



## **Conference Report**

### **Workshop on Water Conservation, King Fahd University of Petroleum and Minerals, Dhahran, Saudi Arabia, 3-5 April, 2000**

The Water Section of the Centre for Environment and Water of the Research Institute, King Fahd University of Petroleum and Minerals (KFUPM), organised a Workshop on Water Conservation in Dhahran, Saudi Arabia, 3-5 April, 2000. The primary objective of the workshop was to provide a forum for exchange of knowledge and experiences on recent advances on water conservation for domestic, industrial and agricultural uses. Some 800 participants from different disciplines attended the Workshop. The presentations included experiences from Bahrain, Brazil, Finland, Kuwait, Sweden, Saudi Arabia, UK, and USA. All technical papers by local experts covered a broad spectrum of water conservation issues from various professional orientations.

The issues discussed included water management and conservation for industrial purposes; treatment and reuse of industrial wastewater; protection and conservation of groundwater for industrial purposes; and impacts of industrial wastewater on the environment. National, regional and global perspectives on industrial water conservation were analysed, and very good presentations on technical, economic, environmental and policy-related issues, gave the participants opportunities for in-depth discussions.

Water resources management has become an important issue for the world, and Saudi Arabia is not an exception. The country is located in an arid region, and has less than 150 mm of average annual rainfall, high evaporation, limited surface and groundwater, as well as high living standards and population growth. According to the World Development Report 1999/2000 of the World Bank, the population of Saudi Arabia increased from 9.4 million in 1980 to 20.7 million in 1998, and is expected to double by 2025. The challenges imposed by the climate, geography, and increase in population and economic activities have resulted in an accelerating pressure on the government to provide water and wastewater management facilities for the municipal, agricultural and industrial users of the country. According to Dr. Walid Abderrahman, desalination of seawater and brackish water and limited groundwater available are the main resources of water in the Kingdom. Thus far, 57 desalination plans have been constructed along the Red Sea and the Arabian Gulf coasts. Desalinated water currently covers approximately half of the national demand, the rest being pumped from deep and shallow aquifers.

In terms of agriculture, the cultivated areas of Saudi Arabia have increased to 0.4 million ha in 1971, to 1.62 million ha in 1992. In 1993, in order to reduce the total amount of water used for irrigation, policies were changed for wheat production, and subsidies were reduced by 25%. With the reduction of area for wheat cultivation (325,000 ha between 1992 and 1994), the water pumped for this purpose from non-renewable aquifers has declined from 28,576 MCM, to 15,376 MCM during this period.

Economic development in the Kingdom has resulted in increased industrial activities in the areas of petrochemicals, cement, and mining. Even though the industrial sector currently represents the smallest percentage of the total water users of the country, their demand is already significant and increasing. This water demand is covered at present mainly from desalination plants and from non-renewable aquifers.

Key-note lectures were given during this multi-disciplinary workshop by IWRA President Benedito Braga and Past President Asit K. Biswas. In a major plenary lecture, Prof. Takashi Asano (USA) reviewed current status of global wastewater reuse, Dr. Ulf Ehlin (Sweden) outlined the approaches taken to improve the water quality of the Baltic Sea, Prof. Lloyd (U.K.) analysed the groundwater situation in several arid countries, and Dr. Muhammed Al-Rashed (Kuwait) discussed industrial water conservation practices in Kuwait.

The Dhahran water meetings at KFUPM have now become an annual event (this was the third workshop). Even within this relatively short period, it has already become the premier annual water event of the Middle East, for which its main organiser, Dr. Walid Abderrahman, is to be congratulated. The main focus of discussion for the next workshop, scheduled for April 2001, will be on desalination.

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