WATER PROBLEMS : CAN THE UNITED NATIONS HELP?
A Discussion with Special Reference to the Middle East

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THE PROBLEM

There is a growing awareness that, in many parts of the world, if current trends in water consumption continue, the procurement of water will ascend to the center stage as a primary political problem. Nowhere is this more apparent than in the Middle East. In all of its five transnational river basins, the amount of water available to the riparians is judged by each to be insufficient in meeting their perceived needs. In the Jordan Basin, the water supply is already exhausted. In others, the riparians feel that the supply currently falls short for some purposes such as the production of electrical power, and that it will soon become insufficient for other uses such as city water and irrigation. Although the sharing of the available water in any single society except Israel has not yet created insurmountable domestic political tensions, the same cannot be said of the international domain. Some experts have already begun to talk about water wars (e.g. Starr, 1991). Leaders of some countries in the region, while expressing themselves a bit more cautiously, have also uttered, if occasionally, expressions such as "casus belli" (Beschorner, 1992: 6) when discussing water related problems with their neighbors.

A study by the Islamic Network on Water Resources Development and Management illustrates graphically the nature of the water problem in the region. The Network assessed the water resources available to the member countries of the Arab League and the extent to which these would meet the basic needs of each society. The study assumed that each person would need 55 cu. mt. of water annually for domestic use, 1150 cu. mt. for the production of food (comprised of fruits, vegetables, cereals and meat) leading to a minimum water requirement of 1205 cu. mt. per capita. It then noted that in 1985 only nine of the twenty one member countries could meet this demand. The report went on to predict that because of rapid

population growth, by the year 2000, the average amount available per person would decline to 1108 cu. mt. which is already under the minimum set by the Network. By the year 2025, assuming that the current trends would continue, the average amount available to a person would go down to as low as 536 cu. mt. (summarized in Clarke, 1993: 88).

There are other countries in the region which are not members of the Arab League but which are exposed to similar problems in terms of water. It is well known that Israel is not blessed with large quantities of water. Iran too, is not known to be a water rich country. While many observers tend to think of Turkey as a country with abundant water resources, international comparisons belie such characterization. Especially if current demographic trends in Turkey are taken into consideration, it does not take a very careful analysis to recognize that it is also a candidate for water shortages in the foreseeable future.

Water shortages will be more and more deeply felt as time goes by. It may be expected that the intensifying shortage of water would lead to a series of undesirable and in some instances probably devastating consequences. Insufficient water coupled with the inefficient allocation of the existing stock, would constitute a serious stumbling bloc to further economic development of the countries of the region. The competition for water might produce domestic instability in those countries which are experiencing it, and it is already clear that it may threaten peace between the countries of the region (See also Starr and Stoll, 1988).

When a pending shortage of water in region and its outcomes in the economic and political fronts can be predicted with relative ease, it is surprising that the countries of the region pursue policies and behave in ways which assume the availability of large amounts of water in the future. Furthermore, cooperation between the countries of the region and riparians sharing the same basin are notably lacking such that neither the conservation and the more efficient use of the existing resources nor planning jointly for the future have yet proven possible. This may seem contrary to the conventional logic which George F. Gruen advocates when he says "a neutral observer could conclude that enlightened self interest would lead the states of the region to cooperate in maximizing the efficient utilization of existing resources and developing additional sources of supply (Gruen, 1991: 2)

The shortages of water in the region are propelled by four sets of factors: environmental, economic and political (Beschorner, 1992:3: see also Wachtel, 1993:2) and demographic. The environmental factor lends itself least to human manipulation. Although there are intra-regional differences, the entire region is less than blessed with abundant precipitation. As regards economics, it is known that many economies in the region are not well developed as characterized by low levels of industrial production and by the employment of a large segment of their populations in the agricultural sector. In farming, water saving technologies are not employed extensively since this requires financial resources which the governments in the region are both lacking and unwilling to commit. Living standards are also rising, however, producing an increased demand for water.

The economic problems are rendered worse by the rapid increase of population. Having many children seem to be culturally desirable in all Muslim countries in the Middle East with varying intensities. Lower levels of urbanization in some countries only help strengthen the trend toward large families. Wealth deriving from oil has also promoted population booms in those countries that are rich in that commodity.

Moving to the political front, we see that many of the governments in the region, irrespective of their divergent ideological orientation in other areas, have chosen to pursue policies of encouraging both population growth and agricultural development. Population growth is often explained in terms of the enhancement of national power and fulfilling religious obligations. The ultimate purpose behind agricultural development policies, on the other hand, in addition to any romantic notions about a model society in which happy peasants prevail, is to achieve self-sufficiency in food. In countries such as Syria and Iraq which are ruled by authoritarian regimes insecure at home and suspicious of the international environment with economies bent on autarchy, the proclivity to emphasize both population growth and the notion of food security may be understandable. The emphasis on population growth may also be understandable in oil rich countries with small populations. But even such a water poor country with a reasonably large population as Saudi Arabia has introduced extravagant programs to become not only self-sufficient in, but also a net exporter of wheat.

