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## **A CRITICAL ANALYSIS OF THE ISRAELI PALESTINIAN WATER RELATIONS**

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### **Abstract**

The water situation in the Occupied Palestinian Territory (OPT) is approaching a critical phase which is threatening the livelihood of the Palestinian population and hindering economic development. The water crisis in the OPT is not due to scarcity of supplies but due to uneven and inequitable distribution of this scarce resource between Israelis and Palestinians. The current water allocations came about as a result of *fete compli* arrangements reflecting the balance of power rather than internationally formulated agreements. Israel is currently utilizing more than 80 % of the Palestinian groundwater resources and denying Palestinians their rightful utilization of the Jordan River. Regrettably, water has not received the same attention as other disputed issues such as the future of Jerusalem, the settlement issue and the right of refugees to return to their homeland. According to the interim agreement, Israel recognized, in principle, the Palestinian water rights. However, the enumeration of these rights has been delayed until the final status negotiation. No serious negotiations have taken place on this vital issue.

The Interim agreement provided Palestinians additional amounts of water, but these small quantities failed to meet the needs of a growing Palestinian population who are subjected to suppressed water demand. It was agreed that the immediate Palestinian needs were supposed to be 28.6 MCM/yr and the future water needs were estimated to be between 70-80 MCM but up to date, after 10 years of signing the interim agreement, only 15 MCM of additional water was supplied annually. As a result of Israel's water policy, the water consumption of the 3.6 million Palestinians living in the West Bank and Gaza strip amounts to 270 MCM per year, whereas the 6.0 million Israelis consume around 1,800 MCM per year. Regrettably, 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.

Other problems plague the Palestinian water sector. The groundwater table in the Herodion well field of the eastern aquifer is declining rapidly as both the Palestinians and Israelis are exploiting its water. Approximately 25% of the Palestinian water communities are not connected to the water network. While the Palestinian Water Authority (PWA) submitted several project to improve the water and sanitation infrastructure, for example to connect Palestinian villages to the water network, these



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projects have been at large rejected by the Joint Water Committee (JWC) established for the interim period.

Moreover, among the recent Israeli schemes affecting the water resources in the West Bank are the fragmentation of the West Bank into several security zones and the construction of the Segregation Zone. This has resulted in the isolation of several Palestinian groundwater wells and springs used for domestic and agricultural purposes. The combined number of water wells utilized by the Palestinian population in the segregation zones is 136 with a combined average annual pumping rate of approximately 44.1 MCM while the combined number of water springs in the segregation zones is 46 with a combined average annual discharge of approximately 23 MCM. This will result in cutting the Palestinians off from these water supply sources or at least imposing more restrictions on their use.

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 agreement. There is very little that the Palestinian layperson can point out to indicate visible fruits of the peace process. While the PWA is doing its utmost to rehabilitate the water infrastructure, its efforts are being impeded by Israel's practices. This in turn calls into question the prospect for a sustainable peace. The basic problem is that Israel so far has refused to approach the water conflicts with its Arab neighbors in an integrated manner. Israel's strategy is to strike a separate deal with each of its neighbors without any consideration to the geohydrological nature of basins and aquifers. Since Israel is holding all the water cards in its hands, it 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. Israel intends to hold large areas of the West Bank in order to create "security zones" and to maintain its control over the Palestinian water resources. Minister Sharon was quoted saying: "My view of Judea and Samaria is well known, the absolute necessity of protecting our water in this region is central to our security. It is a non-negotiable item". (Boston Sunday Globe, Sunday, October 18, 1998). In one of his meetings with the Palestinian negotiators, the Israeli water commissioner Ben-Meir said: "I recognize needs, not rights. We are prepared to connect Arab villages to Israel as well, but I want to retain sovereignty on hand". Such statements confirm Palestinian fears of a dry peace.

To alleviate Palestinian fears of a dry peace, Israel needs to immediately satisfy Palestinians needs for water and to start negotiations leading to a mutual recognition of the "rightful allocations" of both parties to the Jordan River, the Dead Sea waters and the shred groundwater resources.

