between these two positions is precisely over access to water resources. Israel is reluctant to withdraw from the Golan Heights and return back to the 1967 borders because it includes important tributaries of the Jordan River as well as the northeastern shore of the Lake of Tiberias, an area of 60 Km². Although the area is small and relatively low-lying area with no strategic importance, its access to water is still considered important. As such, Israel would like to withdraw from areas based on the 1923 international boundary, which would leave these areas inside Israel. On the other hand, Syria would like the withdrawal to be based on the June 4, 1967 boundary, which marks the line of confrontation between Israel and Syria at the beginning of the 1967 War and which would put some of these areas and their water resources under Syrian control (Map 3). It is obvious that Israel considers the control over hydro-strategic territory crucial in negotiations with Syria.

On the Israeli-Palestinian track, water was one of the major sticking points in the negotiations. Still, an agreement was reached in the declaration of principles and Oslo I agreement that states:

“In order to enable the Council to promote economic growth, upon its inauguration, the Council will establish, among other things, a Palestinian Electricity Authority, a Gaza



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Sea Port Authority, a Palestinian Development Bank, a Palestinian Export Promotion Board, a Palestinian Environmental Authority, a Palestinian Land Authority and a Palestinian Water Administration Authority, and any other Authorities agreed upon, in accordance with the Interim Agreement that will specify their powers and responsibilities. After the inauguration of the Council, the Civil Administration will be dissolved, and the Israeli military government will be withdrawn. “

In annex III, it is stated that “the two sides agree to establish an Israeli-Palestinian continuing Committee for Economic Cooperation, focusing, among other things, on the following:

Cooperation in the field of water, including a Water Development Program prepared by experts from both sides, which will also specify the mode of cooperation in the management of water resources in the West Bank and Gaza Strip, and will include proposals for studies and plans on water rights of each party, as well as on the equitable utilization of joint water resources for implementation in and beyond the interim period”.

In Oslo II agreement, water is referred to under article 40 of Annex 3 “ Protocol concerning Civil Affairs”. The main issues agreed upon can be summarized as follows:

- Israel recognizes the Palestinian water rights in the West Bank. These rights will be negotiated in the permanent status negotiations and settled in the Permanent Status Agreement relating to the various water resources.
- The Israelis shall transfer authority to the Palestinians to assume powers and responsibilities in the sphere of water and sewage in the West Bank related solely to Palestinians, that are currently held by the military government and its Civil Administration, except for the issues that will be negotiated in the permanent status negotiations.
- The issue of ownership of water and sewage related infrastructure in the West Bank will be addressed in the permanent status negotiations.
- The future needs of the Palestinians in the West Bank are estimated to be between 70 - 80 MCM/Yr.
- The immediate needs of the Palestinians in fresh water for domestic use during the interim period is about 28.6 MCM/Yr. The remainder of the estimated quantity of the Palestinian future needs (41.4 - 51.4 MCM/Yr), shall be developed by the Palestinians from the Eastern Aquifer and other agreed sources in the West Bank. The Palestinians will have the right to utilize this amount for their domestic and agricultural purposes.

There is no doubt that the first item may be considered as a historical breakthrough as it is the first time that Israel has recognized the Palestinian water rights. While the



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agreement did not go into the details of the Palestinian water rights, the use of the term “various water resources” in the second sentence is very significant.

While this recognition is a very important step forward, the second and third principles in the agreement attempt to undermine the significance of this issue by talking about maintaining existing utilization and recognizing the necessity to develop new resources, tacitly accepting that more water is needed to satisfy the needs of both populations.

Palestinian water rights are summarized as follows:

- Full control over all the Eastern Aquifer as this aquifer is entirely located beneath the West Bank and is not a shared water resource;
- Equitable water rights in the western and northeastern aquifers, as these aquifers are recharged almost entirely from the West Bank;
- Equitable water rights in the Jordan River System: as a downstream riparian nation to the Jordan River System, Palestine is legally entitled an equitable share of the system’s water resources.
- Water and fishing rights in the Lake Tiberias since this natural reservoir is an integral part of the Jordan River System, in which Palestine is a legally a riparian nation with the privilege to equitably utilize it.
- Full compensation for damages to Palestine’s water resources and environment caused by Israel and reimbursement for water that has been utilized by Israel for years.

Furthermore, the agreement states that the future needs of the Palestinians in the West Bank are estimated to be between 70 - 80 mcm/year. This statement is ambiguous and may be interpreted differently by different people. In reality, this amount merely expresses the immediate needs of the Palestinians to satisfy domestic demand during the interim agreement period, without considering future development of other sectors such as agriculture, industry or tourism.

