

# 1. Campinas: ecological strategic plans for biodiversity and water protection



**Type:** top-down (government initiative)

**Region:** southeast

**State:** São Paulo

**Biome:** Atlantic Rainforest, cerrado  
(Brazilian savannah)

## City of Campinas

**Population:** 1.16 million

**Area:** 796.4 km<sup>2</sup> (51 % rural area)

**Coordinates:** 22.905800 S/ 47.060800 W  
Located 98.3 km from São Paulo city

**HDI:** 0.805 (2010)

## Campinas metropolitan region

20 municipalities

**Population:** 3.12 million inhabitants (Emplasa,  
GIP/CDI, 2019)

**HDI:** 0.792 (third in the country, 2010)

## Context

Campinas metropolitan region represents the second largest GDP (8.92 %) of the São Paulo State, which concentrates the largest population (45.5 million inhabitants, about 21 % of the total Brazilian population <sup>63</sup>), and economic activity in the country (32.3 % <sup>64</sup>). Campinas has important industrial, agricultural, and educational areas, and is also a centre of innovation in scientific and technological research. The second cargo airport in Brazil, Viracopos, is located in the city <sup>65</sup>. It is part of the Macrometropolis of the São Paulo State.

63. <https://www.ibge.gov.br/apps/populacao/projecao/>

64. <https://translate.google.com.br/translate?hl=en&sl=pt&u=http://www.seade.gov.br/produtos/pib-ual/&prev=search>

65. <https://www.emplasa.sp.gov.br/RMC>, accessed: 24.7.2018.

## Challenges

In spite of the good performance of the city and the region in economic areas, there is a historical lack of urban landscape planning that integrates adequate social housing and areas that should be protected, such as riparian corridors, ecosystem remnants and other relevant green areas that offer ecosystem services in the urbanised context. Disregard for poor people's needs has led to informal settlements in the urbanised areas in vulnerable and/or protected locations that the formal market is not

allowed, by law, to occupy (this is common in Brazilian cities). Most of the ecosystems have been lost to urbanisation, and those that remain are disconnected fragments with impacts on essential functions that provide multiple ecosystem services.

## Objectives

The existing plans, programmes and interventions at multiple scales aim to:

- restore the ecosystem remnants and improve connectivity;
- enhance biodiversity;
- increase and protect water sources;
- educate on and raise awareness about the environment;
- offer green areas for recreation and physical activities and healthier and safer spaces for residents who live in the less privileged areas;
- reduce risks of floods;
- control erosion.

## Actions

Campinas has developed plans, projects and programmes to tackle regional, municipal and local issues related to environmental quality and offer of green areas to the least privileged residents.

At **metropolitan** level, the '**Reconecta**' RMC<sup>66</sup> plan (Campinas Metropolitan Region) is supported by the terms of technical cooperation signed by 20 municipalities of the metropolitan region. It aims to enhance biodiversity conservation with the creation of ecological corridors to provide ecosystem services, mainly related to water security.

The municipalities are working to: develop joint strategies to conserve and recover fauna and flora; integrate local actions already being implemented; connect the technical efforts of all the municipalities in the same regional plan and define inter-municipal actions aiming to improve the environmental conditions in the entire region.

This project is being implemented through workshops, meeting and surveys with public servants from the environmental departments of the municipalities and data collection with other entities, such as the Watersheds Committees. Connectivity areas have been defined in the whole metropolitan region aiming to guarantee the connection among forested natural fragments and Protected Areas and the protection of watercourses, enhancing the quantity and quality of water.

These actions are expected to contribute to ecological connectivity at the regional scale through the ecological

66. <http://campinas.sp.gov.br/governo/meio-ambiente/reconectaRMC.php>

corridors; develop and equalise knowledge among public servants in the environmental departments of all municipalities of the metropolitan region; develop stronger representation and influence in the dialogues with other federative entities (State and Federal governments); unify environmental data and information in the metropolitan region.

In the **municipality of Campinas**, **ecological corridors** are being designed to connect forested fragments and/or relevant ecological areas to enable genetic flow. The municipal green plan adopted the concept of a connectivity line to promote ecological corridors. The line points out places to be restored, generally on the margins of watercourses. The corridors also aim to connect conservation units that are protected by law (national system of conservation units). After designing the line, a buffer zone of 1 000 metres was determined to manage specific activities, constructions and interventions.

Implementation of sections can be done through the Green Areas Bank (Banco de Áreas Verdes — BAV), and other legal instruments include: the Compliance Commitment Term (Termo de Ajuste de Conduta), the Compensation Environmental Compliance Term (Termo de Compensação Ambiental), and the Compensation and Regularisation Environmental Compliance Term (Termo de Compensação e Regularização Ambiental).

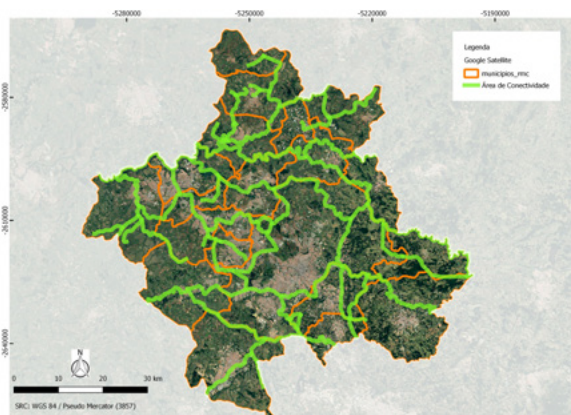


Figure 36. Reconecta metropolitan region ecological connectivity plan.