*Key words: Water scarcity, West Bank Groundwater Aquifer, Jordan River, Dead Sea, Dry Peace, rightful allocation.*



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## 1. Introduction

Water has historically played a significant role in shaping the geopolitical boundaries of the Middle East. Few realize that the lines on present day maps of the region are, to a great extent, the result of a continuous parade of water related wars, occupations, cease-fires and imposed peace plans. Today's boundaries in the Middle East are, primarily, artificial frontiers imposed by superpowers. Water considerations continue to inhibit regional cooperation and agreement. To a large degree, water resources in the area have been taken over by force and military action. The interrelationship between water resources, conflict, competing ideologies, nationalistic agendas and basic human needs cannot be overlooked. Unless, this complex interplay is taken into consideration during future plans, water issues will guide the peoples of the Middle East into further conflict.

Back in 1882, the Zionist Movement vocalized its claim of settling the land of Palestine and claiming its natural resources. Charles Woorn stated that Palestine and the Negev Desert would be able to receive 15 million Jewish immigrants only if sufficient water resources were available. Chaim Weizman wrote to the British Minister David George, describing the minimum requirements of a Jewish State in the land of Palestine and explaining the Jewish perspective on the issue of water, stating that: “The whole economic future of Palestine is dependant upon its water supply for irrigation and for electric power, and the water supply must mainly be derived from the slopes of Mount Hermon, from the headwaters of the Jordan and from the Litani River in Lebanon ... We consider it essential that the Northern Frontier of Palestine should include the Valley of the Litani, for a distance of about 25 miles above the bend, and the Western and Southern slopes of Mount Hermon.” (Jewish Observer, 1973)

Zionism, the nationalistic ideology of the Jewish people always elevated agricultural pursuits, encouraging “pioneer” immigrants to establish new settlements. A variety of philosophers, most notably A. D. Gordon, espoused a Tolstoyic perception that only through work connected to the land and soil could personal redemption be achieved (Tal, 2002). Among agriculture's additional merits that were traditionally cited are: its contribution to “food security,” as a means of self sufficiency, its role in accelerating land confiscation, establishing territorial claims and in the past, socializing new immigrants and reducing unemployment.

Many Israeli policy makers and scientists argue that this ideological and cultural bias provides some explanation for present water policies, which today are frequently inconsistent with economic and environmental considerations. To begin with, the economic contribution of agriculture to Israel's economic profile has fallen to 3% of GNP and 2% of overall employment. Crop subsidies nevertheless remain high for certain crops. Large- scale water diversions for agriculture have also left a hydrological legacy of dry streams and depleted aquifers (Zaslavsky, 2002). The same argument proceeds by justifying that the reason behind the current water policies can be attributed to the



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political elites who continue to dominate government decision-makers. Senior politicians and government officials are disproportionately affiliated with the agricultural sector, affecting their decisions about water allocation, pricing and distribution. The political patronage of Israel's top leadership to agricultural interests continues and they remain protected in recent years regardless of party affiliation.

Palestinians argue that Israel is still pursuing an aggressive water policy and using the shared Israeli-Palestinian water resources inequitably. Israel is using approximately 1850 MCM of freshwater a year more than seven times what Palestinians use. This translates into a per capita water allocation for an Israeli citizen almost 4 times more than the per capita water allocation for a Palestinian citizen.

Palestinians believe that this Israeli water grab policy is designed not only to preserve Zionism ideology or to keep up with Israel's top leadership agricultural interests but also to hold on to large reserves of freshwater that are being converted and will be converted for many decades to come from the economically unproductive agricultural sector to the other development sectors in Israel. On the other hand, Israel by controlling most of the areas natural resources is keeping Palestinians water stressed to chalk any potential Palestinian development. Moreover, water can always be used as a negotiations wild card to get Palestinian concessions in other thematic areas of negotiating a peace settlement. But what are the policies and measures Israel utilized to control the water resources?

