

GEOPOLITICAL ASPECTS OF WATER SUPPLY IN THE LEVANT AREA

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ABSTRACT

This article analyzes water demand and supply around Israel's borders. The increasing demand of water will come, inevitably, on the expense of Israel's water potential. The conclusion of this analysis is that Israel must adopt a strategy of desalination that is much broader in scope than what was planned by the Israeli Water Commission in June 2002. About 230 mcm (million cubic meters) should be added to the missing quantity of 540 mcm, the planned installations must be doubled (at a cost of heavy air pollution in the coastal plain). The financial cost of 250-300 million dollars needed to carry out the desalination is a low price for distancing the nightmare of water shortage around Israel.

KEYWORDS: Egypt, Israel, Jordan, Lebanon, Palestinians, Syria, Water-Desalination, Water-Demand and Supply.

INTRODUCTION

Israel's water strategy must be built on the principle that in any situation the country will be independent of its neighbors when it comes to the supply of water.

This is no slight matter, for 65%-70% of all of Israel's water potential originates in the neighboring states, including the Palestinian Authority (Water Commission, 2002; Soffer, 1999). Similarly Israel must be intelligent in evaluating both its own needs and those of its neighbors in the near future, as well as the extent of its neighbors' willingness to cooperate on the subject of water as with other subjects. It should be remembered, too, that gone are the days when it was possible to conduct "water wars" of the sort that were waged with Syria up to the mid-1960s.

This article will analyze what is happening around Israel’s borders on the subject of water, with the intention of aiding in formulating a prudent water policy for the years to come.

HUMAN DYNAMICS

Around Israel’s borders (the 1949 lines and the 1967 lines), a very rapid population growth has been taking place, related to high natural increase, on the one hand, and a positive immigration to neighboring regions with geographical advantages (Jordan Valley, Hatzbani Valley, Golan Heights (Israeli or Syrian side), Jordan Valley and North of Sinai).

In 2004, some four million Arabs resided very close to Israel’s borders. Further back (up to 50 kms. from the border) there were fifteen million more Arabs (see Table 1).

This population has increased rapidly and will double itself within twenty years, so that by 2020-2025 it will number some thirty million people.

Table 1: Population close to Israel’s borders, 2003-2020 (figures in million).

Israel's Border with:	Arab Population (Adjoining the Border)		Arab Population (Up to 50 km Away)	
	2004	2020	2004	2020
Lebanon	0.250	0.5	1.0	2.0
Syria	0.150	0.2	6.0	12.0
Jordan	0.350	0.5	4.5	8.0
Palestinians	3.6	6.2	3.6	6.2
Egypt	0.02	0.1	0.2	3-4
Total	4.37	7.5	15.3	30.0

Source: Author's calculations

We must take these numbers into consideration when trying to analyze the demand for water around Israel’s borders in the present and in the future, and the hydropolitics of the region, as well (see Table 2).

As for the matter of water use, just like other matters, two additional populations within Israel borders must be taken into account that are generally not figured into any official sources but that consume water in any case. One includes, according to an estimate in 2003, some 300,000 Arabs who penetrated into Israeli territory illegally. The second includes 300,000-400,000 foreign workers (Soffer, 2003). The illegal inhabitants and the foreign workers together add up to a half million persons, who, despite their not possessing identity cards or the right to vote, nonetheless consume water and create sewage. If the political and demographic processes in Israel continue as they are today, the number of these two uncounted populations will reach 800,000 by 2020.

Table 2: Forecast of water quantities to be taken from Israel's water potential for the Arab population, 2003-2020 (figures in million mcm).

	2003	2020
Lebanon	15	30
Syria (alternative A*)	-	-
Syria (alternative B**)	-	220-300
Jordan	55	150
Palestinians	270	400
Egypt	-	-
Total	340	About 830
Total Israeli Water Poter	1.6	1.6

*Alternative A—Israel controls the Golan Heights.

**Alternative B—Israel withdraws from the Heights

Sources: Soffer 1999 and author's calculations

An increase in the number of water consumers will not constitute the only factor in the growth in demand for water. Contributing, too, to this growth will be an increase in the standard of living in Israel and in the region as a whole, or at least in some 'pockets' in the region. From 2000-2003, international reports were published that deal with the present condition of the region and future outlook (UN 2002, 2003, 2004; NIC 2000), and they are all in accord as to the deterioration that may be expected in the region. It is known that an increased standard of living intensifies water consumption.

