



PROJECT IMPLEMENTATION REPORT

NFS001_3

Trocano Araretama Conservation Project

Projeto Conservação Trocano Araretama





Reporting Period: 1st August 2013 to 31st July 2016

Report Prepared by Go Balance Limited




Report Date: 8th July 2024

v1.1

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i. Project Information



Project Title	Trocano Araretama Conservation Project
NFS Project ID:	NFS001
Project Developer:	Go Balance Ltd
Project Partners:	Municipality of Borba
Project Location	Municipality of Borba, Amazonas, Brazil
Original Project Area	1.346.541 hectares
Updated Project Area	1,344,635 hectares
Project Start Date:	10 th June 2011
Project Duration:	19 th November 2054

ii. Report Information

Report Number:	NFS001_3
Project Reporting Period:	1 st August 2013 to 31 st July 2016
Crediting Period:	1 st August 2013 to 31 st July 2016
Report Author:	Go Balance Ltd
Contact Details:	Ciaran Kelly Chief Executive Officer ciaran@go-bal.com Barry MacCarthy Chief Operating Officer barry.maccarthy@go-bal.com

iii. Reporting Scope

This report has been prepared to describe the information pertinent to the project period 1st August 2013 to 31st July 2016. It is important to note that the information included herein accurately reflects the project conditions as they existed during this specific timeframe, without reference to subsequent developments.

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1 Project Structure

1.1 Project Overview

The Trocano Araretama Project is a REDD+ project located in the Municipality of Borba, Amazonas, and is implemented at a jurisdictional level in partnership with the municipal administration, under the Natural Forest Standard.

This comprehensive approach involves a public-private partnership between the company Go Balance Limited and the Municipality of Borba, located in the Amazon region of Brazil. Since its launch on 10th June 2011, the project has demonstrated ongoing commitment across three elected municipal administrations, highlighting its vital role in environmental preservation and sustainable development in the region.

In September 2015, there was a change in the project developer from the original project developer Celestial Green Ventures (CGV) to Go Balance Ltd (see section 2.3).

Since this date, Go Balance plays a key role in the development and maintenance of the Trocano Project. The company is responsible for coordinating all scientific and technical aspects of the project, as well as preparing the necessary documentation to obtain Natural Capital Credits (NCCs). Its activities range from conducting field studies to implementing environmental conservation practices aimed at the annual issuance of NCCs. Additionally, the company takes on the task of managing the verification, sale, and marketing processes of the issued NCCs, ensuring that the project is economically sustainable.



The Municipality of Borba plays a crucial role by granting the project developer exclusive rights to conduct its activities in the municipal territory. Furthermore, the municipality authorizes access to all necessary resources, including information and cooperation from municipal departments, to facilitate the project's success. This close collaboration is essential for conducting studies, technical analyses, and implementing measures aimed at preventing deforestation and promoting sustainable economic and social development in local communities.

The Trocano Araretama Project stands out not only for its approach to environmental conservation but also for its ability to generate tangible benefits for local communities, promoting harmonious coexistence between forest preservation and the well-being of the people who depend on it.

2 Project Participants, Roles, and Responsible Persons

2.1 Project Partners

The partnership between the Borba Municipal Government and the Project Developer within the scope of the Trocano Araretama Project is clearly defined through their respective responsibilities and roles. This collaboration aims to achieve significant environmental, social, and economic objectives in the region.

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Project Developer:

- Responsible for the development, implementation, maintenance, and verification of the Trocano Araretama Project with the goal of achieving annual issuance of Natural Capital Credits (NCCs).

Borba Municipal Government:

- Work collaboratively with the Project Developer and the Trocano Araretama Project when there is mutual benefit, demonstrating a common commitment to conservation and sustainable development.
- Grant access to municipal departments for information and cooperation with the aim of preventing deforestation and promoting social and economic benefits for local communities.



This division of responsibilities allows for effective collaboration between the public and private sectors in pursuit of shared goals. The Borba Municipal Government plays a crucial role in law enforcement and creating an enabling environment for conservation and sustainable development, while the Project Developer takes on the technical and commercial responsibility for achieving carbon credit emission targets and project management. This partnership reflects an integrated and strategic approach to addressing complex issues related to deforestation and climate change in the region.

2.2 Project Implementation Team 2013-2016

The Project Implementation Team is a multidisciplinary team duly qualified for their responsibilities and roles in the project's execution during this period. The team consists of the following members:

Borba City Hall Project Participants

Name	Position
Jose Maria da Silva Maia	Prefeitura de Borba (Mayor)
Lelces Maia Silva	Secretary of Tourism & Environment
Cleuder Moda de Souza	Secretary of Administration and Planning
Clidson Moda de Souza	Secretary for Education
Otávio di Borba	Secretary for Culture
Edilson Batista da Fonseca	City Hall Consultant for Rural Production and Supply
Mauricio Motta	Municipal Communications Advisor
José Tarcísio da Silva e Souza	IDAM Manager, Borba

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Project Management Team in Borba

Name	Position
Jose Rocha de Abreu	Project Leader and President of Iakira
Lene Maria Gomes	Project Coordinator
Ana Lucia Garcia de Moraes	Project Operations
Paula Torres Cofré	Project Administration
Segefredo Leite	Finance Officer

Project Implementation Team



Name	Position
Ciaran Kelly	Director
Laine Tavares	Project administration, communication, and resource allocation
Samara Assef Pereira da Rocha	Portuguese-English translator and procurement officer
Clidson Yago Guedes Moda	Local coordinator
Sean Greif	Project liaison coordinator
Leah Gainey	Environmental Analyst
Monica Gallego Penalva	Environmental Technician and Geospatial Analyst
Juliana Terezinha da Silva	Legal Advisor

Project Participant Partners

Institute Amazon Livre: The engagement of project partner institutions is an important factor that influences the successful execution of project activities. It is not uncommon for many institutions and partners to express interest and commitment to projects during their presentation and launch. However, as the project progresses, these institutions may lose interest and fail to fulfill their commitments, which can hinder the progress of activities.

This occurred with the partnership between the Trocano Project and the Institute Amazon Livre (IAL), which, after a field trip in January 2014, found that IAL had not carried out the planned activities and had no knowledge of the actions it was supposed to execute in its area of responsibility. The partnership between the Trocano Project and IAL had to be reconsidered.

Iakira: Following the breakdown of relationship with the IAL, Iakira played a fundamental role as a local partner of the Trocano Araretama Project in Borba from 2014 to 2016. As a non-governmental organization (NGO) formed by members of the local community, Iakira acted on behalf of the Borba population, collaborating closely with both the project developer and the

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municipal government. Their comprehensive involvement addressed several crucial areas of the project:

- **On-Site Management:** lakira was tasked with managing all on-site activities, ensuring the effective implementation of the project at a practical level.
- **Supervision of Implementation:** Supervising the project's implementation was under lakira's responsibility, which included coordinating social benefits, educational programs, and communication activities.
- **Social Objectives and Deforestation Prevention:** lakira played a crucial role in achieving the project's social objectives and preventing deforestation, ensuring that strategies and actions were aligned with established goals.
- **Project Management Council Functions:** lakira assumed key functions of the Project Management Council, playing a vital role in decision-making related to project implementation.
- **Collaboration with Go Balance:** lakira also confirmed its willingness to work in partnership with Go Balance as the new developer of the Trocano Project, thus maintaining continuity in the project's actions and objectives.

lakira's active role as a local partner demonstrates the Trocano Project's commitment to involving and empowering local communities in the management and implementation of conservation and sustainable development initiatives. Successful collaboration with local organizations like lakira plays a crucial role in building effective and enduring solutions to environmental and social challenges in the region.

2.3 Change of Project Developer

In September 2015, a transfer occurred in the development of the Trocano Project. The original developer's role was transferred from the original entity to Go Balance Limited. This transfer was carried out through an agreement between the two companies, granting Go Balance all project rights. These rights encompassed not only the project agreement but also the ability to negotiate and enter into updates to this agreement in cooperation with the Municipality of Borba, ensuring the continuity of project operations.

This comprehensive transfer also included existing Natural capital Credits, data, documents, and the responsibility to complete the verification processes for the period from 1st August 2013 onwards.

The then-Mayor of Borba, José Maria da Silva Maia, expressed his acceptance of Go Balance as the new partner of the Municipality in the project. This acceptance was reiterated when a new mayor was elected at the end of 2016, highlighting the municipality's continued commitment to the project.

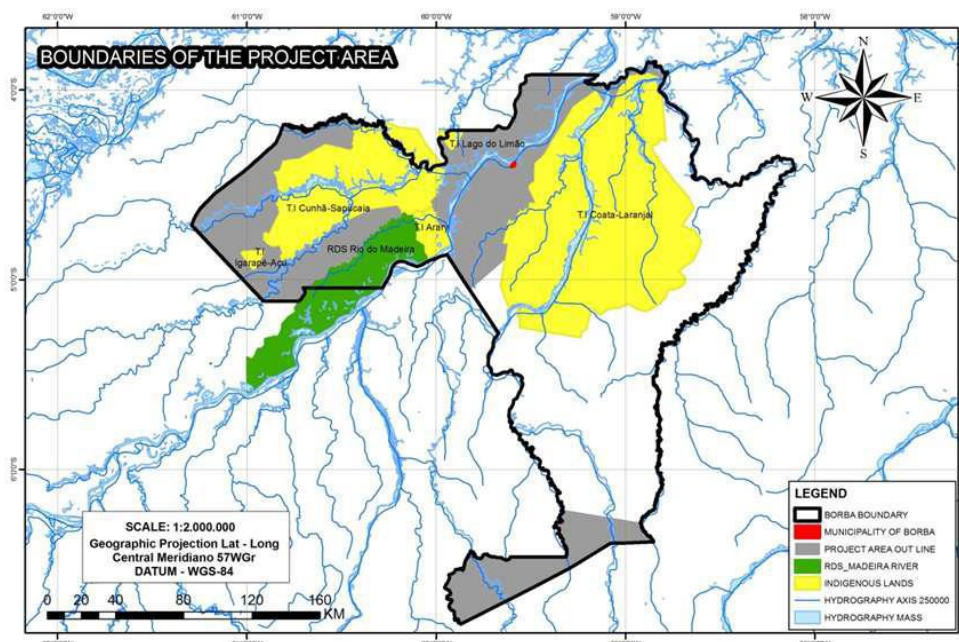
It's noteworthy that the Municipality of Borba has maintained its ongoing support and collaboration with Go Balance as a partner in the Trocano Project to the present day. This ongoing dedication reinforces the municipality's commitment to environmental sustainability and

sustainable economic development, demonstrating that the project remains a priority on its agenda.



3 Land Use, Land Ownership and Carbon Rights

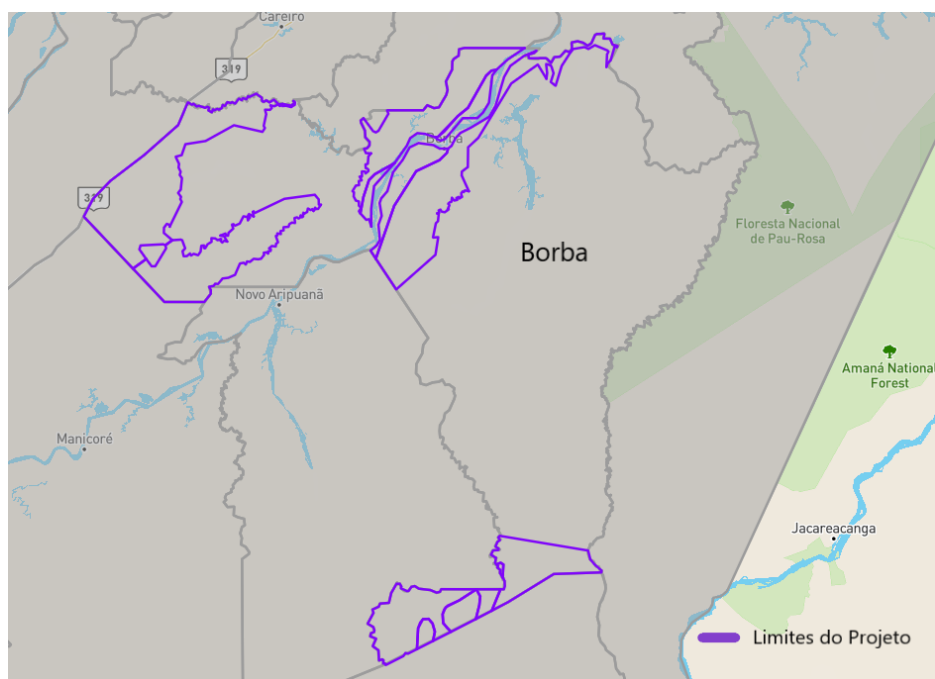
3.1 Project Location

The strategic location of the Trocano Project entirely within the municipal boundaries of the Municipality of Borba is a fundamental factor contributing to the success and integrity of this jurisdictional project. The project area was meticulously defined by precise geographic coordinates ensuring that the project encompassed no indigenous lands, a detail that was clearly documented and unambiguously delineated the project area.



Map 1 - Map illustrating the limits of the Trocano Project with Indigenous Areas excluded

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Map 2 – Outline of the limits of the Trocano Project within the Municipality of Borba

The Municipality of Borba plays a central role in this context. As the public authority responsible for the jurisdiction where the project is located, the municipality holds the land use rights, carbon rights, and ownership associated with the entire project area. The agreement established between the municipality and the project developer grants the project developer the exclusive rights for the development and commercialization of carbon credits generated by the project.

It's important to note that over time, the project area has mainly remained unchanged in terms of legal land use changes, with just one Indigenous Land (Lago do Limão) being regularized in 2016, and the creation of Acari National Park on 11th May 2016. These two land area changes are detailed in the Management Plan Module. This legal stability is crucial to ensure the continuous ability to implement the project and generate carbon benefits associated with it. Maintaining this condition is a testament to the long-term commitment of the Municipality of Borba to the project and its determination to promote environmental conservation and sustainable development in the region.

In summary, the combination of precise location, a strong public-private partnership, and legal stability contributes to the Trocano Project standing out as a successful example of a jurisdictional REDD+ initiative, with the potential to serve as inspiration for other regions seeking integrated approaches to forest conservation and climate change mitigation.

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3.2 Legal Basis

The partnership between the Municipality of Borba and the developer of the Trocano Project is solidified through a legal agreement that grants all legal rights and benefits related to carbon credits that may be certified within the project area during the term of the agreement. This agreement was carefully negotiated, executed, and notarized in full cooperation with the municipal legal department, thus ensuring its full endorsement by the municipal government and its legal approval.

The legal foundation of the agreement is robust, in compliance with all relevant and applicable laws. A thorough review of the project documentation was conducted by legal advisors Remulo José do Nascimento, OAB/AM 118-A, and Juliana Terezinha S. Medeiros, OAB/AM 5360, from the law firm Remulo José do Nascimento.

An outline of the conclusions drawn are as follows:



- (1) The contract is legally valid.
- (2) The Municipality and project developers are entitled to sign the contract.
- (3) The Municipality of Borba-AM, through its Main Law, can give the right to its executive representative to negotiate Carbon Credits with any other representatives of the Public Power, companies and municipalities, including private companies and international companies.
- (4) Through the present analysis, both lawyers mentioned, after having studied the subject and the material requested by Celestial Green Ventures Ltd regarding the Trocano Araretama Conservation Project located in the Municipality of Borba in the State of Amazonas, in Brazil, have concluded that the specified contract follows the laws as per the Brazilian Constitution, Main Constitution of the State of Amazonas, Organic Law of the Municipality of Borba and the other relevant legislation.

Therefore, based on the careful analysis by specialized lawyers and in compliance with applicable constitutional and municipal laws, the contract governing the Trocano Project is a solid and robust legal framework that establishes an effective partnership between the involved parties. This ensures that the project can continue to operate with confidence and transparency, benefiting environmental conservation, sustainable development, and local communities in the Municipality of Borba, Amazonas, Brazil.

3.3 Strengthened Legal Frameworks – by-laws of the Municipality of Borba

To strengthen its long-term commitment to the Trocano Project, the Municipality of Borba took significant measures regarding local legislation, specifically with the approval of Law No. 113/2013 in June 2013. This law was created to reinforce the commitment of the Municipality with the project in the long term, to ensure that its activities will continue to run smoothly through different administrations.

This law was published in the Official Gazette of the State of Amazonas on January 28, 2014. This legislation had unanimous support from the 9 council members elected by the local population and authorizes:

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- **Transfer of Carbon Credits:** The law grants the Executive Branch of Borba authorization to enter into contracts with international companies, organizations, and even international states for the transfer of carbon credits. This strengthens the municipality's commitment to the initiative, allowing for the crucial capture of resources for environmental conservation and sustainable development.
- **Creation of the Municipal Management Authority:** The law establishes the creation of the Municipal Management Authority, responsible for overseeing and monitoring activities related to environmental protection and the reduction of actions harmful to environmental assets. This authority plays a crucial role in ensuring the project's effectiveness and compliance.

This legislation demonstrates the commitment of the Municipality of Borba to the Trocano Project in the long term, ensuring that its activities can continue smoothly regardless of changes in municipal administrations. It also provides the necessary legal basis for the transfer of carbon credits, financially supporting environmental conservation and sustainable development initiatives in the region. The unanimous approval by the council members reflects the significant support of the local community for this critically important endeavour.


