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Hydropolitics In The Middle East: Opportunities For Fresh Thinking About Old Situations

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Scarcity and maldistribution constitute the two basic models of riparian problems in the Middle East that between them contain a representative typology of water issues that policy makers in governments and international agencies such as the U.N. and the World Bank may expect to encounter in their attempts to devise political and economic policies.

The planning and management of water in its political, economic, and strategic modes has historically been difficult owing to peculiarities that distinguish water from other policy issues. Management and planning are made complex by several factors:

1) Relationships of power, position, and interest
2) Territorial and ownership disputes
3) Uncertainty about key facts
4) Political and ideological rivalries
5) Jurisdictional disputes stemming from the fact that watersheds and political boundries are rarely coterminous

6) The absence of effective institutional legal machinery for settling riparian disputes
7) An ingrained tendency toward inaction without the motivation of a crisis, and
8) Deeply rooted cultural and social attitudes toward water that makes change difficult

As a contemporary issue of security and international relations, water displays yet another set of distinguishing characteristics:

1) Water as an issue is pervasive, highly complex, and utterly vital
2) Because of its complexity, water tends to be dealt with piecemeal rather than comprehensively thus becoming fragmented as a foreign affairs and strategic issue
3) Water is always a terrain security issue, especially when scarce, since all concerned parties feel compelled to control the ground on or under which water flows
4) The relationship between water dependency and security is perceived as absolute, i.e., as zero-sum, especially where two or more mutually antagonistic actors compete for the same water source
5) As a zero-sum secuity issue, water carries a constant potential for conflict, and
6) International law as a means of settling and regulating fresh water disputes remains rudimentary and relatively ineffectual

without prior treaty arrangements in place.

In sum, the strategic reality of water is that under circumstances of scarcity, water becomes "a highly symbolic, contagious, aggregated, intense, salient, complicated zero-sum power-and-prestige-packed crisis issue, highly prone to conflict and extremely difficult to resolve.

The Jordan basin best represents the model of scarcity with attendant problems of over population, insufficient finacial resources, poor management, and imbalance of power among its riparians. The Euphrates represents the model of serious maldistribution, despite current sufficiency, with parallel problems of money, personnel and power. For the political analyst and modeler, perhaps the most interesting aspect of these basins is that together they domonstrate the systemic, political, and socio-economic interconnections of water issues which, by their nature, make piecemeal planning and investment strategies less effective or counterproductive in the long run.

Moreover, in the Middle East,. where aridity, scarcity, and some of the world's most atavistic rivalries exist, it is an inescapable reality that there is little hope for the resolution of water based conflict--or cooperation--until sustainable political settlements are put in place. At the crux of conflict in the region is the denial of a national state for the Palestinian people, and water permeates this issue because, demonstratively, it is integral to the other crucial factors of security, ideology, and politics.

The Jordan basin is a semi-arid region encompassing some 18,300 square kilometers with an average annual precipitation of less than 200 mm/yr, a basin which

is inhabited by four riparians and an occupied territory, all of whom are hostile toward one another, and where demand for a diminishing supply of water is increasing rapidly. The issue here, then, is how to manage a scarce vital resource in conditions of belicose rivalry while avoiding open conflict.

The residents of the Jordan basin are Jordan, Israel, Syria, and Lebanon, together with the Palestinians of the Occupied Territories who also have substantial legal and historical usage claims to the waters of the basin. However, some eighty percent of the basin is located in Jordan, Israel, and the West Bank whose populations are most dependent on its waters.

From surface, ground, and marginal sources Israel normally has available about 1950 Mcm/yr of renewable fresh water supplies. Owing to drought, Israel can presently count on only about 1600 Mcm/yr and is consuming some 1820 Mcm/yr, running up an annual deficit of 220 Mcm. Jordan, which usually derives about 900 Mcm/yr of useable water from all sourcres is down to 700-750 Mcm/yr for the same climatic reasons. Jordan's present yearly consumption is about 850 Mcm, producing a deficit of roughly 100 Mcm. Both Israel and Jordan have accumulated a water deficit somewhat in excess of a total year's supply.

