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# WATER WARS

***by Joyce R. Starr***

The Middle East water crisis is a strategic orphan that no country or international body seems ready to adopt. Despite irrefutable evidence that the region is approaching dangerous water shortages and contamination, Western leaders have so far failed to treat the issue as a strategic priority. Yet when the current Persian Gulf war ends, the water crisis could erupt. This intensifying security issue requires sustained policy actions as well as new bureaucratic and consultative structures.

As early as the mid-1980s, U.S. government intelligence services estimated that there were at least 10 places in the world where war could break out over dwindling shared water---the majority in the Middle East. Jordan, Israel, Cyprus, Malta, and the countries of the Arabian Peninsula are sliding into the perilous zone where all available fresh surface and groundwater supplies will be fully utilized.

Algeria, Egypt, Morocco, and Tunisia face similar prospects in 10 to 20 years. Morocco has made serious efforts in the water and sanitation sectors. Still, that country faces the prospect of a declining water supply beyond the year 2000, when its population is projected to grow to 31 million.

Algeria, Israel, the West Bank, Gaza, Jordan, Tunisia, and Yemen are already facing a "water barrier" requiring accelerated efforts, investments, regulations, and controls just to keep apace of spiraling populations. Middle Eastern and North African countries combined will absorb 80 million people by the close of the 1990s, pitting the Davidian capacity of existing water and sanitation services against the Goliath of demand.

The human toll translates into tragic statistics. The United Nations International Children's Emergency Fund (UNICEF) reports, for example, that 40,000 children worldwide---a majority of them on the African continent---are dying daily from hunger or disease caused by lack of water or contaminated water. At the turn of this century, almost 40 per cent of the African population will be at risk of death or disease from water scarcity or contamination.

Yet the Middle East and North Africa are failing to confront overall water shortages. Water consumption for all uses is still less than available water, although fresh water is increasingly scarce throughout the region. The challenges are to make water available at an acceptable cost in places where it is most needed and to dramatically improve the management of existing water resources.

According to the World Bank, the Middle East has the highest median cost of water supply and sanitation in the world. Capital costs of water reached a median of $300 per capita in 1985, about twice those on the American continent and more than five times those in Southeast Asia. Given its burdensome population growth rates, the region cannot afford to expand water supplies at current exorbitant prices.

Israel, Egypt, Jordan, Syria, Tunisia, and Turkey are the only countries in the region that have instituted tariff systems for municipal and industrial water use. Minimal fees for irrigation levied by Middle East nations, however, do not recover even the costs of operation and maintenance. The Gulf states are also exhausting strategic groundwater reserves for the production of crops that could be imported at a lower price.

But efficient pricing and internal management alone, without effective cooperation among countries, will still not resolve the Middle East water puzzle. The Gulf states, for example, use natural gas byproducts from oil drilling to distill water even though waters in neighboring countries flow freely into the ocean. These states could rechannel oil funds to pay poorer countries for available water, while saving their energy and the resulting environmental degradation.

Moreover, with Middle East population growth averaging a staggering 3 per cent annually, the mere prospect of overflowing sewage could bring Middle Easterners to loggerheads. The annual waste-water collection from the Greater Cairo area alone is equivalent to the total amount of water used yearly for domestic, industrial, and irrigation purposes in the entire country of Jordan. Without regional cooperation over water and waste management, sewage could eventually become a catalyst for armed conflict in the Middle East.

Middle Eastern leaders are acutely conscious of the potential for conflict stemming from chronic water shortages. "The only matter that could take Egypt to war again is water," declared President Anwar Sadat in the spring of 1979, only days after signing the historic peace treaty with Israel. His unveiled threat was not directed at Israel, but at Ethiopia, the upstream neighbor that controls 85 per cent of the headwaters of Egypt's life line, the Nile river. In 1990 Jordan's King Hussein issued similar warlike declarations.

Most countries in the Middle East are linked to one another by common aquifers subject to overwithdrawal or overcontamination. Iraqi leader Saddam Hussein's rationale for invading Kuwait in August 1990 was the latter's overpumping of shared oil reserves. How long will it be before aquifer conflict becomes common terminology in the lexicon of Middle East specialists?