3.4 Project Agreement Reviews and Updates

The project agreement, established between the project developer and the municipality, is a dynamic document that requires periodic reviews and updates to remain in compliance with relevant municipal and state laws, when applicable. This process of review and updating is conducted in close collaboration with municipal legal advisors in Borba, ensuring the legality and ongoing relevance of the agreement.

Cooperative Negotiation and Drafting: All updates and amendments to the agreement are always negotiated and drafted in a cooperative nature, in collaboration between the project developer and municipal legal advisors in Borba. This ensures that all changes are made in accordance with local laws.

- **Maintenance of Legal Relevance:** The agreement is periodically reviewed to ensure that it remains relevant and up to date in accordance with Brazilian laws. This review is an ongoing process that demonstrates the commitment of both parties to maintaining legal compliance.
- **Transparency and Cooperation:** The review and updating of the agreement are conducted with full transparency and in close cooperation between the project developer and the municipality. This promotes a collaborative working environment and ensures that the responsibilities and roles of both parties are clearly defined.

This proactive approach to project agreement reviews and updates is crucial to ensuring its effectiveness and compliance with current legislation, thereby contributing to the ongoing success of the Trocano Project in Borba, Amazonas, Brazil.

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3.4.1 Latest Project Agreement

The project agreement was updated in March 2023. This is a consolidated contract that supersedes all previous versions of the contract as a continuation and is the current legally binding agreement for the project, which is the basis for supplying this version of the agreement. It provides the project developer with the necessary rights to carbon and land-use to implement the project and transact Natural Capital Credits.

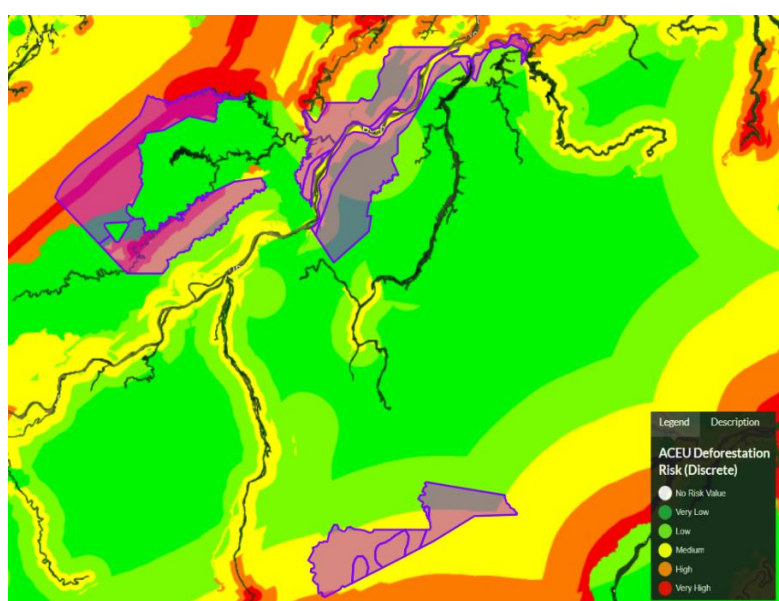
4 Additionality

The Trocano Araretama Conservation Project's aims to mitigate GHG emissions through avoided deforestation, including the conservation of the natural forest ecosystem, the protection of the endangered local communities, and the protection of both the plant and animal biodiversity which are reliant on this vulnerable habitat.



It's important to highlight that without the Trocano Project, the area wouldn't have sufficient resources to effectively protect the forest from deforestation. The collaboration between the project developer, Go Balance Limited, and the municipality of Borba is crucial in achieving these environmental conservation and sustainable development objectives, as the municipal budget does not adequately address forest protection.

4.1 Risk of Deforestation Additionality

The project area has been categorised into risk-levels according to the likelihood that deforestation will occur, based on the risk-based ACEU / NFS methodology. There is a high proportion of high-risk areas that would likely be deforested if it were not for the implementation of the protection actions of the project.



Map 3 – Map of the risk level of the Trocano Project until 2016. Source GP, 2024

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As regions at higher risk of deforestation, as shown in the map above, are generally located near roads and highways, rivers, and urban centres. These areas often face additional pressures due to their proximity to human access points and economic activities. The accessibility due to the proximity to roads and rivers indicates the need for additional resources to be provided through the implementation of the Trocano Project, to enable adequate mitigation measures to be adopted.

It's important to note that this risk analysis considered threats up to 31st July 2016, and the level of risk may vary over time due to various factors such as changes in legislation, economic and demographic pressures, among others. Therefore, conducting periodic and updated risk assessments is crucial to adapt to evolving conditions, and in alignment with the NFS requirements. Conducting subsequent risk assessments will allow the Trocano Project to adjust its conservation strategies according to changes in threats and environmental conditions.

4.1.1 Reduced Deforestation due to the Project Activities

The achievements of the Trocano Araretama Project demonstrate its significant impact on reducing deforestation compared to neighbouring municipalities and the state of Amazonas as a whole. The deforestation rate recorded in the project area, which was $\leq 1\%$ during the verification periods of 2014, 2015, and 2016, contrasts impressively with the regional average in the Amazon, which was approximately $\sim 5.9\%$.

It can be observed on the Geospatial Platform (Map 4 below), using data from INPE PRODES, that in the area adjacent to the southern zone of the Trocano project in Borba, in the neighbouring municipality of Apuí, there was significant deforestation from 2014 to 2016, expanding from the central location of the city of Apuí. However, this deforestation did not encroach upon the Trocano project area.

These results underscore the effectiveness of the Trocano Araretama Project in preventing deforestation and conserving the forest ecosystem in its designated area, even in the face of deforestation pressures in nearby regions. This project's success serves as a model for sustainable conservation and development efforts in the Amazon region.



Map 4 – Deforestation occurred around the city of Apuí, respecting the border of the Trocano Project until 2016. Source GP, 2023

5 Restoration Activities

No forest restoration activities have been carried out in the project areas within this project reporting period. However, this is a potential action that could be implemented in future years, as the project encompasses various degraded and abandoned areas where agricultural and livestock practices are no longer viable or feasible.



6 Non-Permanence

6.1 Buffer Deduction

In accordance with the Natural Forest Standard requirements, for the preceding project periods from the start date 11th June 2011 to 31st July 2013, the non-permanence buffer deductions were as follows:

Period	Credits issued	Buffer Deduction (10%)
11th June 2011 to 31st July 2012	7,702,808	770,281
1 st August 2012 to 31 st July 2013	7,579,393	757,939
Totals	15,282,201	1,528,220

NCCs are deducted at source, by the NFS Registry administration, and these NCCs are held in the buffer account of the Natural Forest Standard Registry to cover the risk of non-permanence. The same deduction shall be applied for the reporting and crediting period associated with this verification. The calculations for this reporting period are demonstrated in the offline carbon calculations spreadsheet provided for the Carbon Calculations Module.

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7 Management Plan

7.1 Overview

The Trocano Araretama Management Plan is an internal document, which has been created and agreed by the Project Implementation Team (PIT). The purpose of the Management Plan is to provide up to date information on the management plan of the project and provide an overview of the project activities with expected outcomes and targets where applicable.

The Management Plan is maintained as a living document for the duration of the project to reflect the evolution of the project over time. This enables the project and implementation team to remain responsive to changing conditions within the project area.

The Management Plan relevant to the reporting period of 1st August 2013 to 31st July 2016 is provided within the supporting documentation and serves to support all sections of the information within this module.

8 Project Activities

8.1 Overview

The Trocano Araretama Conservation Project's aims to mitigate GHG emissions through avoided deforestation, including the conservation of the natural forest ecosystem, the protection of the endangered local communities, and the protection of both the plant and animal biodiversity which are reliant on this vulnerable habitat.



The project is designed to combat deforestation and forest degradation while fostering sustainable development and biodiversity conservation. This project aims to create a balance between environmental sustainability and the economic needs of local communities.

The primary goal of the project is to reduce emissions from deforestation and forest degradation, simultaneously fostering sustainable development and enhancing local livelihoods. The project aligns with the broader objectives of REDD+ by integrating climate action with community development and biodiversity conservation.

Activities include sustainable forest management, conservation efforts to protect and enhance forest carbon stocks, and initiatives to ensure community benefits from these conservation efforts. The project plans to implement sustainable forest management, conservation, and enhancement of forest carbon stocks.

Additionally, the project aims to provide the local communities with enhanced socio-economic opportunities, through their involvement in the project and its activities. Community engagement and participatory approaches are integral to these activities.

The project is designed to ensure that the local communities in the Municipality of Borba are not only participants but also beneficiaries of the Trocano Araretama Project. Through these

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strategies, the project aims to achieve a harmonious balance between environmental conservation and community development.

These activities reflect a holistic approach to community engagement, encompassing environmental conservation, education, health, infrastructure development, and capacity building. Such initiatives ensure that the local communities are not only participants but also beneficiaries of the conservation efforts, aligning with the overarching goals of the Trocano Araretama Project.

The overall objectives of the project and its management plan are as follows:

- *Mitigate deforestation within the project area for the duration of the project.*
- *Conserve and preserve the natural forests of the project area.*
- *Implement effective protection and monitoring activities.*
- *To provide socio-economic improvements for the local communities, including healthcare, education, employment, and infrastructure improvements.*
- *To provide biodiversity protection of the plants, animals, and the ecosystem as a whole.*
- *To carry out data collection, including inventorying biodiversity, forest, flora, and fauna.*
- *To provide viable sustainable income alternatives for inhabitants of the project area.*
- *To strengthen local forest protection.*
- *To incentivise local communities to adapt their current behaviour to more sustainable means.*
- *To incentivise and reward changes in behaviour.*
- *To promote capacity-building and environmental awareness.*
- *To encourage participation in project implementation, through monitoring, management, conservation, and other activities.*
- *To facilitate participation in project-related training.*
- *To implement an environmental education programme.*

9 Project Area

9.1 Project Extent

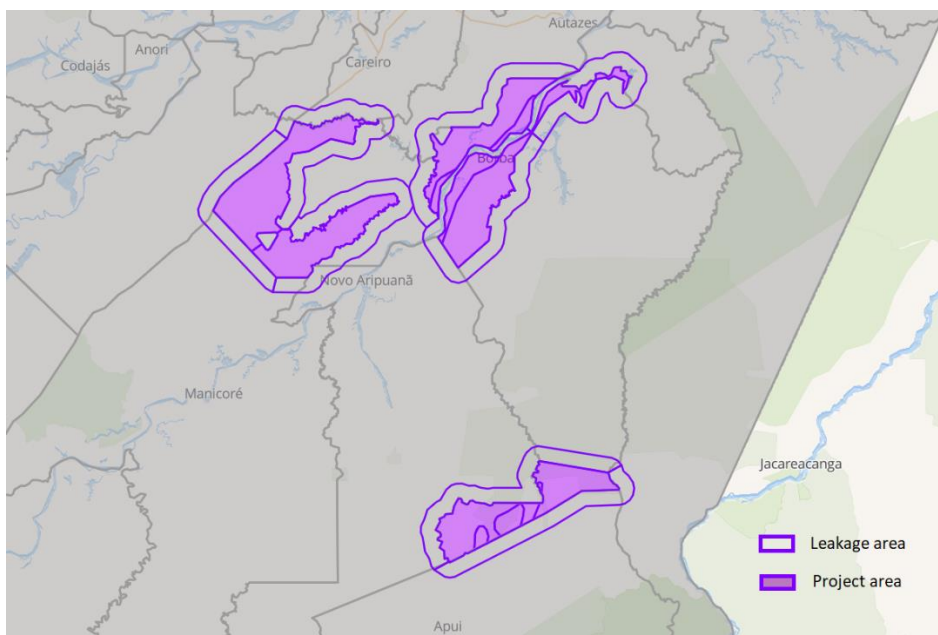
The Trocano Araretama Project is located in the Municipality of Borba, within the State of Amazonas, Brazil. Borba is situated in the southern part of the state, approximately 208 kilometres from the capital, Manaus.

The Trocano Araretama Project is geographically within the boundaries of the Municipality of Borba and is divided into three distinct and differentiated areas: the West Zone, Central Zone, and South Zone. These areas collectively encompass the total project area, and are located along the banks of one of the main tributaries of the Amazon River, the Madeira River.

The project area is defined with precise geocoordinates which can be visualised within the Geospatial Platform. A map demonstrating the project area is provided below:



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Map 5 – Geographic Limits of the Project Area and Leakage Area

The total project area at origination was 1,346,541 hectares. In the reporting period, there was a minor deduction in the extent of the total project area, as a result of an Indigenous Land – Lago do Limão - being extended upon regularization (see section 9.1.1). This resulted in a deduction of 1,906 hectares being removed from the total project area, which results in the total project area being 1,344,635 hectares.

The project has not expanded into any new areas during this project reporting period.

9.1.1 Lago do Limão Indigenous Land

Since the project start date, the Lago do Limão Indigenous Land was regularized, on 15th May 2016. The original project area excluded this Indigenous Land, however the limits were extended during regularization to a total area of 8,232 hectares, which resulted in this area partially overlapping the project area, by a total of ~1,900 hectares. When the overlap was identified, the project boundaries have been adjusted to ensure the removal of this area. This is confirmed in the Geospatial Platform, with the adjusted geo-coordinates updated, resulting in the following difference:



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Image 1: Original exclusion of Lago do Limão - Trocano Project Area 8

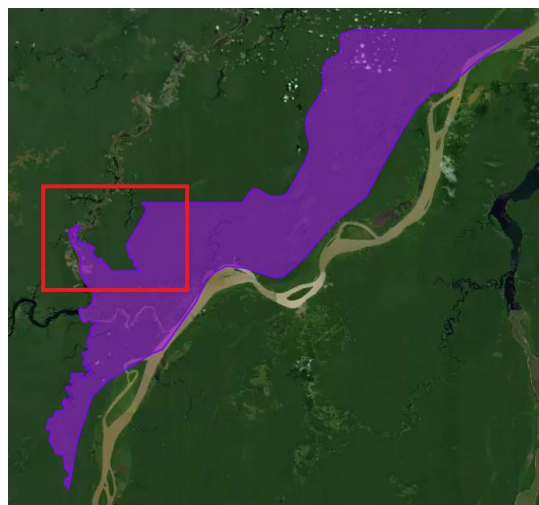
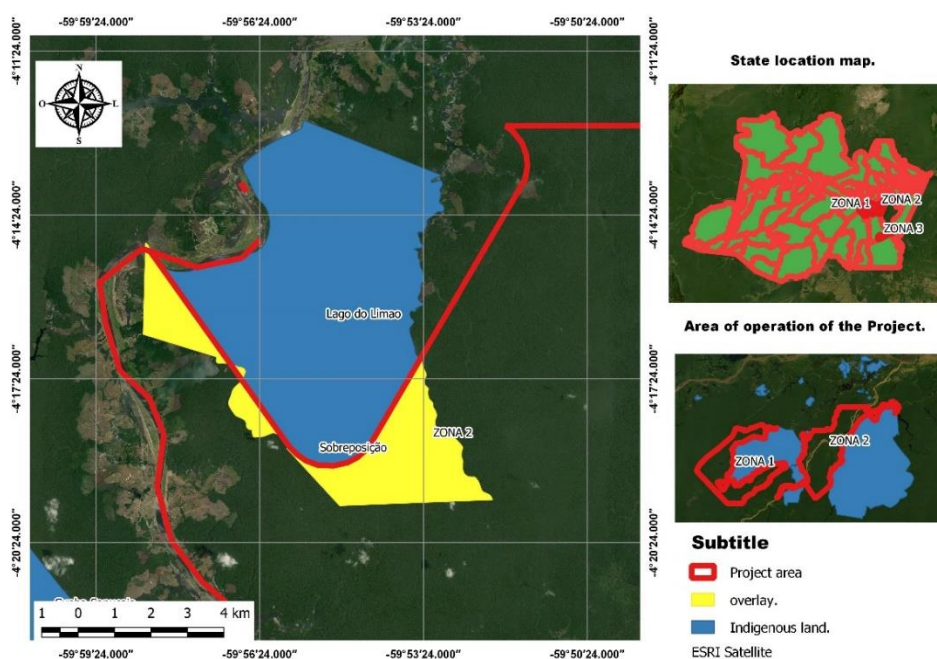
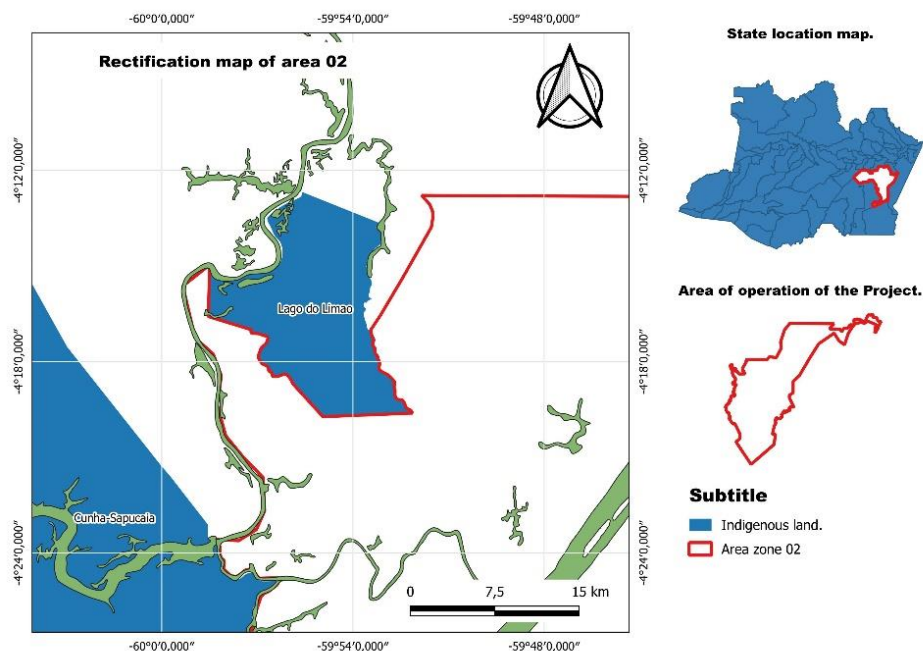