The preceding discussion suggests that we are against culturally based policy choices. These cultural constraints reduce the flexibility of governments in introducing measures which would reduce the demand for water. For example, one might argue that it is the emphasis on food security which establishes an irrevocable link between agricultural development and water security. That water security promotes agricultural development which then leads to food security may not be a wholly accurate proposition. Its uncritical adoption, however, does clearly reduce the will of governments to divert water away from agriculture for other uses, or to forego with the consumption of some of it, altogether. Similarly, family planning is resisted even though its necessity might be recognized since it is feared that political opponents might make an issue of it.

The preferences in favor of increased agricultural production or population growth are usually not lacking political constituencies. The support which the Syrian B'ath regime of Hafiz al-Assad enjoys on the countryside is linked to the land reforms which has helped create a class of farmers whose prosperity depends on government policies supportive of agricultural production. Furthermore, the influx of large numbers of peasants into cities is probably deemed not to be safe from the perspective of the authoritarian leadership. In Israel, although the origins of the agricultural Kibbutzim may be traced in part to Zionist romanticism if also in part to a strategy of colonization of Arab lands, there is no question that they constitute a political factor nowadays which influence the determination of water utilization priorities in Israeli society. If the Saudis continue to insist on producing vast amounts of wheat, who knows, there may even develop a Saudi farm lobby.

The existence of underdeveloped economies extensively reliant on farming, the adoption of policy choices in favor of food security, the pursuit population growth, and the presence of strong agricultural constituencies in many Middle Eastern countries produce an environment in which each country becomes interested in maximizing the amount of water available to it. But here we come to another reality which has been well described by John Kolarz who writes: " '... approximately 50 percent of the total population of the Middle East and North Africa depends on water flowing from another sovereign state. .... slightly more than 90 percent of all Arab people of the same region," are dependent on sources other than renewable domestic rainfall, ... 67 percent depend on transboundary rivers and 24 percent rely upon fossil water and desalination plants." (Quoted in Gruen, 1993: 1)

The reliance on the availability of water for domestic economic and political purposes, coupled with dependence on other countries for the procurement of water, constitute the building blocs of an international environment characterized by highly selfish behavior, lack of trust, and hostile relations accompanied by high levels of tension between states. This is further exacerbated by the fact that many political systems are ruled by insecure authoritarian leaders who find it difficult to pursue cooperative behaviors vis a vis the external world and forego the support generated by a sense of national emergency.

The state behavior in the Middle East as regards water may be summarized under four points. First, each country considers it an indispensable part of its sovereignty to use as it sees fit all the waters which flow through its territory. Second, being reliant on other countries for water is not seen to be acceptable. It is seen to be of a different order than being reliant on other countries for other critical commodities such as fuel (See also Turan, forthcoming). Third, each country wants a system which will maximize its waters irrespective of how such a stance may affect others who may have access to the same waters. Finally, the struggle for the maximization of available water to a country carries easily into other areas since actions in fields which have nothing to do with water are sometimes employed to modify the position of rivals regarding water.

The absence of clearly established laws and procedures on the sharing and the utilization waters which go through more than one country provides the countries of the Middle East with a relatively free hand in behaving in ways which each deems suitable to maximize water gains. This poses the following problem: "What can the countries in the Middle East which have water related problems with each other do in order to move away from relationships characterized by lack of community (i.e. emphasizing sovereignty) lack of trust (i.e. emphasizing security) and unpredictability (emphasizing independent and unilateral action), and move toward relationships which are characterized by feelings of community, mutual trust and predictability?" (Turan b, 1993: 154)

The answer calls for clear and pragmatic thinking. Yet, there are impediments. First, questions regarding the availability and the use of water in the region, as indicated above, are dramatized to such an extent that they stand in the way of clear thinking and analysis. It is also often forgotten that the crisis is man-made, deriving from human decisions to use water in specific ways. More specifically, what we are dealing with is a political problem, a problem about ordering societal priorities through public decision making. If, for example, governments would be willing to

change their policy preferences and forego food security as a paramount goal, then shortages would, to a large extent, disappear. Needless to say, a new set of problems about what kind of less water intensive products could be produced and how. If, on the other hand, the current insistence on food security is retained, then the problem becomes one of an insufficient supply of water, and the solutions sought are couched in terms of the ways through which the available supply of water could be increased (See also Turan b , 1993: 152-153) which generate a new set of problems such as increasing demands, intensifying water scarcity, and uncertainties in water availability (Qashu, 1994: 45).

