



BRAZIL: FLOOD MANAGEMENT IN METROPOLITAN CURITIBA AREA

- 1. Location of the study:** The Metropolitan Area of Curitiba (RMC), in the State of Paraná, Brazil.
- 2. Author(s):** Carlos E.M. Tucci¹
- 3. Brief description of flood management practice**

Most of this RMC urban area, with some 2,5 million inhabitants, has developed in the Upper Iguaçú River Basin, which has a catchment area of some 1000 km². There are a number of tributaries with basin areas of about 100 km². The highest urban concentration is in the Belem Basin and other neighboring basins.

In RMC there are two types of floods: due to urbanization, which occur mainly on the tributaries of the Iguaçú River; and due to low river capacity, flood plains' occupation by the population, flow obstruction due to urban works such as bridges, landfill and inefficient drainage projects.

As a component of an overall program dealing with environmental impacts on the Metropolitan area of Curitiba, the conceptual approach used was: to (i) create a space for flow and storage in the flood plain of the main river (Iguaçú); (ii) develop a way to control the population invasion of the flood plain; and (iii) develop the Urban Drainage Master Plan for the Metropolitan Region for the tributaries.

4. Key issues

Urban Flooding is one of the major threats to cities, particularly in those with a rapid and uncontrolled population increase. Integrated Urban Drainage and Flood Plain Master Plans are the main instruments to assist in the development of a sustainable policy to manage flood impacts in urban areas.

Urban flood management also requires evaluation of socio-economic issues related to land use and urban development. Most of the measures can be developed and implemented through legislation, its enforcement, public participation and capacity building.

5. Relevance to the concept of IFM

The study covers the following aspects of IFM to varying extents:

Integration of land and water management

Aspect 2 - Land and water management

Aspect 3 - Laws and regulations for flood and water management

Integrated river basin management approach to flood

Best mix of strategies

Aspect 10 - Best mix of structural and non-structural measures

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Integrated hazards impact mitigation

Flood plain maps and zoning
Early warnings and forecasts

6. Comments

- (i) Potential strong points of the case study
 - Information on the approaches and flood management measures taken to protect a densely populated urban area of Brazil.
 - The conceptual and structural measures to control and prevent population invasion of reserved flood storage areas.
- (ii) Potential for practices mentioned to be transferred/applied to other regions with geophysical and socio-economic characteristics)
 - The experience presented in the case study could be transferred to other fast-growing urban cities, particularly in the developing world.