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DRY PEACE IN THE MIDDLE EAST?

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Introduction

The Middle East is one of the most water poor and water stressed regions of the globe. While the region is home to 5% of people of the world, it has less than 1% of its renewable fresh water. Today's annual per capita availability of fresh water in the region is only one third of its 1960 level (World Bank, 1996), falling from 3,300 cubic metres per person in 1960 to less than 1,250 cubic meters in 1995. This is the lowest per capita water availability in the world. However, some of the Arab Gulf countries and the Palestinians have per capita availability averages that are even below 10% of the regional average of 1250 cubic metres, and even a country that is considered to be relatively water endowed like Lebanon shows an average of 1,200 cubic metres (Gleick, 1993).

The growth of population and industry are responsible for increasing the demand for water everywhere. This is, however, only one aspect of the problem. Actual physical scarcity, even in the Middle East region, is not the only key issue. Conditions of economic scarcity seem to be more pressing: there is enough water to meet society's need, but there are few incentives for wise and efficient use of this critical resource. Water shortages can be dealt with in a number of ways--increasing supplies and the water system efficiencies and/or through conservation and demand management. The latter are more recent in nature and less used. They are increasingly becoming more urgent and more dependent on using economic instruments such as efficiency prices and conservation compatible incentive regimes. But for these economic instruments to work there should exist an understanding of how these instruments work and why? A macroeconomic context must also be equity and justice. A number of questions arise and these need to be answered clearly and conclusively.



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Is water different from other commodities? Is its value infinite and "thicker than blood?" Can a price for water be determined much like any other commodity? Can water be traded and shared? Are water wars inevitable? Can reasonable arrangements among riparians be negotiated? What constitutes an equitable distribution of shared resources? These are some of the complex questions that arise about water and arouse passion. There is no area of the world where these passions are stronger or more pressing than in the Middle East where severe water scarcity is compounded by historical suspicions, asymmetries of power, and the exploitation of strategic advantages by the countries of the region.

Much has been written about water in the Middle East especially during the last few years. Most of the writings focused on hydropolitics and tended to create a hydrophobic environment towards the subject. Some analysts have even suggested that the region's next war will be fought over water. Others, stressing a more somber tone, tried to establish explicit and implicit links between water scarcity and regional security. Few went beyond that and offered a wide array of solutions to solve the water "crisis" ranging from multi-billion dollar peace pipelines from Turkey, Lebanon, or Egypt to Medusa Bags ferrying water from countries with water surplus to those in short supply, to tugging icebergs from northern areas, to mega-desalination projects. Regional parties met, in both official and unofficial capacities, in an attempt to solve or moderate the water crisis in the region. Their plans included joint management proposals, fixed quotas, data exchanges, human resource development and technology transfer, strategies for enhancing water supplies, water conservation programs, equitable utilization schemes, water banking and cross border storage projects, water diversion plans and programs for the prevention of environmental degradation.

After more than four years of meetings and negotiations, the gap in the positions among regional parties is still as wide as ever. The region's hydrologists and politicians are still talking at different wave lengths. In the few pages to follow, we shall muddle in the waters of the Middle East focusing in particular on the Israeli Palestinian water disputes in the groundwater aquifers and the Jordan Water Basin and the conflicts of Syria, and Iraq with Turkey in the Euphrates/Tigris Basin. We realize that water is a particularly sensitive and critical issue for all parties to the conflicts. But, we also believe that finding a common understanding of water issues in the Middle East would go far to enhance the possibilities of achieving stability in the region. Conversely, failure to reach these common grounds will, most definitely, obstruct any efforts to attain this goal.

There is no alternative to an honest and forthright discussion of the water issues and to exposing the current unsustainable reality of mismanagement, inequities, the outright denial of the Palestinians' inalienable right to their resources and the Turkish dismissal of Syrian and Iraqi downstream riparian rights. It is only then



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that the regional parties can negotiate long term regional arrangements. Before then, agreements concluded under duress cannot be expected to last.

Water Crisis in the Middle East: The Issues:

The water crisis in the Middle East has a lot to do with some general characteristics of water and their peculiarities in the region and still more with the underlying power structure of the state system within the region.

