

IDEAS AND SUGGESTIONS ON WATER RESOURCES AGREEMENT
WITHIN A REGIONAL MID-EAST PEACE TREATY

(A paper submitted to the 6th IAEA Congress on
"The Development of the Desert")

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This paper is based on work done by the author in the framework of the Middle East Economic Cooperation Peace Project at the Tel Aviv University's Interdisciplinary Center for Technological Analysis and Forecasting.

1. GENERAL

Historically, water has always been a source of conflict here in the Western Middle East and, consequently, an issue in peace agreements. So it was in the Biblical quarrel between Abraham and the Palestinians and so it is in the current conflict. It is not surprising that the first regional civil agreement in this region, between the conflicting Israeli and Arab nations, was about water. This was the Johnston Agreement (1953) on the Jordan River water sharing. But the Johnston Agreement was a pact made between enemies - it is not suitable under regional peace. Such a peace will require a special, new, peacetime water agreement. This agreement will require several water projects to be undertaken, while paving the way for others.

2. PEACETIME WATER PROJECTS

Binational or multinational water projects must form an important part of any regional peace agreement. Such projects may be of two kinds : "Necessary projects" which are needed to support the peace and eliminate possible sources of tension that could endanger the peace; and "Possible projects" - those projects which peace make possible and that will be able to achieve benefits previously unattainable.

The following paragraphs describe examples of these two types of projects .

3. NECESSARY PROJECTS

3.1 General

The Necessary projects should be part of the multinational peace agreement - representing those issues which relate to water. Examples of the Necessary projects include those which involve the West Bank and Gaza Strip.

Most probably, a regional peace will be based on a new political status - agreed on by all concerned parties - for the West Bank and Gaza Strip. The demand for water in these new entities exceeds the supply available from local resources. This is one of the major problems that the West Bank and Gaza Strip will face in the future. To eliminate future water shortages, urgently needed water must be imported from external sources. The potential damage of future water shortages in these areas is not only economic and social in nature, but also political. The West Bank and Gaza Strip share common aquifers with Israel. Since these are already fully utilized by the latter, conflicts over water are likely to erupt, unless water can be imported. One such water importation project is described below.

3.2 Water Supply to the West Bank

At the beginning of the next century, the West Bank population is likely to grow from the present 0.8 million to 1.8 million (including immigration). The non-agricultural water demand (domestic, urban, industrial) of the region will reach approximately 90 million m³/year (based on an assumed average per capita GNP of \$1700). Irrigable lands in the West Bank amount to about 50,000 hectares, with a potential water demand of approximately 350 million m³/year. The traditional occupation of the population in agriculture and the lack of natural resources in the West Bank call for large-scale irrigation of the land. Yet, half of this land is located at an altitude of more than 200m above sea-level. This is too high for water to be raised economically - given the level of the available water resources and the cost of pumpage.

The lower areas of the West Bank may demand up to 200 million m³/year, of which local sources could provide up to approximately 150 million m³/year (including a reasonable amount of reclaimed sewage water). Thus, approximately 200-210 million m³/year water must be imported (the lower figure represents the amount required if only the lower areas are irrigated).

Possible sources for this additional water include the Egyptian Nile River, the Jordanian Yarmouk River and the Lebanese Litani River. Use of water from each of these sources can be economically feasible. Politically these sources can be used to supply the West Bank only if the project is accepted by the water owner(s) and Israel. Technically, water from each of these sources should be supplied to the West Bank, via Lake Kinneret *and* by two different routes : the Israeli National Water System and a conduit parallel to the southern Jordan River.

Lake Kinneret is the logical reservoir in which to store the Litani water, which will be diverted, for the purpose of the project, to the Jordan River Watershed. The Kinneret would also serve the same storage function for Yarmouk River water. If water from the Nile River is used, the Kinneret would play a different role. It would not be economically feasible to supply water directly from the Nile River to the West Bank. However, an "exchange supply" would be economical - that is, Nile water could be supplied to the Negev in exchange for Kinneret water supplied to the West Bank.

4. POSSIBLE PROJECTS

Regional peace will create new, far-reaching opportunities in the field of water resources management. Four examples are discussed below :

(A) Utilization of the Jordanian Yarmouk River Winter Flows

Efficient utilization of the Yarmouk River Winter flows could be facilitated by their storage in the Israeli Lake Kinneret. This project offers the only feasible way of utilizing the Yarmouk River waters - which will help solve the acute water shortage

problem in Jordan (as well as supplying water to the West Bank, as discussed above). The following table compares approximate water costs of this source with its (unfeasible) alternatives:

Resources	Structure	Structure Cost (\$M)	Water cost (in Western Jordan (¢/m ³) *)
Yarmouk River	Maquaren Dam	800	37
Euphratus River	Pipeline System	1200	85
Yarmouk River	Diversion to Lake Kinneret and backward pumpage system	30	2.1

* considering annual investment cost (capital recovery + maintenance) 10% of the investment.

(B) Artificial Rain in the Yarmouk River Basin

By "cloud-seeding" - spraying clouds with Argentinum Iodide smoke - Israel has succeeded in increasing the natural rainfall in northern Israel (mainly over the Kinneret Basin) by 10-20%. Given this success, good results are expected for similar treatment of clouds over the Yarmouk watershed. However, cloud seeding in that region would have to be a binational project, since it should be carried out mainly in Israeli territory (upwind of the Basin).

(C) Transfer of Water from Lebanon to Jordan

Under certain political and economic conditions, it may be desirable for Jordan to buy Lebanese Litani River water. The only feasible way to facilitate this water transfer would be to divert the Litani water to the Jordan River watershed and then let the water flow into Lake Kinneret. From this reservoir the water could then be pumped to the Jordan National Ghor Project. The cost of this project would be very low - even negative, since the transfer will generate valuable electricity.

(D) Water Supplied to Jordan from Egypt

It would not be feasible to supply water directly from Egypt to Jordan, but such a transfer could be carried out by means of an exchange with Israel : Egypt could supply water to the Negev through its Delta - Sinai System ("Elsalam Canal") in exchange for Israel supplying an equal amount of water from Lake Kinneret to Jordan. This exchange can save approximately 3 KWH per cubic meter - the energy which would be needed to supply the Negev with Kinneret water. Given these energy savings, the cost of the supply of water from Egypt to Jordan could be zero.

CONCLUSION

Regional peace between Israel and her neighbors needs an international agreement on the supply of water to needy areas (such as the West Bank and Gaza Strip). At the same time, peace will make it possible to efficiently utilize and manage the regional water resources. Cooperation could result in alleviation of acute water problems while providing new and valuable benefits both to the individual countries and to the region as a whole.