FOR PRESENTATION AT THE CONFERENCE ON " WATER AS AN ELEMENT OF COOPERATION AND DEVELOPMENT IN THE MIDDLE EAST- HACETTEPE UNIVERSITY , ANKARA,TURKEY OCTOBER 4-8, 1993

PROPOSALS FOR COOPERATION IN THE MANAGEMENT OF THE TRANSBOUNDRY WATER RESOURCES SHARED BY ISRAEL AND HER NEIGHBORS.

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ABSTRACT

The Israelis, Palestinians, Jordanians, Syrians, and Lebanese share a common geography and a common hydrology on the Jordan River Basin. This paper presents proposals for the establishment of a Jordan River Joint International Commission to manage the water quantity and quality questions of shared transboundry water resources of the Jordan River Basin. The approach proposed is to base the solution of the quantity questions on the concept of equitable apportionment to meet the minimum human and social needs for survival as expressed in the Helsinki Rules drafted by the International Law Association. It is proposed that the method of calculation of a fair and equitable water allocation defined as the Minimum Water Requirement-MWR should be equal amounts water-- 125 cubic meters/person/ year, for essential human survival needs including domestic consumption and urban/industrial use with only a minimal allocation for local production of fresh vegetables. It is proposed that all five riparians share in the responsibility of managing the environmental aspects of the shared waters as well as sharing in the obligation,to assist,in proportion to their available resources, those riparians- Jordan and the Palestinians, who will be unable, in the future, to meet their Minimum Water Requirement-MWR needed for survival.

KEYWORDS

International river basin management,transboundary waters, Middle East, Jordan River Basin, Israel,Jordan, Syria,Lebanon,Palestinians,and Turkey

INTRODUCTION

For better or for worse Jordan, Syria, the Lebanese,Palestinians and the Israelis are bound together by a common geography and a common hydrology since they are partners in the shared use of the Jordan and Yarmuk River system. This common geography ties the fate of all five peoples together

FOR PRESENTATION AT THE IAWQ 17TH BIENNIAL CONFERENCE,
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PROPOSALS FOR THE INTEGRATED MANAGEMENT OF THE SHARED TRANSBOUNDRY WATER RESOURCES OF THE JORDAN RIVER BASIN

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The Israelis, Palestinians Jordanians, Syrians, and Lebanese share a common geography and a common hydrology on the Jordan River Basin. This paper presents proposals for the establishment of a Jordan River Joint International Commission to manage the water quantity and quality questions of shared transboundry water resources of the Jordan River Basin. The approach proposed is to base the solution of the quantity questions on the concept of equitable apportionment to meet the minimum human and social needs for survival as expressed in the Helsinki Rules drafted by the International Law Association. It is proposed that the method of calculation of a fair and equitable water allocation defined as the Minimum Water Requirement-MWR should be equal amounts water-- 125 cubic meters/person /year, for essential human survival needs including domestic consumption and urban/industrial use with only a minimal allocation for local production of fresh vegetables. It is proposed that all five riparians share in the responsibility of managing the environmental aspects of the shared waters as well as sharing in the obligation,to assist,in proportion to their available resources, those riparians- Jordan and the Palestinians, who will be unable, in the future, to meet their Minimum Water Requirement-MWR needed for survival.

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INTRODUCTION

For better or for worse Jordan, Syria, the Lebanese,Pales-palestinians and the Israelis are bound together by a common geography and a common hydrology since they are partners in the shared use of the Jordan and Yarmuk River system. This common geography ties the fate of all five peoples together

and requires that they find a common solution based on equitable apportionment and mutual help to meet the legitimate needs of all peoples. Adequate supplies of good quality water are an essential element for the survival, economic welfare and prosperity of Israelis, Palestinians, Jordanians, Lebanese and Syrians and a cause for deep concern and fears for the future by all the parties in the Middle East who are currently searching for a peaceful resolution to their long standing conflicts.

It is the objective of this paper is to analyze the nature of the water problems faced by the parties and to suggest some basic principles and methodological approaches for analyzing water needs on an equitable basis and the degree of obligation of potential water donors for consideration of the negotiators on all sides. In addition we shall propose institutional approaches for the joint management and environmental control of the shared resources.