The long-range meteorological forecast points to an expected warming of the globe; in other words, a slow but protracted lessening of the water potential of the region as a whole and of each of the states in the region separately (Gleick, 2003).

The dream of the global village generally relates to cooperation between people, states, and regions. Theoretically this cooperation can improve the difficult situation of water regimes in the region. However, the reality is that we should not deceive ourselves with hopes that are inappropriate to the culture of the Middle East. In this region, there was never any cooperation in the past, especially with Israel, and there are no signs of a “new Middle East” in the near future. In the early years of this century, Jordan’s electric system was joined to Egypt’s on lines that detoured around Israel. In August 2003, these two Arab states were connected with a gas line that also skirted Israel. The shuttle that runs several times a day between Aqaba and Nuweiba constitutes a transportation detour of Eilat. These facts indicate that Israel should not err by being over-optimistic in regard to regional cooperation. On the contrary, the more the water regimes in the Palestinian Authority, Jordan, and Syria worsen, the more pressure the international community will apply on Israel to concede water, the Kinneret (Sea of Galilee) included, to satisfy its thirsty neighbors. There is no doubt that this pressure will also be assisted by voices in Israel of those who believe that such steps will bring peace closer.

Up to now, we have cited processes that will intensify the regional need for water, on the one hand, and those that will cause a smaller water supply, on the other. We have also made clear that we must be careful not to harbor illusions about cooperation between Israel and its neighbors (see map 1 – Water Projects Adjacent to Israel). We shall now survey what is happening in the area of the water regime in each of the countries neighboring Israel, and the implications for this country.

SOUTHERN LEBANON

In 2004, residents of the Hatzbani basin used 10-15 million cubic meters (mcm) of water, which in the past was part of Israel’s water potential. The last pumping station was erected on the Awazni springs near the village of Rajar in October 2003. Presently it may be

assumed that the quantity of water reaching Israel from the Awazni will decrease. These waters irrigate not only the fields of the channels of this stream, but also the upper slopes of the Hatzbani, the Lebanese Galilee, and the area of Marjeyun, where exploitation of the rest of the Eyun Stream dries out the Tanur waterfall in Israel during all the months of the summer.

If we assume that there exists a potential 50,000 dunams of terraced land in the Hatzbani basin that can be prepared for agriculture and that the quantity of water required per dunam is 500-700 mcm annually, we can figure that the agricultural development of all this terraced land could subtract some 25 mcm from Israel's water potential from the Hatzbani (Snir).

The exploitation of the waters of the Hatzbani by the Lebanese has up to now been unilateral. Israel, for political reasons, has not attacked the pumping installations. If this trend of exploiting the Hatzbani waters continues without any Israeli response, then it should be anticipated that the Hatzbani will not send water into Israel in the future, except for winter flood waters and sewerage water.

SOUTHERN SYRIA

There are two possible scenarios in this sector. According to the first scenario, Israel will continue to control the Golan Heights for the near future. The population of southern Syria of 2-3 million (in 2003) will continue to utilize the water of the upper Yarmuk basin. The Syrian government constructed some 25 small dams on the tributaries of the Yarmuk, which currently supply the population of southern Syria with some 250 mcm of water. On the basis of the rate of natural increase, one may foresee that this population will double within twenty years, and therefore the present quantity of water will not supply its needs.

More than three million people currently live in the adjoining Damascus basin. The spring waters of this basin, Waj and Zvedani, are insufficient for the needs of the residents of Damascus and its environs, and the quantity of water is increased from some 15,000 wells throughout the basin. Nonetheless, the growing lack of water is felt. The expectation is that the Damascus population will double within twenty years and reach six million.

Within twenty years, therefore, the population of southern Syria (the Damascus basin, the Golan, Hawran, and Mt. Druze) will number 10-12 million. In order to supply water to all this population, there will be need to find new water sources for the region. The single reasonable solution, in my opinion, is a project to transfer water from the Euphrates (from the lake that was created by the Asad Dam within Syria to the Damascus district and Mt. Druze). Why from the Euphrates? Why not from Orontes in Syria or the Litani in Lebanon? The Orontes is completely exploited for irrigating the Hama-Homs region, while the Litani is utilized in southern Lebanon for drinking water, for irrigation, and for electricity (and if Syria were to take from Lebanon, such action would whip up an international storm).

