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1986

FOREIGN SERVICE INSTITUTE
U.S. DEPARTMENT OF STATE

6. INTERCOMMUNAL CONTACTS

The Practical Level *(Charles G. Gunnerson)*

For the last three years I have been responsible for a U.N. Development Program-World Bank global project on waste recycling. We are looking rather carefully at the use of wastewater for irrigation in Cyprus. It is one of the major elements of municipal wastes. By proper technological and institutional interventions, I believe we can reduce the costs of liquid and solid wastes management to cities by between 30 and 90 percent. These are significant savings, especially in developing countries where very often 50 percent of municipal income may be eaten up by waste management and environmental controls.

At the time of writing, Mr. Gunnerson was a Senior Project Officer in the Water and Urban Development Department of the World Bank. He is currently Environmental Engineering Advisor in the Environmental Research Laboratories, National Oceanic and Atmospheric Administration.

Talking about Water

On Cyprus, water is one of the few things that the Greeks and Turks talk to each other about. It is a matter of universal concern because there is not enough of it. The economic development of the island of Cyprus is absolutely linked to water. There is no substitute; there are no alternative sources.

The efficiency with which water is used for irrigation is a major issue. Since 1974, on the Greek Cypriot side, there have been major investments made in irrigation systems, and, as a result, much of the irrigation water is fed through high-efficiency drip or sprinkler irrigation systems. On the Turkish Cypriot side, irrigation is still carried out primarily by flooding in basins or wild flooding. Such crude systems are roughly half as efficient as the more expensive ones.

In Cyprus, irrigated agriculture has expanded, especially in coastal areas. This has caused serious overdrafts on the groundwater. In some areas the water table has been lowered by as much as two hundred feet. That makes for increased costs of well construction and pumping. In and near these areas, saltwater has intruded into the groundwater from the sea as much as two miles, and that water can no longer be used. As a result there have been losses not only in the wells, but in crops and in very valuable agricultural cropland.

The farmers' response to these shortages and the problems with the groundwater are quite interesting. They have either drilled illegal wells or, where drilling regulations are enforced, bought water from their neighbors. The effect is the same. The same amount of water is getting withdrawn as before and the same worsening situation with respect to groundwater is occurring. Hence the interest in the maximum utilization of the water that they have. This includes the reuse of municipal wastewater.

Costs for Water Development

We have identified the Nicosia and Kamares areas as sites for potential research and development in directly irrigating with wastewater. Kamares is a new refugee town constructed close to Larnaca. The costs and benefits need to be worked out by demonstrating what it takes to treat the wastewater, and then reusing it in these irrigated agricultural sites. The Greeks have made a considerable investment already for wastewater treatment at Kamares and are planning water reuse for irrigation. In Nicosia, investments made for simpler yet adequate sewage

treatment facilities have been operating for several years. Kamares would need on the order of $500,000 of additional funds not presently allocated by either government or identified from a donor. Some years ago a Food and Agriculture Organization study laid out a preliminary design for demonstrating wastewater irrigation which in 1984 dollars would cost about $800,000 to get started.

These are only the beginning of costs. If, in fact, Cyprus is going to maximize the use of its water, it is going to require much larger investments than that. There are, for example, about 38,000 acres of citrus in the Morphou area. The flood irrigation methods used there are about 45 percent efficient. To bring that up to 85 percent efficiency through use of more sophisticated systems will require an investment of somewhere around $40 to $50 million. Other major investments are needed to investigate and control seawater intrusion by injecting wastes and otherwise surplus waters into groundwater.

In general, the Greek Cypriot side has available funds from the World Bank, the European Investment Bank, commercial banks and a number of bilateral sources. This is not true on the Turkish side. About the only present source of funds available to the Turkish Cypriot side for this kind of work is the government of Turkey itself or possibly the Kuwaiti or the Saudi Development Banks. The latter two, however, would respond only to a request from the government of Cyprus. That may come, but such a request would have to be very carefully identified and programmed so that the benefits to both the Greek Cypriot and Turkish Cypriot sides would be obvious.

Prospects for a Water Compact

I have talked to officials on both sides about a water compact so that Cyprus could be looked on as a single hydrological unit and so that planning for water use and water transfers would make sense. Informally, these officials have agreed that such a compact would be useful and would eventually be necessary.

Cyprus is probably the one place in the Middle East where water may be an instrument of reconciliation, where conflicts may be resolved rather than started over water. There are some reasons for this. The actual amount of water transfers across the green line are very small. Nicosia itself is interesting. Part of its water supply comes from the Morphou area. The city buys it. They use it. It runs back downhill. Along with water supplied from the Greek Cypriot side, it runs right downhill to the Turkish Cypriot side. It is treated and is used by withdrawing from the stream. These small surface exchanges will probably continue, but they will always be minor.* Each side would benefit from research and development on water reuse.

There are opportunities here. We know that we can integrate systems around the supply of water rather than around the presumed marketing of the crops. After all, not every country in the Mediterranean world can earn most of its foreign exchange by exporting oranges to Europe, but crops can be selected within an integrated system which takes advantage of the original use and then ultimate reuse of the supplies. So it is an opportunity.

The technological issues are easy. Nevertheless it will be difficult to sell this kind of an operation to the political leadership. One thing that we have working in our favor is that we are not talking about major amounts of water. The interbasin exchanges are very small. Either side can get along without the other. The technical assistance is something that they are both interested in because it leads to better use of investment funds. That would be the only thing I think that could glue it together, plus whatever advantage the two sides might see in world opinion. It is a little step, but it would signal a growing acceptance of the need to make practical and concrete arrangements for improving the standard of living on both sides while awaiting some kind of a formal and definite political settlement.