There are numerous claims and counter claims based on arguments of historic use, geography, hydrology, riparian rights, legal rights, national rights and others as to the allocation of the above shared water resources and the prevention of their pollution. We have analyzed these claims and counter-claims in great detail previously(Shuval,1992, and 1993). Reaching agreement on the water conflicts between the five riparians on the Jordan River Basin is a sine qua non for the successful conclusion of a peace agreement. We suggest that instead of an trying to unravel the complex and almost intractable claims and counter-claims on such issues as national water rights, which might involve an endless debate, that the sides attempt to reach agreement on some fundamental basic principles based on concepts of equitable, minimal water allocations to meet human needs for survival.

PROPOSED BASIC PRINCIPLES FOR PEACEFUL COOPERATION BETWEEN THE PARTNERS TO SHARED WATER RESOURCES

There are a number of factors that can be considered when studying possible options for allocation and reallocation of shared water resources including: defacto historic use; the quantity of water arising in an up-stream territory and the amount of water that naturally flows through a down stream territory, alternative water sources available to each partner and last but not least the legitimate present and future minimum needs for human survival of each partner sharing the resource, regardless of the other factors.

The "Basic Principles" proposed in this paper are aimed at providing the parties to the dispute with a proposal for their consideration as one possible approach to assuring the minimal human needs of the parties, which could meet the criterion of a "reasonable and equitable share" as formulated under the Helsinki Rules, which are accepted as

one of the corner stones of international water law (Caponera,1992). Our proposed Basic Principles could hopefully serve as a point of departure for negotiations and agreement, while it is recognized that the other factors mentioned above may also play a role in any negotiations (Shuval,1993).

PROPOSED BASIC PRINCIPLES FOR SHARED WATERS

1.Water rights should not be taken or changed by force or without mutual agreement

2.The Minimum Water Requirements-MWR of the partners to the Israeli-Arab conflict should be determined in the spirit of international water law based on the principle of equitable apportionment of the shared water resources and the other water resources available to each, in order to meet the legitimate human and social needs, with a minimum of an equal water allocation per person for domestic, urban, industrial and minimal fresh food use needed for survival.

3.Water resources within the territory of a partner will first be allocated to meet the present and future Minimum Water Requirements-MWR of that partner and after that the other water uses within the same territory.

4.Historical, actual, water usage from shared resources should generally be maintained and normalized through mutual agreement on condition that the Minimum Water Requirements-MWR of each entity, can be met from sources within each territory sharing the water resource. If the MWR of one entity cannot be met from its own current or potential sources then other entities on the shared international water resource, that can meet their present and future MWR can be asked, within the framework of a mutual agreement, to transfer water based on the real use for domestic/urban/ industrial purposes at that time. Helping another riparian entity on a shared international water resource to meet its MWR needed for minimum survival should be considered as being of a higher order of priority than the rights of an entity based on historic use and/or other geographic or political claims to water rights.

5.In the case where there are more than two entities sharing a water resource and one or more of them cannot meet all of their own present and future MWR and the other two or more entities can meet their own present and future MWR then the degree of liability of potential donors to the water short entity shall be proportional to the extent of unused water resources and/or to the excess water above the amount needed to meet its own Minimum Water Requirements-MWR.

6.The permanent or temporary transfer of water and/or water rights from one territory to another should be arranged

through negotiations and mutual agreement. Compensation for transferred water or water rights must be determined through negotiations and agreement.

7. Every agreement involving the establishment of allocations, normalization, transfer or reallocation of water or water rights on a shared water resource should include factors such as financial or other forms of compensation such as water exchange, or water import from external sources or desalination. Other factors in such agreements should include: environmental protection, pollution control standards and guidelines, information sharing, joint commissions for inspection, monitoring and control of both quantity and quality on both sides of the border and agreed upon binding methods of settling disputes including arbitration and/or adjudication.