Image 2: Updated exclusion of Lago do Limão - Trocano Project Area 8



Map 2: Location map with area overlay

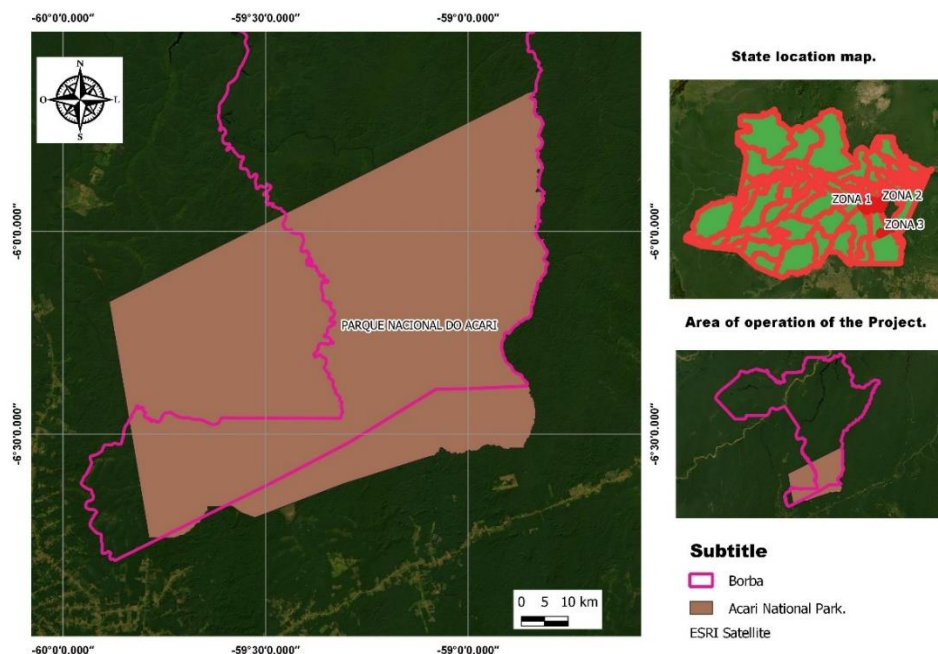


Map 6: Rectification of Lago do Limão exclusion

9.1.2 National Park Federal Decree

The creation of the Acari National Park on 11th May 2016, through a Federal Decree declared by Dilma Rousseff, is an important development in the region. However, it is crucial to note that despite the inclusion of some municipal lands from Borba in this park, the acting mayor at the time confirmed in writing that the municipality was not consulted about its inclusion and did not receive support or resources from the government to carry out conservation actions in this area, which totals approximately 543,000 hectares.

This situation is relevant to the Trocano Araretama Project since the area in question remains within the project's boundaries and did not receive the necessary governmental protection or support for conservation measures. Consequently, the area continues to be categorized as "Unprotected" according to the ACEU approach of the NFS methodology, thereby maintaining the project's additionality in accordance with the requirements of the Natural Forest Standard for this project reporting period.



Map 7: Acari National Park overlap with the Municipality of Borba

9.2 Project Area Forest Characteristics

The forests within the project area, as a majority, remain as natural forest. For definition, a natural forest, also known as a native or primary forest, is an ecosystem predominantly composed of trees and various other plants that have developed and evolved over time without significant human interference. These forests have developed through natural ecological processes and are shaped by the interactions between the various species that inhabit them, including trees, understory vegetation, wildlife, fungi, and microorganisms.

9.2.1 Vegetation Classification

Regarding the types of vegetation in the project area and its surroundings, it is primarily characterized by Terra Firme Forest, followed by Seasonal Flooded Forests (Várzea) and Frequent Flooded Forests (Igapós). Other vegetation types like shrublands, pastures, and savannas are also observed but in relatively small quantities:

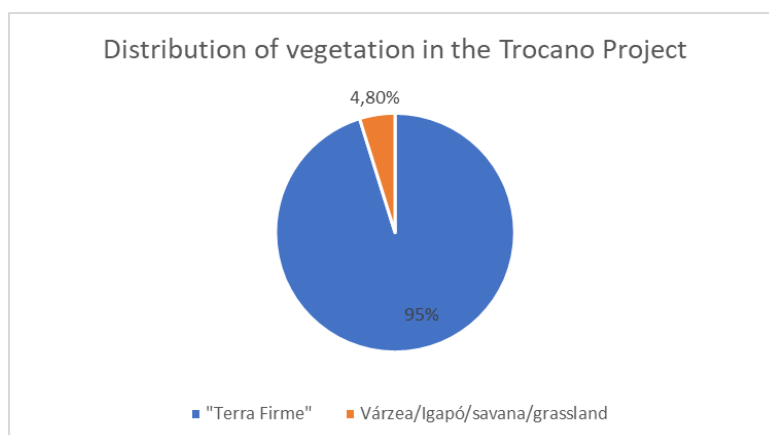


Chart 1 – Distribution of vegetation in the Trocano Project

Terra Firme forests are found in regions of higher elevation, protecting them from river-induced flooding. In these areas, you can find large trees like Brazil nut and palm trees.

Várzea forests are susceptible to seasonal floods. In the higher parts of these forests, the flooding period is brief, and the vegetation resembles that of Terra Firme forests. In the flat areas, which remain flooded for longer periods, the vegetation is similar to that of Igapó forests.

Igapó forests are located in lower-lying areas and are almost always flooded. In these areas, the vegetation consists of low-growth plants, with shrubs, vines, and mosses being common examples.

In the South Zone of the project, Terra Firme Forest predominates with almost 100% of the vegetation cover in this area. In the West Zone, the predominance is also Terra Firme Forest (95%) with approximately 5% of vegetation types such as Várzea Forest, Igapó, grasslands, and pastures (GP, 2023). In the Central Zone of the Project, there is the greatest diversity of vegetation, as it is located along the banks of the Madeira River, where Várzea and Igapó Forests prevail. Nevertheless, Terra Firme Forest has a greater representation in this area.

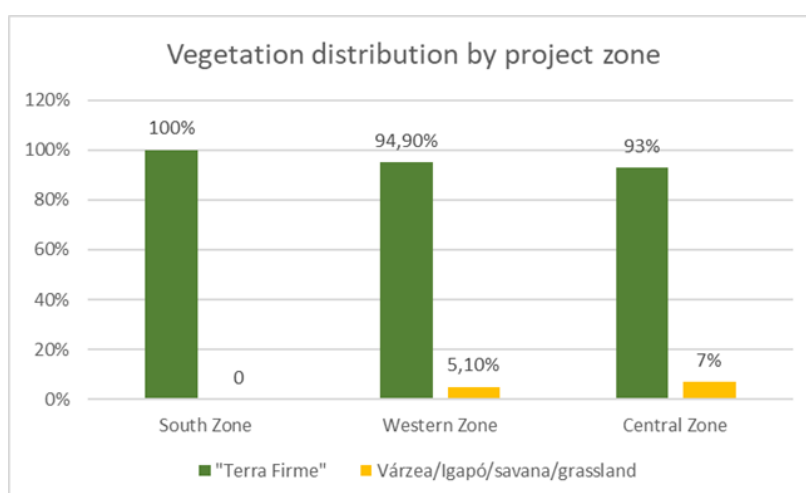




Chart 2 - Types of vegetation found in the zones of the Trocano Project

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The Trocano Project is located in the heart of the Amazon Rainforest, in an area of preserved forest rich in biodiversity. However, the project area faces human pressure aimed at degradation and deforestation. The actions of the project are helping to reduce and prevent these negative actions on the forest and the communities that depend on it.

9.3 Deforestation and Forest Conversion

The carbon quantifications for each project period consider all deforestation that occurred in the project and leakage areas. The associated discounts are deducted from the total number of potential credits for the period.

9.4 Commercial Timber Extraction

The project area does not include any commercial timber extraction activities. The project developer confirms that the area has not been subject to commercial scale timber extraction and has obtained any permits or licences for commercial scale extraction to be issued.

10 Threats to the Forest

10.1 Overview

The main environmental challenges faced by the Amazon biome include deforestation, wildfires, illegal mining, and agricultural expansion. The areas in the Trocano Project most susceptible to these impacts are those near roads and human settlements, and it is in these areas that conservation and protection efforts are focused.

Several threats to the forest have been identified. These threats include deforestation for pastureland for cattle ranching, the use of unsustainable agricultural methods such as clearing and burning vegetation, the establishment and expansion of settlements and communities, road construction that encourages occupation along their margins, and logging and timber extraction from the forest for building houses, boats, and canoes.

In all areas of the project, these actions are observed with the scale of the threat varying depending on the region. However, the most significant threats are cattle ranching and conventional agricultural practices.

A baseline study was conducted to identify and classify the main threats to the project. The threats of deforestation in the Municipality of Borba, classified as direct agents, include small-scale producers and landowners whose primary activity is livestock farming. In the south of Borba, the direct agents are large-scale loggers, squatters, and settlers who invade and take possession of land, often using violent practices.

The indirect agents of deforestation risk include the Borba population itself, which purchases uncertified wood, as well as retailers, distributors of products from larger cities, and small service providers such as small wood product factories.

10.2 Threat Analysis

A comprehensive survey conducted in 2014, considering all areas of the project in the municipality of Borba, showed that agriculture and livestock are responsible for more than 80% of deforestation. Human settlements, roads, and timber trade are also recorded practices, but on a smaller scale as shown in the chart below.

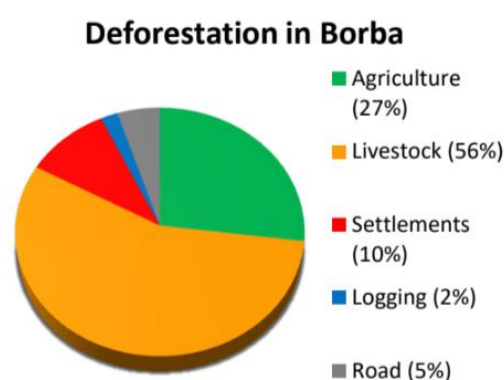




Chart 3 - Deforestation rates in the Municipality of Borba by activities

For data processing, a monitoring protocol was used, which employed three criteria for assessing Deforestation, Time of Human Activity, and Risk levels. Each of these criteria was divided into Low, Medium, and High as follows:

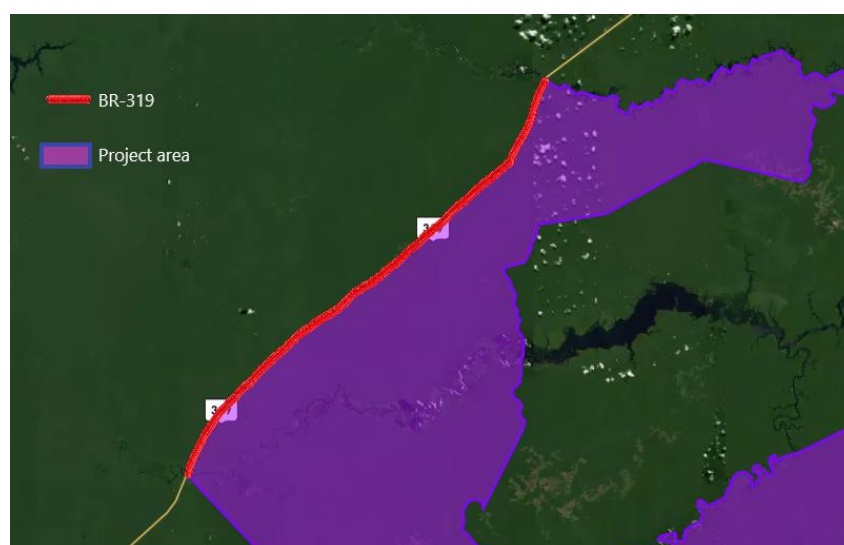
- **Deforestation:** Low -> Almost intact forest; Medium -> Deforestation the size of a soccer field or smaller; High -> Extensive and continuous deforestation, between 1 and 10 soccer fields.
- **Timescale:** Low -> Deforestation activity over 10 years ago; Moderate -> Deforestation activity between 2 and 8 years ago; High -> Deforestation activity within the last 2 years.
- **Risk:** Defined according to the ACEU methodology as low, medium, or high depending on accessibility, cultivability, extractability values, and protection status of the areas.

To obtain the data shown in the graph above, monitoring was carried out in six distinct areas of the project, namely:

- Downstream of the Madeira River:** This section, which comprises the banks of the Madeira River between Borba and the city of Nova Olinda, showed few deforested areas with no recent deforestation activities. This stretch was classified as Medium for Deforestation and Risk and Low for Timescale. Agriculture and Livestock represented 90% of the deforested areas in this region.
- Upstream of the Madeira River:** This section, which comprises the banks of the Madeira River between Borba and the city of Nova Aripuanã, showed that most of the deforested areas were used for cassava and banana production, with sporadic cattle farming. This stretch was classified as Medium for Deforestation and Risk and Low for Timescale. Agriculture and Livestock represented 54% of the deforested areas in this region.



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- c) **Mapiá River:** This stretch is located on the southwest border of the Central Zone of the project, and populations are sparse, mainly using the area for subsistence production. Therefore, it is a well-preserved area with high biodiversity. It was classified as Low for deforestation and Risk and Moderate for Timescale.
- d) **Mapiá Road:** The Mapiá Road is the stretch from Borba heading south to the Mapiá River. The road has many communities and cattle farms showing signs of deforestation on its edges, which was confirmed by satellite image analysis. Before the field visit, this area had been classified as low risk, but field observations showed that the reality is completely different from what was expected, and this area should be reclassified as high risk. For the other parameters, it was classified as High for Deforestation and Timescale. Settlements and the road accounted for nearly 80% of deforestation.
- e) **BR-319 Highway:** As mentioned in the first paragraph, highways are always means that facilitate forest degradation. During the inspection conducted in January 2014, which covered the stretch of Highway 319 bordering the Western Zone of the Project (Map 8), recent deforestation points were observed. However, it was found that the side of the highway that is within the project area maintains a higher percentage of forest cover compared to the side outside the project boundaries. This fact demonstrates that the project's implementation promotes and encourages forest preservation within its boundaries. This area was classified as High for Timescale and Risk and Medium for the level of deforestation. In this stretch, Settlements, the Road, and agriculture represented 92% of deforestation.



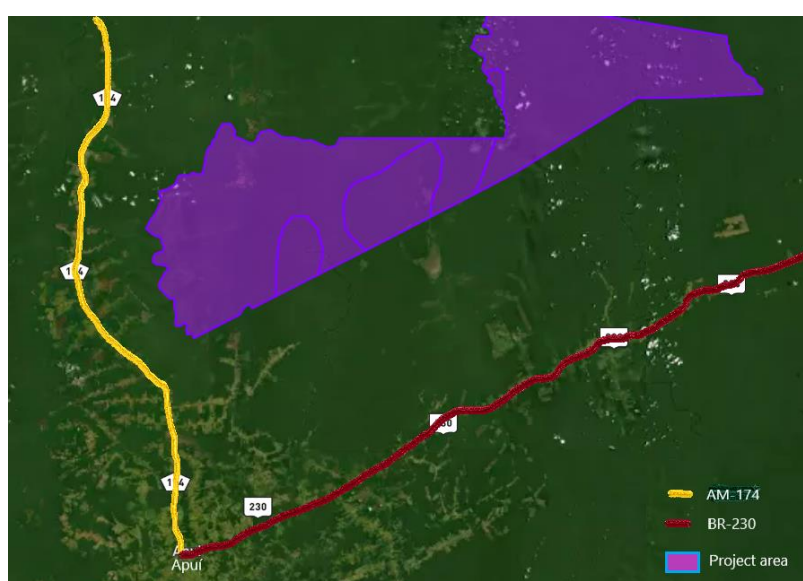
Map 8 - Section of the 319 Highway along the project border on the Western Zone.

- f) **Leakage Area:** The stretch covered in 2014 was only the part along the Madeira River to the city of Nova Olinda, along the banks of the Central Zone of the Project. This small stretch is not significant for assessing the actual levels of deforestation in the total leakage area, especially since the field visit did not observe significant deforestation. However, when satellite images were evaluated, significant deforestation was observed

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on the south bank of the Madeira River. This area was assessed as High for Deforestation and Risk and Low for Timescale.