### **Surface water resources**

The main water course in the region is the Jordan River system. The Jordan River system arises from the eastern mountains in Lebanon. The river flows along the Jordan Rift Valley through the Lake Tiberias tapping into the Dead Sea. The entire length of the Jordan River is 360 km with a surface catchment area of about 18,300 km<sup>2</sup>. Recognizing the importance of the Jordan River System as a major source of water for the future state of Israel, the British High Commissioner, in 1926, granted the Jewish owned Palestine Electricity Corporation, founded by Pinhas Rutenberg, a 70 year concession to utilize the Jordan and Yarmouk Rivers' water for generating electricity. The concession denied Arab farmers the right to use the Yarmouk and Jordan Rivers' water upstream of their junction for any reason, unless permission was granted from the Palestine Electricity Corporation. The control of the Jordan River waters came under threat from a plan devised by M. Ionides, a hydrologist appointed by the British government to serve as the Director of Development for the East Jordan Government. The Ionides plan recommended the use of the Jordan River waters to irrigate the lower Jordan River Valley. Zionist supporters worldwide were not satisfied with the findings and recommendations of Ionides. Their aspiration to utilize the Jordan River Basin for the irrigation of the Negev and the southern parts of Palestine was fulfilled by *walterclay Lowdermilk*. Lowdermilk was commissioned by the United States Department of Agriculture to conduct such a study. Lowdermilk devised a plan calling for the irrigation of the Jordan Valley; the diversion of



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the Jordan and Yarmouk rivers to create hydroelectric power; the diversion of water from northern Palestine to the Negev desert in the south; and the usage of the Litani River in Lebanon. Such a plan along with its management framework would ensure adequate water resources and job opportunities for 4 million new Jewish immigrants in addition to the 1.8 million Arabs already living in Palestine and East Jordan at that time. However, control over the proposed project should be solely in the hands of Jews, with a limited amount of input allotted to the United Nations. (*Lowdermilk, 1944*). Lowdermilk's plan and suggestions were enthusiastically embraced by influential Zionists. Technical experts subsequently contracted to implement and interpret this plan into feasible schemes. James B. Hays was selected for this assignment.

Arabs favored a plan put forth by the American engineer *M. E. Bunker*. He identified a suitable location for the construction of a water storage dam along the Yarmouk River at the Moqarin area, where three valleys join together. The impounded water would be diverted to another dam at Addassiyah into gravity flow canals along the East Ghore area in the Jordan Valley. The plan included two hydroelectric generating plants at the site of the two dams to supply water and electricity to both Jordan and Syria.

As soon as work began on the plan in July 1953, Israel vocalized its concern about increasing Arab control over the area's water resources. Israel objected on the grounds that the original Rutenberg Concession gave it exclusive rights to the Yarmouk River. As a result, pressure was exerted on the United States Government and UNRWA to cease support for the project. To the surprise of the Jordanian Government, work halted soon thereafter and the project was terminated.

It is not the scope of this paper to present all the plans that were devised between the 1930's to 1950's. However, the most important of these plans, apparently, was the Johnston Plan. The plan included water distribution quotas of the Jordan Valley Basin, estimated at 1,213 MCM annually, among the riparian states. It is worth mentioning that none of the plans were endorsed by both Israel and the Arab States. The final form of the Johnston Plan, even though it was rejected by Arab States, was used by the United States as a basis for its future plans in the region. The failure to reach bilateral agreement reinforced each country's inclination to proceed independently. In 1958, Israel reinitiated the National Water Carrier project but with some technical changes and also the Seven Year Plan was replaced by the *Ten Year Plan*. The new plan shifted the diversion point to Eshrd Kinort, at the north- west corner of Lake Tiberias. The new diversion project was carefully designed in accordance to Israel's water allocation in the Revised Johnston Plan. It also refrained from invalidating its general principles. 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 Baniyas and Dan Rivers in the Golan Heights. These headwater diversions threatened to deprive Israel of 35% of its water potential from the Upper



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Jordan. Israel, as a riparian state of the Jordan Basin, considered this action an aggression on its water resources and sent fighter planes to destroy working sites.

Israeli occupation of the Syrian Golan Heights in 1967 and subsequent control over the Jordan's headwaters in the area ended Arab dreams and plans for utilizing the water of the Jordan Basin. In 1969 Israel bombed the East Ghor Canal in Jordan, keeping it out of order for four years. After secret negotiations between Jordan and Israel in 1969- 1970, Israel permitted the repair of the East Ghor Canal while Jordan, in return, reaffirmed its adherence to the quotas of the Revised Johnston Plan.

