

John Kolars
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Water in the Middle East -- 1990

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John Kolars, Professor of Geography and
Near Eastern Studies, University of
Michigan, Ann Arbor, Michigan

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It is an honor to be asked to testify before this committee and I am grateful for the opportunity to appear here. The growing water shortage in the Middle East has profound implications for the continuing search for peace and well being in that region. Mr. Chairman, I request that my full statement and the articles accompanying it be submitted for the record.

The Water Deficit Problem

The people of the Middle East, particularly the Arabic speaking people, are on the verge of confronting a crisis the dimensions of which will make all others that have gone before simple by comparison. Water related events in the Middle East (including North Africa) including growing domestic shortages and the possible unilateral control of international streams by one or another country, are appearing with increasing frequency in the world press. Domestic security, food for growing populations, settlement of territorial disputes such as that over the West Bank and the Golan Heights, as well as the continued well being of governments which have invested huge sums in development schemes dependent upon ample supplies of water, are all at stake.

Over fifty percent of all population in the Middle East and North Africa (excluding the Maghreb) depend either upon water from rivers which cross an international boundary before reaching them, or upon desalinized water and water drawn from deep wells. More startling, two-thirds of all Arabic speaking people in the same region depend upon river water which flows to them from non-Arabic speaking countries, while another 24 percent live in areas with no perennial surface streams whatever! That is, the latter must rely upon either well water from rapidly depleting sources or upon seawater which is expensive to purify in sufficient quantities and expensive to pump to its places of use.

These water dependent populations are increasing rapidly in number. World Bank data show a total population of 217.4 million in 1983 in the area under discussion. It is conservatively estimated that by the year 2000 an additional 119.6 million will be added to this figure, a population increase of 55 percent. Not only will these people need water to drink, but water as well for industry and all the uses that occur within cities. They will also need irrigation water to grow as much of their food as possible before turning to what they may view as potentially unreliable imports.

Sources of Water in the Middle East

There are four sources of water in the Middle East: precipitation, exotic rivers -- those rising in amply watered areas but which eventually grow smaller as they flow through deserts to the sea or inland sinks, aquifers -- underground water-filled strata, and desalinized seawater.

Turkey, Lebanon, and parts of Iran have sufficient water for both rainfed and irrigated agriculture. It is also from these countries that exotic streams flow into neighboring Arab lands. Primary among these streams are the Euphrates and Tigris Rivers, the Asi or Orontes, and the underground waters feeding the Hasbani sources of the Jordan. A similar situation exists in the southern reaches of the region where the summer monsoon blowing off the Indian Ocean onto the Ethiopian Plateau brings the life giving annual floods of the Blue Nile to northern Sudan and Egypt. Farther equatorward, a perennial input of water from the rainy tropics provides the year-round baseflow of the White Nile which joins the Blue Nile's waters at Khartoum in Sudan. From that point to the Mediterranean Sea the combined waters provide the means of life for northern Sudan and all of Egypt.

In other words, the Middle East and North Africa are bounded on both the north and the south by better watered regions which provide exotic stream flow upon which millions of Arabs depend. In areas exotic streams do not reach, particularly the Arabian Peninsula and the Libyan Sahara, millions more Arabs must rely upon wells and desalinized seawater. Consider the following: The Peninsula south of the Jordanian and Iraqi borders has an area of 1,160,481 square miles, within which not a single permanent surface stream is found. American readers will appreciate this if they consider that in our own arid west the states of North Dakota, South Dakota, Nebraska, Kansas, Oklahoma, Texas, Montana, Wyoming, Colorado and New Mexico cover only 1,115,425 square miles. If we add riverless Libya to the list, the Arab World total becomes 1,839,839 square miles. To match this in America we would have to add all the remaining weastern states plus Minnesota to the list!

Furthermore, one must remember that within these so-called "arid" American states are the sources of the Missouri, Colorado, Snake, Rio Grande, Platte, Canadian, ~~and~~ Pecos and Arkansas rivers, not to mention the Mississippi as well as numerous smaller streams.

Examples of the Water Crisis

The Euphrates River is a case in point. Petroleum-poor Turkey, driven by its need for new sources of energy, has turned to the hydro-electric potential of its many rivers, the greatest of which is the Euphrates. (At this point please see: Kolars, The Hydro-Imperative of Turkey's Search for Energy, included herein.) With this end in mind, Turkey has undertaken a gigantic development program on that river. The Southeast Anatolia Development Project (Turkish acronym GAP) is intended not only to provide hydropower but also to earn foreign exchange for the country through the sale of agricultural products to be raised on over a million hectares of land (1 ha = 2.47 acres) irrigated with water drawn from the river. If all these projects planned for GAP are to be realized the flow of the River into Syria -- an consequently later into Iraq -- will be reduced by over 50 percent. (For a discussion of the agricultural potential of this project see: "The Southeast Anatolia Project: Will it make Turkey a major Food Supplier to the Mideast?", Kolars, included herewith). A diagram and discussion showing the amount and possible timing of such depletions, both by Turkey and Syria, is also included. It is Drawn from: Kolars and Mitchell, The Euphrates River, forthcoming July 1990, U. of S. Illinois Press, Carbondale.)