PROPOSED BASIS FOR CALCULATING THE " MINIMUM WATER REQUIREMENTS"-MWR

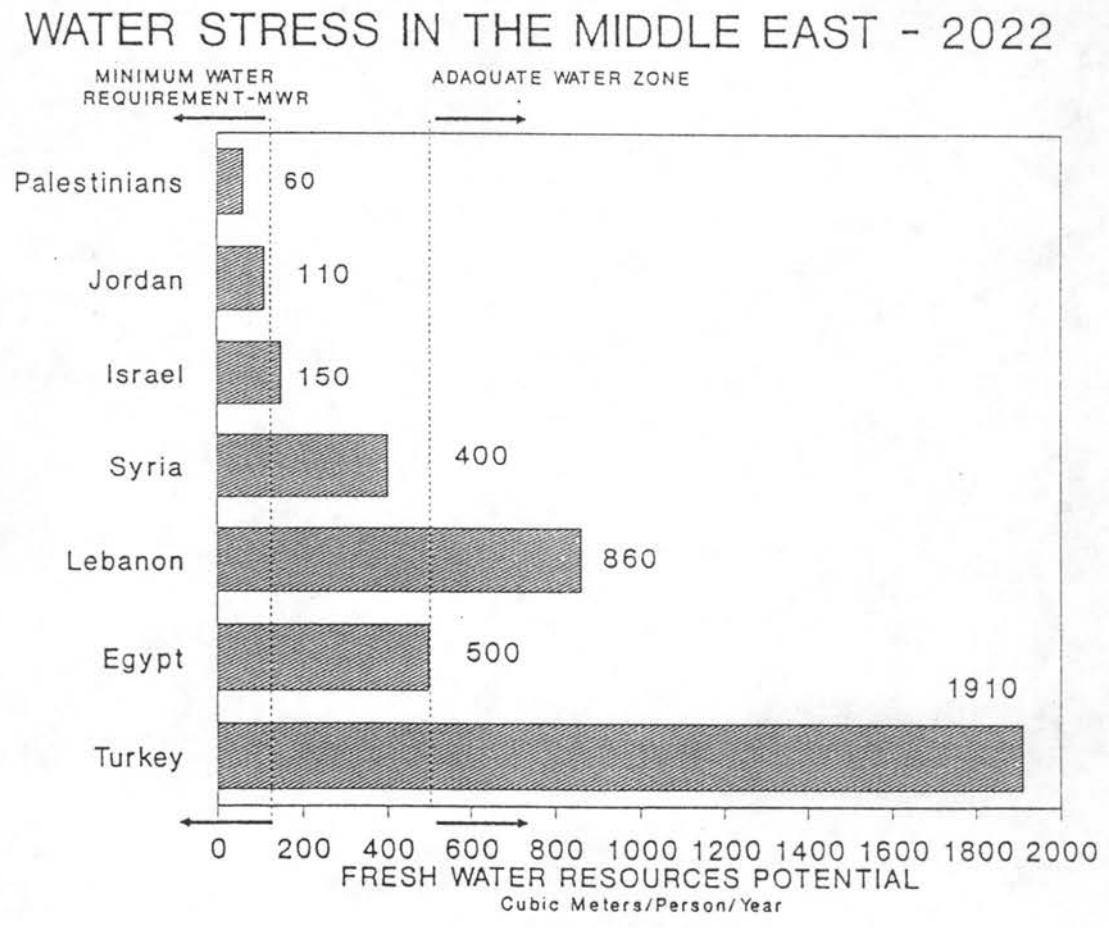
It is generally agreed that the absolute minimum water requirements-MWR, to meet basic human needs are those needed for drinking water or "domestic consumption". However we suggest that the broader concept of "urban consumption" is more appropriate, since it includes domestic use as well as drinking water needed to meet normal public uses for schools, hospitals, and services as well as the water required to provide employment through commerce, trades, and industry. The MWR proposed for consideration is 100 cubic meters/person/year (CM/P/Yr) for domestic, urban and industrial use (Shuval,1992). This amount of water per person per year has been found to be generally adequate in Israel and other water short areas with similar climate for the maintenance of a reasonable hygienic level and a high standard of living based on employment in the urban/ industrial sector not including agriculture. In addition we propose that there be a symbolic allocation of 25 CM/P/Yr of fresh, good quality water for minimal growing of fresh vegetables (such as in vegetable gardens adjacent to homes) that require the use of fresh water of drinking water quality. The MWR calculation will not include any other direct allocation of fresh water for agriculture, but does assume that additional water for agriculture and/or other industrial or urban non-potable uses can be made available through the recycling and reuse of some 65% of the water allocated for domestic/ urban/industrial use. In other words there will be, in effect, the possibility of generating another 65 CM/P/Yr if an effective, total water recycling program is introduced. Thus, the total effective allocation of water could reach 190 CM/P/Yr (125 CM/P/Yr from fresh water sources and 65CM/P/Yr from recycled wastewater.