Among the many special complicating characteristics of water that contribute to the crisis, the following are the major ones:

- Water is a scarce resource whose availability is far below the competing demands for it. This scarcity is more pronounced in some specific areas of the region and within even the same state it is not uncommon to find areas and groups of people with abundant water and others with no or little amounts. The scarcity issue is about **relative** scarcity and not **absolute** scarcity. The physical scarcity is complicated by economic scarcity where actual prices for water are fractions of the true scarcity price (shadow). When prices are below scarcity prices, waste and over use are quickly observed. There are many examples in the Middle East, particularly in Israel where subsidies have engendered a culture of waste.
- Water is fugitive, reusable, stochastically supplied resource and whose production can be subject to economies of scale. In this respect water has many of the characteristics of a common property resource and a quasi public good. The secure supply of water in much of the region, where security is defined as the probability of its availability 9 out of 10 years, is less than 5%. It is rarely recycled, and variability in rain fall is multiples of what it is in other regions.
- Water is typically a non-traded commodity that is rarely sold in a competitive market. There are few overt water markets where suppliers and demanders exchange water. Recently markets in water rights have emerged in several parts of the world, the most notable examples are in Colorado, California and Argentina. But most of these markets are within national entities and often represent simulated market solutions. There are only few international examples of water trade, but it is not difficult to conceive schemes that would involve this trade. There is now a rich literature on this subject that can help in designing efficient markets.
- Water values generally differ from the price that would obtain in a free and competitive market. It is often the case that water has social value that is above what private users are willing to pay for it. The allocation of water often reflects national and social policies and priorities towards agriculture, the environment and national security that



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go beyond promoting the interests of profitable private farmers. Social and policy considerations apart, the diversion of actual prices from their scarcity values is imposing social costs on the domestic economy as well as on neighbouring countries.

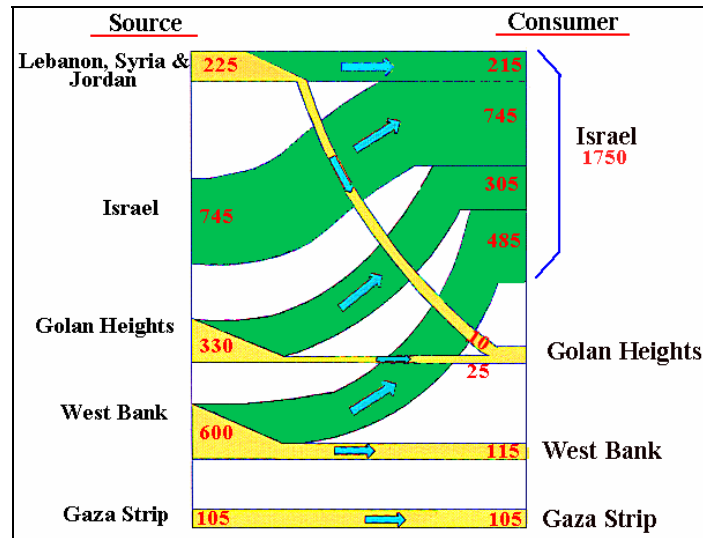
- Water is not only a desirable commodity, its availability is also critical for life. There are little or no substitutes for it. Furthermore, it is a well entrenched principle that no matter how scarce water is, every person is entitled to a minimum quantity that is considered consistent with human dignity.

- Very few countries have water supplies that they have to themselves alone that they do not share with others. It is often the case that surface water (rivers) passes through several countries and aquifers are shared. More than 85% of the water available to the respective countries of the region originate outside their borders or is shared in a common aquifer with others. It comes as no surprise that there are no well defined sharing agreements among riparians and that history is rife with water conflicts. Water is part of the tragedy of the commons.

- While the total water supply may be limited, and, few if any, substitutes exist for it, there exist substantial possibilities for intersectoral and interregional substitutions. As well, there are a number of technologies and conservation packages that rationalize demand and raise the efficiency of its use. Part of the water scarcity crisis in the region is the fact that agriculture uses over 70-80% of the total available domestic supply. It is typically the case that other needs are suppressed, but this leaves a wide room for intersectoral reallocations. Besides, water is transported from one part of the country to another (Israel transports water from the northern part of the country to the desert-like south). This regional allocation to make the “desert bloom” is at the heart of the water problems of the region, but it is suggestive of the possibility and capacity to effect interregional allocations, should such changes become necessary.