Water security will soon rank with military security in the war rooms of defense ministries. Strategic coordination of Saudi Arabia's water supplies is clearly crucial for the defense of the kingdom. Sixty per cent of the world's desalination capacity is in the Persian Gulf countries. Saudi Arabia's desalinated water alone exceeds 30 per cent of global production, while Kuwait and all the other Gulf states are almost totally dependent on their desalting plants for their fresh water supply. The Saudis' private worries that their immense desalination plants, the size of small cities, would become targets for aggression have suddenly become a global nightmare.

Indeed, every one of the Gulf states is strategically vulnerable to full attack or sabotage on their desalting capability.

Saudi Arabia's concerns over water became a priority for the U.S. government when it was faced with maintaining several hundred thousand thirsty American troops in the Saudi desert. The Defense Department has so far relied on bottled water plants in Saudi Arabia and the United Arab Emirates (UAE). Reportedly, the Water Resources Management Action Group, an interagency group under the direction of the Department of Defense, has plans for the provision of potable water to troops in the field in the event Saudi and UAE supplies are disrupted. Yet the price the United States would have to pay to ship water to its troops could be much greater than the price of oil.

The United States also shipped portable desalination units to Saudi Arabia. Water tankers were allegedly given as high a priority on military aircraft as armor and weaponry, a special reserve unit dealing with water supply was activated, and American experts were assigned to identify water sources in unpopulated areas close to the Kuwaiti and Iraqi borders. Nevertheless, according to Edward Badolato, former deputy assistant secretary for energy emergencies at the Department of Energy, the U.S. government "is doing almost nothing" to anticipate sabotage of pumping stations, treatment plants, pipelines, or dams in the Middle East. More than a thousand terrorist attacks were directed against energy targets around the world in 1990. The U.S. Corps of Engineers, which built a camp for 4,000 airmen in Saudi Arabia with state-of-the-art engineering, has developed defensive security plans to protect U. S. domestic water facilities, but not facilities overseas. "We're not equipped to deal with it," said Badolato. "We haven't focused on the water problem. We're barely capable of focusing on oil."

Water, communication, and transportation are fundamental to economic survival, with energy as the common denominator. Leon Awerbuch, manager for power and desalination at the Bechtel Corporation, points out that almost all of the desalting plants in Saudi Arabia and Kuwait are dual-purpose power/desalination facilities. More-over, the majority of water used for Gulf petrochemical production comes from desalination facilities. The more important works in Saudi Arabia, as in other Middle East countries, are loosely ringed by troops and checkpoints---and even equipped with a few missiles---but the overall level of protection, insists Badolato, is no more than the security provided to postal or telephone systems.

# Sharing the Nile

A decade of drought in East Africa has depleted the Nile waters on which Egypt depends. The river provides 55.5 billion cubic meters of water--more than 86 per cent of the total used in Egypt each year. During the summer of 1988, the Nile dropped to its lowest point in a century, forcing Egyptian authorities to dip into Lake Nasser reserves.

The crisis underscored the life-or-death implications for Egypt's economy of a continuing decline in Nile waters. Tourism revenues will be threatened as hotels are unable to obtain water for drinking and sanitary services, and leisure vessels will not be able to navigate the river. Oil export revenues could dry up as oil is diverted to generate the 28 per cent of the country's power normally produced by the Nile. Moreover, Egypt's food production could be crippled because

almost all its farming depends on Nile flood irrigation. Egypt already imports approximately 50 per cent of its food requirements, and an increase in imports would further burden its strained economy. Relaxing state subsidies on food prices is hardly a politically attractive choice, given the food riots President Anwar Sadat faced when he tried to comply with International Monetary Fund austerity measures in February 1977.

Yet, while regional supplies are falling, Egypt's water needs are increasing at an alarming rate because of the country's astonishing population growth, projected to reach 75 million by the year 2000. The last country along the path of the Nile, Egypt has little control over the actions of eight upstream governments. Foreign Minister Boutros Ghali maintains that the "national security of Egypt is...a question of water."