The Johnston plan allocated 394 MCM of the Jordan waters to Israel and the revised Johnston Plan allocated 450 MCM to Israel. Since the 1967 occupation of the West Bank, Gaza Strip and the Golan Heights, Israel vastly expanded its control over water resources in the area to include Mount Hermon and the entire length of the Jordan River. Table 1 shows the difference between the Johnston plan and the current water allocation. While the average annual flow at the outlet to the Dead Sea was 1315 MCM in 1948, the actual volume of water reaching the Dead Sea now is approximately 200 MCM of poor quality water.

TABLE 1. THE JORDAN RIVER WATER ALLOCATIONS IN MCM

Country	Johnston	Current	Difference
Syria	132	153	+21
Lebanon	35	7	-28
Jordan	720	480	-240
Israel	400	647	+247

Source: Stevens et al, 1965

### **Groundwater resources**

Similarly, groundwater allocation from the West Bank Mountain Aquifer and the Coastal Aquifer on the south-eastern side of the Mediterranean Sea is unequally distributed amongst the Palestinian and Israeli populations. The safe yield of the shared West Bank Mountain Aquifer is approximately 680 MCM/year of which only 115 are allocated to the Palestinians. Similarly, the water allocation from the Coastal aquifer is unequally distributed. Inequality in water allocation between the Palestinians and Israelis in the West Bank and Gaza Strip, and the Jews and Non-Jews in Israel is evident in **FIGURE 1.**

The feeling of injustice arising from the unequal distribution of water resources between Israel and Palestine is compounded by the fact that Israel allocates more than 60% of the fresh water resources it controls to agriculture which in turn contributes to only 1.8% of Israel's real growth GDP and employs less than 1% of its labor force. The corresponding figures in Palestine are 18% and 17%, consecutively.



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### **III. The Recent Israeli-Palestinian Water Relations**

Ever since the occupation of the Palestinian territories in 1967, gaining and maintaining absolute control over land and water resources was an overriding priority for Israeli policy. Before venturing into the history of the Arab-Israeli water conflict, a brief examination of the ideological, political and social factors driving the Israeli water appropriation policy is essential as it can provide intrinsically interesting insights into why Israel is pursuing such an aggressive water policy.

The injustice done upon the Palestinians during 30 years of occupation was perceived to be lifted or at least partially undone through a peace agreement. In Oslo II, article 40, Palestinians and Israelis agreed to the following:

- Israel recognizes the Palestinian water rights in the West Bank. These will be negotiated in the permanent status negotiations
- Both sides recognize the necessity to develop additional water for various uses
- While respecting each side's powers and responsibilities in the sphere of water and sewage in their respective areas, both sides agree to coordinate the management of water and sewage resources and systems in the West Bank during the interim period, in accordance with the following principles:
  - Maintaining existing quantities of utilization from the resources
    - Average water supply actually dropped from 92 l/c/d in 1999 to 86 l/c/d in 2002.
  - Additional supply to the Hebron, Bethlehem and Ramallah areas from the Eastern Aquifer or other agreed sources in the West Bank - 17 MCM/year
    - Additional supply from these was 3.995 MCM in the year 2003.
  - An additional well in the Nablus area - 2.1 MCM/year.
    - The well is not productive yet.
  - According to point 7a, various localities in the West bank and the Gaza Strip will receive from Israel an additional 4.1 and 5 MCM/yr, respectively.
    - The Palestinian Water Authority purchases the additional supply. Actually the difference in purchased quantities of water in the West Bank from Israel between the years 1997 and 2002 was approximately 8 MCM.

Many Palestinian scientists believed that the Oslo II accord did not produce enough water resources re-allocation necessary for achieving development in the agricultural, industrial and municipal water consumption sectors. Still, most of the agreed upon immediate needs (28.6 MCM/yr) and the future needs of the Palestinians in the West Bank during the interim period (70-80 MCM/yr) as stated in the Oslo II interim agreement were not produced due to several reasons; mainly:



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1. Delays in obtaining the required approval of the Joint Water Committee (JWC) where decisions need to be made in consensus by a committee equally composed of Palestinian and Israeli specialists (Oslo II agreement, 1996).
2. According to the Oslo II agreement 1996, most of the additional water quantities should come from the Eastern Aquifer Basin. However, recent studies (e.g. CH2MHILL, 2002) have shown that the eastern aquifer is over abstracted and any further abstraction jeopardizes the sustainability of the water resources in the Eastern Aquifer. Indeed, abstraction levels from the new wells developed by the Palestinian Water Authority were significantly lower than the estimated productivity of these wells.