The Occupied Territories (the West Bank and Gaza) have a normal productive capacity of about 650-700 Mcm/yr but the current drought stricken supply is roughly between 500-550 Mcm/yr; the Territories' supplies are being overdrawn by about 75-100 Mcm/yr. Seventy percent of the groundwater on which Israel is dependent and more than a third of its sustainable annual water supplies originate in the Occupied

Territories. Put differently, 83 percent of the water that originates in the Territories is consumed by Israelis on both sides of the Green Line (pre-1967 Israeli borders).

Jordan's population and that of the Occupied Territories are increasing at 3.8% annually--at this rate the doubling time is only 18 years--and the Israelis are increasing at an annual rate of about 2% but anticipate an absolute increment of three quarters to a million emigres from what was the Soviet Union by the end of the decade. Using medium projections, at such rates, within the next two decades Jordan's population will increase from 2.7 million to 7 million, Israel's will rise from 4.4 million to 7 million (including the Russian emigres), and the Palestinians in the Territories will jump from 1.75 million to 4.2 million.

These projected demographics more starkly than any other factor highlight the ugent need for a political solution without further delay: Sometime between 2015-2020 the Jordan basin's population will reach about 18 million; the basin's known water resources will support a population of between 12 and 14 million. Out-of-basin transfers involve too many security and political risks to be sufficiently reliable as an answer while raising necessary funds and building a sufficient number of desalination plants in time to relieve the crisis is very unlikely because of the particular security and funding difficulties involved. What, then, is to be done with the three or four million additional inhabitants who will need to be provided with water?

The average domestic per capita consumption of water in Israel is about 300 litres/day (l/c/d); that of the Jordanians is about 80 litres/day, and the Palestinians in

the Territories consume some 70 litres/day (but in some areas use drops to 45 litres).

The prognosis for the next two decades is for persistent water shortages and the continuing tendency to overexploit unless drastic corrective measures are taken basin-wide, involving economic restructuring, administration, management, and data sharing basin-wide, reduction of irrigated agriculture, alterations in crop patterns, sustainable population growth, and greater efficiency through the application of water technologies and conservation. These essential steps will be politically and economically difficult without considerable outside mediatory and financial assistance.

The effects of ongoing water deficits, already exigent in the Jordan basin, are cumulative and could quickly become irreversible. Neither known natural sources nor water technologies available now or by the end of the decade have the capacity to generate new useable water in needed quantities at an affordable cost. Without a solution to this scarcity, both Israel and Jordan will have to curtail their social and economic development. The result is likely to be heightened competition among the basin's riparians and among domestic sectors within each country for decreasing amounts of degraded water, with concomitant destablizing internal and regional repercussions. Scarcity and environmental degredation will also impact on other water-related resources within the basin.

Because of the current disparity of power among the Jordan basin's riparians--Israel possessing hegemonic force--there appears to be no immediate prospect of a water war; however, water-based hostilities are possible. Water issues are central to

the strategic planning of all the basin's riparians and water problems contribute importantly to the basin's inter-riparian tensions. If current policies and patterns of consumption in Jordan and Israel persist, a mounting series of crises could be touched off before the end of the decade, particularly if economic conditions deteriorate further or if the present drought continues or worsens. Between 1995-2005, Israel, Jordan, and the Occupied Territories could begin to experience acute and progressively worsening perennial water shortages and quality degredation analogous to the three areas running out of renewable sources of fresh water. Consequently, rather than outright warfare among the riparians (which is possible), internal civil disorder, regime changes, political radicalization, and instability are more likely to ensue.

Moreover, the waters of the Occupied Territories are now so integral to Israel's water needs that the delicate balance of Israel's water system has become dependent on the waters of the Territories. Israel, satisfies up to 40 % of its water requirements from the West Bank. It is inconceivable that an Israeli government would ever give up any part of the West Bank without an effective plan, replete with a full array of guarantees and inducements, that would give Israel secure permanent access to sufficient quantities of the Territories' waters or guaranteed access to other comparable sources in the area, probably the Litani River in Lebanon.