In September 1989 Ghali sounded the water alarm to members of the U.S. Congress. He forecast that if current circumstances persist, Egypt and the Sudan will experience a severe deficit in water resources by the year 2010, both requiring 5 billion cubic meters per year. Egypt has almost no rain---about three inches a year---and only 50 per cent of Sudan's agriculture is irrigated by rainfall. The countries bordering Lake Victoria---Kenya, Tanzania, Uganda, and to some extent Rwanda---will require a similar amount of water---at least 10 billion cubic meters per year---in the next two decades. "What is worse is that each Nile country expects different benefits from the control and management of water resources," Ghali stated, adding:

The other African countries...have not reached the level of agriculture through irrigation that we have, and therefore are not as interested in the problem of water scarcity. It is the classic difference in attitudes found among upstream and downstream countries which are on the same international river.

Even in the best of circumstances, most of the Nile countries will be unable to generate sufficient capital to finance critically needed water storage and management projects without massive assistance from donor nations and lending institutions. Africa's foreign debt is approximately $260 billion, with Nile basin countries sharing at least $80 billion of that burden. As Ghali noted, assistance from international organizations and donor countries will be impossible to get "unless we have not only stability, but also a consensus among us." Despite years of effort, however, no formal protocol yet exists among all riparians for a Nile water-sharing plan. Ethiopia is torn by internal insurgency, as is the Sudan. The Ethiopians also have enduring fears that Egypt will misuse the waters of the Nile.

Nevertheless, the framework for a comprehensive Nile basin plan does exist. Egypt succeeded in forming a consultative group comprising all the Nile countries, called the *Undugu* Group, or "fraternity" in Swahili. In recent *Undugu* planning meetings, the Egyptians presented a promising long-range scheme for tapping the Nile to generate massive electric power for export to other regions in exchange for hard currency, which in turn would be used for water and irrigation projects in the Nile countries.

According to the Egyptian plan, the electricity produced by the upstream Inga Dam in Uganda and the Aswan Dam in Egypt would be linked by transmission lines to the downstream countries, including Egypt, and beyond to Jordan, Syria, Turkey, and the European Community. Additional

hydroelectric dams are envisioned in the Sudan, on Lake Mobutu in Zaire, and on Lake Albert in Uganda, all of which would feed into the intercontinental grid. Pollution-free energy would be sold to the north, as a quid pro quo for capital development funds. A plan of such scope and vision may be the only way to finally bring a water-sharing agreement to these nations.

By invading Kuwait, Iraq also forged a link between Egypt's water security concerns as an African state and its Middle East national security agenda. The Kuwait Fund for Arab Economic Development and other Gulf financial institutions expressed intentions in July 1990 to underwrite Egypt's North Sinai agriculture project estimated at more than $1.3 billion. The project was designed by the U.N.'s Food and Agriculture Organization to expand Egyptian settlement in the Sinai and increase agricultural production. Ninety-seven per cent of Egyptian territory is barren desert, with 52 million Egyptians concentrated on 3 per cent of the land. Egypt's population also gains an additional 1 million people every 10 months. The loss of Kuwaiti and Gulf potential assistance to make the desert bloom was perhaps another fear rallying Egypt to the American side in the current crisis.

Farther east, water sharing between Israel and Jordan has remained relatively stable for the last several decades, albeit with occasional flare-ups. Thus Israeli government authorities initially dismissed King Hussein's 1990 suggestions that water disputes could lead to war as a ploy to open up the pipeline of desperately needed Arab aid. Still, there was a sense of foreboding that the king would resort to the water issue to inflame public opinion.

It appears, however, that Hussein's wrath may have been directed less at water sharing than at Israeli reluctance to assent to World Bank funding for the Wahda (Unity) Dam on the upper Yarmuk river. The dam will regulate the water supply, ensuring sorely needed water for the Jordan Valley and vital municipal and industrial water for the Amman-Zarqa urban complex. But the World Bank will not proceed with financial support for international water projects unless all riparians to a particular project signal their agreement. Israel has withheld its approval, contingent on being assured of what it deems a fair share of the waters. Because the Yarmuk contributes some 3 per cent of Israel's national water supply, the Israelis contend that the Yarmuk project could seriously affect their ability to meet growing water demands. Fears and counter-fears have resulted in the loss of valuable time in a race against a common crisis, whereas a resolution could benefit all riparians---Israel, Jordan, and Syria.