- While the quantity of water is in short supply in the region, concern for preserving its quality is perhaps more pressing. Syria is more worried about the quality of water that will be left for it after the irrigation schemes that Turkey is contemplating in the South-East Anatolia Project than about the total quantity. Pollution and saline intrusion of the aquifers are being increasingly recognized as critical factors in planning for the future.

- The current allocation of the shared water resources in the region 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. Turkey and Israel, even though one is a downstream riparian and the other is an upstream one, both have managed to monopolize and utilize water shares far and beyond those that any rational allocation system consistent with basic international law governing transboundary resources would entitle them to.



The headwaters of the River Jordan, located in northern Israel, the occupied Golan Heights and southern Lebanon (including Israel's self-proclaimed "security zone"), feed Lake Tiberias; Syrian and Jordanian waters (most importantly the Yarmouk River), meanwhile, West Bank and Israeli springs feed the Jordan River below Lake Tiberias. As a whole, these elements constitute the Jordan international drainage basin, a naturally-defined area that cannot be artificially sub-sectioned.

As a result of Israel's occupation of the Golan Heights and its control over southern Lebanon, Israel controls the headwaters of the Jordan River. Also, in its pre 1960 borders, Israel accounts for only 3% of the Jordan basin area; yet it currently has control of the greater part of its waters. 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 (Rudge 1992). Consequently, the River Jordan, By its pre-1967 borders, Israel accounts for only 3% of the Jordan basin area; yet it currently has control of the greater part of its waters. 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 (Rudge 1992). Consequently, the River Jordan, which, in 1953, had an average flow of 1250 mcm per year at the Allenby Bridge (Main 1953), now records annual flows of just 152-203 mcm (Soffer 1994).

Israel has restricted Palestinian water usage and exploited Palestinian water resources. Presently, more than 85% of the Palestinian water from the West Bank aquifers is taken by Israel, accounting for 25.3% of Israel's water needs. Palestinians are also denied their right to utilize water resources from the Jordan and Yarmouk Rivers, to which both Israel and Palestine are riparians. West Bank farmers historically used the waters of the Jordan River to irrigate their fields, but this source has become quite polluted as Israel is



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diverting saline water flows from around Lake Tiberias into the lower Jordan. Moreover, Israeli diversions from Lake Tiberias into the National Water Carrier have reduced the flow considerably, leaving Palestinians downstream with only effluent.

In Gaza, the coastal aquifer serves as the main water resource. Other Gazan water sources, such as runoff from the Hebron hills, have been diverted for Israeli purposes. The Gaza strip, which housed only 50,000 people before 1948 is now one of the most densely populated regions in the world as a result of both the high levels of forced immigration following the 1948 and 1967 conflicts, and the high rate of natural population increase. Gaza’s coastal aquifer is now suffering from severe saltwater intrusion (Table 1).

Table 1: Fresh groundwater balance of the Gaza Governate (1995)

Inflow Component	MC M/Y ear	Outflow Component	MC M/Year
Average recharge by rain	21	Domestic abstraction	32
Recharge from wadis	0	Irrigation abstraction	40
Groundwater from Israel	7	Industrial abstraction	1
Return flow (domestic)	13	Settlements abstraction	6
Return flow (irrigation)	18	Groundwater outflow	2
Brackish water inflow	20	Evaporation in Mawasy area	0
		Drop in groundwater table	-2
Total	79	Total	79

Source: Ministry of Planning and International Cooperation, 1996

With regard to total water consumption, an Israeli uses 370 cubic meters per year (CM/year), a Palestinian uses 107-156 CM/year, while a Jewish settler uses 640-1,480 CM/year (Figure 2).