This paper will raise the question of whether the United Nations can help in some ways to help in the solution of Middle East water problems which, in the long run, may threaten peace in the region if not tended to. Before trying to propose an answer, it may be useful to examine the types of activities the United Nations has engaged in as regards helping with the management of various aspects of "water problems."

THE UNITED NATIONS AND WATER PROBLEMS

The United Nations and its agencies have conducted various activities as regards the solution of water problems around the globe. These activities have been of different types. First, the UN through the World Bank and the UNDP has been involved in the development of integrated basin development programs. Secondly, through its specialized agencies, the UN has rendered technical assistance to countries that have needed it. Third, the UN agencies have worked toward the codification of laws and legal principles regarding the non-navigational uses of transboundary rivers. Fourth, the UN and its agencies have worked to highlight problems concerning fresh water resources around the globe, guiding governments and publics to focus attention on them with a view to producing needed action.

River Basin Planning and Technical Assistance

Some of the earlier UN programs focused on the integrated development of river basins. These programs set out to enhance agricultural development and stimulate power production as steps in the achievement of economic development in countries which were located in the same river basin (Westcoat, forthcoming) Examples include the creation of the Mekong River (1957) and the Indus River Commissions.

The emergence of the Mekong River Commission can be traced to studies initiated by ECAFE (UN Economic Commission for Asia and the Far East) which brought together representatives of the four riparian countries of the lower basin of the Mekong River: Laos, Cambodia, Thailand and Viet Nam (Hori, 1993 : 112) the aim was to formulate programs for developing the unusually rich potential the river offered for irrigation, power generation, and navigation, as well as to build flood control systems. The representatives of the four riparians formed the Mekong Committee which received operational assistance from the UN which included "an executive agent, a secretariat, and an advisory board of international experts. The cost of planning, investigations and feasibility studies was financed by the United Nations, Asian Development Bank, and a group of countries comprising the United States, United Kingdom, Canada, France, Netherlands, Australia, New Zealand, Germany, Japan, and others." (Kirmani, 1990: 202)

The Committee produced an Indicative Basin Plan and worked to generate interest in the plan and support for it. It was hoped that the United Nations, multi-lateral banks, and wealthy industrial countries would extend support to the realization of the plan. Although a substantial amount of funds was spent for the studies that led to the formulation of the plan, and sizable administrative costs had been incurred, the plan has not generated but temporary interest in the international community. "The support of the United States for the cooperative effort on the Mekong faded after the Vietnam War; other countries as well as the international banks diverted their assistance to normal operations in the countries outside the Mekong umbrella." (Kirmani, 1990: 203)

Although the Mekong River Committee experiment appears not to have constituted an example of a major success, it has stimulated the cooperation of Laos and Thailand in building power generation capability on the Nam Ngum River. The feasibility for the project was realized with financial support provided by the UNDP and Japan. Construction funds, on the other hand, were secured through grants from industrial countries which included Australia, Canada, Denmark, France, Japan, the Netherlands, New Zealand and the United States. The World Bank supervised the implementation of the project (Kirmani, 1990 : 204).

UN efforts to realize integrated basin development have been carried out in other parts of the world as well. According to Solanes, for example, the UNDP has provided the impetus for the promotion of integrated development in several large river basins in Africa. In several cases, elaborate institutional structures for integrated development have

emerged including the Organization for the Development of the Senegal River (OMVS), Organization for the Development of the Gambia River (OMVG), and the Niger Basin Authority (Solanes, 1992: 120). Looking at the specific role which the UNDP has played in this evolution, Solanes notes:

> ...UNDP, usually in collaboration with executing agencies for the projects, for example, the Department of Technical Cooperation and Development, often begins institutional support and pre-investment surveys. Subsequently, UNDP may coordinate technical missions to enable potential states to confer on a comprehensive development plan and its various components. A package of capital investment and technical assistance may result. Within Kaquera Basin, for example, Austria and Italy jointly agreed to finance the feasibility study for the planned railway network, one aspect of a comprehensive plan for the Basin. UNDP was asked to draw up the terms of reference and to provide the coordination for the project. Also UNDP agreed to act as an auditor for the Kaquera Basin Organization." (p. 120)

UN affiliated agencies may also serve as a catalyst in processes which have led to a negotiated settlements. It was the World Bank which succeeded in getting the representatives from India and Pakistan together in order "to prepare an outline of program and lists of studies for possible technical measures to increase the supplies of water possible from the Indus system of rivers for purposes of economic development." (Biswas, 1992: 206). The Pakistani and Indian experts working with members of the World Bank team agreed after three weeks of negotiation on determining the total supplies of the Indus Basin , the determination of the water requirements of the cultivable irrigable areas in each country, the calculation of derivative data and the collection and compilation of further basic data (Biswas: 206). Although, the way to the final treaty was long and arduous, and many impasses were reached on the way; the agreement on data of a factual nature which these experts had exchanged facilitated considerably the time which is often spent during negotiations on establishing the facts of the case.

