

# NATURE-BASED SOLUTIONS FOR WATER IN THE PERI-URBAN

CASE STUDY BRIEF: BRAZIL



2018 JOINT CALL



River area benefited by the PFA Project. Source: ITPA

## ABSTRACT

The Water and Forest Producer Project (PAF) - Rio Claro / RJ is located in the municipality of Rio Claro / RJ, where the head of Pirai River's is located. It is inserted in the basin of the Guandu river, a vital source of drinking water for 12 million people in the metropolitan region of Rio de Janeiro. The degradation of the Atlantic Forest has compromised the supply of environmental services, among which the provision of water in quantity and quality stands out. The project aims to encourage conservation and restoration of the forest through the mechanism of payment for environmental services, to improve the quality and quantity of water for several municipalities in Rio de Janeiro. The project works through voluntary action by rural landowners, who are financially compensated for adopting conservation and restoration practices on their properties. Currently, the project is being monitored with 70 rural landowners, ~ 4,562 ha of conservation areas, ~ 564 ha for restoration and R\$ 8.5 million in investment in the first five years

of operation. The impact scale of the project for now is local. The idea is to expand the project aiming to cover whole Guandu watershed.

## PURPOSE OF THE CASE STUDY

The aim of this case study is to disseminate the methodology of the PAF Project and strengthen environmental restoration as part of the solution for water resource management in the Guandu basin. Its interest is the environmental recovery of the basin, aiming to improve the quality and quantity of water.

## AREA CHARACTERISATION

Country	Brazil
Province	NA
Municipality	Rio Claro, Lidice District
Town	Rio de Janeiro
GPS coordinates	22°43'26"S 44°07'40"W

## PHYSICAL CONTEXT

Local geography/ topography	Rio Claro municipality presents a wavy relief with amplitudes greater than 200 meters and slopes greater than 45°. However, on the latter lands, usually floodplains, several urban centers as municipality were developed, including its headquarters. The relief is formed basically of gentle hills, intermediated by flat valleys, where the rivers flow.
Main water courses	Piraí river
Main soil types	Red-yellow oxisoils
Precipitation (monthly averages as well as climate change projections)	The average annual rainfall for the reference area was 1300 mm and for the restoration area was 1800 mm.
Temperature range	21.50 ° C, 0 (Resende-Municipality station near Rio Claro - data from INMET )
Critical infrastructure	The Metropolitan Region of Rio de Janeiro (MRRJ) is made up of 18 municipalities and concentrates 75% of the state's population. The Guandu system is responsible for supplying the largest and most densely populated portion of the MRRJ, comprising the city of Rio de Janeiro and much of the Baixada Fluminense. The water from Guandu river is directed to the Guandu Treatment Station, considered the largest in the world. This water is enough for 9 million people in the MRRJ.
Other relevant physical factors	Guandu watershed presents a big ecosystem degradation, prejudicing the population, mainly the poorest part. This watershed is on Brazilian Atlantic Forest, a very degraded biome that have a big influence in the "water produce" in Rio de Janeiro state. This biome have been reduced unceasingly by urban growth, compromising water resources and ecosystem relations in that area. Despite the high level of degradation this biome has an immense biodiversity, that needs to be preserved.

## SOCIO-ECONOMIC CONTEXT

Population	17425 hab
Population demography	20,7 (hab/km <sup>2</sup> )
Year population data was taken	2010
GPD/capita	R\$ 18.285,13 /hab
Economic status (i.e. low income, high income)	low income
Other relevant socio-economic factors	The Guandu river basin region can be divided into two compartments: 1) one located in the metropolitan region, with strong urban characteristics and connections with the economy of the city of Rio de Janeiro and industrial zones; and 2) the compartment of rural and natural spaces, with small towns and villages located in the mountains that present their own dynamics with greater participation of the agricultural sector, in the generation of jobs and the green tax on the circulation of goods and services in public finances.

## OBJECTIVE OF THE NBS

The NBS will address quality and quantity (shortage) of water.

## POLICY AND GOVERNANCE CONTEXT

They use the Brazilian forest code and the Water resources policy of the Rio de Janeiro state. The project also contributes to the regulation of the PES project in the municipality, because they support municipality to create legislation.