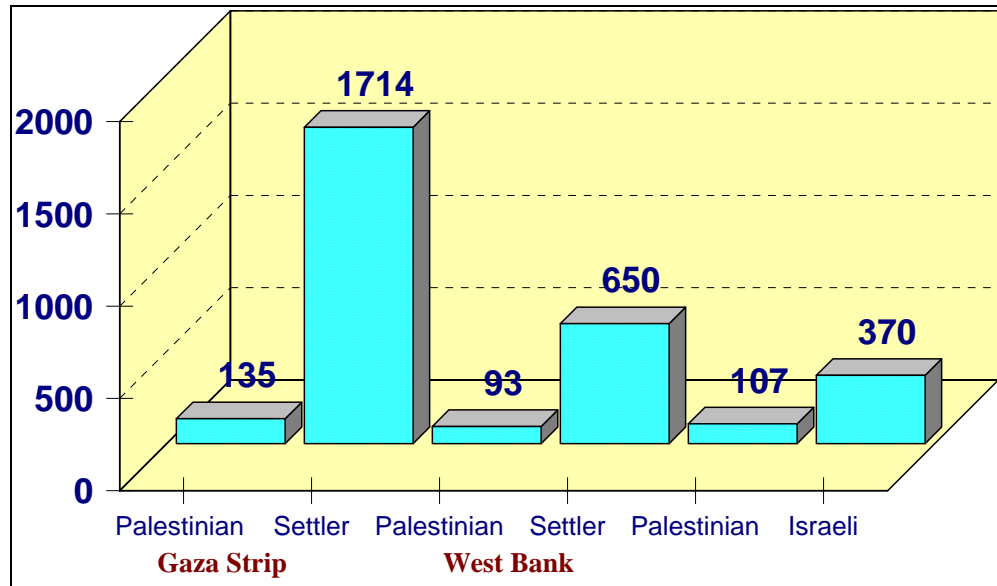


Figure 2: Differences in Water Consumption Between Israelis and Palestinians in CM/Year

Israeli restrictions have drastically limited the irrigation of Palestinian land so that today only 5.5% of the West Bank land cultivated by Palestinians is under irrigation, the same proportion as in 1967. By contrast, about 70% of the area cultivated by Jewish settlers is irrigated.

The per capita water consumption among Palestinians, in sectors other than agriculture, is approximately 25 CM/year in the West Bank, and 50 CM/year in the Gaza Strip, while it is 100 CM/year in Israel. This outlines the suppressed demand for Palestinians. The actual Palestinian demand is estimated at 125 MCM/year per capita and therefore consumption is expected to increase if restrictions have been lifted (Isaac, *et al.*, 1994).

The prospect of substantial increases in water demand in the coming years renders it absolutely imperative to find a solution to Palestine's water shortage. Demand projections for Palestine are shown in Table 2. The calculations are premised upon the population growth projections given above, and upon the lifting of current restrictions on water supplies.



Source: Isaac & Selby, 1996

Water shortages in the region are expected to become more acute and critical as a result of over population , economic development and global warming. We cannot., therefore, count on natural trends to moderate the increase in demand. Rational policies are required to supplement any price adjustment to restrict and rationalize consumption.

Table 2: Projected Sectoral Demand for Palestine

Year	Domestic	Agricultural	Industrial	Total
1990	78	140	7	225
2000	263	217	18	495
2010	484	305	37	826
2020	787	415	61	1,263

Water in the Peace Process

It is now almost four years since the initial peace conference at Madrid was inaugurated. 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 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.

So far, a peace treaty has been accomplished between Israel and Jordan in which the water dispute between the two states was resolved based on mutual recognition of the “rightful allocations” of both parties to the Jordan and Yarmouk Rivers as well as the Araba/ Arava ground waters. 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 . Israel and Jordan are now working on constructing two dams in the lower Jordan River Basin. 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.

On the Israeli Palestinian track, water was one of the major sticking points in the negotiations leading to the signing of the interim agreement (Oslo B) in Washington last September

Water is referred to under article 40 of Annex 3 “ Protocol concerning Civil Affairs.” The first principle in the article dealing with water and sewage states that “ Israel recognizes the Palestinian water rights in the West Bank. These will be negotiated in the permanent status negotiations and settled in the Permanent Status Agreement relating to the various water resources.” There is no doubt that this may be considered as a historical



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breakthrough as it is the first time that Israel has recognized the Palestinian water rights. While the 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. For the Palestinians, they define their water rights as follows:

- a fair share of their riparian rights in the River Jordan basin
- a fair share of the Western and North Eastern Aquifer
- full rights in the Eastern aquifer
- storage and fishing rights in the lake of Tiberias
- full right to the Gaza coastal aquifer

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. The agreement states that “ all powers currently held by the civil administration and military government relating to water and sewage will be transferred to the Palestinians, except for those specified as issues for the "final status negotiations." Nevertheless, the Israeli authorities have not transferred the authority of the West Bank Water Department to the Palestinian Water Authority until now. Work on the agreed upon drilling new wells to meet the needs of the Palestinian community are stalled. 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.