ILLUSTRATION OF APPLICATION OF PRINCIPLES AND METHODOLOGY

As an initial trail illustration of the application of the above principles and methodology (See Table 1) we will estimate the present and future populations to the year 2023 of the five direct riparian parties to the dispute in addition to the two near-by countries,Turkey and Egypt (column 1) and their estimated known renewable fresh water resources potential (column 2)(Shuval, 1993).

From this presentation it is clear that the Palestinians will suffer in the future from serious water shortages. Assuming for the moment that they have available only the water resources that they currently use, then their per capita water use would be reduced from 100 MC/P/yr in 1993 to 40 MC/P/Yr in the year 2023. The total amount of additional water required just to meet the - MWR of the Palestinians in the year 2023 is estimated at some 425 MCM/Yr. The situation for Jordan is similarly bleak. Assuming no increase in their water potential, then their per capita water resources will be reduced from 250 MC/P/Yr in 1993 to some 90 CM/P/Yr in the year 2023. The anticipated degree of water stress in the Middle East in the Year 2022 is shown graphically in Figure 1. Nations with water resources equal to of less than 125 cubic meter/ person/year are considered to be the water stress zone.

FIGURE 1



The amount of additional water required just to meet their MWR is some 370 MCM/Yr. By the year 2023 we estimate that the Palestinians and Jordan together may have a total water deficit of 795 MCM/yr just in order to met the modest water allocation for survival which we have defined as the MWR at 125 MC/P/Yr. This does not include any allocation for agriculture.

Assuming that Israel continues to utilize the water resources that it is currently using, than by the year 2023 it too will find itself with just a bit more than the MWR.

	1		2	3		4	5
	POPULATION		WATER	TOTAL WATER		TOTAL	TOTAL
	1993	2023	RESOURCES	CAPITA/YEAR		MWR	EXCESS
			POTENTIAL	CM/P/yr		2023	SHORT
	Millions		MCM/Yr	1993	2023	MCM/Yr	MCM/YR
Israel	5	10	1,500	300	150	1,250	+250
Jordan	3	10	880	250	90	1,250	-370
Pales-palestinians	2	5	200	100	40	625	-425
Syria	12	26	15,000	1,250	580	3,250	+11,750
Lebanon	3	4.3	9,000	3,000	2,100	540	+8,460
Turkey	55	83	250,000	4,500	3,000	10,400	+240,000
Egypt	60	120	60,000	1,000	500	12,800	+47,000

TABLE 1.CAN AVAILABLE WATER RESOURCES MEET THE MINIMUM WATER REQUIREMENTS-MWR OF MIDDLE EASTERN COUNTRIES? Estimated water resource potential, estimated population in the year 2023,and ability of water resources to meet Minimum Water Requirements-MWR for survival at 125 cubic meters/person/ year for domestic/urban/industrial and fresh vegetables.