This brief survey shows that the UN may render riparians sharing the same river basin assistance, technical or otherwise, in a number of widely different ways depending on the peculiarities of the question and the situation at hand.

Codification of Laws and Legal Principles

Non-navigational uses of transboundary waters is an area in which international law has developed only to a limited extent. This is understandable in that until recently, most transboundary rivers carried an amount of water which was deemed sufficient by the riparians to meet their needs. In recent years, the fact that water is a finite commodity and that its utilization for a variety of purposes in addition to navigation should be tied to common understandings and rules, has come to be appreciated more.

The International Law Commission of the United Nations has cooperated with the International Law Association in order to produce a draft document which aims to codify some of the existing ideas, values and practices in order to offer the international community a basis on which further international law may be built. Some of the articles included in the Draft Report of the International Law Commission on the "Law of the Non-Navigational Uses of International Watercourses" recommend the adoption and the observation of principles of "equitable and reasonable utilization and participation" (Part II, Article 5), "obligation not to cause appreciable harm to other watercourse states," (Part II, Article 7), "general obligation to cooperate," (Article 8), as well as others. There is an attempt in the draft to observe the interests of all concerned parties in a river basin in order that they may carry out their relations regarding transboundary waters in an amicable manner.

It is to be recognized that the evolution of international law is a long and cumbersome process, it is a process of consensus building rather than legislation as such. It is important to recognize that it has been the United Nations which has been behind the effort to develop international law. It is not easy to imagine another organization which has international stature, the organizational structure, the institutional interest and the mission which would allow it to assume such a responsibility. It should be appreciated that the assumption of leadership by the United Nations has made it possible for countries, some of which would otherwise not be able to get together, to meet under the auspices of the International Law Commission to address common problems regarding the use of transboundary waters.

In recent years, the United Nations have been the driving force behind a number of international conferences which have dealt directly and indirectly with water problems. UNESCO has demonstrated live interest in water issues through its International Hydrological Programme which is currently in its fourth stage (1990-1995) entitled "Hydrology and Water Resources for Sustainable Development in A Changing Environment." (Haimes, 1992) The International Hydrological Program had its origins in the International Hydrological Decade which UNESCO had declared in 1965. The goal at the time was to initiate a research effort to understand better the world's hydrological cycle. A number of hydrologists from developing countries were trained under the auspices of the program and more than 300 studies of water flow in individual catchment areas were conducted (Clarke, 1993: 169-170).

UNESCO continued its efforts in hydrology and contributed in great part to the convening of the United Nations Water Conference in Mar Del Plata, Argentina. The results of UNESCO's efforts were reported at this conference and it was decided that the efforts which were carried out within the context of the Decade should be continued under the International Hydrological Program with attention being directed toward finding solutions to the water resource problems, since a substantial amount of data had already been accumulated during the Decade. More recently, UNESCO has again served as the driving force behind the International Drinking Water and Sanitation Decade.

In areas more directly related to policy making, the United Nations Environmental Program (UNEP) has been active. For example, in 1986, UNEP has introduced the Environmentally Sound Management and Inland Water Resources (EMINWA) program to enhance public awareness of the importance of the development of inland waters utilizing sound management practices. As Clarke summarizes, in the program:

> "The top priority is to help countries sharing a river basin develop their water resources in a sustainable manner and without conflict. This often involves new legal and institutional arrangements - typically a convention on the management of the shared resource- and the setting up of a river or lake management authority. This authority would oversee the introduction of water treatment technology, the more efficient use of existing water resources, the implementation of development programmes which do not interfere with the water supply of downstream countries. All these initiatives

increase the amount and raise the quality of water in shared basin area, and lessen both the competition for water and the potential for dispute."

Two major conferences has been organized by the UN in 1992 in which water related issues were present in the agenda. In January 1992, the International Conference on Water and the Environment met in Dublin with the participation of more than 600 experts from various parts of the world as well as those which represented the various interested agencies of the UN. This gathering would serve as the preparatory meeting on water issues to the more comprehensive United Nations Conference on Environment and Development (UNCED) which was to convene in Rio de Janeiro in June (Grover and Biswas, 1993 : 81). The Dublin Conference produced a number of policy recommendations including that management occur at the lowest level possible, that less command and control be exercised by administrative units, and that greater reliance be placed on market forces and participatory approaches (Grower and Biswas: 81). It also noted that regional organizations were essential for the management of transboundary basins (Westcoat, forthcoming: 97).