For example, a close investigation of the water table level in the Herodion Basin has shown a significant drop after year 1984. FIGURE 4 shows the changes in water level observed in three

Herodion wells against the total abstraction from the Herodion Well field. Since 1984, the volume of water abstracted by wells drilled in the Herodion Well Field increased significantly. The relation between the observed water table level and the volume of abstracted water is apparent. FIGURE 5 is a three dimensional representation of the drop in water level observed in the lower Cenomanian aquifer of the Herodion Well Field.

On the other hand, Palestinians were not allowed to develop their groundwater resources in the Western aquifer (the most productive of the three aquifers). Israeli Allocation of water resources from the Western Aquifer is approximately 343.1 MCM in contrast to 23.7 MCM allocated to the Palestinians. Provisions set out in Article 40 allow the drilling of new wells into the Eastern aquifer and to lesser extent into the North eastern Aquifer but not into the Western Aquifer. Even if the Palestinians are to regain their water rights in the Western Aquifer and are allowed to drill new wells in the Western Aquifer, Israel has to reduce its current abstraction rates in order not to deplete the aquifer.

Article 40 of the Oslo II accord starts, “On the basis of good-will, both sides have reached the following agreement in the sphere of Water and Sewage”. Based on the above, many Palestinians feel that the element of good-will was particularly lacking. It would be practically difficult to conceive that the Israeli negotiations team and its supporting technical team miss-calculated the productivity of the Eastern aquifer by some 60-70 MCM/yr. Palestinians now realize that any further abstraction from the Eastern Aquifer, the only of the three aquifers that is confined within the West Bank, would result in the depletion of this resource. Actually, the Palestinians could have never achieved their water needs in the interim period by abstracting water from the ground water aquifers unless they were allowed to develop their Western Aquifer coupled with a significant decrease of the volume of water abstracted by Israeli wells.

To many Palestinians, it became apparent that the state of Israel has not given up on its policy to derive maximum benefits from all water resources in the occupied territories





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even if the price was in the 1990's reaching a peaceful and just settlement for the Palestinian-Israeli conflict.

#### **IV. The Israeli Water Policy and the Palestinian Environment**

Several ecologically unique and important areas in the Occupied Palestinian Territories have been adversely affected by the aggressive Israeli water policy including marshlands, wetlands, perennial streams, the Jordan River and the Dead Sea, among others. For example, the banks of the Jordan River and the Dead Sea Side Wadis, the marshes around the springs and the land depressions adorn the bare and desolate surroundings with evergreen meandering strips and Oasis. Soil moisture in these areas from springs, runoff or underground moisture compensate for the scantiness of atmospheric humidity creating microhabitats booming with life forms. These areas have been suffering serious degradation processes induced mainly by anthropogenic unsustainable development actions. In the last 30 years, the level of the Dead Sea has dropped more than 20 meters and its surface area has shrunk by 30%. The reasons for this are well known. Major water diversion projects of the waters of the Jordan River and of the Dead Sea side Wadis have reduced fresh water inputs from its pre-1935 annual average of 1,570 MCM to less than 560 MCM/yr of bad quality water (Average annual water inputs into the Dead Sea ranged between 419-559 MCM during the last 6 years). The drop in the Dead Sea water level has led to the opening up of sinkholes. 32 sinkholes opened up in recent years alongside the western coast of the Dead Sea and the rate has been recently increasing. The Dead Sea Basin is also living up to its name. Groundwater table levels have been dropping in several well fields at an alarming rate. Israel's ever growing aggressive water policy led to the over-abstraction of groundwater and to harvesting surface water thus depriving nature from its legitimate use of water. The Jordan River ecosystem suffered the most. It had a flow of 1,250 MCM of good quality water in the year 1957. Now it has a flow of less than 200 MCM/yr of brackish water and wastewater. The banks of the Jordan River supported woodlands and underground vegetation of the Populion Euphraticae and Tamaricetum Jordanis alliance. The river banks were visited for their historic, cultural and religious values. In addition, several perennial Wadis with rainwater storm runoff and/or with permanent water from springs lost significant volumes of water due to diversion of water resources for agricultural purposes. The consequences of these actions were for some Wadis a striking loss of above ground green biomass and biodiversity and the penultimate irreversible land degradation.