The Southern Zone of the project is also another area that is affected by the threats brought by highways. Although Highways 174 and 230 do not make direct contact with the project's borders, the "fishbone effect" caused by these highways has already reached the leakage zone (Map 9). These two highways converge in the Municipality of Apuí, which has agribusiness and livestock as its main economic activities, both of which contribute the most to deforestation. In this area of the project, satellite images are the primary means of monitoring.



Map 9 - Southern project zone of the project and its proximity to highways BR-230 and AM-174



11 Measures adopted to Address Threats

11.1 Overview

Given the vastness of the project area and the challenges of traveling through these regions, various actions are required to mitigate threats. Among these actions are the mapping, identification, and monitoring of the project areas and their surroundings. This provides an overview of the most vulnerable locations prone to deforestation and other negative impacts, helping to define which measures should be directed to each project area.

The methods used by the project team for this monitoring included comprehensive on-site visits throughout 2014, 2015 & 2016, the use of satellite imagery, aerial photos taken by chartered aircraft, and data processing using the Geospatial Platform.

The quality and frequency of satellite imagery have improved over time, making it one of the primary monitoring tools for the Trocano Project. Satellite images can accurately identify various

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types of threats and their dates and frequencies. Once collected and processed, this data is stored in the Geospatial Platform.

When an immediate assessment is required in hard-to-reach areas, the project also has the option of aerial monitoring using chartered aircraft.

On-site visits are of paramount importance for identifying and reducing threats since the field team can interact with communities and raise awareness about the importance of forest preservation. On the other hand, these communities realize that the project areas are being closely monitored by the project team.

11.2 Community Engagement & Communication

On-site visits are of paramount importance for identifying and reducing threats since the field team can interact with communities and raise awareness about the importance of forest preservation. The communities realize that the project areas are being closely monitored by the project team.





Image 3: Visit made to Adilson's family on the banks of BR-319, April 2014



Image 4: Visit to São Joaquim Community. August 2015

Making frequent visits to communities during the execution of conservation projects, such as the Trocano Project, is crucial and offers several important advantages and benefits. Here are some reasons why this is so crucial:

- **Communication and Building Relationships:** Regular visits allow project team members to build strong, trusted, two-way relationships with local communities. This is essential for establishing an effective partnership and ensuring that communities feel involved and respected in the conservation process.
- **Contextual Understanding:** Regular visits provide a deeper understanding of the local context, including culture, challenges, needs, and community values. This is vital for adapting conservation strategies sensitively and appropriately to the local reality.
- **Active Engagement:** By visiting communities frequently, it's possible to actively involve residents in conservation activities. They can become integral to the decision-making, planning, and implementation process, increasing their sense of responsibility and ownership of the project.

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- **Real-Time Feedback:** Regular visits provide opportunities to receive real-time feedback from communities. This allows for necessary adjustments to strategies, immediate problem-solving, and ensuring that project actions align with local needs.
- **Continuous Learning:** Frequent contact with communities provides ongoing learning for the project team. This includes learning from traditional community knowledge, gaining a better understanding of challenges, identifying innovative solutions to problems, and threats to forest conservation.
- **Transparency and Accountability:** Frequent visits demonstrate transparency and accountability on the part of the project. This helps create an environment of trust and reduces potential mistrust that can exist between local communities and the project team.
- **Effective Monitoring and Evaluation:** Regular visits are crucial for effective monitoring and evaluation of project progress. This includes data collection, monitoring key indicators, and assessing the impact of project activities being implemented.
- **Conflict Resolution:** Frequent visits also allow for early identification and resolution of conflicts or concerns that may arise between the project and communities. This prevents conflicts from escalating and harming project conservation efforts. A Dispute Resolution Mechanism is in place for dealing with any formal complaints and concerns from local stakeholders.
- **Long-Term Sustainability:** By maintaining ongoing dialogue with communities, it becomes more possible to ensure the long-term sustainability of initiatives. This is because communities are more likely to continue supporting and protecting the natural environment when they feel valued and engaged.



Other actions to reduce these threats that are highly effective include educating and training the local population and riverine communities about the importance of preserving the forest and the social, environmental, and financial benefits that can be achieved through sustainable practices. The interaction of the project team with local communities makes them feel like integral parts of the project and encourages them to act as true partners in forest preservation and protection actions. This increases their engagement in the project's social initiatives.

In summary, frequent visits to communities play a vital role in building effective partnerships, adapting conservation strategies to local needs, actively involving communities, and overall project success. This approach is essential for achieving sustainable and positive outcomes for forest conservation and the people who depend on it.

11.3 Municipal Law

The support of the local government and the creation of public policies to protect areas at high risk of degradation, such as the enactment of Law No. 113/2013, which reinforces the long-term commitment of the municipal government to continue the project's actions across future administrations, are also effective tools in reducing threats.

Not only in the State of Amazonas but as is common in any other Brazilian state, it often happens that after a change of government, actions and commitments made in previous administrations

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are forgotten and sometimes discontinued. The creation of this law allows the actions of the Trocano Project to continue regardless of political changes in the municipality.

12 Measures adopted to Address Leakage

12.1 Leakage Buffer

The leakage area of the Trocano Project was defined following the NFS AM001.1b methodology as a protection zone with a radius of 10 km around the project area, totaling approximately 1.8 million hectares (Map 10). This area aims to protect the project's areas against deforestation and the subsequent reduction of carbon reserves.



Map 10 - Leakage zone of the Trocano Project.

12.2 Leakage Challenges

Understanding the challenges faced during the execution of conservation projects, especially when it comes to reducing deforestation that affects carbon credit generation, is crucial to assess the effectiveness of mitigation actions. However, it's important to emphasize that, in some circumstances, the project team's ability to act may be limited, as is the case with leakage areas located beyond the project's geographical boundaries. Below are descriptions of some of the obstacles encountered and how they can impact the project's leakage mitigation efforts:

- Geographical Limitations:** The project team often operates within specific geographical boundaries and may lack direct authority or influence beyond those limits. This can be a significant challenge when areas affected by deforestation are located outside these boundaries. In some cases, such as the mentioned Southern Zone of the project, these areas may even belong to different municipalities, making coordination and implementation of mitigation measures even more complex. This limitation in the project team's ability to act in leakage areas makes these areas extremely vulnerable to

deforestation and degradation, especially in areas with easy access via roads and highways.

- **Preexisting Deforestation History:** In some regions, deforestation may be a long-standing issue that predates the project's implementation (Map 11). This can further complicate mitigation efforts because there are historical and social factors contributing to ongoing forest degradation, often extending into leakage areas and crossing project boundaries. Dealing with preexisting deforestation requires additional strategies and may necessitate partnerships with other stakeholders, such as government authorities and civil society.





Map 11 - Areas deforested before 2011 in the South Zone of the Project

- **Cultural and Political Obstacles:** The lack of a forest preservation culture, inadequate government oversight, and ineffective public policies for deforestation prevention are significant challenges affecting conservation. Changing mindsets and creating stricter policies are complex, long-term processes that require coordinated efforts on multiple fronts.

12.3 Leakage Mitigation

Several measures are implemented to reduce leakage. The first of these is monitoring, which is conducted through field inspections covering the most vulnerable areas. Different modes of transportation, such as land, water, and air, are used depending on the conditions of each location to be inspected. Additionally, reports are prepared based on data collected from local communities and photographs of deforested areas. Later, this data is confirmed through satellite imagery and analysis of the photographs.

In order to primarily identify leakage from the areas within the project, a land monitoring was also conducted by the IAKIRA team in April 2016. In this monitoring, five areas within the project were visited, and the consequences of a major fire that had affected the area were observed, including the burning of cultivation areas and forested areas. Other forms of degradation were

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also noted, such as deforestation for housing construction and sand extraction. During this trip, communities residing within the project area were also visited, and information about the project's progress and the importance of forest preservation was shared.

As part of the measures to reduce threats, communications are carried out during visits to communities, emphasizing the importance of community involvement in the project's conservation efforts. Information about planned activities and the benefits the project will bring through community participation is shared. Continuous contact with communities inside and around the project, keeping them updated about project activities, is crucial for engaging these communities and gaining their support in achieving the project's objectives, and ensuring against local activity shifting.

13 Project Monitoring

13.1 Monitoring Plan

The monitoring plan aims to create a robust and adaptive monitoring system for the Trocano Araretama Project, leveraging both advanced technology and community participation. The integration of geospatial data with on-the-ground monitoring ensures a comprehensive approach to tracking project progress and impact, ultimately contributing to the project's success in preserving the Amazon rainforest and supporting local communities.

The plan includes regular geospatial data and satellite imagery analysis, corresponding ground surveys where applicable, and community-based monitoring to ensure comprehensive tracking of forest conditions.

The Trocano Project uses advanced methods of remote sensing and geospatial data will be used to measure and monitor changes in forest carbon stocks over time. The relevant and appropriate data is held within the Geospatial Platform and is updated periodically.



The Monitoring Plan is included in the Project Management Plan in detail, but as a summary includes the following:

- Integration of geospatial data
- On-the-ground monitoring
- Training and Capacity building
- Data Integration and Reporting
- Community Feedback

14 Project Actions

14.1 Benefit Distribution Mechanism

The project management plan includes a benefit-sharing mechanism that ensures fair and transparent distribution of benefits derived from the project, enhancing local livelihoods and

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economic well-being. This includes infrastructure improvements, local development projects, education, healthcare and other community needs.

The community benefits that are the result of the project are implemented in consultation with the local communities themselves, ensuring that they are reflective of the needs of the people of the project area. Social impacts are detailed in the Social and Biodiversity Module in more detail.

14.2 Project Actions and Activities Summary

The Timeline of Key Project Activities report for this reporting period (provided in the supporting documentation) gives detailed information of the actions taken within this reporting period, however an overview of some important actions are highlighted here.

14.2.1 Community Actions

Community visits were made throughout the period with the primary goal of engaging these communities in the project's protection and conservation efforts. During these visits, surveys were conducted to assess each community's current water and energy supply infrastructure, their main sources of income, the number of residences and schools, and their primary difficulties and needs.

The project conducted renovations and construction of schools and health centers in the communities within the project's interior. The renovation of the Puxurizal Bridge, which increased safety for local communities and provided employment opportunities in the region, was also carried out.



Workshops and training sessions on proper waste disposal, a campaign about preserving endangered animal species found in the project area, and support for sports through karate competitions in Borba were organized.

Due to its extreme climatic conditions, the Amazon is often affected by major floods that cause various disruptions and losses for the populations of affected municipalities. In March 2014, Borba was hit by a major flood, and several communities within the project's interior were affected and needed emergency assistance. The Trocano Project made a donation of R\$ 100,000.00 (One hundred thousand Brazilian Reais) to enable the municipality to provide basic necessities such as food, clean water, and temporary shelter to these affected communities.

14.2.2 Water Analysis

It is widely known that despite the Amazon Region being the richest in water resources, the quality of the available water for the majority of the population does not meet the parameters to be considered suitable for human consumption. Consuming contaminated water poses various health risks, and typically, children and the elderly are the most vulnerable to waterborne diseases such as diarrhea and parasitic infections, which, if left untreated, can lead to death.

With this in mind, the Trocano Project team conducted water analyses in August 2015 of the Madeira River and the water from the drinking fountains at the School in the São Joaquim

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Community (images 3 & 4) which was consumed by teachers and students. The results of these analyses revealed contamination, confirming that the water was not suitable for consumption.

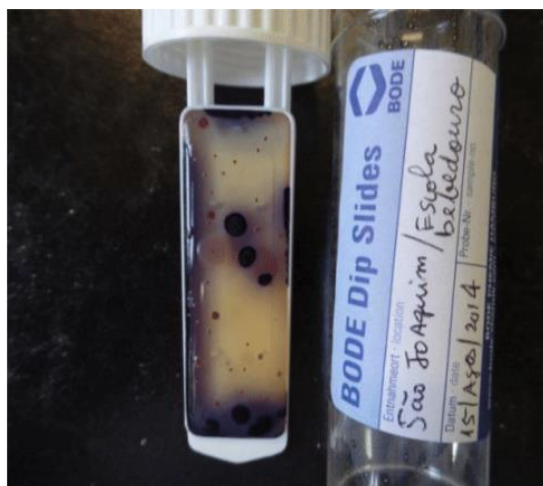


Image 5 - Quick water test at the water coolers of the São Joaquim Community School.

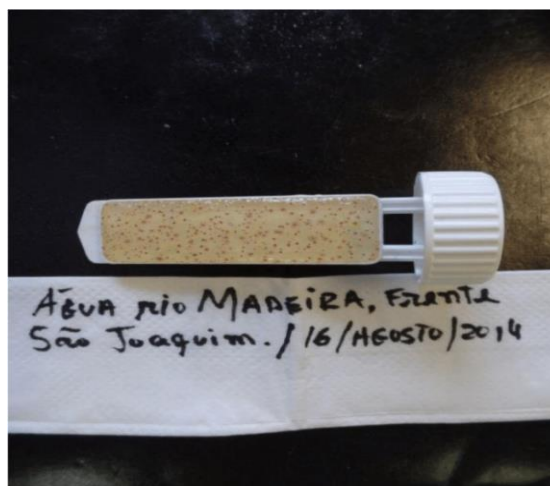




Image 6 - Quick water test of the Madeira River on the banks of the São Joaquim Community.

Following the results found, the Trocano Project installed the Acquabox water filtration system in the São Joaquim Community (image 5 & 6) which provides 1000 liters per day of clean drinking water to 80 students at the school and 20 families within the community. In return, the community committed to assisting in monitoring the project areas to prevent degradation.



Image 7 & 8 - Acquabox water purification system installed at the school in the São Joaquim Community.

In continuation of the water quality monitoring activities, water analysis was conducted in five communities within the project area with the goal of identifying water contamination issues in these communities and proposing methods and technologies to improve water quality, similar to

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what was done in the São Joaquim Community as shown. This action involved a partnership with the Amazon Research Institute (INPA).

At the Nossa Senhora Aparecida School in the Vila Isabel Community, students and teachers did not have access to an adequate water filtration system for drinking. Therefore, the project acquired and sent a water filtration and cooling system to the school to meet its needs.

14.3 Communication Channels with Project Stakeholders

Communication plays a crucial role in the Trocano Project, being fundamental to its success and the Trocano Project demonstrates a strong commitment to transparency and the dissemination of information about its actions and impacts.



To date, we have employed various communication strategies to disseminate information about the project. This has involved conducting both formal and informal meetings with local authorities, such as the mayor, secretaries, and council members, as well as conversations, virtual meetings, and discussion groups with communities. Furthermore, we have distributed simple and effective illustrated brochures describing the project and its benefits to community members.

The communication strategy for the Trocano Project is ongoing and evolving. During this project period, outreach channels include local radio broadcasts, educational lectures, public engagement events and the Trocano Project website, as well as the ongoing community visits.

There is also the establishment of a permanent Project office in the seat of Borba, with a dedicated team, which serves as a direct point of contact for those who do not have internet access, allowing them to obtain information about the project's ongoing actions. This strategy ensures that the dissemination of information is comprehensive and inclusive, meeting the needs of different audiences.

The creation of the Iakira NGO also played a vital role in dynamically and directly disseminating information to populations in more remote areas of the project. This approach ensures that information reaches communities in distant regions, promoting the Trocano Project's commitment to effective communication and the participation of local populations. In summary, the project employs various strategies to ensure that its information is accessible and comprehensive, demonstrating its commitment to transparency and public engagement.

Another important aspect was the collaboration with healthcare professionals from the municipality, municipal secretaries, and members of IDAM, who play a vital role in disseminating information and raising awareness about the project. They are constantly moving around the project area as part of their work activities, which allowed us to effectively reach more remote areas of the project.

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15 Team Training and Capacity

The Trocano Project encompasses various communities, settlements, and populations within their operational areas, and it is of utmost importance to inform and train these groups about the project's intended actions.

During the timeframe of this report, formal training and capacity-building sessions were conducted with the OTG team responsible for the project, community members, riverside inhabitants, and collaborators from the Borba municipality.

The community engagement activities in the Trocano Project area are conducted consistently with the aim of involving the population in monitoring and preserving the project areas. Various training sessions are conducted with the local population, the Borba office team, and partners like the Iakira NGO.

Active participation of the population and local communities is essential for the success of conservation initiatives, as these people live directly in the conservation area and play a vital role in environmental protection.



The training sessions cover various topics related to the project with the goal of empowering office staff and the local population to become project monitors. Training in GPS Usage and Monitoring Sheet Completion includes using GPS to map areas of interest, such as deforestation sites, wildfires, and wildlife trails. Deforestation Monitoring Training includes raising awareness and providing training on the importance of forest preservation and conservation and teaching how to fill out monitoring sheets to record relevant information about the state of the forest, including areas affected by illegal activities, changes in vegetation, and other environmental indicators.

Workshops were held in the São Joaquim community, addressing the following topics:

- Informing the community about the project
- Understanding the primary needs of the community
- Informing the community about the expected real benefits
- Clarifying the project's objectives
- Gathering feedback from the community regarding their expectations and questions
- Providing the community with answers to any questions and doubts they might have

Training sessions were also held with the Borba project office team, covering the following subjects:

- Introduction of the team to the project and explanation of the work's requirements and responsibilities.
- Addressing any issues or concerns the team might have had regarding the work and the project itself.
- Presentation and explanation of the Management Plans.