These activities have aimed to mobilize and organize the world community on water issues. The extent to which these meetings have had impact on the conduct of policy and the solution of various water related issues in the world has not been closely examined. Impressionistically speaking, while these organizations and meetings tend to bring concerns about water to the fore and constitute an invaluable source for countries to draw upon in working on solutions to their specific problems, they do not have immediate and direct impacts on the behavior of states in the development and management of their water resources, and in cooperating with each other in solving mutual problems including sharing the waters of transboundary rivers, initiating basinwide policies of pollution control and other similar endeavors. We should not overlook the significant role these meetings have played, however:

> "... Without UNESCO's effort, much of our present understanding of the immediacy of a world water crisis would not have come to light. ... Certainly , the limits of the world's water resources would not have been understood as they are now. Nor would the regional disparities in water distribution and the pressing issues to which they give rise." (Clarke, 1993: 170)

SOLUTIONS

Let us assume, for the sake of argument, that all river basins in the Middle East are in the territory of the same state. Taking the contemporary trends and patterns of consumption as a given, there would still be either a current or a pending water shortage in all of them.

What kind of solutions are devised and applied in states that encounter water insufficiencies? It seems that there are three general directions in which solutions may be developed. First, an attempt may be made to restrict consumption. This is a known method in environments which periodically face water shortages. For example, in parts of California, during years when precipitation has not been enough, municipalities may ban citizens from watering their lawns, washing their cars, etc. During the 1994 summer season, the Greater Municipality of Istanbul has been letting urban districts receive city water every other day since the water stocks of the have gotten to be unusually low due to insufficient precipitation. Restricting the consumption of water may also be a method used more permanently such as in the case of Jordan and Israel.

Restricting water consumption by a decision of a public authority is a system of distributing a limited commodity by administrative fiat. Some experts argue that the problem is not really an insufficiency of water but artificially high demand, a distortion produced by artificial pricing policies which allocate resources to inefficient users. Adjusting prices to the availability of water may be neither desirable nor practicable in the case of short term shortages, but if restricted water use is a way of life, a pricing system which is based on market principles may be appropriate for regulating excess demand.

Second, a society encountering water insufficiencies may try to increase the total amount of water available to it. Here, there may exist two different options. In some instances, it may be possible to increase the amount of water available by reducing wastage, seepage, evapo-transpiration and by adopting water saving technologies in irrigation, in industry etc. But in most instances, increasing the water available for consumption in a society requires reaching new sources of water. These sources may be internal or external. Internal sources have included the construction of dams, the drilling of new wells for the exploitation of underground water, the inducement of precipitation by artificial means as well as the application of desalination technologies. External sources, on

the other hand, have included the shipment of water by tankers, by pipelines, and by other yet not well developed means such as medusa bags. Earlier methods which were talked about such as tugging icebergs from the South Pole, were later found to be impracticable.

Third, a country may try to meet a pending or current water shortage, by trying to control and modify developments in areas which generate increased demand for water. For example, a country may choose to pursue vigorous birth control policies to reduce water demand generated by a growing population. Similarly, a government may promote dry farming and discourage irrigated farming. It may promote the development of economic activities such as the development of industries which do not use much water. Note that this is not the same thing as the adoption of water saving technologies or reducing waste but an attempt to deal with the structural variable which generate demand for water.

If a river is located entirely within the boundaries of one country, it would be possible for a single political authority to make the decisions regarding how water needs are to be met, how water supplies may be increased or how the demand may be reduced. This is not to say, these are easy things to do, it is simply noting that the additional complications which derive from the international nature of river basins would not be there. There are two types of additional complications which the international character of a river generate. First, each riparian has "strong incentive to exploit its part of the basin without regard to the interest of other riparians." Second, if a cooperative solution is achieved, then each party would try "to avoid paying its share of the costs, i.e. to free ride." (Waterbury, 1990 : 4) These complications are also present in a national environment, but a government can devise and implement rules which stand in the way of their becoming manifest.

The tendency of each riparian on a river basin to exploit its part of the river without taking into consideration in a significant way the concerns of the others produces an environment in which all riparians are suspicious of each other. This mutual lack of trust, stands in the way of cooperation since each party fears that the others are ill intentioned, will not keep their word, exploit one's weaknesses etc. As Gruen points out, even the collection and exchange of hydrological data which would constitute the beginning step for any process of negotiation or attempt at cooperation, is embedded with difficulties because most countries tend to fear that data which they pass on to others may be used against them in international discussions and debates in legitimizing the claim of others for more water (Gruen, 1993: 2).

The tendency to pass costs accruing from engaging in cooperative projects, and those which are in fact generated by international cooperation to others, in addition to being a natural tendency, is reinforced by the judgement that other riparians are getting a better part of the deal, they are more prosperous anyhow, and that the riparian making the judgement does not feel that it has the resources to meet the costs.

We have now come to a point where we can introduce the United Nations into the discussion. We have identified the types of solutions which a society might adopt when encountering a water insufficiency problem. We have also identified some problems which will have to be surmounted if the solution to the water problem necessitates cooperation between states. Our question, given these constraints, is whether the United Nations can play a unique role in affecting cooperation as regards water utilization in the five river basins in the Middle East?