Turkey is well on its way to accomplishing a major part of GAP. The Keban Dam farthest upstream is already in place and producing electricity. Next downstream, the Karakaya Dam which came on line in 1989 is also meant for hydro-electric production. Biggest of all, the Ataturk Dam is nearing completion downstream from the other two. The Ataturk will be the fourth or fifth largest dam of its kind in the world and will be used not only to produce hydro-electricity but also the waters impounded in its reservoir could eventually irrigate more than 900,000 hectares. Of this amount, 157,000 ha on the Harran Plain just north of the Syrian border are scheduled to receive water beginning in 1991. To complicate matters further, return from these fields may bring added pollution to Euphrates waters making them more difficult or impossible to reuse farther downstream in Syria and Iraq.

Nor is this the entire story, Syria, the next downstream user has similar needs for electricity and irrigation. It is

attempting to meet these demands by means of the Tabqa (Ath-Thawra) Dam which it completed in 1974 as well as with several smaller dams on the main stream and along its major tributary in Syria, the Khabur River. Perhaps 300,000 hectares of land will be irrigated in this way. Further depletion of river water plus further pollution is inevitable. The Euphrates third riparian partner is Iraq, farthest downstream and historically the first and largest user of the river's water. As many as a million hectares of irrigated land in this latter country may be jeopardized in the near future by shrinking supplies as well as by increasing pollution from both upstream users.

Crises have already occurred because of the above situation. In 1974 when Turkey and Syria began respectively to fill the reservoirs of the Keban and Ath-Thawra Dams, river flow into Iraq was reduced to a trickle. Iraq began mobilizing its armed forces and moving towards the Syrian border when intervention by the Saudi government cooled the situation. Again, in 1980, preceding the free elections following the Turkish coup at that time, Keban reservoir waters were depleted to insure electric production as a gesture to the voters. When the reservoir was refilled a smaller but potentially dangerous water shortage occurred again in Syria and Iraq. And in January of this year (1990) Turkey closed the river for thirty days in order to begin filling the Ataturk Reservoir. Turkey had previously guaranteed a continuous flow of 500 cubic meters per second across the border into Syria. Prior to January this amount had been increased for a time to 750 cms, but the overall impact of the cutoff, according to the Syrians and the Iraqis was disastrous. Electric power was curtailed in Syria and both downstream countries had to ration river water for domestic and farm use. Moreover, this brief interruption of river flow accounted for only a tiny fraction (3% to 5%) of the reservoir's total capacity. This is a point worriedly stressed by both the Iraqi and Syrian governments. (See the included translation of Turkish newspaper article, "Iraq Behind Diplomatic Maneuvers," included herein.)

In fairness to Turkey and Turkish diplomacy, President Ozal has suggested that Turkey share its surplus water with its southern, Arab neighbors by means of a "Peace Pipeline." This pipeline would be in fact two pipelines, one carrying water as far as Mecca on the west side of the peninsula and the other taking water to Sharjah in the U.A.E. (See: Kolars, "Turkey and the Middle East Pax Aquarum," included herein for a complete description of this proposal and its reception by the Arabs.)

To this point nothing has been said regarding the use of underground waters in those riverless parts of the Middle East. Such waters are finite, non-renewable in most cases, and are rapidly being depleted. (See: Kolars, "The Course of Water in the Middle East," draft copy included herein for a more thorough description and discussion of the problems associated with these kinds of waters as well as with

the use of desalinized waters to replace them.) Time does not allow a complete listing of the potential trouble spots that will be generated in the next decade as waters from all sources become scarce. For example, the USAID irrigation projects proposed in Somalia would require 85% of the waters of the Shibeli River all of which rises in Ethiopia. On the island of Cyprus, the production of citrus upon which the Turkish Cypriots depend is threatened by over-pumping of groundwater and the subsequent invasion of seawater into the aquifers while the only source of surplus water on the island is the Greek controlled Trood in the southwest which is being developed by them with Soviet aid.

Finally, peace in Israel-Jordan-Palestine ~~may~~ in the final analysis depend upon the fair sharing of available waters. Israel receives one-third of its water from Lake Kinneret (the Sea of Galilee), one-third from within its own borders, and one-third from wells and springs on the West Bank. Information taken directly from the Israeli press points out that 83 percent of West Bank waters are used by Israel and only 17 percent by West Bank Arabs. Furthermore, it has been written in Ha'aretz (3 May '89)

"Any future settlement in the West Bank must include detailed figures on the use of water resources by the local entity. It is clear that the agreement will limit the water quotas of the Palestinians and will guarantee Israeli supervision over water resources.

According to water experts, only a country contemplating suicide would agree to withdraw from the West Bank before agreeing on arrangements for long-term water use."

Perhaps Ozal's "Peace Pipeline" may become a reality if no other sources of water can be found in this area. Certainly, a much more active research interest must be taken in these matters by the United States government if we are to be prepared to take an active and informed role at any of the many prospective bargaining tables where water will be the most important item on the menu.