Out of the recognized amount of 70-80 mcm/year, Israel offered the Palestinians 28.6 mcm/year to meet their immediate needs during the interim period, in the manner detailed below:



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1. Additional supply to Hebron and the Bethlehem area, including the construction of the required pipeline - 1 mcm/year.
2. Additional supply to Ramallah area - 0.5 mcm/year.
3. Additional supply to an agreed take-off point in the Salfit area 0.6 mcm/year.
4. Additional supply to the Nablus area - 1 mcm/year.
5. The drilling of an additional well in the Jenin area - 1.4 mcm/year.
6. Additional supply to the Gaza Strip - 5 mcm/year.
7. An additional well in the Nablus area - 2.1 mcm/year.
8. Additional supply to the Hebron, Bethlehem and Ramallah areas from the Eastern Aquifer or other agreed sources in the West Bank - 17 mcm/year.

The capital cost of items (1) and (5) above shall be borne by Israel, and the rest by Palestinians.

Palestinians fear of a dry peace

So far, the Palestinians in the West Bank and Gaza have not seen the translation of this agreement to water in their taps, but are witnessing severe water shortages. There is a growing fear among Palestinians that the Israeli government is not serious in its peace aspirations. Israel has not implemented its commitments stipulated in the interim agreements, while at the same time, it is continuing its unilateral steps of swallowing more Palestinian land for Jewish colonies and bypass roads. There is very little that the Palestinian layperson can point out to indicate visible fruits of the peace process. Over the past three years, the GNP per capita in Palestine declined by 30% and unemployment rose to record levels of up to 40%. In the field of water, the peace process did not translate into continuous supply or additional waters in the taps. On the contrary, water shortages especially during the summer months are exacerbating. For example this year, the people of Ramallah district (210,000 residents) have the worst water shortage in 35



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years. This is due to restrictions imposed by Israel on getting permits for works needed for a new pumping station located in Area C (under Israeli control). The drought of last year and the reduction in the amount provided by Mekorot (the Israeli water company) exacerbate the problem. While the PWA is doing its utmost to rehabilitate the water infrastructure, its efforts are being impeded by Israel's practices and restrictions. Out of the 28.6 MCM of additional water committed by Israel in the OSLO II agreement to be provided to the Palestinian as an immediate needs, Palestinians and after 6 years since the agreement has been signed, got only 12 MCM. There are serious doubts that Palestinians can extract the water quantities specified in the agreement from the Eastern aquifer. It is believed that the maximum amount that could be extracted is 12 MCM. The drops of the water level in the Palestinian wells in the Eastern aquifer are raising alarm about the sustainable yield of this aquifer. The Joint water committee has approved less than one fourth of the water projects submitted by the Palestinians. In the preparatory talks about the final status negotiations, Israel is refusing to discuss Palestinian water rights and are insisting on dealing with some additional water quantities that may be granted to Palestinians. The Israeli negotiators are adamant in rejecting Palestinian demands of their water rights in the Jordan River. They are proposing desalination to overcome Palestinian water shortages. The high cost of desalination per m³ of water is not affordable by Palestinians, whose GNP per capita is \$1,300 compared Israelis who enjoy a GNP of \$17000 per capita. Certainly, Israel can easily adopt desalination and grant Palestinians their water rights



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The Israelis have recently unveiled their point view with regard to the final status of the West Bank. They introduced to the Palestinian negotiators a map which reveals the basic land scheme that Israel would propose as a final status solution during the ongoing negotiations. The map divides the Palestinian land into five cantons that are not geographically integrated. Absolutely no sustainable and integrated development of Palestinian infrastructure could take place, essentially rendering a Palestinian state physically unattainable and unsustainable.

According to the Israeli proposal, Israel would like to rent the area of the Jordan Valley area, the food basket for Palestinians, for 15-20 years. It is evident that Israel is considering the control over water resources as a significant factor in reshaping its political boundaries with Arab neighbors. Its objective is to keep as much as water under its control. The Palestinian rights in the water of the Jordan basin have historical, geographic and hydrological roots which are organically linked to economic, social and other considerations. These represent the legal basis of the international water laws which define the rights of the riparians in the shared basins. Its proposal for the final solution with Palestinians will have a detrimental impact on the sustainability of the development of the Palestinian economic sectors and make the Palestinian aspiration of a Palestinian state an unattainable dream. Israel has appointed itself as the regional water commissioner to dictate how much water each of the riparians is entitled to. Certainly, such an attitude is not conducive for a sustainable peace in the region.