WHAT CAN THE UNITED NATIONS DO?

We have identified three types of solutions to water shortages: Restricting use, increasing the available supply, and bringing about structural shifts in areas which either generate or intensify the demand for water in society. We will new try to see what kinds of roles, if any, the United Nations can play as regards solutions.

We may begin by noting that there may be two different ways in which the United Nations may be functional in contributing to solutions. First, the UN may work with each individual country directly, and in ways which do not necessarily involve international cooperation. But the outcomes of such unilateral interactions may still produce effects which may be beneficial to others in the same basin, or help establish parameters which may be important to have at future attempts at international cooperation. Second, the UN may be involved as an actor in multi-lateral cooperation, acting as an initiator, leader or facilitator in such a process.

Whether the UN will be or ought to be involved in a specific basin or in a specific problem area must be determined prior to investigating what the UN can do. Here, two criteria appear to be important. There is no need for the UN to be active in areas in which there are already arrangements and mechanisms serving the ends which the UN would also be expected to serve, unless the intervention by the UN would clearly add a capability or a resource which would alter significantly the capabilities of

the existing mechanisms or arrangements. Second, there should be some consensus among the actors that they are interested in affecting some solution/s and that some support from an international organization like the UN would be needed, helpful, appropriate, etc.

Restricting Water Use or Consumption

The need to place restrictions on water consumption in a river basin may emerge under two different circumstances: there may be a natural phenomenon such as a drought which reduces the available water or an upstream country may withhold water from those downstream. In either case, there is an interest that none of the riparians experience undue deprivations and that burdens deriving from water insufficiency be shared equitably.

Restricting the consumption of water in any society is an act which governments are reluctant to adopt and implement. Governments are unlikely to allow external actors such as the United Nations to have an input in such decisions. It therefore seems that the United Nations, rather than intervening when a critical situation erupts, should work to create a set of conditions which would encourage governments to take into consideration other riparians when they initiate restrictive measures or policies.

In the past, international credit agencies some of which are affiliated with the UN and others which would be receptive to UN advice, have insisted that on transboundary rivers, any country which wants to build a dam or develop other systems designed to increase its water consumption, should plan these with the other riparians and get their consent for its project if it wanted to receive financial assistance in the form of loans or grants from international agencies. For example, when Syria requested World Bank financing on the Ghab project, the World Bank considered four approaches as regards the criteria to be employed in producing a response which included among others a) treating the river and its basin as an entity and to consider projects only if they were part of a comprehensive scheme; and to require the assent of all riparian countries to a project (Caponera, 1991: 3). Loan policies based on such considerations may be developed, refined, and applied persistently to encourage cooperation between the riparians on an incentive basis. One area where refining is needed is making sure that no country can block the development plans of others by simply claiming that it is hurt when such is in fact hardly the case. This seemed to be the case as regards the Euphrates where financial assistance to Turkish plans to build a dam on

the river were withheld on the insistence of downstream riparians who claimed that they would be hurt, which has not been borne out even after the Turkish construction of the dam with its own means.

This moves us to another area in which UN support might be helpful. One of the main reasons for the confusion in the responses of the international lending agencies as regards the Euphrates was that none of the downstream riparians had reliable data. They had but unreliable estimates with exaggerated figures to cover for any errors. The situation has not changed yet. The United Nations may either cooperate with the riparians individually or may encourage cooperation between them with regard to producing standard, reliable measurements and data. Turkey has offered to initiate a joint program which other riparians have not yet received warmly (Kut, 1994: 12). The assumption of this responsibility by the UN might present the riparians with a more neutral agency whose leadership they might be willing to accept in data standardization and collection (See also Turan, b 1993:155-156 and Turan, forthcoming).

The need for standardized measurement and the collection of data in the Middle East is not confined to the Euphrates-Tigris basin. Similar activities are needed in the other basins. This presents the possibility of establishing of a regional program for data collection. The data collected would be more useful if not confined only to precipitation and flows, but also deal with the quality of soils, the amount of irrigable land, and other similar factors since water cannot be discussed without identifying the potential areas in which it will be put to use.

In addition to collection of data, it may be useful to have a regional organization which serves as a clearing and distribution house for information about what each riparian is planning to do, and what it is doing with its transboundary water resources. One of the elements of a situation in which actors fail to cooperate is lack of information about the plans of others, lack of explanations why what another riparian is doing is being done. This creates an aura of suspicion which stands in the way of good judgements and cooperative behavior.

Let us take an example. If all riparians of the Tigris-Euphrates Basin deposited their short and medium term development plans as regards water utilization, it may be discovered that the sum total of expected utilization exceeds by far the total amount of water available in the basin. Even making such information available may invite all riparians to review and readjust their development plans. They may also be able to perceive better the advantages which may accrue from cooperation on water utilization.