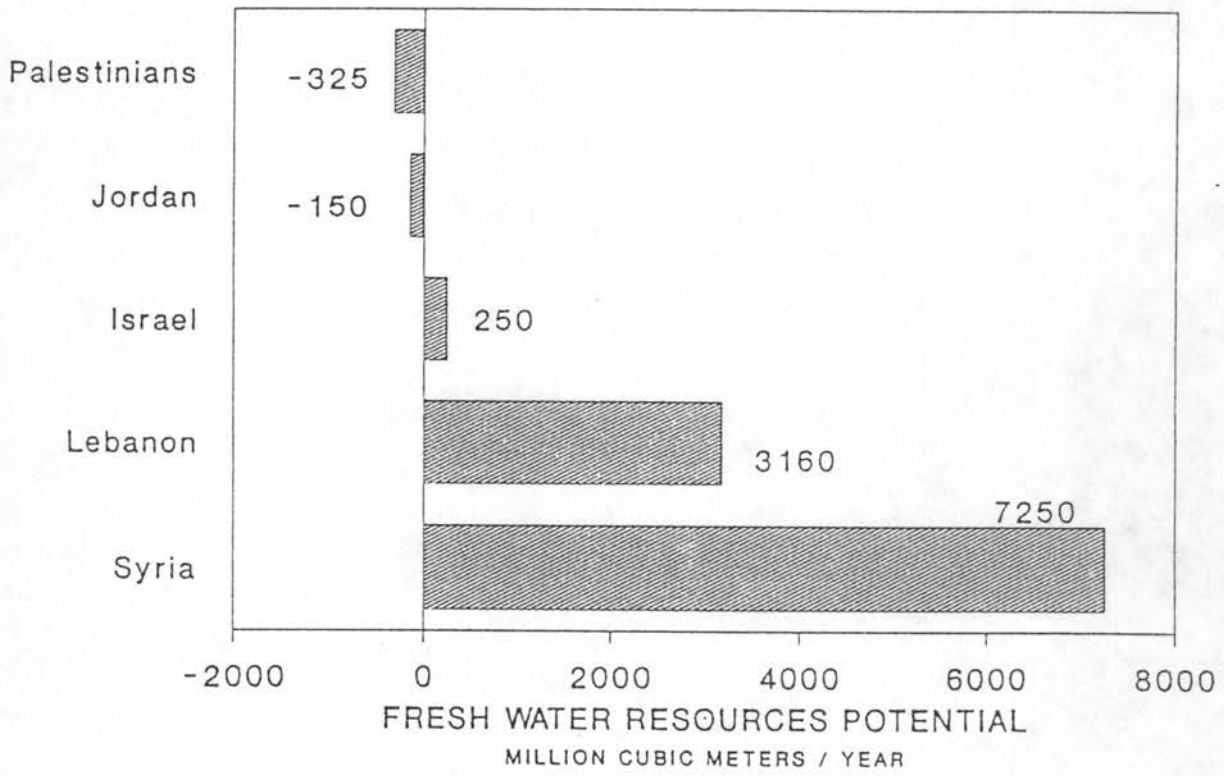
Israel's per capita water resources will go from 300 MC/P/Yr to 150 MC/P/Yr by the year 2023 and possibly even lower as a result of the continuing process of salination and contamination of the ground water of the aquifers. The total excess of water resources above the amount required for domestic, urban/industrial use to met the MWR will be 250 MCM/yr.,but they may have no excess of drinking water at all, if our pessimistic estimates of loss of potable water through salination and pollution are correct.

Egypt and Syria will, in the year 2023, still have 500 MC/P/Yr. and 580 MCM/P/Yr respectively. While Lebanon and Turkey will remain in the water abundant range with 2000-3000 MC/P/Yr .

If we now examine the situation as presented here in terms of the general principles we have proposed in the spirit of the Helsinki Rules we find that of the five parties who share in the transboundry water of the area ,two(Jordan and

the Palestinians) will face serious water shortages and will not even be able to meet their minimum requirements for drinking water unless their water resources are increased. Israel will just be able to meet its MWR, while Lebanon and Syria will be able to meet their MWR and other needs without any problems and will have considerable amounts of water in excess of the MWR(See Figure 2).

ESTIMATE OF TOTAL FRESH WATER POTENTIAL IN EXCESS/OR SHORT OF THE MINIMUM WATER REQUIRMENT IN THE YEAR 2022.



Let us assume for a moment that Israel alone is called upon to contribute water to the water short parties. Even if it transferred 100% of its theoretical excess above the MWR (250 MCM/Yr) it still would only cover less than one third of the needs (795MCM/Yr.) See column 2 in Table 2.

TABLE 2.