It might eventually be possible to overcome Israel's security and ideological reasons for retention of the Territories, but not its hydrological arguments, which will persist until the water issue is settled. It is water, which is constituent to security, political, and ideological factors, that will in the final analysis determine the future of

the Occupied Territories, and by extension, the issue of conflict or peace in the region.]

Historically, patterns of consumption in this century indicate that the highest annual per capita withdrawals from water resources are associated with nations where both irrigated agriculture and industry are large scale and very advanced (e.g., the U.S. at about 2500 cubic meters). However, it does not follow that the opposite would be true for developing nations where industrialization is low, populations are high, soil quality is poor, and water is scarce—a set of circumstances that characterize large tracts of the Middle East. In those countries where the need for food production from irrigated agriculture is substantial, the tendency is for proportionately higher per capita withdrawal, as, for example, in Egypt (2000 cm), Jordan (900 cm), and Israel (1200 cm). Over the past two decades, the trend has been a rising per capita withdrawal rate globally.

Despite a moderate leveling off among some countries in the late 1960s, the withdrawal rate resumed an upward climb even in those countries where per capita consumption was already high or had overtaken supply, asx in the Jordan basin. The world-wide phenomenon of peoples migrating to cities has had a dramatic impact on water supply and use. In the last half century, the massive shift of population from rural areas to urban centers, occuring at an incredible speed, has resulted in a surge of water usage as population densities have increased and water uses have multiplied. All of these patterns of behavior typify the Middle East and have been intensifying over the last quarter century.

Despite the burgeoning problems inherent in these patterns, and despite daunting obstacles to a peaceful settlement, there are nevertheless opportunities for fresh thinking about old situations. In this regard, it is useful to recall that the unique importance of water for human life can lead either to severe conflict or solid cooperation. If the participants in a water rivalry can be made to see themselves as confronting a common fate, resolvable only through their cooperation, thus being responsible to and for one another, then a positive interaction very different from familiar hostility may occur. Then new or alternate approaches to these scarcity-causing trends can be effectively applied.

Until now, when water shortages have loomed, the near Pavlovian response of government authorities has been to solve the problem by expanding supply somehow, but without commensurate reductions in demand. This approach remains prevalent. However, as water budgets have dwindled and costs of supply have risen in many countries, particularly where diminishing supply cannot be readily restored and new stocks are very difficlut to generate in sufficient quantity—as in the Middle East—the focus of planners must be shifted away from the supply-side to controlling demand. Water management needs to be directed toward the *needs* of people and managing demand rather than on water itself, that is, rather than on finding ways to increase supply. The supply-side approach, if not a cause of domestic and international tension and potential conflict, certainly contributes significantly to their maintenance.

The management of need and demand involves several steps. It is generally agreed that the most effective way to manage a water crisis such as that which afflicts

in the Jordan basin, for example, would be the creation of a basin-wide authority with sufficient independence, power, expertise, and funds to perform its tasks. Such an authority would first require a solution of the Israeli-Palestinian-Arab conflict equitably and in conformity with the principles of law, but this happy solution is not likely to occur in time to stave off a major water driven crisis. However, even in the absence of a formal political agreement and of trust among the principal actors, there are still various hydrological incentives for taking some positive conflict or crisis avoidance actions. Chief among these incentives is the fact that unless the current situation is eased, the basin's states seriously risk destablization, radicalization, and conflict, the effects of which could be devastating and spill out beyond the confines of the basin to other key regional actors.

One of the most fruitful ways implement a need/demand strategy and to alleviate the basin's problems of water scarcity and overpopulation would be through the restructuring of economies away from heavily irrigated agriculture toward other sectors, such as electronics, service, and industry--a difficult but not impossible task given proper incentives and strictly dedicated financial assistance. If Jordan and Israel, for instance, were to reduce their irrigated agriculture by 40%, they could roughly break even in water supply and demand, assuming simultaneous improvements in efficiencies and conservation. (Israel did, in fact, temporarily reduce irrigation water by 37% in 1991 and by 40% this year; whether those reductions can be sustained after the unusually heavy winter rains remains to be seen). The basic assumption, of course, is that the problem would be attacked from the the angle of reducing demand as opposed to trying to increase supply, which has been the

traditional approach.

