



Curitiba

Title of the Initiative	Linking environmental preservation to urban development: The Green Areas of Curitiba
Initiative Duration	1970's - Ongoing
Submitted by	1. Luciano Ducci, Mayor of Curitiba 2. Marilza Dias, Secretary for the Environment
Comments by the Jury	<p>Curitiba is already well known nationally and internationally as an Ecological Capital, a title conferred by the United Nations in recognition of its environmental policies in the 1990s. This new initiative reinforces the city's reputation for conceiving and implementing simple but innovative solutions. While the initiative dates back to the 1970s, it is very much ongoing which is another commendable aspect of continuity across different administrations. The concept is simple: it links the preservation of bio-diversity with the creation of green space in the city, especially along the river banks and their natural flood plains in the city. These areas are very important for migratory birds and indigenous flora and fauna. The innovative aspect of the initiative lies in a system of incentives for property owners to play an active role in creating conservation zones in accordance with standards that are stricter than those of national legislation in exchange for tax breaks and/or the possibility to build higher than would normally be allowed by prevailing by-laws.</p> <p>In a pioneering attitude, a partnership was entered in 2008 with the Society for Wildlife Research and Environmental Education - SPVS - to quantify the amount of CO₂ sequestered by indigenous plant biomass within urban areas. This is the first instrument of its kind in Brazil.</p>

The initiative demonstrates that preserving biodiversity, improving and expanding green areas, and planning for rapid urban growth can be carried out simultaneously and in a mutually reinforcing manner while creating value opportunities for property owners and developers and improving quality life for all citizens.

Curitiba has a population of 1,746,896 people and covers a land area of 432 sq km.

Linking Environmental Preservation to Urban Development: The Green Areas of Curitiba

Background Information

In the state of Paraná, rural mechanization combined with a policy to encourage industrialization moved a large population contingent to Curitiba, capital of Paraná, driving its 370 thousand inhabitants in 1960 to reaching more than one million in 1980. Even if in the seventies the environmental issue in Brazil was still incipient, given the concern was “growth at any price”, Curitiba was contemporary with the countries that had made this concern their policy driver.

Meeting the needs of a growing city in fast expansion, without losing sight of its potential, was instrumental in establishing this proposal that enabled the change in the calling of the city, making of its protected areas (Conservation Units) and the preservation and conservation of the city’s green areas, one of its main features.

This initiative allowed combining the conservation of green areas with water resources. Conservation Units fulfill several functions: protect biodiversity, prevent illegal occupations of banks of rivers and streams, provide recreational

areas, sanitation and flood control.

However, the best partnership established was with the people who started to make of those areas privileged spaces for leisure since there was no access charge, including to the City Zoo, annually visited by approximately 1 million people. There is also an increase in tourism which grew from 2.2 million in 2005 to 3.7 million in 2012.

In the eighties, the city had 51 m² of green area per inhabitant and currently this has reached 64.5 m².

The city became known nationally and internationally as the Ecological Capital, title conferred on it by the United Nations in recognition of its environmental policies in the nineties.

For this policy to remain effective, partnerships were established with non-governmental organizations, the Foundation for Research of the Federal University of Paraná, the Open University of the Environment and HSBC Bank.

Goals of the Initiative

The results of this initiative can be seen in the increase in creation of Conservation Units, the increment in the square meter of green area per inhabitant index, the increased carbon sequestration resulting from green areas and national and international recognition for the strategies adopted.

Curitiba today has 50 Conservation Units distributed as follows: 22 Municipal Parks, 16 Woods, a botanical garden, an Ecological Station, 02 Environmental Protection Areas and 11 Private Reserves of Natural Municipal Heritage.

In order to achieve this goal, Law 9804/2000 "Municipal System of Conservation Units" was enacted, which, among other things, allows the transfer of constructive potential, payment in kind or exchange of land in areas of interest to the City for the establishment of new protected areas and incorporation of areas adjacent to existing ones.

Despite the continued growth of the city, the green area preservation and conservation policy has enabled the preservation of forest remnants in the city which today provide an index of 64.5m² of green area / inhabitant. This measure-

ment is obtained from the city's system of geographical information registration of the City Department of the Environment.

In a pioneering attitude, a partnership was signed in 2008 between the City of Curitiba and the Society for Wildlife Research and Environmental Education - SPVS to quantify the CO₂ absorbed during photosynthesis and accumulated in the form of carbon in native plant biomass.