A PROPOSED RANKING OF POTENTIAL DONORS OF WATER TO THE WATER SHORT PARTIES BASED ON THE DEGREE OF EXCESS WATER RESOURCES IN THE YEAR 2023, ABOVE THE MINIMUM WATER REQUIREMENT-MWR OF 125 CM/PERSON/YEAR.

	1 EXCESS ABOVE MWR	2 %OF EXCESS TO MEET DEFICIT	3 % CONTRIBUTION IF SHARED S+L+I
1 Syria	12,000 MCM/Yr.	6.8 %	57%
2 Lebanon	8,460 MCM/Yr.	10.0 %	41%
3 Israel	250 MCM/Yr	100.0 %	2%
Turkey	240,000 MCM/Yr	0.3 %	--

If Syria, which is no less of a party than Israel to the shared water resources, contributed all of the water needed to cover the deficit of the Jordanians and Palestinians, it would amount only to a reduction in its excess resources of 6.8%. If Lebanon contributed all of the water needed it would represent 10.0% of its excess resources. If however Turkey agreed to contribute, or sell, the water needed it would only represent a reduction of 0.3% of its excess resources.

If however, for example, three out of the five riparians, Syria, Lebanon and Israel are together asked to contribute to the meet the water needs of the two water short partners who are riparians on the water resources, proportionately to the amounts of excess water that they will have in the year 2023, above that needed to meet their own MWR needs, then the calculated percentage of the contribution of each of the three countries would be as shown in column 3 in Table 2. Under such a proportional allocation Syria would be expected to contribute 57% of the total deficit of or 453 MCM/Yr, Lebanon 41% or 326 MCM/Yr and Israel 2% or 16 MCM/Yr. for a total of 795 MCM/Yr.

This example calculation has been presented for illustrative purposes only, as one possible methodological approach. This approach is based on the "equitable utilization" principle of the Helsinki Rules. It is designed to meet the minimum water requirements- MWR for survival of all partners. It should provide a method for analyzing the degree of need of the water short riparians and the possible degree of obligation to assist the water short riparians by the others who at least can meet their own Minimum Water Requirements-MWR.

Obviously none of the partners will be satisfied with an existence based only on the above minimum water allocation. A bold regional Water-for-Peace Plan for increasing the water resources of the area for all, by importing water or

desalination sponsored by the major powers could become an important impetus to the peace process (Shuval, 1992). However, there must be a recognition that imported or desalinated water will, in general be costly and can be justified only for rational economic uses, which most likely will not include agriculture.

This methodological approach may be one way of approaching the problem of water allocations to the water short partners and hopefully will provide input into the negotiating process. It will certainly be controversial, however it is presented as food for thought. There are of course other factors that can be considered in studying the question of water allocations on a shared aquifer but the concept of equitable allocation based on meeting minimal human needs should be of prime importance. In the final analysis it is only through direct negotiation that an eventual agreement can be reached and it is not the task of this paper to prejudge the outcome of that vital process.

THE NEED FOR AN INTERNATIONAL JOINT COMMISSION FOR THE JORDAN RIVER BASIN

Assuming that agreement will be reached on questions of a just and equitable formulation for water allocations between the five riparians on the Jordan River Basin including the Syrians, Lebanese, Jordanians, Palestinians and Israelis it will be vital that such an agreement include provisions for the establishment of an International Joint Commission for the Jordan River Basin. For convenience we shall call this the Jordan River Joint Commission- JRJC. The functions of this commission should include:

1.Developing and sharing of hydrological data.

2.A procedure for joint validation of data including mutual free access to data sources and points of water flow measurement.

3.Long term water resources planning.

4 Drafting and promulgation of environmental quality and pollution control regulations which will become legally binding in all watershed areas of the shared international waters both surface water and ground water.

5.Establishment of a joint environmental monitoring and control staff including a joint laboratory for objective testing of water quality and pollution sources.

6.A system for joint monitoring and control of agreed upon water allocations including joint surveys and measurements in any one of the riparians.

7. Joint management and operation of any joint transboundary water importation project benefiting more than one riparian.

8.An agreed upon procedure for the ajudacation of disputes based on various phases, starting with negotiations, review by a higher level Joint Board, mediation, arbitration and finally by some form of agreed upon ajudication binding on all partners either by arbitration or an international court.

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