

Guest Editorial

BENEDITO P. F. BRAGA

President, International Water Resources Association, Department of Hydraulic and Sanitary Engineering, Escola Politécnica da USP, Av. Prof. Almeida Prado, 271, 05508-900 São Paulo, SP, Brazil

Brazil is a federal republic of 8.5 million km² located between the Equator and the Tropic of Capricorn. Its extension, both from north to south and east to west, is approximately 4400 km in each direction. The Brazilian coastline extends for some 7500 km. The country is divided into five natural regions and politically into 25 states, two federal territories and a Federal District. Approximately 50% of the population is under 19 years of age and unevenly distributed among the regions and between rural and urban areas. Eleven hydrographic zones have been established for water resources monitoring and management, which corresponds to the major watersheds of the country. These zones do not coincide with the political division of the country into states. Hence, good water management will imply an articulation among neighbouring states.

The urbanization process is one of great relevance to integrated water management. More than 70% of the Brazilian population live in urban areas where the sanitation infrastructure is almost non-existent. The largest urban conglomerate of the country—the Metropolitan Region of São Paulo, with an estimated population of 16 million – has only 60% of this population served with a wastewater collection network. Treatment is provided for 2.9 m³/s, which represents 12% of the sewage collected.

The current Federal Constitution of Brazil, issued on 5 October 1988, emphasizes the environmental theme with a special chapter dedicated to the subject. Chapter VI, section 225 presents the National Environmental Policy which was based in the Federal Law 6.938 of 31 August 1981. According to this section, all citizens have the right to an ecologically equitable environment. This is a major asset of the people of Brazil and is essential to a healthy quality of life. The government and the general public have the charge of defending it and preserving it for the present and future generations. According to the first paragraph, to assure the effectiveness of this right, the federal government has some important obligations with significance for water resources, such as:

- preserve and recover essential ecological processes and provide for the ecological management of species and ecosystems;
- define, in all federative units, physical space to be specially protected;
- impose environmental impact studies for licensing of civil works or any potentially harmful activity;
- control the production, commercialization and usage of techniques, methods

and substances that imply a threat to the quality of life, life itself and to the environment.

Other constitutional statements related to water resources in section 225 are:

- The exploitation of mineral resources implies the obligation to restore the degraded environment, in compliance with the techniques suggested by the related public agency.
- Conduct and activities harmful to the environment will subject the offender to criminal or administrative sanctions, independently of the obligation to mitigate the damage generated.
- The Amazon Forest, the Atlantic Forest, the Pantanal and the coastal zones are a national asset whose utilization will be carried out under conditions that warrant the preservation of the environment including the use of natural resources.

Brazil has three major regions of interest for sustainable development: (a) Amazonia, the north-east region and the central-west region which need economic development to offset regional disparities; (b) the ecologically sensitive areas of Amazonia, Pantanal and the southern coastline and (c) the degraded urban and rural watersheds in the south and south-east in view of their need for conservation, restoration and environmental control.

It is within this perspective of Brazil being a large country with abundant water quantity and a large ecological and social disparity among regions that this thematic issue of *Water Resources Development* has been prepared. Five papers will present to the reader issues such as the sustainable development in the Amazon and of the North-East region; what are the real water resources management problems of the Pantanal; how can reservoirs be managed to mitigate potential environmental problems; and what legal and institutional apparatus is available for integrated water resources management in Brazil.

I can certainly say that this issue of *Water Resources Development* is a major step towards effective collaboration among less developed countries. Many countries with a similar culture and similar technical problems will benefit from the papers presented in this issue.