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Monitoring training was also carried out with the project team based in Borba. This training took place downstream of the Madeira River in a central project area and covered the following topics:

- Demonstration of monitoring procedures and methodologies.
- Explanation of monitoring spreadsheets and how to complete them.
- Demonstration of GPS, cameras, and binoculars usage.

16 Project Reporting

16.1 Project Implementation Reports (PIR)

In accordance with the Natural Forest Standard requirements, the modules presented for verification have been collated and published as the annual reports for the project period. The report shall be submitted to the NFS for publication on the NFS Project Index and shall also be published on the Trocano Project website.

16.2 Project Reporting from Previous Periods

16.2.1 Natural Capital Credits (NCCs)

Period	NCCs issued	Buffer Deduction	Sellable NCCs
11th June 2011 to 31st July 2012	7,702,808	770,281	6,932,527
1 st August 2012 to 31 st July 2013	7,579,393	757,939	6,821,454
Totals	15,282,201	1,528,220	13,753,981



16.2.2 Outstanding Corrective Actions from Previous Verifications

There are no pending issues or corrective actions outstanding from previous verifications.

16.2.3 Planned Actions not Implemented in this Project Period

Solar Ovens: One of the planned activities that couldn't be realized was the social action of acquiring and distributing solar stoves to the communities. In the pilot project, it was found that this equipment did not perform in the field as it did in laboratory experiments. Solar stoves have an excellent theoretical basis but depend on many climatic factors for efficient use. Given the Amazon region's highly variable daily climate with frequent rains, heavy cloud cover, and shading from the forest, the use of this type of stove would be limited and would not meet the communities' needs.

Ecotourism: Another planned socio-economic activity is the ecotourism development project in the region. An initial market research was conducted during the Santo Antônio Festival, and the implementation of activities was scheduled for 2016. However, in 2016, one of the most hotly contested elections for Borba's mayorship occurred, which affected the progress of various planned activities for the year, including the ecotourism development project.

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17 Social and Community Benefits

17.1 Overview

The Trocano Araretama Project is designed to combat deforestation and forest degradation while fostering sustainable development and biodiversity conservation. This project aims to create a balance between environmental sustainability and the economic needs of local communities.

Although the primary goal of the project is to reduce emissions from deforestation and forest degradation, simultaneously fostering sustainable development, the project also has the aim of enhancing local livelihoods. The project aligns with the broader objectives of REDD+ by integrating climate action with community development and biodiversity conservation.

Activities include sustainable forest management, conservation efforts to protect and enhance forest carbon stocks, and initiatives to ensure community benefits from these conservation efforts.

Additionally, the project aims to provide the local communities with enhanced socio-economic opportunities, through their involvement in the project and its activities. Community engagement and participatory approaches are integral to these activities.



The project is designed to ensure that the local communities in the Municipality of Borba are not only participants but also beneficiaries of the Trocano Araretama Project. Through these strategies, the project aims to achieve a harmonious balance between environmental conservation and community development.

These activities reflect a holistic approach to community engagement, encompassing environmental conservation, education, health, infrastructure development, and capacity building. Such initiatives ensure that the local communities are not only participants but also beneficiaries of the conservation efforts, aligning with the overarching goals of the Trocano Araretama Project.

17.2 Project Objectives

The overall objectives of the project and its management plan are as follows:

- *Mitigate deforestation within the project area for the duration of the project.*
- *Conserve and preserve the natural forests of the project area.*
- *Implement effective protection and monitoring activities.*
- *To provide socio-economic improvements for the local communities, including healthcare, education, employment, and infrastructure improvements.*
- *To provide biodiversity protection of the plants, animals, and the ecosystem as a whole.*
- *To carry out data collection, including inventorying biodiversity, forest, flora, and fauna.*
- *To provide viable sustainable income alternatives for inhabitants of the project area.*
- *To strengthen local forest protection.*
- *To incentivise local communities to adapt their current behaviour to more sustainable means.*

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- *To incentivise and reward changes in behaviour.*
- *To promote capacity-building and environmental awareness.*
- *To encourage participation in project implementation, through monitoring, management, conservation, and other activities.*
- *To facilitate participation in project-related training.*
- *To implement an environmental education programme.*

In the context of social benefits, one of the fundamental objectives of the Trocano Araretama Project, and REDD+ in general, is to bring real, measurable and sustainable benefits to people and communities in the project area.

As the project is based in Borba, a remote municipality in the Brazilian Amazon, the project team have taken to the rivers, visiting communities of all sizes, and a variety of levels of isolation.

Having experienced first-hand the challenges that are faced in the communities, we have worked to provide the most suitable answers to these problems, in a way that is sustainable for both the people and the environment.

17.3 Detailed Supplementary Reports

The supporting documentation for this module is key to understanding the extent of actions taken and is supplied as an annex document.

18 Communities within the Project Area

18.1 Identification of Communities within the Project Area

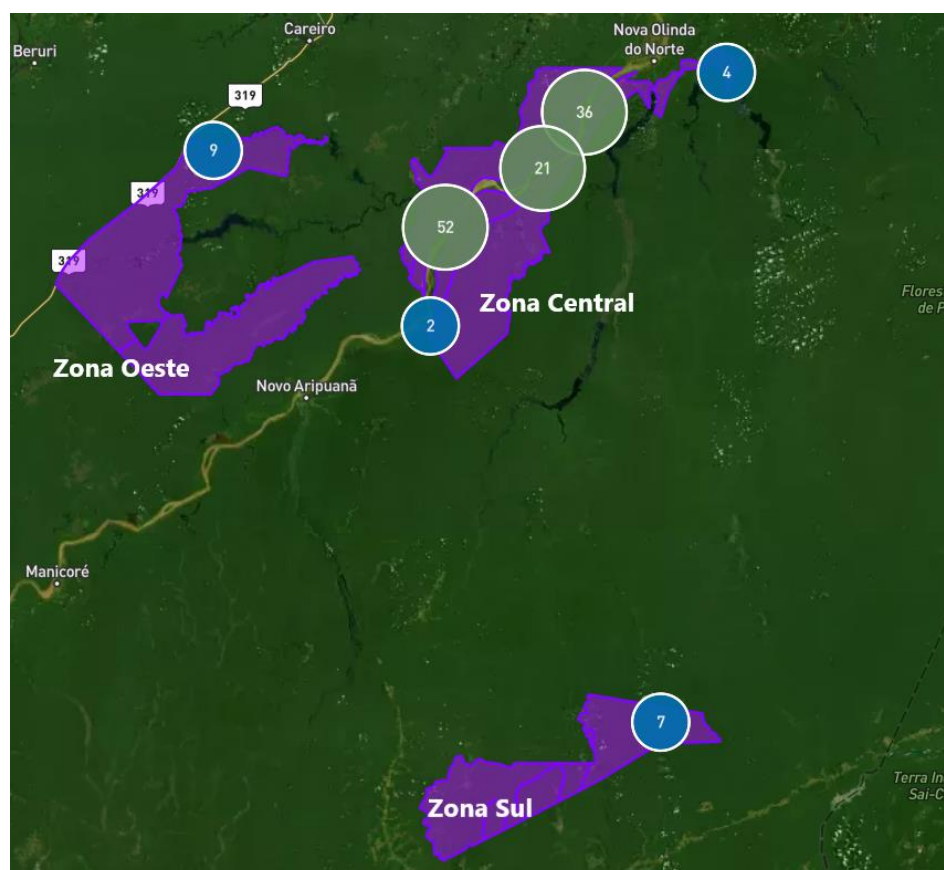
The project area is home to many local communities who depend on the forest for their livelihoods. These communities engage in traditional practices such as fishing, small-scale agriculture, and sustainable forest use. The project aims to involve and benefit these communities by promoting sustainable development, improving living standards, and providing alternative livelihood options that align with forest conservation.

One of the project activities is the mapping and identification of each of these communities. This is essential to understand the dynamics of these regions and ensure that interventions are appropriate and respectful of the needs and ways of life of these populations.

In the context of the Trocano Project, the concentration of communities is within the Central Zone of the project, as depicted in the map below. This concentration is not a coincidence, as the Madeira River runs throughout the extent of this zone. Communities often choose the banks of major rivers as their settlement locations due to the convenience of transportation, access to water, fishing, and other natural resources essential for their livelihood.

During the initial project implementation, 105 communities were identified as being within the Trocano Project area. As time passes, many of the smaller communities are transient and may combine with other communities over time or relocate due to seasonal changes. Communities

are remapped periodically, as updated information is available. A full list of communities in relation to this project period is provided in the supporting documentation.





Map 12 – Consolidation of Identified Communities within the Project*

***Note:** This map includes all identified communities, including some that have combined with others since the project start date.

A full list of identified communities is as follows:



#	Name	#	Name	#	Name
1	Miripiti	51	Jacarezinho	101	Porto Paraíso
2	Ponta Grande	52	Iracema	102	Santa Luzia
3	Sacaí	53	São Sebastião	103	Ararunim
4	Ponta da Areia	54	Terra Preta	104	São Sebastião
5	Espírito Santo	55	São Sebastião do Jauari	105	Novo Horizonte
6	Vila Isabel	56	Chumbo	106	Awarazinho
7	Porto Figueira	57	Santa Ana	107	Awara Grande
8	Boca do Laguinho	58	Santa Clara	108	São Lázaro
9	Bom Jesus	59	Santa Rita	109	Vicinal
10	Santo Antônio	60	Belo Horizonte	110	Tabocal
11	Porco	61	Nova Alegria	111	Boca do Parana (Mandii)

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12	Pororoca	62	Sempre Viva	112	São Luis
13	São Joaquim	63	São Benedito	113	Igarape Uarazinho
14	Copaíba	64	Acará	114	Barrigudo
15	Tauari	65	Barreirinha	115	Piaba
16	Floresta	66	Novo Remédio	116	Vila Tupana
17	Patauí	67	São José	117	Muiratinga (Mandii)
18	Santa Maria	68	São João		
19	Catarina	69	Costa do Ipiranga		
20	Nova Vista	70	Castanhal		
21	Terra Pretinha	71	Bonfim		
22	Arapapá	72	Pouso Alegre		
23	Santa Marta	73	Terra Preta		
24	Terra Preta Felicidade	74	Cariri		
25	Itaúba	75	Flechal		
26	Cantagalo	76	Boa Esperança		
27	Arapara	77	Suaçú		
28	Santa Catarina	78	São Sebastião		
29	Retiro	79	São José		
30	Fortaleza	80	Santana		
31	São Benedito do Arapapá	81	São Roberto		
32	Ponta Alegre	82	Caiçara		
33	Vera Cruz	83	Limão		
34	Miriti	84	Trocanã		
35	Nova Aparecida	85	Santa Isabel		
36	Rio Madeirinha São João	86	São João		
37	Santo Antônio do Bruno	87	Paricá		
38	Pau Caído	88	Chaves		
39	São Francisco	89	Piquiá		
40	Alexandre	90	Volta do Timbó		
41	São Felipe	91	Puruzinho		
42	Terra Preta	92	Guariba		
43	Timbó	93	Fortaleza		
44	São Francisco	94	Nova Fazenda		
45	Awará	95	Rio Branquinho		
46	Nossa Senhora da Conceição	96	Perseverança		
47	São Bento	97	Castanha		
48	Boa Lembrança	98	Anumaã		

Table 1: Full List of Identified Communities

It is also important to note that riverside communities often move during certain seasons of the year. During periods of intense flooding, river waters can inundate the homes and cultivation areas of these communities, forcing them to relocate to higher ground. Once the water levels return to normal, these communities return to their original locations. This cycle of movement is an important aspect to consider in project planning, as it directly affects access to and the use of local resources.

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19 Social and Community Interaction

19.1 Free, Prior and Informed Consent (FPIC)

In accordance with the NFS requirements, formal FPIC was not required to be carried out for this project period, as it is not a 10 year verification event.



However, it should also be noted that the community consultation and communication process is not an isolated event, it is an ongoing process; that the project is discussed in all community visits. These discussions are carried out by the Trocano Project team members, as well as the associations we work with. This approach reflects the project's commitment to maintaining open and transparent communication with local communities and the affected population.

During all visits and meetings with communities and local residents, the Trocano Project team dedicates itself to collecting valuable information about the expectations, suggestions, questions, and any potential complaints from the public living within the project's area of influence. This not only allows the project to align with the needs and concerns of the communities but also demonstrates a strong commitment to listening and responding to the voices of those directly impacted by the project. The summary of records is provided in the supporting documentation.



Photo 1 - Project team sitting down with community members in the Trocano Project area

Interviews conducted during site visits give community members the opportunity to express their support and enthusiasm for the project, as well as their expectations regarding the benefits the project can bring. This highlighted the effectiveness and importance of the communication established with the project area's inhabitants. Actively involving communities and maintaining effective communication channels with them are crucial for the project's success, and the reliance on their support and engagement has been widely demonstrated.



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This active and participatory approach is an essential component to ensure that the Trocano Project remains in tune with local communities and that its work positively contributes to sustainable development and environmental conservation in the Amazon region.

19.2 Community Engagement & Communication

On-site visits are of paramount importance for reinforcing local support for the project. Making frequent visits to communities during the execution of conservation projects, such as the Trocano Project, is crucial and offers several important advantages and benefits. Here are some reasons why this is so crucial:

- **Communication and Building Relationships:** Regular visits allow project team members to build strong, trusted, two-way relationships with local communities. This is essential for establishing an effective partnership and ensuring that communities feel involved and respected in the project process.
- **Contextual Understanding:** Regular visits provide a deeper understanding of the local context, including culture, challenges, needs, and community values. This is vital for adapting project strategies sensitively and appropriately to the local reality.
- **Active Engagement:** By visiting communities frequently, it's possible to actively involve residents in conservation activities. They can become integral to the decision-making, planning, and implementation process, increasing their sense of responsibility and ownership of the project.
- **Real-Time Feedback:** Regular visits provide opportunities to receive real-time feedback from communities. This allows for necessary adjustments to strategies, immediate problem-solving, and ensuring that project actions align with local needs.
- **Continuous Learning:** Frequent contact with communities provides ongoing learning for the project team. This includes learning from traditional community knowledge, gaining a better understanding of challenges, identifying innovative solutions to problems, and threats to forest conservation.
- **Feedback on Project Actions:** Follow-up assessment and monitoring of actions implemented in the project area to ensure that the impacts remain positive and appropriate to the needs of the communities.
- **Transparency and Accountability:** Frequent visits demonstrate transparency and accountability on the part of the project. This helps create an environment of trust and reduces potential mistrust that can exist between local communities and the project team.
- **Conflict Resolution:** Frequent visits also allow for early identification and resolution of conflicts or concerns that may arise between the project and communities. This prevents conflicts from escalating and harming project conservation efforts. A Dispute Resolution Mechanism is in place for dealing with any formal complaints and concerns from local stakeholders.



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19.3 Community Visits

In addition to mapping the communities, community visits serve as opportunities to conduct comprehensive surveys of the specific characteristics and resources of each community. This includes identifying their primary deficiencies and needs, which are essential for the development of effective actions within the Trocano Project. Furthermore, visits to communities play a vital role in social communication, allowing the project's objectives and main activities to be shared with local populations, promoting more effective and informed collaboration.

Regular visits to communities play a vital role in building effective partnerships, adapting conservation strategies to local needs, actively engaging communities, and contributing to the overall success of the project. This approach is essential for achieving sustainable and positive outcomes for both forest conservation and the people who depend on it. Numerous community visits were carried out during this project period, which are detailed in the Timeline of Key Activities Report, with a brief summary of key visits provided here:

- **Boca do Paranã:** Primarily a farm with livestock, sheep, pigs, and subsistence fishing. It has a generator for electricity, and the water consumed is collected from rainwater.
- **Paraná do Mandii:** A community of floating houses where vegetables, bananas, lemons, and peppers are produced. Some of the production is sold in Borba, and there's a small grocery store in the community. Water is sourced from a stream. The community has a boat used for school transportation.
- **Muiratinga (Mandii):** Comprised of two houses with electricity provided by a generator. Water is collected from the river and treated with aluminum sulfate. They produce bananas, corn, Brazil nuts, and açai.
- **São Luis:** Had five houses supplied with electricity from a generator, and water is collected from the river after treatment. They raise approximately 60 heads of Brahma cattle and buffalo, produce cassava flour, and extract Brazil nuts. Large degraded areas due to land overuse suggest potential for a reforestation program.
- **São José:** Consists of three houses with electricity from a generator. Water is collected from the river and treated with chlorine. They raise white cattle and cocoa.
- **São Joaquim:** Comprises seventeen houses with electricity from a generator, and water is sourced from the river and treated with aluminum sulfate. The community has a school with 75 students and 7 teachers, complete kitchen facilities, but lacked a computer. They produce passion fruit, cocoa, bananas, and cassava, and engage in subsistence fishing and hunting. There's no proper sanitation system, and residents use the forest for their needs.
- **Igarapé Uarazinho:** Eleven houses powered by a generator, which was not functioning during the visit. River water is treated with chlorine before consumption. The community raises buffalo for milk, consumed exclusively within the community, and also produces cassava, bananas, and vegetables. The community faces constant risk due to riverbank erosion.
- **Ponta Alegre:** A well-structured community with 34 houses powered by a municipal generator. Water is sourced from a well and stored in a 5000L tank. The community has

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septic tanks for sewage treatment, and the school is equipped with a computer room with internet access. However, waste is still disposed of in the surroundings. Cassava and banana production and fishing are practiced.