One of Israel's strategic concerns in granting territory to the Palestinians is the future of the Yarkon/Taninim mountain aquifer that lies beneath both pre-1967 ("Green Line") Israel and the West Bank. However, a variety of Israeli, Palestinian, and foreign experts contend that 80, 60, 40, or 20 per cent of the aquifier lies under the West Bank---depending on the expert speaking. There may be more than one truth. Theoretically, 70 to 80 per cent of the aquifer could be in the West Bank, as well as 70 to 80 per cent of the waters recharged by rain. However, all of these recharged waters flow westward toward the coastal plain and the Mediterranean Sea. Israel pumps the majority of the naturally recharged waters, which it has done since the mid-1960s, to sustain its agricultural, industrial, and population growth. The West Bank aquifer supplies 25-40 per cent of Israel's waters, while underground resources, waste-water reclamation, catchments, saline springs, and other sources provide the remainder.

Palestinian experts generally acknowledge that Israel provides requisite water to the West Bank for domestic and industrial use. They nevertheless claim that Israel refuses sufficient water for agricultural expansion, which is viewed as the life-force of economic viability for the territories. Israeli authorities respond that agriculture has been the primary culprit draining the aquifer's resources.

Both Israeli Jews and Israeli Arabs use more water per capita for domestic purposes than do West Bank and Gaza Strip Palestinians. Domestic and industrial uses combined, however, account for less than 30 per cent of Israel's supply, while agriculture uses the most water---not only in Israel, but throughout the Middle East. Water-absorbing crops like Israeli cotton or Jordanian bananas contribute to export income while ravaging the water supply.

The agricultural sector supplies 5 per cent of Israel's gross national product but drains more than 70 per cent of the country's water. Israeli farmers have been forced to accept a 37 per cent reduction in water over the last year for certain crops, while Israelis living in the West Bank are prohibited from engaging in extensive farming. Already exploited to dangerous limits, the aquifer will become increasingly saline and sustain irreparable damage through overuse or free drilling by either side.

Israel alone is currently using its water resources at between 15 and 20 per cent beyond their natural replenishment rate, causing water table levels to drop and shallow wells to go dry. The Sea of Galilee, or Lake Kinneret, which has been supplying almost one-third of Israel's requirements, is at its lowest level in 60 years. The Israeli government intends to declare a state of emergency over the country's waters if the drought continues. State Comptroller Miriam Ben Porat issued a special report in January 1991, confirming that "in practical terms, Israel has no water reserves in its reservoirs." Ben Porat blamed the Agriculture Ministry for allocating too much water to farmers while ignoring warnings of shortages. "Today, there is a real danger that it will be impossible to provide water in enough quantity and quality even in the short-term," she stated.

The Gaza Strip, which is semiarid, claims only one aquifer. Contamination has reached a critical level because of the heavy local use of pesticides and fertilizers and the lack of services to remove or treat raw sewage in many towns and villages. Heavy pumping has also caused seawater intrusion. Gaza's water will be unusable by the year 2000, when its population will approach 1 million.

Israel is laying pipes to pump water to the Gaza Strip from its own reserves. But with an expected 1 to 2 million Soviet Jews arriving in the coming decade---added to an estimated 5.4 million other Israelis by the year 2000--there is simply no way that Israel, the West Bank, or Gaza can meet their water requirements unless Israel reclaims sewage at a faster pace, desalinates water at an accelerated rate and cost, or imports water. In addition, Israel had almost no rain over the past year. A prolonged drought could easily turn a critical situation into a catastrophe.

West Bank Palestinians obtain their water through pre-1967 wells at no charge and through the Israeli water carrier for a fee. Some Israeli authorities claim that Israeli settlers and Palestinians

in the territories pay the Israeli government equal rates for water. Palestinians charge that the Israeli government subsidizes water for the settlers, who use more than their fair share.

Volumes of articles have been written on this subject, and yet there is no common pool of reliable, neutral data to draw upon. All parties to the conflict---including academics---have thus far tended to present facts, interpret figures, and recycle newspaper reporting according to their own political preferences. The one fact that is indisputable, however, is that the Palestinians have no decision-making power in their own water future. Yet, ironically, without a comprehensive water-sharing agreement or understanding between Israel, the West Bank, Jordan, and Syria, on the one hand, and Israel and the Gaza Strip on the other, there can be no policy road map to a just allocation scheme.