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LOOKING AHEAD

The issue of water scarcity in the Middle East and solutions to it have been handled and studied by many researchers, economists, hydrologists and politicians in the World. An array of solutions to water scarcity have been proposed to ease the current water deficit and to resolve the freshwater conflicts in the region. Increasing fresh water supply and decreasing water demand options were proposed by many. Increasing water supply includes importing water from North Eastern countries such as Turkey, desalination of the Mediterranean water, wastewater reclamation, and building new dams to increase the catchment of winter floodwater. The second option, decreasing water demand, includes using water efficient techniques in agriculture, increasing the price of water and reducing the high allocation of water resources to agriculture and instead importing “virtual water”. All these proposals will not be practical unless water rights for each nation in the region are first agreed upon.

Most water resources in the world are shared and the Middle East is no exception. Managing shared water resources should be integrated and involve all the parties involved. Management does not only include allocation of water quantities, but most importantly, it involves the protection and sustainable utilization of the resource. In recent years, the world has been moving from hydrosovereignty to hydrosolidarity. The Middle East should start such an approach. Now with conflicting parties finally



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negotiating a lasting and sustainable political solution, this issue assumes an ever more urgency. While in principle, the resolution of the Middle East water allocations and disputes (hydrosovereignty) will be based on the principles of international law, there is no mechanism for this issue to be institutionalized under the current circumstances. It is clear that the question of controlling the region's waters is basically related to various perspectives of different parties to their 'legitimate national rights'. Each party will invoke a variety of legal principles to establish its claims: first-in-use first-in-right, customary or equitable utilization, absolute sovereignty, beneficial use, basic justice and fairness, good neighborliness, prior use, etc. In making its claims, each party is merely selective and chooses the legal principles that buttress its claims. Since the ultimate goal is to arrive at a just and sustainable peace in the region, the political settlement should involve an agreement on the use and distribution of the region's waters as well as institutions and structure that will guarantee the sustainable utilization of the scarce water resources.

In the Israeli-Palestinian context, “equal utilization” and “joint management” of the water resources offer a just and sustainable basis for resolving the historic water conflicts

Equal Utilization of water resources:

Table 3 shows a comparison of natural resources between Israelis and Palestinians which call for action to relieve the discrepancies.



Table 3. Comparison between NRM indicators in Israel and Palestine
(10 dunums= 1 hectare)

Indicator	Israel	Palestine	Ratio
Population (millions)	6	3	2:1
Total area (million dunum)	21	6	3.5 : 1
Accessible area (million dunum)	21	2.4	8.8:1
Cultivated area			
Irrigated area(million dunums)	2.18	0.2	10.9 : 1
Contribution of Ag. to GDP	1.8 %	7 %	1: 3.9
Forested area(million dunum)			
Total Water consumption(MCM)	1960	286	6.9:1
Agr. Water comsumption(MCM)	1252	174	7.2:1
Domestic Water consumption per capita(CM)	100	30	3.3:1
Agr. Water consumption per capita(CM)	220	58	3.8:1
Irrigated area per capita (dunum)	36.3	8	4.5:1
Pop. Density	285	1210	1:4.2

During the years of occupation and up to this date, Palestinians do not have enough water in their taps for a long period during the year. At the same time, Israelis and Jewish settlers have enough water for their lawns and private swimming pools. This discrepancy of water allocation among many other issues, creates a feeling of unjustice among Palestinians. Certainly, such a discrepancy cannot continue in the future. A comprehensive and sustainable peace should be based on justice and fairness. Both parties have agreed on the principle of “equitable utilization” of the resources, but quantifying this term will have to be agreed upon. It is proposed here that “equity” be used as a simple and straight forward interpretation and quantification for the term “equitable utilization”. In other words, the distribution of water in Israel and Palestine be shared equally between Palestinians and Israelis based on the population figures. Table 4 outlines the water resources available in mandate Palestine. It is proposed here that these 2086 MCM of water be shared equally between the two peoples.



Table 4. Water resources and their use in the mandate Palestine

Source	Total annual recharge (MCM)	Water use (MCM)		
		Palestinian	Israeli	Israeli settlements
Renewable Aquifers				
Eastern aquifer	172	54 (61) ¹	40	35-50
North eastern aquifer	145	42 (32) ¹	103	5
Western aquifer	362	22 (24) ¹	340	10
Coastal Plain Aquifer	240	0		
Gaza Coastal Aquifer	55	112		5-10
Western Galilee	120	0		
Sub-Basins	0-40	0		
Other aquifers	205	0		
Surface Water				
Jordan River basin	1311	0	685	10-20
Surface runoff	90			

A joint management structure will have to be agreed upon to address the monitoring and compliance with the quotas and to ensure the protection of the aquifers as well as the periodic reallocation based on climatic and demographic changes. Such an approach has the following merits:

- It is based on the values of equity and justice, which are essentials for sustaining peace.
- It provides a quick and simple way for resolving the water rights issue that otherwise, will drag the final status negotiations.
- It introduces for the first time in the region, an integrated water management scheme which will certainly be of great value for resolving the water conflicts between Syria, Lebanon, Israel, Jordan and Palestine.