The bilateral negotiations between Israel and Syria on one hand and Israel and Lebanon on the other, have been lagging behind, which led both Lebanon and Syria to boycott the multilateral talks. The change in Israeli government, and the appointment of Ariel Sharon to the ministry of infrastructure in charge of water negotiations between Israel and its neighbours has casted doubt on the chances of arriving at a sustainable solution to the Arab-Israeli water disputes soon.

4.0 Conflicts Over the Euphrates and the Tigris

On July 25, 1992 Turkey inaugurated the Ataturk Dam near Bozova in south-east Anatolia. The dam is part of a large integrated multi-billion dollar irrigation and power generation complex that comprises 22 dams on both the Tigris and Euphrates rivers. By the year 2015, the new dams would help generate about 20% more electricity (more than 27 billion kilowatt-hours) and could irrigate 20,000 square kilometres of land (twice the size of Lebanon) that could theoretically double Turkey’s farm output. While the Euphrates and Tigris account for 28% of Turkey’s water supply, the two rivers represent over 40% of Syria’s and 80% of Iraq’s available water.

Turkey’s plan to fill the dams will drown 155 villages in Turkey, change the entire environment in the watershed and reduce the shares of Syria and Iraq in fundamental



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ways. When Turkey decided to divert the Euphrates to fill the Ataturk dam shutting totally its flow to Syria and Iraq in 1990 despite an informal agreement with Syria to maintain the flow at 500 cubic metres per second, both Syria and Iraq realised the kind of difficulties the Turks can cause them. Despite major political difficulties between Damascus and Baghdad, the two leaderships quickly came together threatening war over protecting their shares. Turkey, discovered that it over estimated the rift between the two, opened the flow to its normal course. Water conflicts between the parties have never subsided. They are partly related to water, but they have a lot to do with strategic posturing.

Turkey is looking for a direction to project its power and interests. It has lost its advanced western post on the border of the “evil empire” and has been practically shut out of Europe. Turkey has abundant water but not much oil which Iraq, Iran and Syria have in different proportions. Water gives Turkey the instrument and pretext to project itself southward, while coveting oil gives her the impetus to project its power eastward. But Turkey has to contend with internal instability coming from the Kurds in Anatolia and the many ethnic groups that make up the Turkish mosaic. The project is touted as transforming the area into a vibrant economy that can countervail the threat of the Kurds Workers Party (PKK). There are, however, some strong reasons to believe that the project is intended to change the demography of the region by dwarfing the Kurds by flooding the region with other ethnic groups. Syria’s preoccupation with the perpetual Israeli threat to its southern flank and its military presence in Lebanon and Iraq’s defeat in the Second Gulf War, have combined to give Turkey a wide room to project unopposed its military and water powers. The question is for how long and to what extent it can exploit Arab difficulties without paying internally for it. The Syrians are not taking chances and have explicitly and implicitly helped finance and protect the Kurds in their fight over Anatolia. The situation remains very precarious as long as Iraq is incapacitated. Iran is currently making up for the absence of Iraq, but is it in a position to affect the asymmetrical balance of power in the region? This is a crucial question at the moment following the death of Papandreou who was a staunch ally of Syria in its opposition to Turkey.

The precariousness of the political situation is only matched by the variability of the flow of the Euphrates. The velocity of the Euphrates may fall as low as 100 cubic metre per second as it enters Syria at Karkamis in the summer and as high as 7000 cubic metres per second in April when the snow melts, the existence of the dams should theoretically allow Turkey to provide Syria with an even flow of 500 cubic metres per second. This it actually did during the three drought years of 1989, 1990 and 1991. But recent tactics show Turkey as exerting pressures on Syria through the variability of the water flow. It is here that the problem lies. To what extent is Turkey willing and able to punish Syria and Iraq with impunity. Will Syria and Iraq remain indifferent to the repeated Turkish pronouncements and interruption of supplies? Are these interruptions truly tactical and therefore temporary, or are they the natural consequence of Turkey’s decision to use a



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larger share of the water of the two rivers for its economic and political purposes far in excess of its historical and equitable share?