The parties to the conflict are simply quibbling about numbers that may or may not be true. The reality is that Israel, the West Bank and Gaza, and Jordan are facing a combined water deficit of at least 300-400 million cubic meters per year (and some estimate the figures to be as high as 500-600 million cubic meters). This is aggravated by drought conditions. A way must be found to meet this deficit at a cost the parties can afford, through either technological applications or importation of water.

As Israel searches farther afield for water, negotiations with private Turkish firms become increasingly attractive. One potential scheme would transport water from Turkey in flexible barges or floating bags. The cost of associated infrastructure including special terminals and additional pipelines could add $200 million alone to the cost of the water. Although Agriculture Minister Rafael Eitan said in November 1990 that the Israeli government would not import water, he encouraged developing private importing arrangements.

Fact-finding talks between the Israeli Water Commission and Turkish companies are still in the preliminary stages. "If the cost of water is too high," said one Israeli authority, "there will be no deal." Meanwhile, adverse publicity and political demarches in the Arab world have also slowed the discussions.

The Jordan and Yarmuk River basins are well suited to integrated development, but all joint schemes proposed have been victim to Arab-Israeli or Syrian-Jordanian enmity. The proposed Wahda Dam, which would store and utilize Yarmuk River water otherwise discharged into the Jordan River and ultimately the Dead Sea, may in fact buy Jordan less than a five-year respite from shortages, given the country's yearly population growth rate of 3.8 per cent---one of the world's highest.

Consequently, to meet its growing water needs, Jordan is relying on incremental solutions, including deeper drilling for groundwater sources and relatively expensive technologies like drip irrigation. One promising approach is solar-powered pumping and desalination of brackish groundwater in the Jordan River valley south of the Dead Sea; but the initial costs of such a scheme are prohibitive for a country in Jordan's economic straits. Technology and engineering can help redress Jordan's water problems, but regional political cooperation among the local river-sharing states must be achieved first to jointly develop and make use of the area's surface water sources.

Compared with its neighbors, Lebanon has plentiful water resources, which could be shared. Its numerous rivers and underground systems are reliably recharged from ample precipitation, especially snow in the mountains. A national water shortage engineering and management system could turn Lebanon into a lucrative Middle East water haven, were there the vision and stability to realize it. Instead, the country is crippled by severe water shortages in Beirut, seawater intrusion in the coastal aquifer, farm lands neglected by lack of irrigation water, and pipelines and aquifers severely damaged by civil war.

# Turkey's Water Plan

Turkey, with its abundance of water, is in a position to serve as a balancing force in the Middle East. Since the mid-1980s, current President and former Prime Minister Turgut Ozal has been championing the concept of a Turkish water "peace pipeline" to serve both Gulf and Near East countries. The proposal is to take water from two rivers, the Seyhan and Ceyhan, that empty into the Mediterranean, and transport it southward through Syria, Jordan, and Saudi Arabia to the Gulf. Two massive pipelines would supply water to these countries---one to Jordanian and Syrian cities, and the other to Bahrain, Kuwait, Oman, Qatar, Saudi Arabia, and the UAE. Altogether the project could bring potable water to more than 15 million people at a construction cost of more than $20 billion. Local fabrication of prestressed concrete cylinder pipes and other components would generate numerous industries and jobs in the region.

But the "peace pipeline," if it can be financed, would take at least eight to ten years to construct, and the financing itself depends upon all the states involved working out a joint water-sharing agreement, which has not been attainable for even individual projects in the past. The Saudis and Kuwaitis have not accepted Ozal's request for both approval and investment, on political grounds as well as arguments that the price of water delivered through the pipeline would be too high compared to local desalination.

Senior Kuwaiti and Saudi Arabian officials have also feared giving the Turks a role in and possible control over their water sovereignty. The pipeline could attract more favorable attention once the Kuwaiti crisis subsides, although a water carrier that passes through several countries would be vulnerable to attack. Regardless of the constraints, Ozal has taken the Middle East water issue to a new level of public diplomacy.