Experts have for some time argued that Middle Eastern governments should realize that their energy and water resources would serve them better if they were exchanged, through an appropriate market situation, for foodstuffs produced with far lower energy and water subsidies in locales with climates better suited to agriculture. This strategy would enable MiddleEastern water authorities to transfer enormous quantities of water from inefficient agriculture to far less consumptive intustrial applications, which presumably could simultaneously increase GNP; the contribution of light industry to GNP is about 30 times greater per unit of water used than the contribution of agriculture.

Understanding and easing the transition from agriculture to light industry will be complex for many reasons, not the least of which pertain to the political issues involved. The shift from farming to industry (or, for example, to electronics, service, or transportation) is difficult because agriculture is culturally embedded, highly symbolic, and militarily significant. Investment in research and practice oriented toward encouraging and enabling the smooth transition would yield high dividends. The U.S., the EC, various governments and the World Bank could provide incentives for planning and implementing economic restructuring and for mitigating the attendant hardships.

Perhaps the best way to initiate economic restructuring is to provide incentives for one country to act as a demonstration model for others, not only in the Middle East,

but also in other parts of the world. Jordan might be a good candidate because of its pressing economic and water-related problems and its perceived willingness to be innovative. The program would have to be implemented gradually, with rigorous periodic evaluations, flexible planning, and built-in measures for easing transitional hardships. Should this eneavor enjoy even mild success without exorbitant cost, it could be attractive to other basin actors, with a region-wide or even global impact. A positive impact could result even from the success of the project's initial stages. This is an undertaking that lends itself to collective endeavor, so many governments and agencies could act jointly, thereby spreading the risks.

Important technical developments are constantly emerging, such as new methods of desalination; "Medusa Bags" for transporting water by towing the bags behind ships; technologies that improve purification, efficiency, and conservation, etc. Seeking and selecting such new ideas needs to be done continually and systematically. Investment in new, promising developments, particularly those that are unlikely to be funded by standard sources should have a high priority.

In the Middle East, as well as in many industrial nations, international fresh water use, allocation, and preservation suffer from a lack of inter-and-intrabasin cooperation, poor data, and uncoordinated, piecemeal approaches that result in fragmented policies and actions. Since it is unlikely that cooperation can be coerced or induced at the highest political levels, another approach must be found. The most promising is to encourage cooperation--at a lower but still significant level--among officials and technical experts. If officials and scientists in the region communicate

sufficiently to develop shared understanding of the water situation, available technologies, and potential solutions, they could become a strong force for cooperation--a community of informed officials and experts throughout the region to press for and guide effective water policies.

Another possibility would be to promote cooperative desalination at basin or regional levels. Such arrangements, although requiring considerable political agreement, would yield great economic, political, and social benefits, especially in such landlocked countries as Jordan.

The key to achieving these goals--and, in some respects, the prerequisite to successful economic restructuring--would be the establishment of a technical infrastructure for hydropolicy that addresses problems at three levels: basin, regional, and global. Specifically, this would involve the establishment of three interrelated types of water institutes: 1) an institute for each of the three major river basins in the region--Euphrates/Tigris, Jordan, and Nile; 2) a comprehensive Middle East regional water institute; and 3) a global water institute, perhaps under the auspices of the U.N. or World Bank.

These institutes, comprising staff, fellows, trainees, and other personnel from the world's major basins, would perform several functions: a) provide expertise, research, educational opportunities, and data necessary to develop the entrepreneurial, human, and technical resources presently lacking; b) generate databases and hydrological, economic, and other social scientific analytical tools; c)

act as conference settings; d) serve as centers for accurate record keeping and information dissemination; and e) foster interaction among basin and regional specialists.

Water is the earth's most essential resource. No other substance carries greater potential for conflict or disaster when scarce or poorly distributed. Thus, approaches, concepts, and actions must be commensurate with the magnitude of the problem--and where water is concerned, the problem is nothing less than survival.