According to the first scenario, Israel is not directly involved in the water crisis expected for southern Syria. It might be involved only indirectly because the intensified pumping on the Yarmuk would be at the Kingdom of Jordan's expense, and then the kingdom would require even more water from Israel.

In the meantime, Syria and Jordan have returned to the old-new idea of putting up a joint dam on the Yarmuk River, in the Maqrin region (the Unity Dam), but a smaller than had been planned before. Israel, which in the past objected strongly to the idea of the dam, recently removed its objection, as a result of the Israeli-Jordanian Peace Agreements. In the area intended for putting up the dam, large earth works have been going on since mid-October 2003 (for details on the dam and the controversy over it, see Soffer, 1999).

According to the second scenario, Israel will withdraw from the Golan Heights and Syria will control 250 mcm of water on the Golan itself; it will also return as a full partner in the section of the Hatzbani river between Rajar and the bridge near Maayan Baruch, which is in its territory, and it will be permitted to use any quantity of water that it can draw from the Hatzbani. Similarly, according to this scenario, Syria will return as a direct and indirect partner in the waters of the Kinneret both in practice and according to the Johnston Plan of 1955. If the forecast of a water crisis in the Damascus basin and in southern Syria is fulfilled, it may be assumed that Syria will then violate any agreement signed with Israel and will exploit every drop of water that

it can move to Damascus and to southern Syria. The rest of the water, which cannot be consumed or stored, might become polluted, even from the introduction of several hundred thousand heads of cattle on the Golan. Unlike the "water wars" in the 1960s, in which Syria attempted to divert to its benefit the waters of the Jordan only as a provocation, that country will be in need of water in the scenario just described; therefore, one may assume that it will gain much international understanding. Syria will gain much understanding in the international community, among other reasons, because Israel will desalinate water on the coastal plain in the coming future. Complaints will be heard that Israel can increase desalination and release water from the Kinneret to its poor, thirsty neighbors.

Israel can be saved from such a crisis if, before it withdraws from the Golan—which means placing the water of the Jordan basin into the hands of the Syrians—it sets up a project for transferring water from the Euphrates to southern Syria and limits the number of well heads allowed for pasturing on the Golan Heights.

According to the second scenario, Syria can also claim that, on the basis of the Johnston agreements of 1955, which it refused to sign at the time, it is entitled to use a quantity of 20 mcm of the waters of the Baniyas and, furthermore, that it is allowed to draw 22 mcm from the Kinneret for watering the Betiha Valley. It will also try, then, to argue that it is entitled to use some 90 million mcm more of the Yarmuk waters. At present, Syria uses 250 mcm of the waters of the Yarmuk; of which 140 mcm belong in effect to the Kingdom of Jordan (Zaslavsky, 2002; Soffer, 1999).

It is clear that the second scenario is more difficult for Israel. It means conceding the sources of the Jordan in Syria and Lebanon. Despite its being a difficult scenario, and perhaps because of that, Israel must deploy to be prepared for such an eventuality.

KINGDOM OF JORDAN

The Kingdom of Jordan is currently undergoing a prolonged water crisis. The landscape of Amman is barren, and even its richest neighborhoods have lawns of marble and gravel instead of vegetation. Residents of many neighborhoods in the city receive

water in pails, once a week or every other week according to the condition of the water reservoirs.

The forecast is not encouraging, and its causes are a high natural increase, regional desiccation, and aggressive exploitation of the waters of the Yarmuk by Syria. Some 300,000 Jordanian residents of the Jordan Valley exist from the Abdullah Canal, which feeds water from the Yarmuk to the Valley, groundwater from the Muhaiba region, and some flood waters that are collected in the streams of the Jordanian Heights (Soffer, 1999).

The Israel-Jordan peace treaty brought about a partial solution to the crisis. Israel, by agreement, is to transfer to Jordan some 55 mcm of water from the Kinneret. Israel and Jordan have a dispute over the interpretation of the water agreement: the Jordanian government interprets it to mean that Israel must add another 100 mcm annually to what it gives the kingdom; Israel understands the agreement to mean that it must assist the kingdom in creating another 100 mcm. It may be assumed on the basis of the dynamics in the region that, in the final analysis, Israel will act out of political as well as humanitarian reasons to transfer more water to Jordan than it does at present. I expect it to convey 150 mcm as stated in the water article in the peace treaty (Gazit and Soffer, 2002).