Although Turkey, which controls the headwaters of the Tigris and Euphrates rivers, is generously endowed with water, 40 per cent of its arable land is in southeastern Anatolia, which suffers from a general shortage of water. To alleviate this shortage, Turkey in 1983 initiated the South East Anatolia Development Project, also known by its Turkish acronym GAP, a series of 13 subprojects comprising irrigation and hydroelectric dam sites, including the massive Ataturk Dam. Seven of these sites are located on the Euphrates River and the other six are on the Tigris.

Upon completion, the project will supply approximately 24 billion kilowatt-hours of energy (almost half of Turkey's current energy needs) and open 1.6 million hectares of land to irrigated cultivation. The Turkish government hopes to sell the additional food production to Europe and the Middle East, which is expected to import $20 billion worth of foodstuffs by the end of the

century. However, at present levels of investment, it could take the Turkish Government more than 50 years to complete the total program.

GAP has raised Syrian and Iraqi anxieties over the availability of water for their own agricultural and industrial projects. Syria and Iraq fear that the Ataturk Dam could divert most of the Euphrates' flow into Turkey's Urfa Plain, forcing Iraqi and Syrian dependence on Turkish water. Iraq, long concerned about the effects of Syrian development schemes on the Euphrates, is now arguing that Turkey's dam construction could reduce the river's annual flow into Iraq of 22 billion cubic meters anywhere from 50 to 75 per cent. Turkish officials contend that this is technically impossible and that Turkey would also be injured in any attempt to store water over a prolonged period. Once again, the lack of shared technical data and neutral analysis feeds fear and mistrust.

Turkey contributed to its downstream neighbor's fear in November 1989 by announcing that it would hold back the flow of the Euphrates for one month, starting in January 1990, in order to begin filling the Ataturk Dam. Some Middle East sources suggest that Saddam Hussein read the action as part of a U.S. plot against Iraq. To allay concerns, the Turkish government did provide "detailed technical information" to both Syria and Iraq on this water diversion. In addition, Turkey offered to compensate her neighbors for the month-long loss of Euphrates water by boosting the river's flow between November and January.

During the height of the tension, Ozal emphasized his commitment to resolve water disputes with Iraq and Syria, acknowledging their concerns. "I appreciate their fears," he said, "but we will not harm them. To the contrary, Turkey will more than make up for the water shortage. I have tried to convince Iraq and Syria of our positive intentions." As would be expected, however, Iraq and Syria reacted to the impoundment of Euphrates water with a surge of diplomatic cables, visits, and warnings.

These problems have been exacerbated by the current drought. This past year was one of the region's driest in half a century, resulting in a significant drop in the level of the Euphrates. In an average year, the Euphrates' capacity is an estimated 31,820 million cubic meters, a quantity that can satisfy the demands of Turkey, Syria, and Iraq. However, in 1989 the level fell to 16,870 million cubic meters, causing serious water shortages in all three countries.

The drought depressed Turkey's economy, but Syria's situation is even worse. The low level of the Euphrates, combined with pollution from Syrian pesticides, chemicals, and salt, has forced the government to cut back on the supply of drinking water and electricity to Damascus, Aleppo, and several other cities. Damascus is without water most nights, and is estimated to lose as much as 30 per cent of its water from old, leaking pipes.

Unlike Syria, Iraq is fortunate in having access to the less-exploited Tigris. Before the Kuwaiti crisis, Iraq was planning to invest over $300 million in more than 20 flood control, hydroelectric, water storage, and irrigation projects on the Tigris, its tributaries, and Lake Tharther. A major scheme is intended to divert water from the Tigris into Lake Tharther, and then into the Euphrates if Euphrates water is insufficient to irrigate Iraqi croplands.

The past record of disputes over water is evident. In 1975 Iraq and Syria came to the brink of war over Syria's reduction of the flow of the Euphrates to fill the Ath-Thawrah Dam, which Iraq claimed had adversely affected 3 million Iraqi farmers. Turkey also reportedly uncovered an alleged Syrian plot to blow up the Ataturk Dam, which Syria views as a threat to its farmers. In 1987 Ankara allegedly hinted at a cut in the flow of Euphrates water to Syria over Syrian support for Kurdish terrorists, an enduring source of tension between the two countries. In October 1989, Syrian MIGs on a "training mission" shot down a Turkish survey plane well within Turkey's borders. Five people were killed in the incident, which was reportedly linked to Syrian-Turkish tensions over water.

