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Prevention of water-related conflicts: Water management in regional initiatives

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My notes today are based on many years of experience in the development and management of water resources. As an expert on the topic of water, I will try to summarize the principal reasons for water crises – not the political or legal aspects, but rather the real, physical causes of crises. I believe that professional recognition of the problems and creative, professional solutions can significantly reduce friction and competition over water sources.

Conflicts within states and between states over water issues arise from water shortage resulting from two main factors. The first factor is increased over-all needs due to population growth, and increased consumption per capita due to a rise in the standard of living. The shortage of water sources is liable to get worse in the future if predictions of global warming come to pass and areas that until now were on the edge of the desert and suffered from some degree of water shortage will become subject to permanent drought and aridity. The area that I come from, the Middle East, is an example of an area with a semi-arid climate. It could be one of the first to suffer from a decline in water sources due to a reduction of rainfall and a decrease of potential water in the region.

The second reason for conflicts over water is the decreased availability of usable water due to pollution caused by uncontrolled, untreated human activities near the water sources.

Inter-state competition and controversy over water sources can of course stem from reasons not directly connected to physical needs for water – the background could be historical or social, based on border conflicts, legal claims or psychological aspects of conflict. I will concentrate, as I mentioned, on the physical, professional side, out of my understanding and belief that the right technological and organizational solutions, based on information and common knowledge of the parties involved, together with fruitful professional dialogue, have made and will continue to make a decisive contribution to moderation of the conflicts.

Conflicts arising from physical causes can be solved, or at least significantly minimized, through two main processes, which can be implemented gradually.

The first way is by using existing water more efficiently, thereby increasing productivity. Conserving water for agricultural and home use through sophisticated irrigation systems and other methods could postpone for many years the necessity for

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the second way, which is using technology to create new water sources and/or to reclaim polluted water that has been removed from the water use cycle.

Conserving water and optimizing its use can be accomplished relatively cheaply through education, guidance and public relations. What must be taken into account is that these are long-range programs that require a plan of action and a steady, ongoing budget.

If a need arises for a short-term savings in water use, this can be accomplished using simple technology. Water conservation in agriculture is accomplished by changing from flood irrigation to sprinkler or drip irrigation. An additional way is to introduce automation. With a relatively low outlay, it is possible to install a mechanism that controls the quantity of water released and monitors soil moisture.

It is also possible to reduce household water use through simple means such as installing pressure and flow valves to minimize leakage from the main pipes and to decrease the amount of water flowing through the faucets. Water loss in municipal systems can reach 20% or more of the total amount of water supplied. In addition, household wastewater piped to local cisterns or absorbed into the ground due to faulty maintenance of the sewage pipes constitutes double damage: loss of water for agricultural recycling, and pollution of the local aquifer.

More efficient use of water, through the means described above, can significantly increase the water available for use. This requires – in addition to simple, inexpensive technology – guidance and education, as well as money to finance the technology and the guidance.

After all the possibilities for conserving existing water have been exploited, if there is still a gap between the needs and the existing available water sources, and/or if the quality of these water sources has seriously deteriorated, then there is no choice but to introduce technologies for the creation of new water sources by means of desalination and purification.

The obstacle to introducing technologies for the production and reclamation of water is economic. Many areas which suffer from a shortage of water are also limited in their ability to finance the operations needed to produce or reclaim water. Agricultural enterprises in water-challenged areas usually cannot afford additional production costs. The home consumer is also not able to pay for expensive water produced through desalination or complex technological purification.

Neglecting to deal with the growing shortage is liable to lead to increased competition over the cheap natural water sources found in the natural filler areas on the border between states and an exacerbation of the dispute over the extent of water usage of each of the sides. The controversy is usually accompanied by violations of the balance and equivalence in the use of existing water sources, amid violations of the accepted rules of the game according to international law. For this reason, it is important to hold an ongoing dialogue between the sides in order to reach mutually acceptable solutions for dividing the shortages and for initiating technological projects to increase the regional water potential.

There are many ways to deal professionally with the risks, beginning with the ethical and political aspects and continuing on to technical solutions. One proven way of bringing the parties to mutual understanding of each side's goals is by examining the conflict according to the Analytical Hierarchy Process, called A.H.P. for short. The method is simple, based on four main stages:

In the first stage, the sides present their goals. Discussion allows for the neutralization by consensus of irrelevant goals, leaving only the true objectives of the parties.

In the second stage, a joint discussion is held to set the order of importance of the agreed-upon goals. Prioritizing the goals is not a technical exercise – it is integrally connected to the welfare and development objectives of the parties. Therefore, it should be done together with the decision-makers and with the aid of technical and professional advisors.

In the third stage, alternative development and management policies are presented. These are meant to provide an answer to most of the agreed-upon goals of the parties. This is a creative step involving joint thinking by experts from both sides.

In the fourth stage, a qualitative or quantitative comparison is drawn between the various development and management policies that were prepared in the previous stage. It is likely that some of the alternatives will address only some of the goals. It is also likely that a particular alternative will be preferable to one of the sides insofar as it meets its goals and, at the same time, will be less suited to the goals of the other side. However, since in the second stage of the process, the goals were prioritized according to joint, consensual order of importance, in the final analysis the best of all the policy alternatives will be the one to receive a recommendation. In this process, the option chosen constitutes a fair compromise, in which each side achieves the maximum possible part – but not all – of its goals, allowing the other side to realize part of its goals as well.

After a policy has been chosen that is acceptable to all parties, it is possible to proceed to technical issues – economic and engineering aspects – of planning the engineering projects needed to implement the policy. Furthermore, the consensual framework enables the application of understandings reached during the policy-setting process.

It is important to note/ I would like to emphasize/ that it is not always possible to find solutions completely satisfactory to all sides. However, the analytical process itself is of great value. Analysis of a structured system creates a common language and dialogue between the sides, who gain a better understanding of the needs and goals of the other side, and also facilitates an open dialogue that usually increases ongoing understandings between the sides.

The OSCE can help in all of the topics presented here. With appropriate budgetary and organizational preparation, the OSCE can offer its services in the following fields:

- Establishing a program for public relations, education, and training workshops on methods of conserving water in agriculture and home use.
- Dissemination of information and demonstrations of water production and reclamation technologies that exist in OSCE member states.
- Provision of service as a facilitator for analyzing shared water systems in order to formulate a consensual policy for the development of existing water sources, production of additional water and purification of polluted water sources through technology.
- Help in planning and/or financing projects intended to create new water sources or rehabilitate existing ones.

- Consultation on legislation, regulation, service conventions and regional agreements. These are essential companions to the physical and engineering solutions.

In summary, [I would like to point out that] many local water problems are solvable through small water plants that concentrate on solving specific problems. It is not always necessary to offer solutions based on huge, high-budget, high-tech industries. In many cases, creative thinking to solve a local problem, and its immediate implementation, is valuable as a trust-building step. Success in a modest project can have considerable impact on the fabric of relations between the sides and can lead to a change in atmosphere and eventually to good neighborliness.