The establishment of an agency, which, in addition to collection data, serves as an information clearing house might facilitate considerably the emergence of a more congenial atmosphere in which water resources may be shared. In fact, such an agency may also work over basin wide and regional development plans and draw the attention of the riparians to the possibilities for cooperation and the rewards which would ensue (See also Küffner, 1991: 7-8). A UN affiliated regional agency might serve this end well.

Restricting the water for a downstream country in a basin by an upper riparian is a serious problem which may be alleviated to a certain extent by providing the lower riparian with instruments with which it can reciprocate to the deprivations it may be suffering. Expressed differently, the greater the amount of interdependence among the riparians of a river basin, the more probable it is that they will choose to approach their mutual problems in a cooperative mood. Mutuality of dependence would mean that the lack of cooperation on the part of one riparian would be reciprocated by lack of cooperation in another area by other riparians. To cite an example we may look at the Peace Pipeline to ship water from the Seyhan and Ceyhan Rivers in southern Turkey to other countries of the Middle East which had been proposed by the later President Turgut Özal of Turkey:

> "In response to Arab and Israeli fears that political factors may disrupt Turkish water supplies, the late President Özal and President Demirel have both repeatedly stressed that they seek to develop a network of mutually beneficial economic relations among Turkey and all its neighbors. For example, pipelines would convey oil and gas to Turkey. In exchange, Turkey would provide food, water and hydroelectric power to its neighbors. This growing interdependence and the obvious fruits of cooperation, they say, are the best guarantee against disruption. Financial and technical support by industrial nations and international agencies for such water sharing projects can make a tangible contribution to a peaceful and prosperous future for all the peoples of the region." (Gruen, 1993: 17)

The international agencies including the United Nations can play an invaluable role in helping create the interdependence which Turkish presidents have envisioned which render water only one of the commodities in the utilization of which all riparians are required to cooperate. This is fully in line with the resolutions of the General Assembly of the United Nations such Resolution 1710 (XVI) and 2626

(XXV), calling upon the member states to increase the flow of development resources to developing countries (Solanes, 1992: 119)

Finally, an international technical support agency may help governments to develop systems of measurement of the consumption of water and to introduce pricing policies which direct countries use the water available to them in more rational ways. It is to be remembered that pricing water, charging economic prices for, it is a politically explosive area which individual countries would be reluctant to open to the intervention of international agencies. Yet, for example, Arab-Israeli Peace may well necessitate the development of better measurement and pricing systems of water consumption since the sharing of waters is a major issue area in the peace negotiations. Furthermore, the adoption of these systems in some areas may constitute an example which may later be recommended for adoption in other problem areas. Although the sovereignty of riparians of any basin ought to be observed closely , there is no reason to deprive them from the benefit of hearing creative ideas and solutions. The minimum that may be possible is to offer assistance to those countries which want to initiate such measurement and pricing systems. There are already UN agencies such as the UNDP, UNIDO and UNEP which may assume the additional function of providing the type of assistance that is being discussed.

Increasing the Water Supply

As shall be recalled, we had identified two different ways of increasing the water supply available to the riparians of a basin. The first is economizing on the consumption of water, the second is finding new sources of water either within a country which is located in a river basin or from without.

Let us start with the more efficient use of the currently available water. For example, in the South-eastern Anatolia Project known by the acronym GAP, Turkey has developed projects to re-use irrigation water, the application of sprinkler irrigation, the automation of main canals. Further, it has projects to establish demonstration and pilot schemes to teach the farmers the use of water saving technologies (Bilen, 1993: 14). Other countries in the region may also be encouraged to adopt similar technologies. It seems that success would be more likely if there is not international organization organized either at the regional level or as the regional branch of a international organization.

Any organization whose mission it is to propagate the adoption of water saving technologies would be expected to perform several functions. First, such an organization may serve as a collector and disseminator of all available scientific information regarding water saving technologies . Second, the organization itself may promote the development of, and lend financial and other support to, or itself establish research centers devoted to the study of water conservation. Third, an organization may provide the financial support needed for the adoption of water saving technologies.
It seems that the first two functions may be discharged by the same organization, one possibly ran directly by the United Nations. Water conservation research, technologies, and the dissemination of scientific information are concerns of a universal nature, and may be best served by a UN agency with regional branches. The third function, on the other hand, may be discharged by an organization which is better capable than the United Nations has been so far, in providing financial assistance for the adoption of technologies. This assistance would be more desirable if organized in a way that money is borrowed with favorable terms but paid back such that additional funds are generated to finance other users (Turan a and b, 1993: 156 and Turan, forthcoming)

Increasing the available supply of water through reaching new sources, it appears, is mainly a responsibility of the countries which want to do that, but the organizational structures we have already talked about may be of relevance here. Clearly the universal organization which is responsible for the dissemination of information and technology might also render assistance in the field of increasing the available supplies of water through discovering and making use of new or unused sources. As regards agencies which might help with the financing of projects designed to generate new water for consumption, there are a number of international lending agencies active in this field already including the World Bank, the International finance Corporation, International Development Association, and a number of regional development banks such as the Asian Development Bank and the Islamic Development Bank.

