

2. Curitiba: Barigui watershed restoration



Type: top-down (government initiative)

Region: south

State: Paraná

Biome: Atlantic Rainforest

City of Curitiba

Population: 1 908 359 (2017 ⁶⁸)

Area: 435.036 km²

Elevation: 935 m

Coordinates: 25.4809° S / 49.3044° W

MHI: 0.823 (2010)

Context

Curitiba is the largest city in the southern region. It is an important regional economic and cultural centre. The meaning of Curitiba in the indigenous language of Tupi-Guarani is 'land of Araucárias' (the native pine tree), though these are no longer present in the urban landscape.

Curitiba is a point of reference in biodiversity conservation and enhancement. Since 1972 the city has implemented parks to improve the urban environment. In 1992, after the Rio ECO92, the city started mapping the Barigui watershed with aero-photogrammetry. Curitiba hosted the 8th Convention on Biological Diversity in 2006. From then on, the municipality decided to launch several actions to assess its biodiversity (with the collaboration of the Museum of Natural History), capture carbon, and as a co-benefit lower the urban heat-island effect.

68. <https://agenciadenoticias.ibge.gov.br/agencia-sala-de-imprensa/2013-agencia-de-noticias/releases/16131-ibge-divulga-as-estimativas-populacionais-dos-municipios-para-2017>

Objectives

The Barigui river is still flowing on its original course and has not been canalised. The programme 'Viva Barigui' ⁶⁹ aimed to protect and enhance areas to store storm water to prevent floods (built wetlands), connect biodiversity fragments, restore riparian corridors, prevent river bank erosion, and offer public spaces for several social, sports and cultural activities. In order to restore the river's margins, it has relocated low-income residents from vulnerable areas along some riparian areas.



Figure 39. Curitiba's Botanical Garden.

Actions

The implementation of eight parks along the watershed. The first Barigui park opened in 1972, located in the city centre. It has a total area of 1 400 000 m², of which 34 000 m² is under the management of the Environmental Secretary. It was designed to prevent floods with wetlands that are habitats for biodiversity and to offer multiple activities for residents. It has floodgates to manage the water flows.

Two large parks have been implemented in the northern area:

- Tingui (opened in 1994, total area 427 492 m²) ⁷⁰;
- Tanguá (opened in 1996, total area 235 000 m²) ⁷¹.

Five parks have been implemented along the river in the southern area:

- Cambuí (opened in 2008, total area 99 301 m²);
- Guairicá Natural Municipal Park (opened in 2014, total area 118 178 m²), extends 1 381 m along the river, financed in partnership with the municipality and the French Development Agency;
- Mané Garrincha (named after a famous Brazilian soccer player) (opened in 2014, total area 87 006 m²), extends 1 550 m along the river;
- Mairi (opened in 2016, total area 29 806 m²), financed by the French Development Agency;
- Yberê (opened in 2016, total area 238 105 m²).

All the parks except Mané Garrincha were given indigenous names. They are all multifunctional, offering diverse activities, with spaces for active and passive recreation and sports fields for people of all ages. There are honey gardens for environmental education with five native bee species in many sites. All the eucalyptus trees that were removed were used in the parks' equipment. The sports areas are jointly managed by the Secretary of Environment and the Secretary of Sports, Leisure and Youth.

69. Decreto No 342/2011.

70. <http://www.curitiba.pr.gov.br/conteudo/parques-e-bosques-parque-tingui/321>

71. <http://www.curitiba-parana.net/parques/tangua.htm>

Stakeholder involvement

The Department of Parks and Squares plans, designs, implements and manages all parks (some they manage partially). Several city departments were involved in the process of the development of 'Viva Barigui': the Environmental Department (design on integrated green areas, biodiversity and human activities), the Housing Department (housing), the Public Works Department (mobility, paving, drainage, bridges, lighting), the Urban Planning Department (planning and geometric design of bike lanes to connect the city north to south) and the Traffic Agency (traffic, traffic lights, and pedestrian crossings).

Implementation

The parks were created from 1972 onwards, as seen above. Investment in the last four parks was BRL 26 million, and they were co-financed by the French Development Agency and the municipality (50 % each).



Figure 40. Multifunctional park along the Barigui river with retention basin that prevents floods in urbanised areas.

Outcomes

- Flood prevention.
- Enhancing and connecting ecosystems.
- Lowering urban heat-island effect.
- Providing active and passive recreation.
- Improving the quality of urban environment.
- Building resilience to extreme climate events.
- Enabling active and clean mobility.

Success factors

The same political group has been in power for the last 25 years, which was important for the continuity of the projects. Environmental education helped connect people to nature.

Limiting factors and risks

- The city needs funds to buy the properties in the area from which the residents must be evicted.
- In the riparian protected areas, the owners have the right of pre-emption.
- A decree has decreased the riparian corridors ⁷² that were protected by law from 30 to 15 metres, because of a ‘social priority interest’.
- There is not enough time to open a public tender that requires 4-5 months, because the city budget is annual (from August to August).
- The reduction of financial resources leads to the reduction of the personnel that have the capacity to carry the projects forward.

Lessons learnt

- Protection of riparian corridors maintained the river in a good ecological condition.
- Don’t bury, canalise or concrete over the river: keep the river alive.
- Don’t allow illegal occupation.
- Don’t hire external companies to implement the projects. Public personnel know the problems and develop solutions to address them through appropriate design and implementation.

Contacts

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Figure 41. A view of Curitiba from the Botanical Garden.

72. In Portuguese — (APP) Área de Proteção Permanente, Faixa Marginal de Proteção (FMP).