Four ecological corridors are already formalised:

- Santa Genebrinha forest;
- Capivari-Jatobás;
- São Vicente-Serra D'água;
- Santa Genebra connectivity core (first phase).

The municipality also intends to implement **linear parks** along channelised creeks for recreation, clean mobility, environmental education and enhancement of quality of life in dense and lower income urban areas. This initiative aims to reduce the deficit of green areas with social functions in the city, and targets the implementation of 49 linear parks. This programme also aims to avoid further illegal occupation of the rivers' margins. This action favours the enrichment of biodiversity, improvement of water quality with restoration (where possible) of watercourses' riparian corridors (in Brazil river banks and its floodplains are permanent protected areas), storm-water management, enlargement of floodplains, erosion control and the possibility to connect ecosystems as ecological corridors.

The urbanisation process and the lack of planning have often led to neglecting the demand for and care of green areas, resulting in an absence of vegetated and public spaces in lower economic neighbourhoods. The **municipal green plan** establishes efficient and integrated guidelines to develop and manage green areas where they are needed most. As part of the methodology used to identify the priority areas to implement the linear parks, the distribution of the 26 existing parks was mapped in 2016. The city developed an index of social green areas<sup>67</sup> to identify

67. Secretaria Municipal de Planejamento e Desenvolvimento Urbano.

the regions that had more or less accessibility to green areas, mapping the priority neighbourhoods. The social green spaces were mapped and graded from very high to very low. The mapping indicated where new linear parks should be planned, designed and implemented.

The municipal green plan proposes 49 linear parks, from which some will be implemented through compensation instruments by the landowners. Two

parks, Taubaté and Santa Lúcia, are being implemented by the municipality with funds from a federal government programme to accelerate growth (Programa de Aceleração do Crescimento). Forty-three parks are in the final phase of the preliminary study, financed by the municipal fund for the environment.

## Stakeholder involvement

Different stakeholders are involved in the abovementioned actions. For the inter-municipal Reconecta RMC these stakeholders are the Campinas Metropolitan Region Agency, Agemcamp, the PCJ Watershed Agency (Agência das Bacias PCJ), the José Pedro de Oliveira Foundation, the ICLEI — Local governments for sustainability, the Public Ministry of the State of São Paulo — the environmental defence group (Gaema) and the Environmental Council of the State of São Paulo.

For the ecological corridors in the municipality of Campinas the stakeholders are the Secretary of Green,

Environment and Sustainable Development (Secretaria do Verde, Meio Ambiente e Desenvolvimento Sustentável). This same secretary is involved in the municipal green plan, together with the José Pedro de Oliveira Foundation. Finally, the linear parks were designed by the School of Architecture of the Pontifical Catholic University of Campinas.



Figure 37. Lagoa Creek Linear Park, before intervention.



## Implementation

Implementation is ongoing. None of the plans, projects and programmes at any scale have been implemented yet. Funding is coming from different sources, as seen above.

## Success factors

Reconecta RMC successfully integrated 20 municipalities of the metropolitan region to protect and connect biodiversity-rich areas and rivers to maintain and enhance water quantity and quality.

## Outcomes

The expected outcomes are to:

- improve water quality and quantity;
- enhance the quality of life of residents;
- enrich and connect remnant biodiversity ecosystems;
- prevent floods;
- improve air quality;
- moderate urban heat-island effect;
- offer multiple open spaces for recreation, active mobility and sports.

The positive impacts that are foreseen are the creation of legal instruments that will enable the long-term implementation of multiscale projects.

- Plan of integrated development of the Campinas metropolitan region.
- Zoning of ecological and economic areas that incorporate the connectivity areas.



Figure 38. Lagoa Creek Linear Park, after intervention.

## Limiting factors and risks

The most important limiting factor is the lack of understanding of the potential of NBS to solve water management issues by other municipal departments that are canalising rivers and creeks, and even burying some underground to make space for urbanisation.

Furthermore, at metropolitan level, there are differences in the political priorities of each city administration. There is no normative instrument to transfer technical and financial resources among municipalities.

It is not feasible to expropriate some private plots of land along the areas defined to implement the ecological corridors. There is also a lack of public properties and/or private owners' consent to convert areas into green corridors, as well as a shortage of funds to establish and design the overall project and build the fauna passages to cross new or existent roads.

Finally, there is a lack of trained personnel and financial resources to develop the projects for the linear parks, as well as for their implementation.

## Lessons learnt

It is fundamental to have a multi-stakeholder approach to push forward the vision of a greener city. Environmental education of the residents and the involvement of all the municipalities of the

metropolitan region are essential for the development of sustainable plans that are nature-based, and that need the cooperation and understanding of complex and systemic issues regarding biodiversity and ecosystem services.

## Contacts

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