Editorial

In total, 70% of our planet's surface is covered by water, but 98% of it is salty. Desalinating technology is still too expensive to make its use widespread. Of the 2% of fresh water, most is found in the polar caps or in aquifers. That leaves us with only 0.014% of all the water on Earth in lakes and rivers.

The spacial distribution of water is considerably uneven. This uneven distribution problem is accentuated by the fact that highly populated urban centres are often located in water-scarce areas. For example, the annual per capita availability of water, in thousands of cubic metres, is 109 for Canada, 15 for the ex-Soviet Union, 10 for the USA, 4 for Mexico and 0.16 in Saudi Arabia and Jordan.

It has been estimated that 3400 million people have access to just 50 litres a day, and the UN reports that 40 000 children die every day from diarrhoeic diseases and other collateral effects resulting from a shortage of water. During the last decade, the global area of irrigated farm land has decreased by 7%, the grain reserves in 1987 were at 101 days and in 1989 at 54. In 1989, it was estimated that 61 million hectares of irrigated land were affected by salinity.

To this we must yet add the pollution problem. The quality of water in most of the rivers, lakes and oceans has deteriorated to such a degree that protection measures are now urgent. Solutions to the pollution problems require an integral approach, with the participation of politicians, economists, scientists and society at large. All nations must take part in the effort.

Mexico, with a territorial area of nearly 2 million square kilometres, is not exempt from the above-described situation. Two-thirds of the country's surface is arid or semi-arid. The annual rainfall over 42% of the nation is under 500 mm. In contrast, 7% of the territory receives over 2000 mm of precipitation per year.

The annual runoff is approximately 410 km^3, 50% of which is confined to 20% of the nation, while 30% occurs in only 4% of the surface area. It has been estimated that 110 km^3 of groundwater is available for use.

Unfortunately, 70% of the population and industrial activity is found in the two-thirds of the nation that generates only one-third of the runoff. Most of the irrigated land is found in this area as well. In the south-east, which covers almost one-third of the nation and where two-thirds of the water is found, the population density and the degree of economic activity are very low.

Mexico has another unique characteristic. More than one-quarter of the population is found 2000 m above sea level. Only 4% of the runoff is available there. In contrast, at altitudes under 500 m, a similar population receives 50% of the runoff.

Twenty watersheds generate 89% of the total pollutant load, as measured by the BOD, and only four watersheds receive 50% of the wastewater discharge, including that produced by the larger cities.

Groundwater quality is affected by the dilution of arsenical salts and the leachates from solid wastes and wastewater. Non-point pollution also affects the aquifers, owing to the leaching of plaguicides and fertilizers used in agriculture.

In an effort to modernize the nation's water management policies, the National Water Commission (*Comisión Nacional del Agua*, CNA), the sole authority for water administration in Mexico, has proposed three objectives: build the hydraulic infrastructure required to satisfy demands, promote the efficient use of water, and restore and improve water quality.

To provide the technological support needed by CNA, the Mexican Institute of Water Technology (*Instituto Mexicano de Tecnología del Agua*, IMTA) carries out basic and applied research, develops technology and prepares the human resources in the areas of efficient water use, improvement and conservation of water quality, and protection of waterworks.

In this special edition on water development in Mexico, a peek is given at water planning and management concepts as they have been developed and applied, the research and technological advances developed in response to water policies, the integral management of water to conserve and improve its quality, aquatic weed control methods, techniques to modernize meteorological systems, methods to optimize water use in irrigation districts, means to design economical and precise measurement devices, and social aspects of the transfer of irrigation districts.

We hope that the sharing of our experiences will be useful to the readers of *Water Resources Development*.

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Guest Editors