

# The Environmental and Social Needs of the Metropolitan Region of Curitiba: An integrated solution of the US-Brazil Sustainability Consortium

This project was developed by Ball State University (BSU) Master of Landscape Architecture (MLA) student, Sara Wendelin, in an internship funded by BSU. This internship served as the capstone sustainability experience. Through the internship, the USBSC brought the sustainability expertise developed through the BSU-MLA degree and the USBSC's sustainability curriculum to bear on the major sustainability issues of Guarituba in the Metropolitan Region of Curitiba, Brazil.

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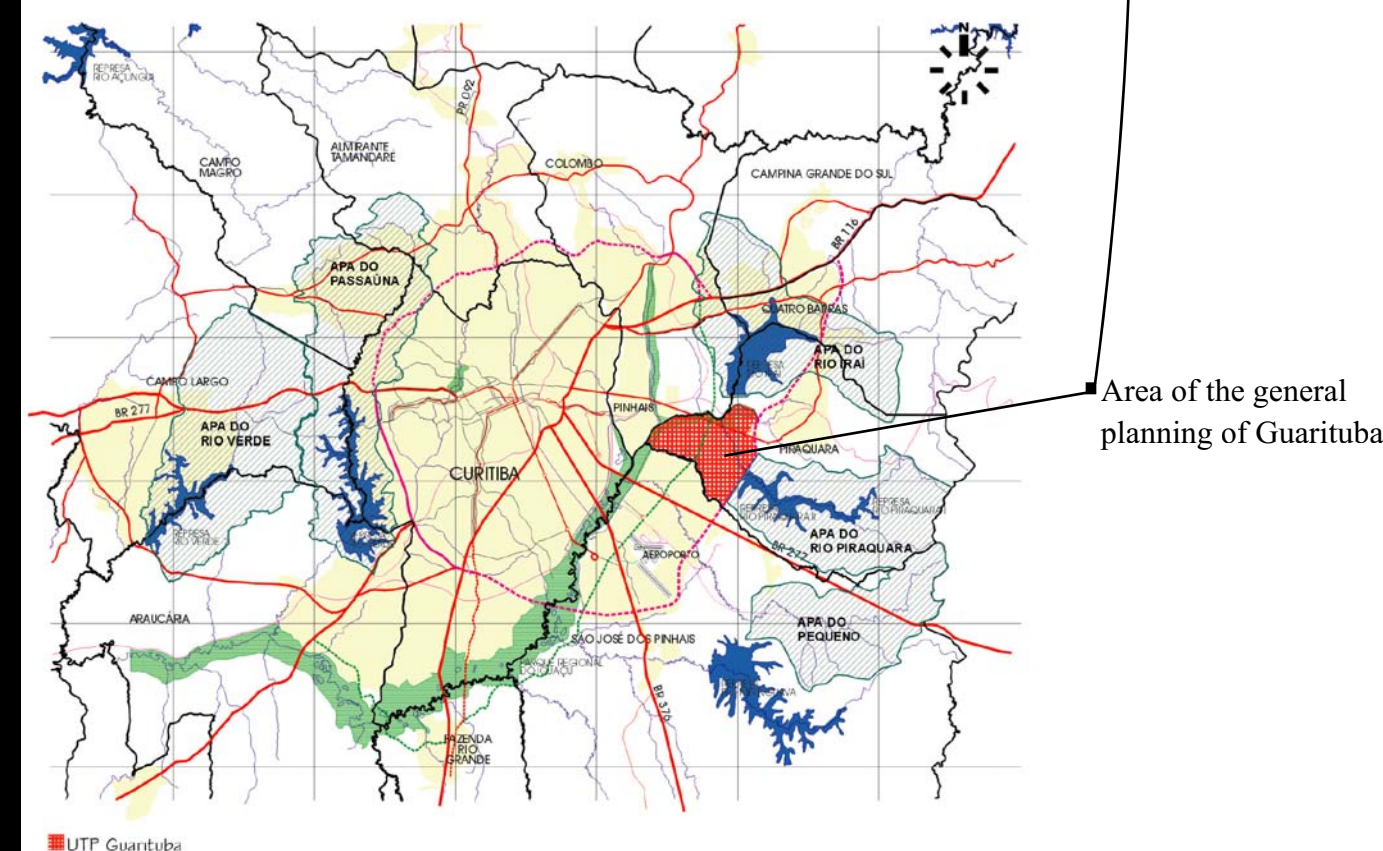


Above: A young boy sits on the front porch of his family's house in Guarituba  
Below: A man works on home improvements. Residents in the community build their homes little by little, adding what they can when they can afford more materials. Some houses start with little more than a few sheets of corrugated metal.