- **Barrigudo:** Comprised of 8 houses powered by a generator. They did not have access to treated water, which was sourced from a stream. This was a poor community lacking basic food, and they were requesting support from IDAM for a production project. It is an area with great biodiversity.
- **Piaba:** Comprised of seven houses with electricity provided by a generator. They consume treated water from a stream. They produce cassava and engage in hunting and fishing. The community lacked means of communication.
- **KM 216 (BR-319):** Comprised two houses supplied by the energy grid that cuts through the highway. Water for the community is from an untreated well. Even though it's along the highway, the community lacked means of communication, and the nearest school is 25km away in Vila Tupana. The highway becomes impassable during the rainy season, and malaria is a major problem for this community. They produce cupuaçu, açaí, guava, acerola, cassava, and travel at night to hunt. Despite constant deforestation, there's a significant animal biodiversity.
- **Vila Tupana:** This community is outside the project boundaries but was visited to assess the possibility of assisting other communities along BR-319. It has a school with approximately 135 students and 4 teachers, with functional internet. The community is supplied with electricity from the highway grid and has a public phone.



These visits aimed to gain a better understanding of the socioeconomic reality, challenges, and needs of local communities. The data collected are crucial for directing project actions and ensuring that conservation and sustainable development strategies are tailored to the specific demands of each community.

It's important to note that data collection was not limited to the communities already visited; there are plans to extend these activities to more communities throughout the project. This approach demonstrates the project's ongoing commitment to engage with and understand the various communities sharing the region, ensuring their interests and needs are duly considered.

This expansion of visits and data collection reflects the desire to achieve a broader and more inclusive impact, serving a larger number of communities and contributing to more equitable and sustainable development in the region. By understanding the specific realities of each community, the Trocano Project is better prepared to implement strategies that bring tangible benefits to both people and the environment, effectively fulfilling its mission of conservation and climate change mitigation in a responsible manner.

19.4 Evaluation of the Social Impacts of the Project on Local Communities

Ongoing assessment of the social impacts of the Trocano Araretama Project on visited communities is a fundamental part of the sustainable development approach. To ensure that project actions align with the interests and needs of local communities, monitoring visits are

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conducted regularly. During these visits, data and information about social, economic, and environmental changes in the communities are collected. This allows for the assessment of the impact of project activities, identification of areas that require adjustments, and measurement of progress toward conservation and sustainable development goals.

In addition to providing valuable information to enhance project strategies, monitoring visits also promote community engagement. They offer an opportunity for ongoing dialogue between project stakeholders and community members, reinforcing mutual commitment to biodiversity preservation, climate change mitigation, and local well-being. As the Trocano Project advances, these monitoring visits play a crucial role in ensuring that positive social impact is sustained and expanded, becoming a model of best practices in the implementation of conservation projects in partnership with local communities.

19.5 Meetings with Stakeholders

For the implementation of the Trocano Project, ongoing meetings with the population of Borba, municipal agencies, and other local institutions is conducted to gather information about expectations related to the project's objectives and activities. Informational events are also held to clarify all stakeholders in the project's influence area about the benefits that the project could provide.

There were also several meetings with potential partners for the project, such as IDAM, Moraes Consultoria, the Borba Culture Department, Qluz, and representatives from communities within the project area. All of these meetings aimed to identify potential partners, opportunities for social projects, the needs of local communities, and companies that could provide services for the project.

19.6 Strategies for Enhancing Social Benefits and Accessibility

19.6.1 Project Trocano Office in Borba

The inauguration of the Project Trocano office in Borba in January 2014 marked a significant milestone in the interaction between the project and the local communities. Strategically located within the municipality, the office became a point of reference and a readily accessible source of information for local populations and project partners. This not only allowed people to obtain information, seek clarification, and make suggestions regarding the project, but also fostered a direct connection between the community and the project team.

Furthermore, the dedicated team operating the office played a vital role in collecting valuable local knowledge, acting as a link between field activities and the Project Trocano headquarters in Dublin. The team was also involved in proactive activities such as school visits, training, and collaborations with local partners, expanding the reach and impact of the project's initiatives.



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Photo 2 - Representative of the office in Borba, Lene Gomes.



Photo 3 - Training room in the office in Borba.

In summary, the office in Borba not only facilitated effective communication between the project and the local community but also served as a hub for information and collaboration, demonstrating Project Trocano's ongoing commitment to promoting sustainable development in the Amazon region.



19.6.1 Dispute Resolution Mechanism

There is an ongoing Dispute Resolution Mechanism whereby any concerns can be raised regarding the project, and indeed any communities can use this to opt out of the project, if they so wish. The Dispute Resolution Mechanism is detailed in the supporting documentation.

The communities are made aware of this mechanism and the project is also advertised on the local radio station, to alert people of how to contact the project team, which includes the project office within the city of Borba.

The Trocano Araretama Project Dispute Resolution Mechanism (DRM) is based on the guidelines established by the Forest Stewardship Council (FSC). This system provides a robust and well-structured process for resolving any potential conflicts within the project. The fundamental approach of this process is to resolve disputes informally initially through dialogue and negotiation. Only when an agreement cannot be reached through this channel will formal procedures be applied.

The central objective of this dispute resolution mechanism is to maintain transparency, efficiency, and impartiality throughout the process, ensuring that all parties involved are treated fairly. It is important to note that during the period covered by this report, no disputes or complaints have been reported regarding the Trocano Araretama Conservation Project. This fact reflects the project's commitment to maintaining a harmonious operation and compliance with established guidelines, minimizing conflicts, and ensuring a positive environment of cooperation.

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19.6.2 Reports on Project Grievances

No formal grievances were raised during this project period, and therefore there is no summary or report to be provided.

20 Social Impacts

20.1 Benefit Distribution Mechanism

The project management plan includes a benefit-sharing mechanism that ensures fair and transparent distribution of benefits derived from the project, enhancing local livelihoods and economic well-being. This includes infrastructure improvements, local development projects, education, healthcare and other community needs.

The community benefits that are the result of the project are implemented in consultation with the local communities themselves, ensuring that they are reflective of the needs of the people of the project area. The additional social benefits provided by the Trocano Araretama Project reflect the positive impact this initiative has had on local communities and the well-being of the region. Among these benefits are:

- **Provision of Clean Water:** The installation of water filtration systems plays a crucial role in promoting health and access to clean water, contributing to an improved quality of life for communities.
- **Improvements in Educational Infrastructure:** The construction and renovation of schools contribute to access to quality education, strengthening the human capital of the region and opening up opportunities for a better future.
- **Community Centres:** The construction of community centres is an important component in promoting social cohesion and creating spaces where communities can come together, share resources, and strengthen community bonds.
- **Health Clinics:** The presence of health clinics is crucial for providing affordable healthcare to local communities, improving their quality of life and well-being.

These social enhancements demonstrate that the Trocano Project goes beyond environmental conservation and also seeks the sustainable development of the communities that depend on the forest. These actions are implemented as a result of the existence of the Trocano Project and reflect the project's commitment to creating a comprehensive positive impact, benefiting both the environment and the people who share this region.

20.2 Project Actions and Activities Summary

The Timeline of Key Project Activities report for this reporting period and Brochure of Summary of Activities (provided in the supporting documentation) gives detailed information of the actions taken and benefits implemented within this reporting period, however an overview of some important actions are summarised below.

20.2.1 Overview of Community Actions and Benefits

Community visits were made throughout the period with the primary goal of engaging these communities in the project's protection and conservation efforts. During these visits, surveys were conducted to assess each community's current water and energy supply infrastructure, their main sources of income, the number of residences and schools, and their primary difficulties and needs. The project activities included renovations and construction of schools and community centres and cooperated with the renovation of the Puxurizal Bridge, which increased safety for local communities and provided employment opportunities in the region.

Workshops and training sessions on proper waste disposal, a campaign about preserving endangered animal species found in the project area.





Photo 4 - Waste disposal workshop with students



Photo 5 - Campaign in local community



Illustration 1 - "Animals at Risk, Keep Your eyes open" Campaign Poster

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The Trocano Araretama Project demonstrated its commitment to the Borba community in several ways. In addition to its focused efforts on environmental conservation and sustainable development, the project also actively engaged in activities that promote social well-being and community resilience.

One notable example was the support for sports, specifically the practice of Karate for children in Borba. The project not only provided training but also created opportunities for these children to participate in competitions, encouraging physical activity, discipline, and teamwork.



Photo 6 - Children from the Karate team.
Source Trocano Project



Photo 7 - Karate competition supported by the Trocano Project

Additionally, the Trocano Project proactively responded to emergency situations by providing support to regions affected by flooding in the Borba area.

Due to its extreme climatic conditions, the Amazon is often hit by major floods that cause various disruptions and damages to the population in the affected municipalities. In March 2014, Borba experienced a significant flood, and several communities within the project's interior were affected and in need of emergency assistance. The Trocano Project made a donation of R\$ 100,000.00 (One hundred thousand Brazilian Reais) so that the Municipality could provide basic needs such as food, clean water, and temporary shelter to these affected communities. This support demonstrates the project's willingness to assist local communities in times of need, strengthening the resilience of these areas in the face of environmental challenges.



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Photo 8 - Flooded forest. Source Trocano Project



Photo 9 - Residence at risk from flooding. Source Trocano Project

Finally, the celebration of Tree Day in the Axinim Community, which included informative lectures and tree planting activities, exemplifies the project's commitment to environmental awareness, sustainable practices and biodiversity preservation. This holistic approach combines efforts for environmental conservation with the promotion of community well-being, creating an essential balance for a sustainable future in the Amazon region.



Photo 10 - Participation of the students



Photo 11 - Students planting the trees



21 Biodiversity Conservation

21.1 Overview

One of the main objectives of the Trocano Araretama Project is the preservation and protection of local biodiversity. To address the aspects related to biodiversity conservation, it is crucial to understand how the project aims to achieve this objective.

The Trocano Araretama Project, with its mission focused on preserving and protecting local biodiversity, implements a comprehensive monitoring system.

The Trocano Araretama Project is dedicated to preserving local biodiversity and uses a detailed monitoring system to achieve this. This system includes field visits for hands-on ecosystem

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analysis and advanced techniques like image analysis and software calculations. These methods help understand and manage wildlife dynamics and react to any changes that could affect the region's biological richness. By combining expert knowledge with cutting-edge technology, the Trocano Project sets a high standard for sustainable environmental management.

21.2 Biodiversity Assessment in the Project Area

One of the initial steps in biodiversity conservation is to understand the richness and variety of life forms present in a specific area. In the case of the Trocano Araretama Project, this involves conducting field research, biological inventories, and studies to catalog the plant and animal species in the region. This assessment is crucial to identify major threats to biodiversity and make informed decisions about ecosystem management.

Another way to assess local biodiversity is through the analysis of articles and scientific studies conducted by universities and research institutions in the Trocano Project region.

As required by the Natural Forest Standard, the Normative Biodiversity Metric (NBM) methodology is used for a more specific analysis of biodiversity in the Trocano Project areas.



21.3 Identification of Key Species and Ecosystems

After the biodiversity assessment, the project identified five animal species critical to conservation in the area. These species are either endangered, endemic to the region, or play a fundamental role in maintaining the ecosystem. Below are the main characteristics of each of these species.

The Woolly Monkey (*Lagothrix cana*) is a primate species known for its long and dense fur, predominantly brown in color, with a distinctive white patch on the belly. Its tail is prehensile and shorter in relation to the body, and it has a face with a striking expression. The main threats to the Woolly Monkey include habitat loss due to deforestation and urban expansion, as well as predatory hunting. Therefore, protection strategies for this species include preserving key areas, controlling deforestation, and promoting sustainable practices to minimize human interference in the region inhabited by these primates.

The Giant Otter (*Pteronura brasiliensis*) is a semi-aquatic carnivore known for its dark fur and elongated body, adapted for life in the water. It lives in social groups and can be extremely aggressive in defending its group and territory, earning it the popular nickname "river jaguar." It is an indicator species for the health of aquatic ecosystems, as it depends directly on rivers for feeding and reproduction. Actions such as deforestation along riverbanks, illegal mining, and water pollution negatively impact this species and contribute to the decline in the number of Giant Otters in the wild.

The Pink River Dolphin (*Inia geoffrensis*) is the primary freshwater cetacean in Brazil. Known for its pink skin color and elongated snout, it inhabits Amazonian rivers. As a top predator, it plays a crucial role in the ecosystem by controlling fish populations and dispersing seeds of aquatic plants. There are ancient legends about the Pink River Dolphin transforming into a human to seduce young riverine women, which may contribute to the persecution of this species. Other

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threats to the Pink River Dolphin include hunting, river pollution, and more recently, climate change has demonstrated its ability to cause significant negative impacts on animal populations.

The Tucuxi Dolphin (*Sotalia fluviatilis*) is another freshwater cetacean, smaller than the Pink River Dolphin, with a more grayish coloration. It lives in groups and is also an indicator of the health of aquatic ecosystems. Although not part of local legends, the Tucuxi Dolphin faces the same threats as the Pink River Dolphin, and conservation efforts for this species should be similar.

The White-nosed Saki Monkey (*Chiropotes albinasus*) is a neotropical primate with dark fur but featuring a distinctive white patch around the nose. It is adapted to forest habitats and has a prehensile tail. As an endemic species to the southern region of the Brazilian Amazon, between the left bank of the Xingu River and the right bank of the Madeira River, this species becomes more vulnerable to environmental changes, and preservation efforts for this species should focus on maintaining natural habitats.



The identification of key ecosystems plays a crucial role in biodiversity preservation, as these ecosystems are essential for sustaining various species. Maintaining these priority areas helps ensure the survival of specific populations of flora and fauna that depend on these unique habitats.

Key ecosystems often provide specific conditions that meet the particular needs of certain species. They can include primary forests, wetlands, igapós, among others. The conservation of these ecosystems not only protects the present species but also contributes to the overall health of the ecosystem.



Photo 12 - Primary Forest Area of the Trocano Project.

The identification of priority areas for biodiversity, as mentioned in the assessments of the Trocano Project areas, allows for directing conservation efforts and resources to locations where their preservation will have the greatest positive impact. This strategic focus is essential for addressing the challenges of biodiversity loss and habitat degradation.

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21.4 Strategies to Protect and Conserve Existing Biodiversity

Based on the identification of key species and ecosystems, the project developed specific strategies to protect and conserve them. This included implementing an environmental education program for local communities about the importance of preserving the main endangered animal species identified in the project area. The species chosen for the program were the Giant Otter, the Woolly Monkey, the Pink River Dolphin, the Spider Monkey, and the Tucuxi Dolphin.



Photo 13 - Member of the project team informing the community about the fauna conservation program, 2014.

The selection of species for the Trocano Project was carefully considered, taking into account not only scientific criteria such as the degree of extinction risk and species vulnerability but also cultural and local aspects. Some of these species have a special connection to local legends, making them targets for persecution and threats, often driven by superstitions.

The holistic approach of the project recognizes the importance not only of biodiversity preservation but also of protecting species that play a significant role in local culture and mythology. By considering the traditions and beliefs of the communities, the Trocano Project seeks to respectfully demystify those legends that may put these animal species at risk and, in doing so, promote respect and harmonious coexistence between species and human communities.



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Photos 14 & 15 - Community members interacting with local fauna. Source: GP, 2023

Other biodiversity conservation strategies that are in the planning phase and are expected to be implemented in the Trocano Project include sustainable production systems such as Agroforestry Systems (AFS). AFS allows communities to continue producing a variety of foods in forested areas without the need to completely clear the planting areas, thus preserving the habitats of various species.

The creation of responsible ecotourism initiatives, enabling communities to share and economically benefit from the natural attractions of the region without compromising biodiversity, is another planned action for the project. Ecotourism encourages active participation from communities and reinforces the connection between environmental preservation and local socio-economic well-being.

Another fundamental strategy is partnering with research institutions and non-governmental organizations to promote continuous data collection, scientific research, and the development of innovative technologies to monitor and protect key species. These partnerships expand the capacity to implement evidence-based conservation practices and ensure the continuous adaptation of strategies as new information becomes available.

The comprehensive approach of the Trocano Project recognizes that effective biodiversity conservation goes beyond the geographic boundaries of the project, involving global awareness of the importance of the Amazon for the health of the planet. Disseminating results, sharing experiences, and participating in international conservation networks contribute to a broader and collaborative vision in protecting this crucial ecosystem.

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21.5 Monitoring the Impacts on Flora and Fauna Populations:

It is essential to track how the project's actions affect flora and fauna populations in the area. This involves implementing monitoring systems that regularly assess the state of key species and ecosystems. Monitoring helps determine if conservation strategies are effective and allows for adjustments as needed. If there is evidence of population decline, the project can take corrective measures to mitigate negative impacts.