The development of water sharing systems is a matter of basin wide cooperation. The UN has been involved only in one water sharing arrangement, the Indus River Treaty. There, the water were allocated in such a way that the two contestants, namely India and Pakistan, would use water from different sections and subsidiaries of the river. Thus, the need for cooperation were rendered unnecessary after the initial agreement was reached (Lowi, 1993: 10) A role for the UN in affecting water sharing arrangements does not look promising. The sale of water from one country to another, on the other hand, is a commercial activity which may

best be taken care of by the market forces. The only possible role for the UN might be to extend support to research in water transport systems. In discussions with an engineer who has designed what appears to be relatively inexpensive system of transporting water through the seas, for example, I have learned that a 2 million dollar experiment would demonstrate the feasibility of this system which looks convincing in the books but as yet, untried.

Structural Shifts in the Demand for Water

Structural shifts in demand as a way of reducing water dependency of societies, river basins and regions which do not have a sufficient supply is a difficult feat to achieve. This requires fundamental commitments on the part of societies which the UN and other international organizations would not be able influence easily. The determinants of structure are deeply felt national political choices based on culture, belief, and fundamental evaluations of the world. International agencies including the UN can be helpful only in instances where governments are decided on bringing about structural shifts but are incapable of realizing it by themselves for lack of know-how or financial means. Such shifts also require massive amount of resources which organizations like the UN do not have. Therefore, their potential contribution in this area is limited.

SOME CONSTRAINTS ON THE ROLE THE UN CAN PLAY IN WATER PROBLEMS

In the preceding discussion, some common problems which emerge in water utilization, the particular problems transboundary waters present, some solutions to these problems and whether the United Nations can be helpful in helping address and solve these problems and how, has all been taken up. Needless to say, the discussion is not exhaustive, and the Middle East has received more attention than other parts of the world. This being so, a final question may be raised regarding the role the UN can play in this area. Are there considerations to be paid particular attention to when we are discussing a role for the United Nations? Several constraints may be listed in searching for a role for the UN to be functional in bringing about solutions.

We should be aware that if there is a feeling among the riparians that the presence of a third party would facilitate compromises which all think would lead to some mutual benefit, then a role for the UN may be facilitated (See also Kirmani, 1990: 205) Plans devised by third parties

without significant interest on the part of the riparians tend not to be supported by those who are most closely affected, i. e. the riparians. Expressed differently, there has to be a felt need among the riparians, and the external solutions devised such as those by the UN must in one way or another respond to this need.

This brings two corollaries which has to be spelled out also. First, in most river basins, there are differences between the power positions of the riparians. For example, the upper riparian tends to be in a favored position because that is where the water originates from and therefore flows to the lower basin may be controlled. But, some of the lower riparians may be stronger militarily or control resources which they may mobilize against the upper riparian. Any arrangement which tries to ignore the power relationships in a basin is likely not to be successful. In this context, we should note that there is a tendency for the weaker riparians to mobilize international support including those from agencies like the UN as a counterbalancing force to the stronger neighbor. This tends to be counterproductive since it turns the stronger riparian against international involvement in the solution of problems. A more appropriate strategy must be one which recognizes the power relationships in a basin and builds programs taking that into consideration.

Second, the involvement of international organizations in regional and basin wide questions may bring with it into the problem solving area a number of actors whose positions and behavior are determined by concerns which have little to do with the immediate situation and problem at hand. Therefore, it is important to make sure that the riparians in a basin and/or countries of a region assume or be given a leading role in the activities of international organizations as those activities relate to the former. Otherwise, the motives for cooperating with an international organizations is likely to be reduced, at least, for some of the countries in a region.

Finally, we may find that sovereignty may stand in the way of effective solutions and economically rational behavior on the part of the states, but that is a reality which no international organization can ignore if it wants to maintain effectiveness in helping bring about solutions to water problems despite prodding from powerful members sometimes that the preferences of less powerful could be "not overemphasized."

Our discussion, it is hoped, has shown that an organization like the United Nations can be highly instrumental in contributing to the management of water problems and on some occasions, contribute significantly to the achievement of solutions. If these functions are achieved successfully, then the UN may be able to serve the ultimate end it was established for, the realization of peace. Success is more likely to obtain, if the constraints under which an international organization operates is taken into consideration from the very beginning.

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