There is on the Jordanian agenda a plan for a broad-based pumping of fossil water, found in large quantities in the Disi Basin south of Petra in the area of Wadi Rom, and transporting it to Amman (Gross and Soffer, 1996). This source, common to Saudi Arabia and Jordan, can supply Jordan annually with 80-100 mcm of water of a reasonable quality. In 2002/03, Jordan held a discussion of the project, including its sources of financing and alignment. There are two possibilities for the alignment: (a) parallel to the desert road, leading directly to Amman; (b) leading to Amman via the Jordan Valley.

A third solution on the kingdom's agenda speaks of digging a canal connecting the Red Sea and the Dead Sea. The fall in height of the canal water will enable the creation of cheap electricity to serve water-desalination plants. This is an expensive project, with many attendant political and ecological problems in the Arava and the area of the Dead Sea. It obligates Israel's agreement as the country that

shares the Dead Sea with Jordan. This idea is not new and was on the agenda back in 1970s, in the period of the Oslo agreements, in consonance with the idea of Israeli water canals, from Haifa Bay/Atlit to the Dead Sea or from Rafiah to the Dead Sea, and in parallel with the idea of excavating a canal from the Gulf of Eilat to the Dead Sea that would cross Israel in part and Jordan in part.

In addition to all these expensive ideas, there is also a simple, inexpensive proposal: to desalinate water on the coasts of Israel and transport it to Jordan along a short, convenient alignment. The question is whether the kingdom would agree to have its “national oxygen” pass through the State of Israel. According to the experience accumulated up to now in Israel’s relations with Egypt and with Jordan and on the basis of their attempt to detour around Israel as we described earlier, the answer would seem to be negative.

EGYPT

Israel and Egypt have no common water sources. Nevertheless, Egypt has been advancing, slowly but gradually, a large and costly water project that certainly will have implications for Israel. Egypt is planning and advancing the excavation of a large water canal, called the el-Salam Canal, which is meant to bring water from Damietta, on the eastern arm of the Nile, to northern Sinai. This canal crosses in a siphon underneath the Suez Canal, south of Port Said, and from there it flows east, paralleling the northern Sinai road in the direction of el-Arish (see map 1). Egypt hopes, with the aid of this project, to bring about an agricultural revolution in northern Sinai and to enable the settlement there of 5-6 million Egyptians. Realization of this program will bring hundreds of thousands of Egyptians to Israel’s western border, near Kerem Shalom.

When the el-Salam Canal reaches northern Sinai, will Egypt agree to absorb several hundred-thousand Ghazans in the Sinai stretches? I fear that the answer to this question will be negative, except if the Americans exert heavy pressure to prevent the tragedy looming over the Gaza Strip, whose population numbered 1.3 million in 2003 and is expected to almost double to 2.5 million by 2020 (the natural increase in the Gaza Strip is the world’s highest).

Is it worthwhile for Israel to make an economic deal with Egypt on purchasing Nile water? I would not recommend it both for strategic reasons and for health reasons.

PALESTINIAN AUTHORITY

The critical, most urgent problem with regard to water pertains to the Palestinian people, Israel's closest neighbor. In 2004, the Palestinians needed 250-270 mcm of water, most of it for household and agricultural consumption. Within twenty years, consumption will grow, even double, with the growth of the population of the Authority (including the Gaza Strip) from 3.3 million today to 6.5 million-7 million (Soffer, 2003).

The meaning of this is that even if Israel is entitled by international law to use the mountain aquifers, these in the future will be in use by the Palestinians. They are the ones who sit on these aquifers, and it is unreasonable that any Israeli leadership would withhold drinking water from them. As of 2004, hundreds of pirate drillings have already been carried out in Judea and Samaria without any control or supervision; and this is a hint of what is to come.

A simple calculation, based on a consumption of 100 mcm of drinking water per person per year (as in Israel of 2003), shows that seven million people will require some 700 mcm of water just for drinking, not even for agriculture. Even if we assume a yearly per-person consumption of 50 mcm of drinking water, this calls for 350 mcm of water, which equals the entire quantity of water of the Yarkon-Taninim aquifer. Rapid pollution of the mountain aquifer may also be expected because ecological problems do not rate very high when the standard of living is low.

Israel must take into consideration that when water desalination plants are constructed on its shores, there will be increased international pressure to deliver potable water to the region's poor.