History has taught us that in most cases, man's intervention in nature has led to devastating impacts on the delicate balances in ecosystem. The Samaritan civilization has collapsed despite its innovative agriculture and irrigation advances simply because they ignored one simple fact which is that transfer of river water does not only carry water but clay and silt as well as salts. Thus, despite its progress, the Samaritans have destroyed the rich Mesopotamian lands by Salinization. In recent history, similar things



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have been experienced. Israel has been demanding since early Zionism to create the Zionist dream of greening the desert. The desert only needs water and thus, Israel has been adopting a cry baby and whining approach by laying its hands over the waters of all its neighbors without any formal or informal agreement in order to bring as much water and pump it up from -200 meters to (150-205 m a.s.l) in the Negev to make the desert bloom. A hard lesson for the world has been to live in harmony with nature (i.e. the desert has the right to remain a desert as an oasis has the right to continue as an oasis). In the Jordan River, the river itself has been historically an oasis around which civilizations lived. The Silk Road and the Spice Road moved around the banks of the Jordan. Regrettably, due to the diversion of water resources, the Jordan now is rather a sewage canal while the Negev Desert has become an agricultural landscape. The indigenous Bedouins have been forced to abandon their nomadic life while others invaded to make Moshav and kibbutzim exploiting large quantities of very costly water in un-economical sector.

## **V. Palestinian Water Needs**

In the Year 2000, the Palestinian Water Authority finalized the Water Sector Strategic Planning Study and the National Water Plan. The studies estimated the long term future water needs for the Palestinians. The overall demand in Palestine is projected to more than double in a 20 years period from 354 MCM/yr in 2000 to 845 MCM/yr in 2020. As indicated above, the total water use in 2000 was estimated at 279 MCM, which is actual use (suppressed demand). The major demand growth will be in Municipal and Industrial demand by almost four fold from 141 MCM/yr to 472 MCM/yr, whereas agricultural demand is projected to grow from 213 MCM/yr to 373 MCM/yr. Over the next 20 years period, the gap between supply and demand will grow from over 60 MCM/yr in 2000 to more than 550 MCM/yr in 2020, if no further resources are developed. Utilization of surface and groundwater resources, which relies on the recognition of water rights in the Eastern, Western and Northeastern groundwater basins will reduce the gap between demand and supply, but still leaves a gap of around 144 MCM/yr between supply and demand in 2020. In order to reduce the gap between demands and supply, Palestinian water rights to utilize their share of the Jordan River Water should be recognized and non-conventional resources/options should be explored. The aforementioned scenario constitute the only acceptable solution for many Palestinians; namely the recognition of the Palestinian Water Rights (ground as well as surface waters). While the state of Israel continues to deny the Palestinians their water rights and the agreed upon 60-70 MCM of additional water resources to be allocated to the Palestinians within the interim period were never realized, the Palestinian Water Authority planed to develop non-conventional resources such as surface water harvesting from seasonal streams and the treatment and reuse of wastewater. However, all major water projects in the West Bank should be approved by the Joint Water Committee (JWC), a body of Israeli and Palestinian governmental officials responsible for the coordination and management of water and sewage resources and systems in the West Bank.



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## **VI. The Israeli-Palestinian Water Relations During the Second Intifada**

Following the eruption of the second Intifada in the year 2000, Palestinian officials complained that it became unnecessarily difficult to agree with the Israeli counterpart in the JWC on the implementation of several water and wastewater projects. For example, the designs, feasibility studies, environmental impact assessment and funds have been prepared and allocated for the establishment of several wastewater treatment plants. The Israeli counterpart in the JWC, the Palestinians complained (personal communication with PWA), imposed insurmountable technical obstacle that delayed and in most cases prevented the establishment of the wastewater treatment plants.