Curitiba, the capital of the state of Paraná, is claimed to be the ecological capital of Brazil, and is known in the planning field for its sustainable urban development. However, the high percentage of population growth concentrated in the outer rim of the metropolitan region has resulted in crises in these areas. One such crisis exists in the municipal of Piraquara, in the district of Guarituba, to the northeast of Curitiba. Not only does this community lack the most basic infrastructure, its very existence threatens the water supply for the entire metropolitan region

The majority of the area consists of flat wetland areas with wet fluvial soils subject to flooding. The community has a population density well above what is suitable for this type of land. Currently, the local agency of planning for the metropolitan region (COMEC) is evaluating the area to plan for organized urbanization and to help correct past mistakes. Part of this plan includes the preservation of wetland areas through the creation of a park on the unsettled land at the center of Guarituba. Through cooperation between COMEC and the US-Brazil Sustainability Consortium, funded by CAPES-FIPSE, a conceptual park plan for this blighted area was developed. In this plan, not only would the park give the community a sense of dignity, the sewer infrastructure is integrated into the park using constructed wetlands that serve as an educational tool, attracting tourism while helping protect the important waters of the Iguassu watershed.



## Mission and Goals

This project presents options for the environmental and social improvement of Guarituba. The purpose of the design was to create a central recreational area around which the community can organize its social life, and also which protects the wetlands from further growth in the density of buildings and the population. The current social and infrastructural needs of Guarituba and the limitations of the land influenced the design decisions for the park. This was drawn from some of the goals of the existing development plan for the district of Guarituba, including:

- Effectively improve the quality of life of the population:
- Give the community respectable living conditions
- Implement sports and recreation equipment for the community
- Improve the water quality:
- Implement a drainage system
- Contain the environmental degradation of the area
- Secure the environmental conditions adequate for the preservation of the wetlands



View of site for proposed park in Guarituba, looking southwest:  
Currently most of the land is vacant or being used as pasture for cattle.

## Definition of the study area

The proposed park site is located within the study area of COMEC's overall Guarituba planning project. This area is bordered by the Irai River, the Itaquí River, and state roadway PR-415, which connects the area to Curitiba, 22 km to the west of Guarituba. The total area equals 225 square km, approximately 1.81 % of the metropolitan region of Curitiba. The entire area is located within the High Iguassu Watershed. The rivers of Irai, Itaquí, and Piraquara are the headwaters of the Iguassu. Thus, the water pollution issue begins in Guarituba but is important to the entire state of Paraná.

Located in the north central region of the community is a still undeveloped area. The airport for super-lights is located to the northeast of the site (as shown in the aerial view to the bottom left). The land to the east and west, as well as a small area to the south, is currently zoned as Consolidated Urbanization. Thus, dense housing surrounds the area for the proposed park.



View of Proposed Pedestrian Bridge and Vegetated Drainage Way adjacent to soccer fields.

## Conceptual Plan

As stated in the mission of the project, improvement of both the environmental and social conditions of Guarituba was the main goal of the design. These two needs were brought together through ideas for the integration of the water drainage system with the recreational space. The park was designed to provide a wide variety of recreational spaces including sports fields and courts, walking trails through a variety of environments, an area for stretching and exercise, age specialized playgrounds, areas for barbecues and picnics, as well as a snack bar and community center. However, woven into this recreational arrangement are elements that give the design its environmental beauty. Two lines from the planned drainage system run through the park. By bringing these lines to surface level and running the water through vegetated canals and staging and retention areas, the water quality is improved through aeration and nutrient uptake. Thus, ameliorating the pollution released directly into the adjacent rivers.

