

GRUPO TOCTAO

Assessment of externalities concerning Global Climate Regulation associated with the implementation of the 'Parque Cidade' land allotment

EXECUTIVE SUMMARY

Toctao Group features a portfolio of private construction works of different sizes and segments, among them urbanism, working in the development, planning, sales and deployment of apartment complexes and allotments. In 2019, it is going to start the construction works of the allotment called 'Parque Cidade' (City Park), in Goiania, State of Goias, Brazil, in an area of 164.35 hectares (ha). The future neighborhood is going to be formed by two communities named 'North Condo' and 'South Condo', as well as commercial areas to meet the region demands.

Planning of maintenance and restoration of green areas and landscape design for the allotment areas goes beyond compliance with legal regulations and seeks to offer convenience and quality of life to future dwellers. Those green areas provide ecosystem services both at the local and regional levels, such as leisure and recreation, scenic beauty, local climate regulation and flow regulation of bodies of water. The ecosystem service related to scenic beauty has not been valued in this case, since the commercial strategy involves sales values in the real estate development that cannot be announced yet, but it is something that can be valued in the future.

That said, the study focuses on valuating externalities related to how the real estate development can contribute to Global Climate Regulation by preserving the native forest, recovering Areas of Permanent Preservation (APPs), and providing urban arborization and landscape design, and compares with

emissions caused by vegetation removal required to deploy the property development. The study did not determine a specific time horizon, but rather the time period necessary for the recovered area to reach its climax¹ and show its full potential to absorb carbon. The Replacement Cost Method (RCM) was used, with valuation based on the Social Cost of Carbon (SCC) equivalent to US\$ 87.30, as proposed by Nordhaus (2017) for 2020.

As for land use change, the results show a net negative impact of about 3.2 tCO₂e, considering carbon removal associated with the restoration of an area of 9.6 ha in an APP (removal equivalent to 908.92 tCO₂e)², which is currently degraded, and the restoration of a planted area of 1.215 ha³ with landscape design (115 tCO₂e)⁴, subtracting emissions related to removal of native vegetation in an area equivalent to 1.06 ha⁵ (294.95 tCO₂e) and removal of pastureland in an area of 140.66 ha (3,910.3 tCO₂e).

On the other hand, the externality resulting from avoided deforestation in an area of 34.506 ha⁶ (9,601.6 tCO₂e) accounts for about BRL 3.3 million in benefits related to Global Climate Regulation to the society.

This study may show the real estate development neighborhood association the benefits of keeping green areas and urban arborization. It also translates into numbers a theme that is unknown to the population, who will be able to see the economic value of natural resources.

¹ About 20-40 years, according to the phytophysiology.

² Considering planting in the Cerrado (Savanna) / Alluvial Seasonal Semideciduous Forest in Goias State, in an area that was previously used for pastureland (94.68 tCO₂e/ha).

³ Considering 1,823 trees have been planted, distributed around the property development, which would account for 1.215 ha if they had been planted in a single area (each hectare has capacity for 1,500 trees, according to Martins, 2004).

⁴ Considering vegetation removal in Cerrado (Savanna) / Alluvial Seasonal Semideciduous Forest in Goias State (278.26 ha)

⁵ Considering 1,589 felled trees, distributed around the property development, which would account for 1.06 ha if they had been removed from a single area (each hectare has capacity for 1,500 trees, according to Martins, 2004).

⁶ Considering avoided deforestation in Cerrado (Savanna) / Alluvial Seasonal Semideciduous Forest in Goias State (278.26 ha)



Reporting of Environmental Dependencies, Impacts and Externalities

Responsible for completing: Cinthia Martins

Project drivers

Objectives: Estimate total value and/or net impact; and Communicate internally or externally.

Description: Show the benefits offered by actions concerning compensation and readjustment of vegetation required to implement the allotment.

Project scope

Object of the project analysis: Project

Description: Valuation of Global Climate Regulation ecosystem services, aiming at determining the externalities derived from keeping forests, recovering degraded areas of permanent preservation, and deploying urban arborization, compared to the impact of removing vegetation from some areas located where the future land allotment will be.

Geographic area: Real estate development located in Goiania-GO

Step(s) of the value chain included: Own operations

Type of approach: Prospective

Time horizon: Time period necessary for the vegetation to reach its climax (about 20-40 years)

Ecosystem Service: Global climate regulation

Global climate regulation

Role played by ecosystems in carbon and nitrogen biogeochemical cycles, thus influencing emissions of important greenhouse gases, such as CO₂, CH₄ and N₂O.

Method(s) used: Replacement Cost Method (RCM)

Results

Externality: about BRL - 1.1 million and BRL 3.3 million

Data used	Type of data
Net emissions	
Actual emissions resulting from deforestation or environmental degradation, in tCO ₂ : 294.9 from native vegetation, and 3,910.3 from pastureland	Primary/own data
Actual removals resulting from environmental recovery, in tCO ₂ e: 1,024	Primary/own data
Carbon stock	
Biome phytophysiology and land use: Alluvial Seasonal Semideciduous Forest in Goias State	Own data
Area of carbon stock, in ha: 34.506	Own data
Carbon stock, in tCO ₂ e: 9,601	Primary/own data

Further information

Social Cost of Carbon: US\$ 87.30

Exchange rate used to convert the Social Cost of Carbon (SCC) into Brazilian Reais: 3.90

Assumptions adopted in the valuation estimates: –

Adjustments or derivation applied to the methods and tools adopted: –

Other pieces of information: Each hectare has capacity for 1,500 trees, according to Martins (2004).

MARTINS, Osvaldo Stella. Determinação do potencial de sequestro de carbono na recuperação de matas ciliares na região de São Carlos - SP (Determining the potential for carbon sequestration in the recovery of riparian forests in Sao Carlos region - State of Sao Paulo). 2004. 161 f. Dissertation (PhD in Biological Sciences) - Sao Carlos Federal University, Sao Carlos, 2004.

Explanatory notes: Primary data considers the vegetation assessment report elaborated for the property development environmental licensing, as well as the property forest recovery project, and urban arborization.

Analysis of the results

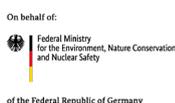
The study shows the benefits offered by actions concerning compensation and readjustment of vegetation required to implement the allotment. It is also worth noting the importance of recovering water body areas of permanent preservation close to the land, which are currently degraded. This ecosystem service can be assessed later by the company team, given the importance of those water springs to the city of Goiania.

Ecosystem service management

Use of Valuation of Ecosystem Services Results: Social and environmental impact assessment; Reporting; and Discussion with public institutions involved.

Description: The study will be used to reinforce and justify to the neighborhood association the benefits of preserving green areas, recovering areas of permanent preservation, and providing urban arborization to dwellers and the community as a whole. It somehow translates into numbers a theme that is unknown to the population, who will be able to see the economic value of natural resources.

Realização



MINISTÉRIO DO
MEIO AMBIENTE