In the case of Beni Neim wastewater treatment plant, the level of treatment of wastewater requested by the JWC highly exceeded those observed in several if not all Israeli wastewater treatment plants. The other imposed condition was securing reuse of the total volume of the treated effluent from the Beni Neim wastewater treatment plant. Even if that was technically possible as most of the open space in Palestine today is located in segregation zones, it would take lots of awareness campaigns carried over a long period of time to alter people's perceptions as regards to using high quality treated wastewater in unrestricted agriculture. The reason for imposing such conditions is that the Israeli counterpart in the JWC assumed that the free flow of the treated wastewater in Wadis or the artificial recharge of the Eastern Aquifer would pose a serious threat to the quality of groundwater. Accordingly, another location near Al-Thahiriya close to the Israeli border was selected by JWC. The requested level of treatment is lower than that for Beni Neim wastewater treatment plant and the treated effluent would be re-used in Israel. This can be conceived as another turn in the Israeli water policy that reinforces the conviction of many Palestinians that Israel is escalating its traditional policy of deriving maximum benefits from all water resources in the occupied territories.

The Israeli separation zone is maybe the clearer and most recent manifestation of Israel's control policy. The separation zone will trap large tracts of Palestinian agricultural land between the walls and fences being erected on these lands and the Green Line separating Israel and the West Bank. The separation zone endangers the agricultural sector as well as other Palestinian economical and natural resources. The Palestinian communities located inside the separation zone are mainly communities dependent upon agricultural produce for the bulk of their income. The Israeli decision to construct the segregation wall fits the State's historical declarations of intent to gain control of water resources inside the West Bank. This is best illustrated by Israel's transport of water underlying the occupied West Bank to the northern Negev to increase the cultivation of land in this distant region, while refusing to the Palestinians water needed to develop their agriculture and industry.

In an interview on 5.4.2004 Sharon was asked by Haaretz reporter:



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*What happened to the plan for an "eastern fence" in the Jordan Valley?*

"I don't see a fence being built there today, unless we need to. Here and there we will block access points to the Jordan Valley."

*Will the Jordan Valley remain under Israeli control in a final status agreement?*

"Israel will need a security zone."

On 7.9.2004, Israeli Agriculture Minister revealed plans to expropriate some 31,000 dunums of land to expand Jewish settlements in the Jordan Valley.

Sharon's statements clearly indicate his intention to retain the eastern portion of the West Bank through restrictions, or a wall if necessary, and therefore retain control of the Jordan River (and the fertile Jordan Valley) despite previous agreements and allocations. The northwest portion of the West Bank contains the richest Palestinian groundwater wells, particularly those located adjacent to the green line. As a result of the Wall, over 5.5 MCM will become inaccessible or their access restricted which translates into the separation wall cutting 23% of the Palestinian annual abstractions from the Western Basin. The Western-most part of the West Bank which is mainly planted with fruit trees, vegetables and field crops and has large areas of irrigated agriculture, represents approximately one third of the West Bank agricultural production.

## **VII. Conclusions**

The aggressive Israeli water policy adversely affected the Palestinians and their environment. The Israeli authorities used many different and complex measures and policies, all of which were designed to place under Israeli control the maximum amount of water. *Supply induced scarcity* (Kelly, Homer-Dixon 1995) has become a major threat endangering the sustainability of Palestinian natural resources and the viability of a future Palestinian state. On one hand, the lack of sufficient water resources is chalking the development potential of the Palestinian economic sectors and, on the other hand, the degradation of landscapes through the deprivation of water is bringing about long term adverse impacts including the immediate loss of biodiversity, the loss of ecological goods and services and the longer term loss of the economic potential of the scenic landscapes for eco-tourism.

Could there be an equitable allocation of resources? Could we still sustain a two state solution? Or is it that both the peoples and the shared environment will suffer from the Political conflict until they are irreversibly damaged?

To solve the conflict over natural resources, it is important that Equity and Equitable principles are followed; that no weight or recognition can be given to advantage obtained by illegitimate means. Equity requires clean hands, and water usage arrived at by coercion and force of arms does not give rise to any "equitable" claims.