Equally important and critical is the fact that even when the water flow is kept evenly at 500 cubic metre per second, is it of the same quality that it was in the past. There is considerable evidence that Iraq has already experienced a rise in the salinity of the water it gets from Turkey directly or through Syria, so much so that at Basra much of the irrigated land is lost due to excessive salinity.

The way ahead

The current peace process offers a historic opportunity for all nations in the Middle East to abandon the states of belligerency, confrontation, non-cooperation and polarization. The ultimate objective is to arrive at a comprehensive, just and lasting peace in the whole region where all the peoples of the area can join their efforts to develop the area and promote progress and prosperity in the region. Water will be a major issue that can catalyze the peace process or inhibit it. Unfortunately, the recent political changes in Israel has brought into power those who are obsessed with “water security” and are advocating the retention of Arab waters in Israel’s control. While in principle, the resolution of the Middle East water allocations and disputes will be based on the principles of international law, there is no mechanism for this issue to be institutionalized. If the issue of water allocation continues to be addressed with an eye for might rather than justice, Arabs will remain the thirsty partner to an unjust peace. And, as is so often pointed out, an unjust peace is no peace at all. Words, however, are not sufficient: declarations alone, no matter how detailed, cannot solve the problems of Gaza Palestinians who have no access to clean water. No Gaza Palestinian will be too impressed by the recognition of intangible rights, by the consideration of proposals or by the establishment of a regional water data bank. Concrete action is needed.

Israel should instigate some confidence building measures, to show that it is committed to resolving the allocation problem. Israel, as a confidence building measure, should immediately provide Gaza with 50 mcm through the National Water Carrier. Such a move is urgently needed, and would serve as a practical recognition of Palestine's riparian rights. Gaza Palestinians should not be charged the full cost of this allocation, as is the case within the terms of the Oslo Agreement; instead it should be offered in partial recognition of Palestinian water rights. Additionally, Israel should immediately make more water available for domestic consumption in the West Bank. The 35 cm per capita annually consumed for domestic purposes in Palestinian towns (Zarour and Isaac 1991) is simply insufficient, with shortages being critical during the summer. Seventy cm per capita/annum should be made available to those Palestinians who are connected to piped water supplies and Israel should facilitate the work of the Palestinian Water Authority in providing water networks to the 25 % of the Palestinian villages in the West Bank who have no piped supplies.



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Such confidence building measures would clearly demonstrate that Israel desires a just and equitable solution to the riparian dispute. It is not fanciful to envisage a resolution, rather than a settlement, to the region's riparian dispute. On the contrary, the only way that peace can be meaningful is if agreements are sustainable. And the potential does exist for cooperative solutions to the water crisis. A third party should be introduced, a thoroughly independent body, not simply a subscriber to one party's agenda. The "honest broker" would fulfill the following functions. Firstly, it would be responsible for verifying data, for establishing the facts which would form the basis of negotiation, and for clarifying misleading assertions. Secondly, it would act as a clearing house, as an incubator for positions. And thirdly, it would be in close contact with international financial institutions, and would attempt to guide the dispute by holding the right to sanctions against one or other of the parties.

Until this happens, there are several small steps that can be initiated at national, regional and international levels to facilitate the work of the political leaders of the region including:

1. Make all available water data in the region accessible through improved communication networks and web sites(e.g. an Online Water Information Network)
2. Encourage open forums(workshops, conferences, meetings) to discuss all aspects of the Middle East water issues at national, regional and international levels
3. Promote the capacity building of the regional parties in the area of integrated water management
4. Develop simulation models that could assist decision makers in the region in policy formulation, planning and negotiations
5. Promote the participation of water planners, distributors and users in decision making
6. Invite the private sector to assume a leading role in the water services
7. Promote R&D in the region aimed at transferring new water technologies
8. Train a number of economists in the region in the fields of water and environmental economics
9. Restructure the water policies at the national level
10. Introduce conflict resolution mechanisms and options at different levels within the region
11. Share with the regional parties the international experience in water dispute resolution and joint management of international river basins and ground water aquifers



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