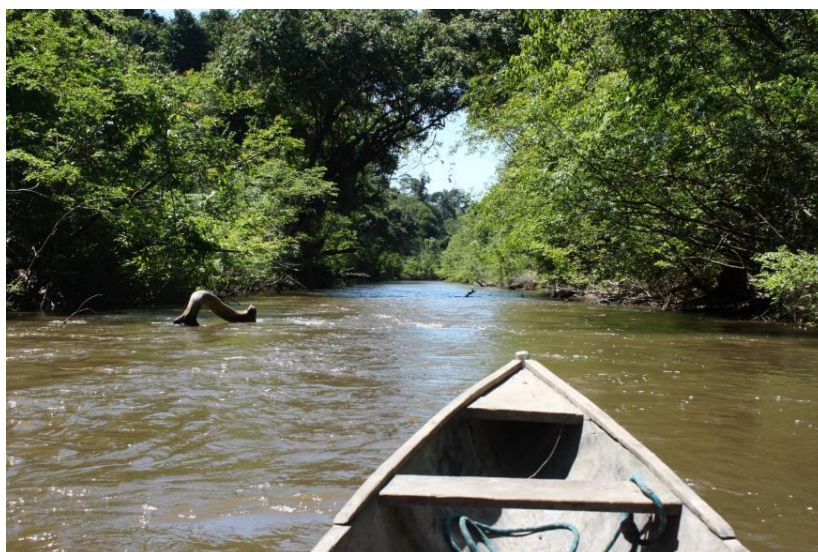


Photo 16 - Monitoring expedition for Area 6 of the Trocano Project



Biodiversity monitoring is always associated with the deforestation and project monitoring actions, as habitat loss is the main cause of biodiversity decline in a particular region. Irregular human occupations in previously preserved areas contribute to increased hunting pressure on animal species.



Photo 17 - Field monitoring in the Puxurizal community.



Photo 18 - Field Monitoring in the Borba-Mapia area

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In summary, the Trocano Araretama Project addresses biodiversity conservation in the Amazon region through assessment, identification, protection strategies, and monitoring of flora and fauna populations. These actions are essential to ensure the survival of critical species and ecosystems in the area and contribute to the preservation of this important natural heritage.

21.6 Biodiversity Assessment in Project Areas According to the NBM

The provided biodiversity metrics offer a comprehensive view of the ecological status in the Trocano Araretama Project areas, using different approaches to assess human influence and species richness. The associated data layers for this assessment are available within the Geospatial Platform.

- **Pristineness (0 to 5):** This metric highlights the human impact on ecosystems, ranking areas from 0 (highly altered) to 5 (completely unaltered). A higher score indicates less affected ecosystems, while a lower score suggests significant influence from human activities.
- **Normative Biodiversity Metric (0 to 10):** This metric combines pristineness and species richness, providing a more comprehensive assessment. It considers both environmental preservation and biological diversity, with a higher score indicating areas with healthy and diverse ecosystems.
- **Probability of Biodiversity Metric (1 to 10):** This metric incorporates habitat type and the level of human disturbance. Higher scores reflect areas with a higher likelihood of supporting biodiversity, considering habitat and human disturbance history.

The analysis of the project area is detailed below.

21.6.1 Southern Project Zone

The Southern Zone of the Trocano Project presents significant challenges due to its isolation and difficulty of access but mostly remains untouched. However, there is a substantial threat of deforestation due to logging and other activities that may encroach into this area, especially given its proximity to the city of Apuí.



Map 13 - Map of the South Zone of the Trocano Project.

Analysis of specific areas in the Southern Zone:

Area 1: Biodiversity assessment for Area 1 indicates a good balance between moderate human influence (Pristineness score: 4.3) and considerable species richness (Biodiversity score: 9.1). This area can be considered a region of biodiversity importance with the potential for effective conservation strategies.



- Normative Biodiversity Metric score: 5.3 (0-10 scale)
- Pristineness score: 4.3 (0-5 scale)
- Biodiversity score: 9.1 (1-10 scale)

Area 2: Area 2 shows positive indices, with a high Normative Biodiversity Metric (6.0) and notable pristineness (5.0), indicating a relatively untouched area. The biodiversity score (9.8) highlights significant species variety. This area is crucial for conservation due to its relatively pristine condition and biological richness.

- Normative Biodiversity Metric score: 6.0 (0-10 scale)
- Pristineness score: 5.0 (0-5 scale)
- Biodiversity score: 9.8 (1-10 scale)

Area 3: With a normative biodiversity metric of 6.0 and pristineness of 5.0, Area 3 is another region with favorable conditions for conservation. Its biodiversity score of 9.5 indicates an abundance of species. This area represents a crucial stronghold for biodiversity, deserving special attention for protection.

- Normative Biodiversity Metric score: 6.0 (0-10 scale)
- Pristineness score: 5.0 (0-5 scale)
- Biodiversity score: 9.5 (1-10 scale)

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Area 4: The assessment of Area 4 highlights favorable conditions, with a normative biodiversity metric of 5.7 and pristineness of 4.7. The biodiversity score of 9.3 suggests robust species diversity. This area is a valuable part of the regional ecosystem deserving conservation efforts.

- Normative Biodiversity Metric score: 5.7 (0-10 scale)
- Pristineness score: 4.7 (0-5 scale)
- Biodiversity score: 9.3 (1-10 scale)

Area 5: Area 5 stands out with a normative biodiversity score of 6.0 and pristineness of 5.0, indicating a relatively untouched environment. Its impressive biodiversity score of 10.0 highlights exceptional species diversity. This area is a biodiversity gem, requiring careful protection.

- Normative Biodiversity Metric score: 6.0 (0-10 scale)
- Pristineness score: 5.0 (0-5 scale)
- Biodiversity score: 10.0 (1-10 scale)

Area 7: With a normative biodiversity metric of 5.4 and pristineness of 4.3, Area 7 presents favorable conditions. The biodiversity score of 9.3 highlights significant species richness. This area is essential for regional biodiversity and deserves attention in the implementation of conservation strategies.

- Normative Biodiversity Metric score: 5.4 (0-10 scale)
- Pristineness score: 4.3 (0-5 scale)
- Biodiversity score: 9.3 (1-10 scale)

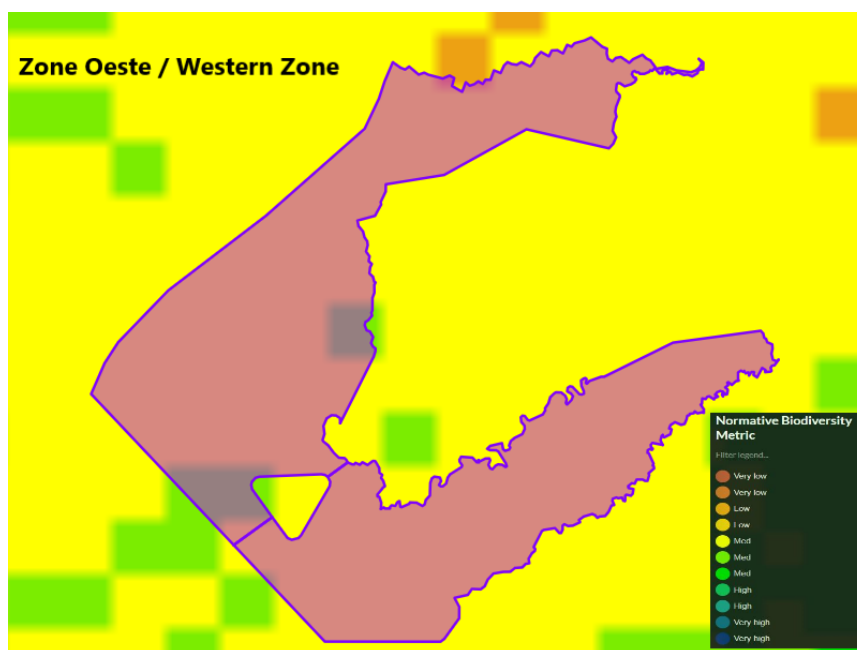
These indicators provide a valuable assessment of biodiversity and pristineness in different areas of the Southern Zone of the Trocano Project, contributing to conservation strategies and sustainable management.

21.6.2 Western Project Zone

The West Zone of the Trocano Project consists of two large areas with distinct characteristics.

The isolated region in the southern half has little human activity, with scarce communities and vast areas of untouched forest. The difficulty of transportation and communication is evident, with an 8-hour high-powered boat journey from Borba. The lack of regular transportation requires the use of basic river means, and the area is surrounded by indigenous reserves and protected areas.

The other sparsely populated area concentrates most of the population along the BR 319. The road in poor condition requires 4x4 vehicles, connecting Porto Velho to Manaus. Despite the history of deforestation in the region, the project area shows a noticeable reduction. Accessibility makes this region high-risk but also offers opportunities to support marginalized populations in health, communication, and education.



Map 14 - Map of the Western Zone of the Trocano Project

Analysis of specific areas in the Western Zone:

Area 6: Area 6 presents a normative biodiversity metric of 4.1, indicating moderate human influence. The pristineness (4.1) suggests that the area is not completely untouched but still maintains a reasonable condition. With a biodiversity score of 8.9, this area harbors a considerable diversity of species. Although not as pristine as some other areas, it still represents a valuable habitat.

- Normative Biodiversity Metric score: 4.1 (0-10 scale)
- Pristineness score: 4.1 (0-5 scale)
- Biodiversity score: 8.9 (1-10 scale)

Area 13: Area 13 exhibits a normative biodiversity metric of 4.2, indicating moderate human influence. The pristineness (4.2) suggests a reasonable condition in terms of preservation. With a biodiversity score of 8.5, this area is identified as a high priority for biodiversity by the Ministry of the Environment of Brazil. This designation highlights the importance of this area for conservation strategies.

- Normative Biodiversity Metric score: 4.2 (0-10 scale)
- Pristineness score: 4.2 (0-5 scale)
- Biodiversity score: 8.5 (1-10 scale)

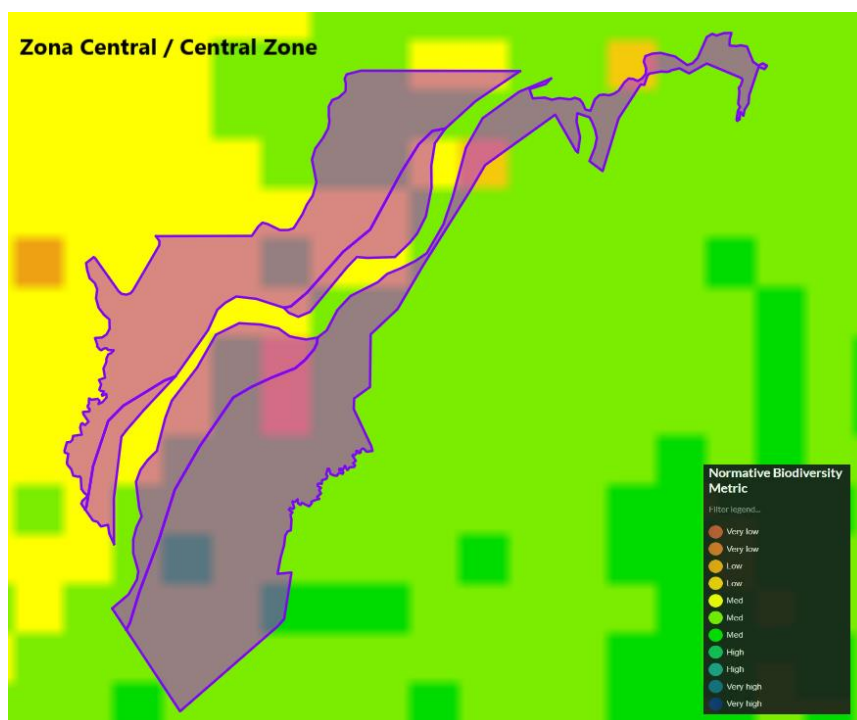
21.6.3 Central Project Zone

The central zone of the Trocano Araretama Project, while standing out for its considerable population density, faces significant challenges due to intense human interaction. The intrinsic

intertwining with the Madeira River introduces complexities due to the presence of various riparian communities. These communities establish a unique dynamic of coexistence with the ecosystem, contributing to cultural richness but also presenting potential impacts on local biodiversity.

The urban concentration in the central zone, exemplified by the municipality seat of Borba, brings additional challenges arising from population growth and associated demands for infrastructure and services. The expansion of urban areas often implies alterations to natural environmental patterns, influencing ecosystems, and consequently affecting local fauna and flora.



Thus, human interaction in this central zone emerges as a critical factor for biodiversity, requiring integrated approaches that reconcile sustainable human development with the effective preservation of natural resources. A deep understanding of these complexities is crucial for the implementation of effective strategies that promote harmonious coexistence between human communities and the biodiversity present in the region.



Map 15 - Map of the Central Zone of the Trocano Project.

Analysis of specific areas in the Central Zone:

Area 8: Area 8 presents a normative biodiversity metric of 4.1, indicating moderate human influence. The pristineness (4.1) suggests a reasonable condition in terms of preservation. With a biodiversity score of 7.4, this area harbors a considerable diversity of species. Moreover, the Ministry of the Environment of Brazil classified 41.9% of this area as of very high priority, and 16.3% as of extremely high priority for biodiversity, highlighting its importance for conservation strategies.

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- Normative Biodiversity Metric score: 4.1 (0-10 scale)
- Pristineness score: 4.1 (0-5 scale)
- Biodiversity score: 7.4 (1-10 scale)

Area 9: Area 9 exhibits a normative biodiversity metric of 5.0, indicating moderate human influence. The pristineness (4.0) suggests a reasonable condition in terms of preservation. With a biodiversity score of 6.4, this area maintains an acceptable diversity of species. The Ministry of the Environment of Brazil classified 16.7% of this area as of very high priority, and 74.1% as of extremely high priority for biodiversity, reinforcing its relevance for conservation.

- Normative Biodiversity Metric score: 5.0 (0-10 scale)
- Pristineness score: 4.0 (0-5 scale)
- Biodiversity score: 6.4 (1-10 scale)

Area 10: Area 10 presents a normative biodiversity metric of 5.2, indicating moderate human influence. The pristineness (4.2) suggests a reasonable condition in terms of preservation. With a biodiversity score of 7.0, this area harbors a considerable diversity of species. The Ministry of the Environment of Brazil classified 35.7% of this area as of very high priority, and 58.2% as of extremely high priority for biodiversity, highlighting its importance for conservation.



- Normative Biodiversity Metric score: 5.2 (0-10 scale)
- Pristineness score: 4.2 (0-5 scale)
- Biodiversity score: 7.0 (1-10 scale)

Area 11: Area 11 exhibits a normative biodiversity metric of 5.0, indicating moderate human influence. The pristineness (4.0) suggests a reasonable condition in terms of preservation. With a biodiversity score of 7.8, this area maintains a significant diversity of species. The Ministry of the Environment of Brazil classified 15.9% of this area as of high priority, 16.7% as of very high priority, and 20.5% as of extremely high priority for biodiversity, emphasizing its relevance for conservation.

- Normative Biodiversity Metric score: 5.0 (0-10 scale)
- Pristineness score: 4.0 (0-5 scale)
- Biodiversity score: 7.8 (1-10 scale)

Area 12: Area 12 presents a normative biodiversity metric of 5.0, indicating moderate human influence. The pristineness (4.0) suggests a reasonable condition in terms of preservation. With a biodiversity score of 7.2, this area harbors a considerable diversity of species. The Ministry of the Environment of Brazil classified practically the entire area (95.8%) as of extremely high priority for biodiversity, emphasizing its importance for conservation.

- Normative Biodiversity Metric score: 5.0 (0-10 scale)
- Pristineness score: 4.0 (0-5 scale)
- Biodiversity score: 7.2 (1-10 scale)

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21.7 NBM Summary

The analysis of the averages of the parameters for the Trocano Project, as presented in the table below provides valuable insights into the biodiversity assessment in the project area. The Trocano Project encompasses several zones, each characterized by its own set of ecological challenges and conservation opportunities.

Project Area	NBM Score	Pristineness Score	Biodiversity Score
1	5.3	4.3	9.1
2	6	5	9.8
3	6	5	9.5
4	5.7	4.7	9.3
4	6	5	10
6	4.1	4.1	8.9
7	5.4	4.3	9.3
8	4.1	4.1	7.4
9	5	4	6.4
10	5.2	4.2	7
11	5	4	7.8
12	5	4	7.2
13	4.2	4.2	8.5
Average	5.15	4.38	8.48

Table 2 - Breakdown of NBM Score by Project Area

Overall, the averages of the parameters reveal that the Trocano Project maintains a good score in terms of biodiversity, pristineness, and species diversity. These results are promising for the effectiveness of the implemented conservation strategies, suggesting that the project's actions are positively contributing to the preservation of biodiversity in the Amazon region. It is crucial to continue monitoring these indicators over time to adapt strategies as needed and ensure the long-term sustainability of the ecosystem.



22 Geospatial Platform Project Monitoring

22.1 Geospatial Platform Overview

The Go Balance Geospatial Platform is a comprehensive data platform that is built in accordance with the approved NFS methodology and associated maps that have been approved as being in accordance with the approved Methodology AM001.1b.

The purpose of the platform is to provide the monitoring and reporting files, maps and data that are required as the basis of the carbon calculations, and to inform the quantification calculations provided in an offline spreadsheet format.

The maps and layers in the Platform are produced in accordance with the approved NFS Methodology and have already been formally approved by the NFS Technical Panel. The carbon calculations are presented to confirm the carbon benefits from the Project for the given project period(s).

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The Platform is also subject to two sources of QA/QC; these documents are provided in the Supporting Document Package.