CONCLUSIONS

We have reviewed the existing demand for water in the region adjoining the borders of Israel and attempted to forecast expected demand in this region in the future—which in many cases will come at the expense of Israel's water potential.

The unavoidable conclusion of this analysis is that Israel must adopt a strategy of desalination that is much broader in scope than what has been planned and recommended by the Water Commission in its report of June 2002. The commission assumes that in order to compensate by 2010 for what will be lacking, an annual desalination in the amount of 540 million mcm will be required. Our analysis, however, pointed to different figures, that the reduction in Israel's water potential will be much more rapid than what was observed in the past.

The conclusion, then, is that another 230 mcm must be added to the missing quantity of 540 mcm (Of this added amount, 30 mcm will be at the expense of Lebanon, 100 mcm at the expense of Jordan, and 100 mcm at the expense of the Palestinians; at this point, Syria is not relevant.)

At stage B, in light of the expected transfer of potable water to neighboring states, there will be need for a larger quantity of desalinated water. The cost of \$250 million-\$300 million to be invested in desalination for distancing the nightmare of a water shortage in and around Israel is a very low price. Thus the planned installations must be doubled.

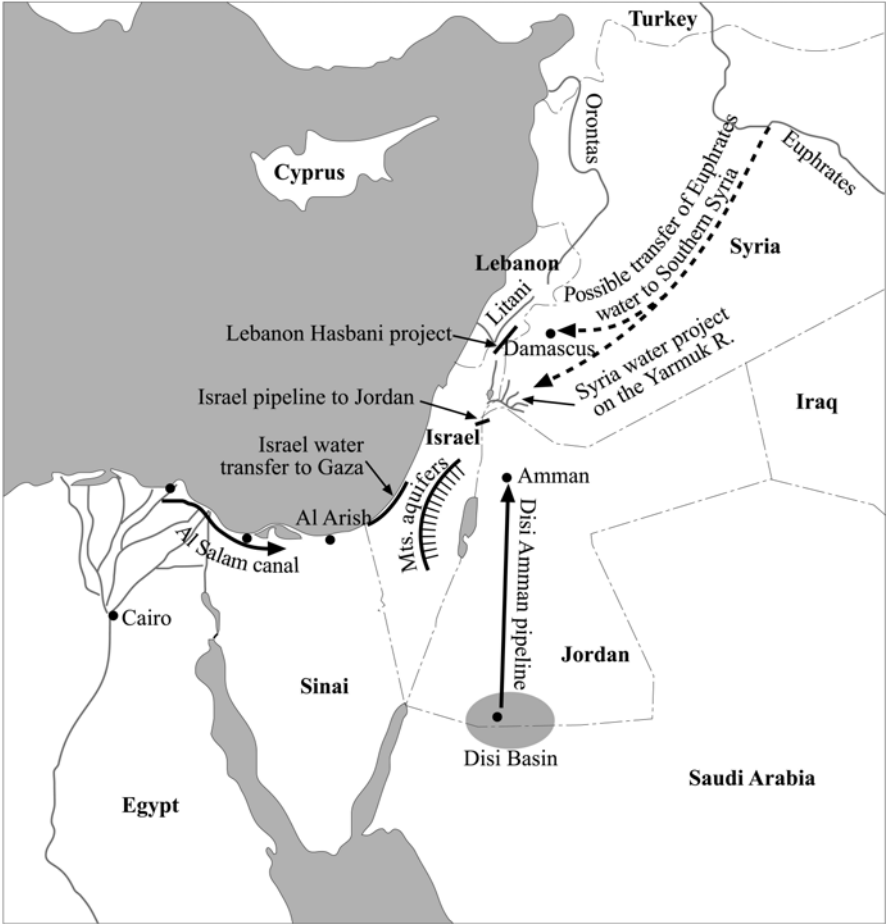
If the forecasts outlined here are indeed fulfilled, there will be other implications for the subject of water: If the Kinneret gradually passes into the hands of Israel's neighbors, the national water carrier will gradually be phased out. Israel's coastal plain will fill up with desalination installations, which will have strategic importance no less than the power stations and refineries. An increase in air pollution on the coastal plain, a problem today, can be expected.

I see no other alternative for the situation. We can only minimize the damage if the siting of the installations and the method of their operation are undertaken cautiously and with forethought.

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Map 1: Water Projects Adjacent to Israel



Map 3: Water projects adjacent to Israel