

**MINISTRY OF MINES AND ENERGY  
NATIONAL DEPARTMENT OF WATER AND ELECTRIC ENERGY  
GENERAL COORDINATION OF WATER RESOURCES  
USE OF HYDRAULIC ENERGY**

Roberto Moreira Coimbra

## **HISTORY**

Water is a renewable natural resource that appears in Brazilian territory coming from three main origins:

- a) atmospheric precipitation over the surface of the country, forming superficial basins and subterranean reservoirs;
- b) the rivers that flow in from or are shared with neighboring countries, notably the basins drained by the Amazon, the Paraguay and the Uruguay rivers.
- c) the natural coasting water resources, formed by the waters of the Atlantic Ocean along approximately 8.500 km of the sea-shore, together with the estuaries, lakes and other points of river discharge.

The hydrological cycle, by which the water drains off and then returns successively, happens in eight great hydrographic basins. The availability of water in the different significant points of this cycle is measured by a national hydrographic network, planned, coordinated, and operated by the National Department of Water and Electric Energy - DNAEE, an organ which is part of the Ministry of Mines and Energy, aiming the exploitation of hydroelectric energy as its fundamental objective.

## **GENERAL DATA**

The total volume drained by rivers, in Brazilian territory, is estimated at 257,790 m<sup>3</sup>/s in terms of average discharge over a long period of time. Most of the 92% of this figure is in the six great hydrographic basins, with the following average flow according to DNAEE: The Amazon 209,000 m<sup>3</sup>/s, the Paraná (including Iguazu) 11,000 m<sup>3</sup>/s, the Paraguay 1,290 m<sup>3</sup>/s, the Uruguay 4,150 m<sup>3</sup>/s, and the São Francisco 2,850 m<sup>3</sup>/s.

In the basins of the oceanic slope, smaller rivers appear, but which have great economic and social importance. The following Rivers merit special mention: the Parnaíba (800 m<sup>3</sup>/s), Jaguaribe (133 m<sup>3</sup>/s), Mundaú (30 m<sup>3</sup>/s), Paraíba (27 m<sup>3</sup>/s), Paraguaçu (113 m<sup>3</sup>/s), in the Northeast region, the rivers Doce (1,140 m<sup>3</sup>/s), Paraíba do Sul/Guandu (900 m<sup>3</sup>/s), UpperTietê/Cubatão (60 m<sup>3</sup>/s), with reversion of 50%, Ribeira do Iguape (540 m<sup>3</sup>/s), Itajaí (270 m<sup>3</sup>/s), and Guaíba (1,740 m<sup>3</sup>/s), in the Southeast and Southern Regions.