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- It demonstrates to the opponents of the peace process that Israel is genuine in its peace aspirations and that negotiations are the ultimate means for resolving conflicts.
- It will allow for efficient utilization of current water networks and conveyance systems between districts.
- It addresses the issue of demographic and climatic changes
- It allows for potential water trades between districts and regions.
- It provides a basic tool for environmental protection of the water resources.
- It will catalyze Israeli and Palestinian as well as regional cooperation in the field of water and other areas.

Basin wide Management

Effective water resource management needs to transcend national boundaries and it becomes imperative for riparian countries to collaborate in matters of mutual interest. In a shared river basin, each riparian country is entitled, within its territory, to a reasonable and equitable share of the water and is obliged not to develop projects that would not cause harm to other riparian country. To coordinate between efforts and to develop integrated plans of shared basins, many countries in the world adopted the formation of basin wide management to establish an integrated approach to land and water management in the catchment area of the entire basin. It is regrettable that so far, such an approach has not been implemented in the Middle East so far. Ultimately, this approach has to be adopted because it is the only rational way for solving conflicts and ensuring that all riparians not only utilize the waters but also protect their quality and guarantee sustainability. The Jordan River Basin may be an ideal candidate for promoting a “basin wide regional institution” in which all riparian countries need to be involved.

A committee that will steer the basin wide regional institution should be established by all the governments concerned in order to promote, coordinate, supervise and control the planning, investigation and implementation of water resources development in the basin.. The main tasks of the committee should be:

1. To cooperate in all fields of sustainable development, utilization, management and conservation of the water and related resources of the Jordan River Basin.
2. To promote and cooperate in joint and/or basin-wide development projects and basin programs.
3. To protect the environment and natural resources from pollution and other harmful effects resulting from any development plans and uses of water and related resources in the basin.



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It is realized that such an approach will not happen overnight. It needs good relations between riparian countries, mutual trust, spirit of cooperation and various regional projects. Certainly, this seems to be still far away, but preparations for such an approach need to be started now. Article 33 of the Convention on the Law of the Non-Navigational Uses of International Watercourses dealing with the settlements of disputes includes that if the parties were unable to resolve their dispute within six months of a call for negotiations, a commission of inquiry could be created on the demand of a single party.

Consequently, Palestinians should immediately approach all the riparians of the Jordan river basin calling for a negotiated basin wide management approach. If negotiations fail to start or reach a just solution for the different parties, it is proposed that the matter be referred to the International Law Commission Convention on the Law of the Non-Navigational Uses of International Watercourses of 1997 to solve the dispute. A fact-finding mission composed from members from the disputed countries as well as members from neutral countries should be formed to solve the dispute. The riparian countries should provide the Commission with required and requested information and to facilitate its access to their respective territory to inspect facilities, plant, equipment, construction or natural feature relevant for the purpose of its inquiry. The mission shall prepare a report and submit it to the concerned parties setting forth its findings and appropriate recommendations to an equitable solution of the dispute.



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Conclusion

The prospect of substantial increases in water demand in the coming years renders it absolutely imperative to find a solution to the region's shortage, which is expected to become more acute and critical as a result of over population, economic development and global warming. The current peace process offers all nations of the Jordan River Basin the opportunity to end the states of belligerency between them and usher in a new era of real security and cooperation. It is clear that any inequity or unjustness that may be felt by any party at any time will not lead but to further instability. There is very little that the Palestinian layperson can point out to indicate visible fruits of the peace process. In the field of water, the peace process did not translate into continuous supply or additional waters in the taps. On the contrary, water shortages especially during the summer months are becoming the norm.

This paper presents a modest proposal that relies on the power of logic rather than the logic of power. Since we are living in a world of imperfect justice, this proposal may not be accepted at this stage. Most probably, we shall see a series of unilateral or bilateral projects such as desalination plants, water import from Turkey or the Red-Dead canal. It is argued that these efforts will not replace the inevitability of the basin wide management. It is hoped that this proposal be taken seriously by all concerned and steps are taken towards its implementation in the FUTURE.



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