In the urban environment in Brazil, there is no record of any other such surveys. The information obtained will serve as a input for nature conservation associated to the issue of climate change.

As a result we have:

A. Increased carbon in native areas: 15 municipal Conservation Units sampled with a total of 42,854 t C, indicating an annual increase of 720 t C fixed only in these Conservation Units. Extrapolating the estimate to all forest regions of the county, these areas annually sequester 19,007 t C.

B. Carbon stocks in urban tree cover: a total stock of 42,188 t C.

C. Carbon stock in individual Araucaria pine specimens: The estimate resulted in 70,280 t C, which represents 5.9% of the current estimated amount for the forests of the municipality Conservation Units.

Innovation for the Initiative

The initiative can be considered evolutionary and, at the same time, revolutionary. The city innovated by considering the preservation and conservation of green areas as essential to the maintenance of Urban Biodiversity and, therefore, for the quality of life. It conciliated the adoption of a legislation that is stricter than the Federal or State ones, but encouraged the owners of areas of native vegetation to preserve them and keep them through financial gains by reducing taxes, increasing the number of floors built in areas where there is not foreseen and transfer of constructive potential to other areas. We can also consider the proposal as evolutionary as it is being enhanced continuously. One such example has been the eradication of invasive exotic species that is considered the second leading cause of loss of native plant and animal diversity. Curitiba enacted De-

cree 473 in 2008 defining the forest species considered invasive.

The project also carried out actions in environmental education through courses for city employees to drive their knowledge of our plants and plays to raise awareness about the issue. Educational work was also undertaken in the vicinity of protected areas where the replacement of invasive exotic tree species with native species was happening.

Approximately 20% of the city surface is covered by forest fragments, being protected by the Municipal Green Area System. Thus, society's participation in the preservation and conservation of these areas that are so important to maintaining the quality of life of our citizens is essential.

In addition to legislation for licensing and overseeing, the city of Curitiba was highly innovative with the creation of the Private Reserve of Natural Municipal Heritage - RPPNM, Conservation Units which allow owners to continue living on the property, keeping the area green, with the possibility of becoming a venue for activities in environmental education and scientific research, and also entitling them to transferring the property's building potential constructive to other properties located in areas without environmental restrictions.

Benefit to Other Cities

In addition to legislation for licensing and overseeing, the city of Curitiba was highly innovative through the creation of the Private Reserve of Natural Municipal Heritage - RPPNM, which allow owners to continue living on the property, keeping the area green, with the possibility of being a venue environmental education activities and scientific research, and also entitling to the transfer of building potential to other properties without environmental restrictions.

Since the enactment of the municipal law in 2006, eleven (11) Private Reserves of Natural Municipal Heritage –RPPNM have been established with a total of 81,335.40 m²: Cascatinha, Ecoville, Barigui, Bacacheri, Bosque da Coruja, Canela, Erva Mate, Guabirova, Taboa, Jerivá and Cedro Rosa, showing society's adhesion to the project and intent of preserving nature.

Through a partnership with Non-Governmental Organization (NGO) So-

ciety for Wildlife Research and Environmental Education - SPVS, properties with relevant forest fragments receive visits from professionals specializing in Conservation of Nature, for technical guidance, environmental education, information on invasive exotic species and disclosure of the possibility of creation of Private Reserves of Natural Municipal Heritage - RPPNMs. The purpose of these visits is to raise information about these areas, describe the environmental quality of the forest fragments, generating a database about them and their status, enabling future planning as regards actions to be taken, and provide guidance to owners in improving environmental quality of the areas, and show them another option to preserve the area, with a possible economic benefits.

As one of the consequences or spin off, some of the property owners with forest fragments joined together and created an association, the Association of Guards of Green Areas of Curitiba and the Metropolitan Region (APAVE), with support from various entities, including the City Department of the Environment of Curitiba.

This work is a great partnership between society and the Municipal Administration, in the protection of nature, which is a common asset for the population, bringing a higher quality of life for city inhabitants by maintaining the connectivity between protected areas and surrounding regions. In addition to enabling the conservation of biodiversity in the county, this serves as a transition, resting and feeding area for migratory species, plus enabling contact of urban dwellers with nature, sensitizing and informing the Curitibaano about the importance of environmental preservation.