The friction between Iraq, Syria, and Turkey over water access can only be defused through an explicit agreement among the three countries covering water allocations in the Tigris and Euphrates basins. But discussions have dragged on inconclusively since the 1960s. For example, the Trilateral Commission on the Euphrates has met periodically, but has discussed only technical matters such as river flow rates and rainfall data. In the absence of a formal protocol on water-basin management and apportionment among riparians, the World Bank and other multilateral lending agencies have been unable to offer a financing package for GAP and related infrastructure development projects.

Meanwhile, the downstream riparians are suffering from acute salinity, and none of the parties can meet their development goals. A comprehensive management plan would eliminate Iraqi and Syrian fears, while increasing the generated benefits for all three countries. Continued stalemate and the unilateral construction of new dams, by contrast, could lead to escalating disputes and armed confrontation.

# Responding to the Emergency

The United States could play a leading role in bringing together the parties to Middle East water problems, ending a period of sluggish progress toward a common appreciation of a common threat. The United States also has unique expertise on water to assist the Middle East with the emerging crisis. The U. S. government, through its many departments and agencies, has undertaken extensive technical water assistance programs throughout the world. The quiet pool of dedicated water-related talent, hidden in the recesses of the U.S. government, could mark the United States as a leader in the global effort to respond to the water emergency.

Projects for every conceivable purpose have been designed and implemented, including waste-water treatment plants, dams, feasibility studies, training programs for regional experts, and the like. Yet there are scant resources available for some of the most compelling priorities: coordination between U.S. government bodies and other donor governments and institutions, improved data collection in the field, accelerated training programs for Middle Eastern and African water specialists, or investment in breakthrough technologies. Although there is considerable expertise and concern throughout the various agencies, the U. S. government does not currently have the will to demonstrate significant global leadership on the water issue.

In 1987, M. Peter McPherson, then administrator of the U.S. Agency for International Development (AID) and later undersecretary of the Treasury, noted that the "development of

water resources is a critical foreign policy issue for the United States." Four years have passed, and McPherson's message on water has yet to catch the attention of the foreign policy establishment---both inside and outside the government.

Despite well-intentioned efforts, federal departments rarely undertake comprehensive, anticipatory planning on water challenges abroad. American experts are in the vanguard in developing conflict resolution techniques on water sharing. Yet no single agency has definitive responsibility, let alone an adequate, congressionally authorized budget to carve a foreign-policy niche for water. Thus in place of a broad strategic approach to the water dilemmas of the Middle East, the United States continues to rely on an ad hoc response. AID has spent billions of dollars on regional water projects without clearly defined, all-encompassing foreign-policy objectives.

The U.N. declared the 1980s the International Drinking Water Supply and Sanitation Decade. The World Bank and U.N. organizations---notably the U.N. Development Programme (UNDP), UNICEF, the U.N. Environment Programme, the World Health Organization, and the U.N. Center for Human Settlements---have made a resolute effort to slow the ticking clock. But neither the World Bank, nor any of the major U.N. bodies has the effective political mandate or the charter to negotiate water controversies between countries unless specifically requested or to dictate appropriate water management. Instead, the most concerned international players find themselves walking a political tightwire leagues above the seas and rivers, with little expectation of a net.

The U.N.'s Decade on Water realized the provision of water installations for 700 million new users and sanitary facilities for 350 million persons. The World Bank and three multilateral regional banks---the African Development Bank, the Asian Development Bank, and the Inter-American Development Bank---provided major contributions. But the billions spent on water to date cannot keep up with exploding populations, nor have funds been linked to foreign-policy strategies for sustainable economic growth.

To respond to this emergency, the Global Water Summit Initiative was launched in January 1989 to galvanize the highest level of political leadership within donor countries and water-resource regions to face their common future. More than 40 African countries actively participated in a dialogue for action at the inaugural African Water Summit hosted by Mubarak in June 1990. The resulting Cairo Water Declaration recognized that through cooperation African water and land resources are potentially capable of sustaining several times the present population.