There are different governance levels involved in Water and forest producers project – Rio Claro, at Rio de Janeiro state, Brazil. At the municipal level is the city hall of Rio Claro and at the local level is Guandu Watershed committee (GWC), The Nature

Conservancy (TNC) and the Water Management Association of the Paraíba do Sul River Basin (WMAPSB). The Water Management Association of the Paraíba do Sul River Basin (WMAPSB) has the main responsibility for implementing the NBS measures. The GWC deliberates and WMAPSB performs. The financial responsibility is shared by GWC and TNC.

## ACTIONS

The NBS of the Brazilian case study focused on improving the quality and quantity of water through payment to the landowners to conserve and restore their properties. This mechanism is known as PES (Payment For Ecosystem services). The payments are a way of encouraging conservation in private areas that could influence the quality and quantity of water at Guandu watershed.

## POTENTIAL (OR ACHIEVED) IMPACTS AND BENEFITS

- Improvement in the quality and quantity of water
- Income generation
- Environmental education
- Increased biodiversity
- Restoration of degraded land
- Increase of native vegetation
- Data generation to support public policies
- Reduction in water treatment costs

## SUSTAINABLE DEVELOPMENT GOALS AND/OR ANY OTHER WATER-RELATED DEVELOPMENT GOALS ADDRESSED

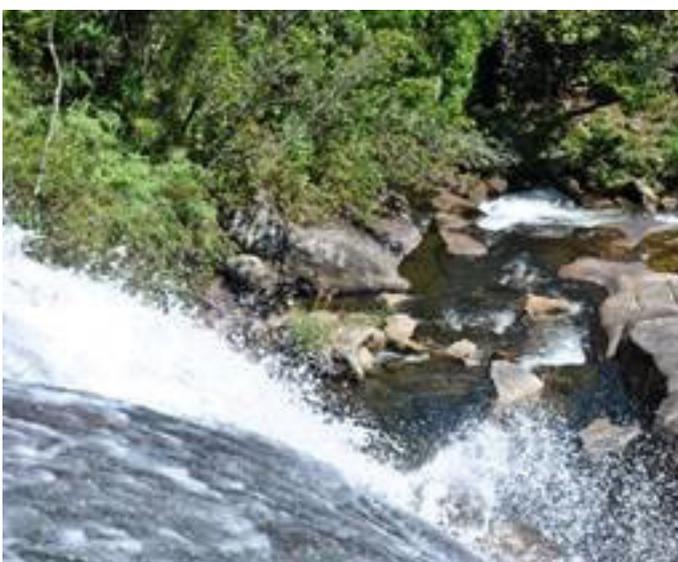
SGD6  
SDG15  
SDG13  
SGD3



Rural owner signing the project contract. Source: ITPA.



Cradle preparation for forest restoration.



Rio das Pedras waterfall.



Permanent protection area of the Papudos river with forest restoration.

## LESSONS LEARNT

Ecological - monitor to assess the effectiveness of interventions and adjust if necessary.

Social - community engagement to attract more landowners.

Social - environmental education to raise awareness of the environmental benefits of initiatives.

Economic - compliance with payment for landowners.

Some lessons learned: involvement of various sectors of society (farmers, The Nature Conservancy, the city hall, and the Watershed Committee) in which each has an important role and perform their activities adequately.

- Involve the partners since the beginning of the project
- Promote a scientific demonstration of the importance and impacts of the project for the community
- Transparency during all the process
- Promote frequent meetings between the partners to report the results and listen their feedback.

## TRANSFERABILITY OF RESULTS

- The data generated for the project can be used by municipality to support public policies
- The improvement generated by the project actions benefit the properties that can receive other incomes, as bird watching tourism.
- The project results and lessons learnt can be used as reference to reproduce the actions in other areas.



Rural owners showing the financial award for conservation. Source: ITPA.

## CONTACT INFORMATION

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## WHAT IS NATWiP?

NATWiP is an acronym for a project entitled: Nature-Based Solutions for Water Management in the Peri-Urban: Linking Ecological, Social and Economic Dimensions.

This is an EU-Cooperation project funded under the Water Joint Programming Initiative (JPI) Call 2018 and is led by an international consortium of scientists. The NATWiP team works towards promoting sustainable implementation of nature-based solutions to address water challenges in peri-urban areas.

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