22.1.1 Project Monitoring using the Geospatial Platform

The project monitoring plan aims to create a robust and adaptive monitoring system for the Trocano Araretama Project, leveraging both advanced technology and community participation. The integration of geospatial data with on-the-ground monitoring ensures a comprehensive approach to tracking project progress and impact, ultimately contributing to the project's success in preserving the Amazon rainforest and supporting local communities.

The plan includes regular geospatial data and satellite imagery analysis, corresponding with ground surveys where applicable, and community-based monitoring to ensure comprehensive tracking of forest conditions.

The Trocano Project uses advanced methods of remote sensing and geospatial data is used to measure and monitor changes in forest carbon stocks over time. This data is held within the Geospatial Platform and is updated periodically.

22.2 Trocano Project Area within the Geospatial Platform

Within the Geospatial Platform, the Trocano Project area is divided into 13 distinct areas. The reason for segmenting the project area is due to the scale of the entire project area covering 1.3 million hectares and purely for ease of use, to enable the analysis results to be generated efficiently. Each separate area generates results specific to that geographic polygon and displays the corresponding analysis data, and together comprise the total project area.

For periodic quantification and verification purposes, the 13 sets of results are collated offline in spreadsheet format to generate an overall total. The calculations follow the NFS approved methodology, using the data generated by the geospatial platform.

22.3 Deforestation Monitoring

Annual deforestation data is sourced from the Brazilian Space Agency (INPE) through their Project for Remote Deforestation Monitoring in the Legal Amazon (PRODES), via the INPE TerraBrasilis web portal. This data is published annually, with each monitoring year running from 1st August to 31st July and is generated from the interpretation of Landsat and CBERS images, with a spatial resolution of approximately 30m. The annual PRODES data is obtained from <https://terrabrasilis.dpi.inpe.br/downloads/>.

Any deforestation activity that occurs within the project area is accurately tracked and accounted for within the carbon calculations quantification process.

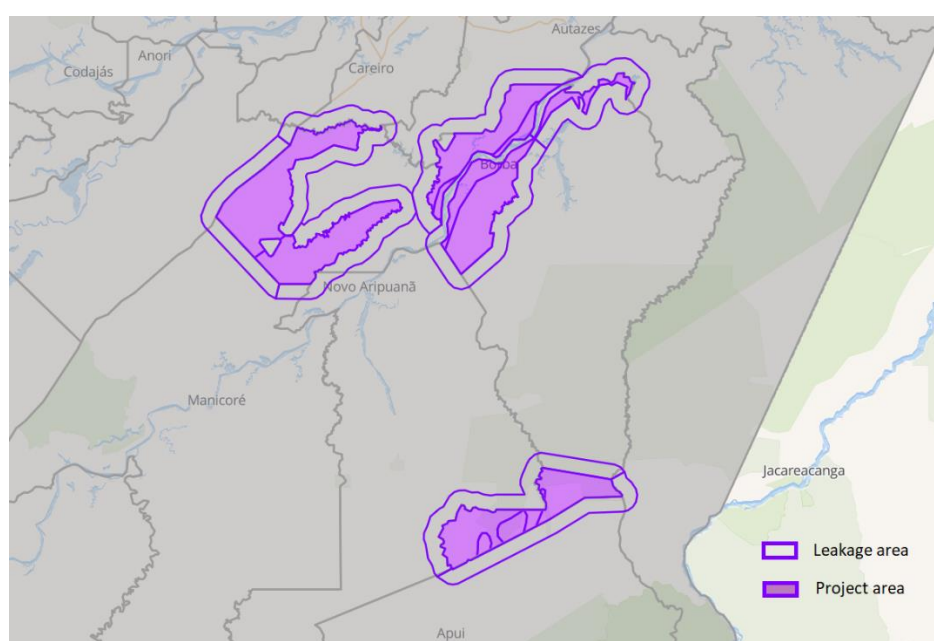
22.4 Leakage Area Monitoring

According to the NFS methodology a leakage zone of 10 km from the boundaries of the project area is monitored. Within the Geospatial Platform, the leakage area is divided into 9 distinct areas, again for ease of use and analysis purposes, due to the entire buffer zone totalling an area in excess of 1.5 million hectares. These 9 areas do not directly correspond to the 13 distinct

project areas themselves; they are numbered independently of the project area and in their entirety comprise the total leakage area.

The leakage buffer area is monitored and reported within the geospatial platform using the PRODES deforestation data. Any emissions from deforestation occurring in the leakage area are calculated and deducted from the overall project calculations.

For periodic quantification and verification purposes, the 9 sets of results are collated offline in spreadsheet format to generate an overall total.



Map 17 – Geographic Limits of the 10 km Leakage Area surrounding the Project Area



23 Project Reporting

23.1 Geospatial Platform Data Layers

The Geospatial Platform that holds all relevant spatial data associated and applicable to the project, and clearly references the data sources. All layers within the geospatial platform are applied at a regional, national or sub-national scale. A summary for each of the layers within the platform is provided below.

23.1.1 Biomass and Carbon Stocks Layers

The platform provides the Total Biomass & Carbon from original NASA JLP Maps. It also provides the Total Biomass and Carbon from NASA JLP maps adjusted for Deforestation between 2000 and 2011. An Adjusted Carbon Map was generated for the baseline scenario of the project (start date 2011) and covers an area of approximately 37 million hectares around the Trocano Project areas (see below).

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23.1.2 Adjusted Carbon Layer (2011)

The NASA carbon map (Saatchi et al.) approved under the NFS methodology was produced using satellite data from 2000-2007. This was necessary because of persistent cloud cover in some areas. This adjusted carbon map accounts for the deforestation that was detected and mapped by the Brazilian space agency (INPE) from August 1999 to July 2011. This adjusts the carbon map to the Trocano Araretama Project start date (June 2011).

The deforestation data used is from the INPE PRODES data, which maps deforestation, per year, from August to July. For example, the PRODES deforestation map for 2011 shows deforestation detected between August 2010 and July 2011.

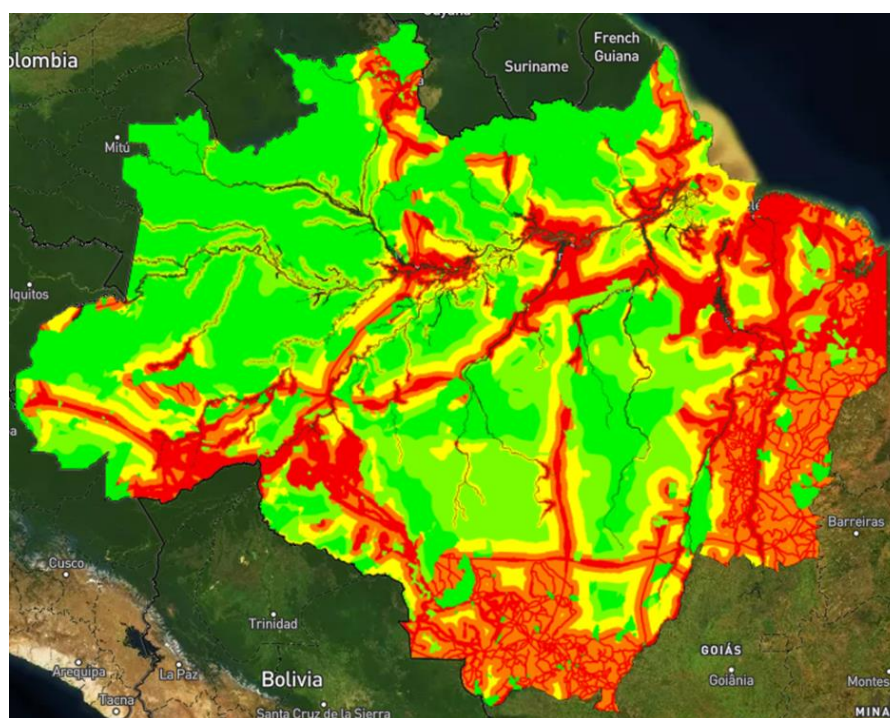
23.1.3 Deforestation Reporting

There are two deforestation layers within the platform. The first is for areas where deforestation had occurred prior to the project start date are mapped using INPE PRODES data between August 1999 and July 2011. The second is for areas where deforestation has been detected and mapped by INPE PRODES after the project start date, if any is present.



23.1.4 Risk Map 2011-2016

The Risk Map has been produced to coincide with the PRODES monitoring year, which runs from August 1 to July 31 each year. This risk map is therefore applicable to the project period 1st August 2011 to 31st July 2016.

The risk map was produced following the NFS approved methodology AM001.1b.



Map 18 – Risk Map produced in accordance with the NFS methodology AM001.1b

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23.1.5 Flooded Areas

These results show areas categorised as regularly or permanently flooded according to the ESA Globcover V2.3 land cover map. Areas prone to flooding are grouped within the ACEU risk categories and show the average and potential credit values originally assigned to them. This data is used in conjunction with the Risk of Deforestation 2011-2016 data layer and is an applied deduction within the manual carbon calculations quantification process.

23.1.6 Biodiversity Metric Score

This data layer provided in accordance with the NFS Normative Biodiversity Metric approach. The Normative Biodiversity Metric (0 to 10 score) is a combination of pristineness and species richness. Offline analysis is provided in the Social and Biodiversity Module report.

24 Carbon Calculations

The supporting document Trocano Calculations Methodology provides the detailed process for each relevant layer associated with the carbon calculations. A summary of information is provided below.

24.1 Factors, Assumptions and Data

The geospatial platform applies the NFS approved methodology and associated maps to quantify the carbon benefits of the project. The risk map being applied to this project period is for the 5-year period of 2011-2016.



24.2 Quantification of Emissions Reductions

The carbon calculations for each given year of the project are carried out following the NFS AM001.1b methodology. The geospatial platform results are manually entered into the carbon calculations spreadsheet. The associated file for the quantification of emissions reductions and carbon credits calculations is provided as Annex 1 to this report. This provides the full calculations for each of the 13 areas, including all appropriate deductions and provides the final carbon assertions for each given year.

24.3 Quantification of Deductions

The manual calculations include the following deductions:

- Deforestation emissions (where present)
- 9% undetected deforestation (see section 4.3.2 below)
- Regularly flooded areas
- Soil carbon
- Leakage buffer emissions
- Non-permanence Risk Buffer Deduction

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24.3.1 Deforestation Deduction (if present)

This deduction utilises INPE PRODES deforestation data for the corresponding year and is used for input into the manual calculations spreadsheet, where any deforestation has occurred either within the project area or the leakage monitoring buffer.

24.3.2 Additional 9% Undetected Deforestation Deduction

In order to account for emissions undetected by the INPE's PRODES Amazon Annual Monitoring Program, a full assessment study was carried out during the initial stages of the project. As a conservative approach, the outcome of this analysis resulted in the decision to add an additional 9% to the deforested area extent within deforested areas. A copy of the assessment report is available within the Geospatial Platform Science section, and in the supporting documentation.

The calculations for this reporting period are demonstrated in the offline carbon calculations spreadsheet provided in Annex 1, and this adjustment is applied to both the project area and the leakage buffer calculations.

24.3.3 Regularly Flooded Areas

Areas prone to flooding are grouped within the ACEU risk categories and show the average and potential credit values originally assigned to them. As regular flooding reduces accessibility and therefore the risk of deforestation, the deduction adjustment is made according to the extent of the regularly flooded area within each area.

The calculations for this reporting period are demonstrated in the offline carbon calculations spreadsheet provided in Annex 1.

24.3.4 Soil Carbon



The NFS methodology includes an adjustment in the crediting calculation to avoid issuing credits for conservation of soil carbon in areas deforested before the project start. The vulnerable soil carbon fraction is included in the calculation for emissions after the project start date.

24.3.5 Leakage Buffer Deduction

Any emissions from deforestation occurring in the leakage area are deducted. This deduction again utilises INPE PRODES deforestation data for the corresponding year. The calculations for this reporting period are demonstrated in the offline carbon calculations spreadsheet provided in Annex 1.

24.3.6 Non-Permanence Buffer Deduction



In accordance with the Natural Forest Standard requirements, the non-permanence buffer deduction of 10% is applied and deducted at source, by the NFS Registry administration upon NCC issuance. These NCCs are held in the buffer account of the Natural Forest Standard Registry to cover the risk of non-permanence.

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The calculations for this reporting period are demonstrated in the offline carbon calculations spreadsheet provided in Annex 1.

24.4 Carbon Credit Calculations

An overview of the carbon credit calculations for each year of the project period are provided in the following pages. The full calculations spreadsheet is provided as Annex 1 of this document.

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24.4.1 Calculations for 1st August 2013 to 31st July 2014

Project Area	tCO2e					
	Baseline Potential Credits	Emissions Previous Project Periods	Emissions Current Project	Excluded for Flooded Areas	Excluded for Soil Carbon pre-project	Credits for Project Period
1	222,636	-	-	-	-	222,636
2	103,612	-	-	-	-	103,612
3	89,580	-	-	-	-	89,580
4	636,091	-	-	1,251	-	634,840
5	10,802	-	-	-	-	10,802
6	1,316,525	-	-	5,978	54	1,310,493
7	913,506	1,060	-	655	163	911,629
8	819,559	25,823	6,393	17,722	1,258	768,362
9	68,715	4,245	-	11,104	110	53,257
10	141,344	3,541	102	3,880	1,588	132,233
11	594,562	67,987	26,392	34,237	6,449	459,498
12	31,737	-	-	3,404	54	28,279
13	2,920,927	11,500	3,451	76,147	603	2,829,226
Total	7,869,596	114,155	36,338	154,377	10,280	7,554,446

Undetected emissions 9% 3,270 7,551,176



Leakage Area	
1	139,106
2	-
3	12,392
4	155,101
5	-
6	-
7	96,231
8	-
9	54,801
Total	457,630

Undetected emissions 9% 41,187

Total leakage emissions 538,425

Total Carbon Assertions for Verification **7,012,750**

NFS Non-Permanence Buffer Deduction (10%) **701,275**

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24.4.2 Calculations for 1st August 2014 to 31st July 2015

Project Area	tCO2e					
	Baseline Potential Credits	Emissions Previous Project Periods	Emissions Current Project	Excluded for Flooded Areas	Excluded for Soil Carbon pre-project	Credits for Project Period
1	222,636	-	-	-	-	222,636
2	103,612	-	-	-	-	103,612
3	89,580	-	-	-	-	89,580
4	636,091	-	-	1,251	-	634,840
5	10,802	-	-	-	-	10,802
6	1,316,525	-	-	5,978	54	1,310,493
7	913,506	1,060	-	655	163	911,629
8	819,559	32,216	17,088	17,722	1,258	751,274
9	68,715	4,245	4,239	11,104	110	49,017
10	141,344	3,642	-	3,880	1,588	132,233
11	594,562	94,379	55,366	34,237	6,449	404,131
12	31,737	-	2,836	3,404	54	25,443
13	2,920,927	14,951	621	76,147	603	2,828,605
Total	7,869,596	150,493	80,151	154,377	10,280	7,474,295

Undetected emissions 9% 7,214 7,467,082



Leakage Area	
1	253,704
2	-
3	23,239
4	46,344
5	8,925
6	-
7	79,335
8	10,283
9	80,194
Total	502,023

Undetected emissions 9% 45,182

Total leakage emissions 547,205

Total Carbon Assertions for Verification **6,919,877**

NFS Non-Permanence Buffer Deduction (10%) **691,988**

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24.4.3 Calculations for 1st August 2015 to 31st July 2016

Project Area	tCO2e					
	Baseline Potential Credits	Emissions Previous Project Periods	Emissions Current Project	Excluded for Flooded Areas	Excluded for Soil Carbon pre-project	Credits for Project Period
1	222,636	-	-	-	-	222,636
2	103,612	-	-	-	-	103,612
3	89,580	-	-	-	-	89,580
4	636,091	-	-	1,251	-	634,840
5	10,802	-	-	-	-	10,802
6	1,316,525	-	-	5,978	54	1,310,493
7	913,506	1,060	-	655	163	911,629
8	819,559	49,304	20,454	17,722	1,258	730,820
9	68,715	8,484	-	11,104	110	49,017
10	141,344	3,642	-	3,880	1,588	132,233
11	594,562	149,745	16,307	34,237	6,449	387,824
12	31,737	2,836	4,586	3,404	54	20,857
13	2,920,927	15,572	1,300	76,147	603	2,827,305
Total	7,869,596	230,644	42,647	154,377	10,280	7,431,648

Undetected emissions 9% 3,838 7,427,810



Leakage Area	
1	198,142
2	-
3	3,796
4	116,428
5	13,237
6	-
7	31,330
8	10,453
9	44,131
Total	417,518

Undetected emissions 9% 37,577

Total leakage emissions 455,094

Total Carbon Assertions for Verification **6,972,716**

NFS Non-Permanence Buffer Deduction (10%) **697,272**

	TROCANO ARARETAMA PROJECT	
	PROJECT IMPLEMENTATION REPORT Project Period 1st August 2013 to 31st July 2016	

Annex 1

Full Carbon Calculations 2014-2016 Spreadsheet: *Carbon Calculations Module Annex 1 Full Carbon Calculations 2014 to 2016*

Supporting Documentation

A comprehensive set of supporting documentation, numbered 001 through 038, was submitted for the verification process. These documents are not intended for publication but were provided in full for verification purposes.