In an effort to respond to the escalating Middle East water crisis, a Middle East Water Summit will be hosted by Turkish President Ozal in November 1991 in Istanbul. The themes of this dialogue will parallel a major new World Bank study that includes Middle East waters, while also targeting wider regional management issues. The UNDP will play a central role in coordinating country presentations; the World Bank, agencies of the U.N., and leading donor nations will be instrumental in guiding the event.

The Summit Initiative is directed toward resource management, not political controversy. In the years ahead the survivability of the Middle East will be driven by economic sustainability as well

as by politics. There is no more compelling resource challenge facing the region than water security.

The most constructive future approach by the United States and other donors would be to highlight water resource management as integral to regional security and stability. This would mean restructuring water-resource policies and institutions within Middle Eastern countries in accordance with plans for integrated economic development. Funds for the water sector must be substantially increased, but made conditional on determined efforts to institute appropriate pricing and management policies. Money for large projects alone will not ensure stable water futures for Middle Eastern nations, just as past funding for immense pet projects failed to prevent the current crisis.

The U.S. government must stop providing piecemeal aid for water projects that have little or no relationship to program planning by other donor institutions and governments. AID has maintained an informal dialogue with the World Bank over the last decade on water policy--perhaps more communication than goes on among the various agencies of the U. S. government. Yet this informal approach is ineffective, given the gravity of the situation. There must be systematic coordination among the principal players in the World Bank, U.N. agencies, the United States, and other donor governments and funds. Specifically, an office should be created within the U.S. Department of State, reporting directly to the secretary of state, that ensures coordination among U.S. agencies and with other donor institutions on water-resource projects.

The Middle East Water Summit in Istanbul is the first opportunity for decision makers to collectively address the need for a comprehensive approach to water management strategy in the Middle East. Its success, however, will be contingent on the readiness of government leaders and the international community to link water policy to larger objectives and to act decisively to carry it out. President George Bush, Secretary of State James Baker, and their colleagues in the Western alliance, the Soviet Union, and Japan must elevate the water issue to its proper strategic role in future Middle East policy planning.

A senior State Department official said recently, "Yes, water problems are very interesting. But we're dealing with global warming this year." Leading nongovernmental funding groups---reflecting the myopia of government bureaucracies---acknowledge the environmental importance of water, but explain that it is simply not on their agenda. Obliged to await a future time when it is either convenient or trendy to focus on water security, Middle Eastern countries may be beyond the point where our belated attention will stave off disaster.

Richard Armitage, former assistant secretary of defense for international security affairs, and currently the Wahda Dam mediator for the State Department, believes that American attention to this security arena is long overdue: "It is time for the United States to acknowledge that the water crisis in the Middle East is worsening and adding an extra dimension to prospective war scenarios....the time may be right for the administration to organize a long-term, multinational effort in this arena."

The Istanbul summit will test the willingness and resolve of the United States and its allies to finally chart a forward-looking rather than reactive policy in the Middle East. A key policy

proposal to be reviewed at the summit will call for the creation of a Middle East Water Resources Policy Center with the mandate to pursue regional policy coordination, data collection, management training, and assessment of investment of needs, while also providing a forum for conflict resolution. The center should be under a multilateral umbrella of donor countries and institutions, with the leadership provided by existing U.N. organizations.

The financial requirements for such a center to be effective, and the requisite investments in water infrastructure and technology to ensure regional water security, are a mere fraction of present military expenditures in the Middle East. As Farouk El Baz, director of the Center for Remote Sensing at Boston University, has noted, the proposed center would strengthen the work of existing institutions.

Even before the Gulf crisis subsides, the United States, its allied partners, and the Soviet Union should actively encourage regional dialogue over contentious resource issues. To the oft-repeated question, "Can interstate water problems be seriously addressed before the larger political questions in the region are resolved?" there is only one response: A passive governmental approach to Middle East water scarcity will doom any future peace initiative. Middle East hatred is bountiful but Middle East water is at the point of no return. It is vital to the economic and political survivability of the region to sit down at the negotiating table. Indeed, a creative response to water cooperation could forge a new path to peace.

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