MEJURUÁ PROJECT

Document Prepared by: Plant Inteligência Ambiental under coordination by ATA Consultoria

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Project Title	Mejuruá Project
Version	V 2.0
Date of Issue	01/12/2023
Project Location	Brazil, State of Amazonas
Project Proponent(s)	BR Arbo Gestão Florestal - Carlos Roberto Canabarro Gomes - carlos.canabarro@brarbo.com.br - +55 (51) 3527-4145
Validation Body	Epic Sustainability – enquiries@epicsustainability.com - +91 95919.41036
Project Lifetime	17 May 2023 – 16 May 2113; 90-year lifetime
GHG Accounting Period	17 May 2023 – 16 May 2053; 30-year total period
History of CCB Status	Under validation
Gold Level Criteria	Climate: the project's achievement of gold-level criteria in climate action is justified by its location in the central Amazon Rainforest, a vital carbon reservoir crucial for global temperature regulation. Focused on preventing advanced deforestation in a region approaching a critical point, the project responds to the worsening conditions, including record-low river levels and a declared state of emergency. Community: The Mejuruá project intents to be validated at the Gold Level for exceptional community benefits since the project zone is in an area of a

	medium human development country in which at least 50% of the households within the communities are below the national poverty line. Carauari, the nearest city to the project area, was ranked 65th out of 5,507 cities in the Brazilian poverty index. Various activities have been devised to foster socioeconomic development in the Project Zone, including the establishment of a 5 MW thermoelectric power plant, the installation of a sawmill, support for Sustainable Agriculture Land Management, and the development and management of the sustainable production of "açaí" berries and other non-timber forest products. Biodiversity: the Mejuruá project intends to achieve Gold Level validation for its exceptional biodiversity benefits, given that the project zone harbors three species listed as endangered on the IUCN Red List and one species classified as critically endangered. Several activities have been designed and implemented to contribute to the conservation of the area, including sustainable forest management with FSC certification, surveillance and patrolling, wildfire prevention, forest protection training, among other measures.
Expected Verification Schedule	2nd semester 2024

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1   **SUMMARY OF PROJECT BENEFITS**

1.1 Unique Project Benefits

The table below presents the projected results and expected impacts that are expected to materialize by the end of the project. These are aligned with the anticipated benefits and are detailed in the respective sections that provide more extensive information on the positive impacts generated by the project.

Table 1: Unique Project Benefits

Outcome or Impact Estimated by the End of Project Lifetime	Section Reference
1) Sustainable Forest Management: The project will adopt a sustainable forest management approach using Reduced Impact Logging (RIL). After the plot is managed, it remains undisturbed for a minimum of 30 years, enabling the natural forest regeneration process to unfold. This measure plays a pivotal role in climate change adaptation by preserving carbon stocks and sustaining ecosystem services, ultimately bolstering the forest's resilience.	2.1.2 2.1.8 2.1.13
2) Affordable clean energy: The project aims to install a 5 MW thermoelectric Power Plant supplied exclusively with wood residues produced at sawmill to be integrated into the industrial activities. The surplus electricity generated will be made available for distribution to the town, replacing the current Diesel-based generation. This will further contribute to the reduction of emissions of GEE and will be dealt with both in terms of project development and economic mechanisms, such as the carbon market. Due to issues of public domain and ownership, the project development will be undertaken in collaboration with public authorities in the future.	2.1.8 3.5.3
3) Facilitate land regularization and sustainable land use for families occupying areas through the Forest Angels Program: The execution of this program involves providing land titles to riverside residents who have long occupied the Project Area. Additionally, these families will undergo training to identify potential forest threats and implement recommended mitigation measures. This initiative not only secures the families' rightful presence in the territory but also actively involves them in contributing to forest conservation efforts.	2.1.8 3.5.3
4) Digital inclusion: Antennas and their related peripherals will be strategically positioned within communities to facilitate convenient internet access and communication, including essential emergency communication. This proactive approach aims to mitigate community isolation while fostering digital inclusion.	2.1.8 2.3.7
5) Support the development of Sustainable Agriculture Land Management and the sustainable production of Non-timber Forest Products: To bolster environmental resilience and promote sustainable development, the project will provide extensive training in advanced agriculture and forest management. Additionally, it seeks to	2.1.8 2.3.4 3.5.3

| empower and reorient the açaí berry value chain, fostering greater social and gender equity while promoting economic stability within the local communities. | 4.1.1 |
| | 4.4.4 |

1.2 Standardized Benefit Metrics

The table below presents the metrics of added benefits according to the reference section and the respective values for climate, community, and biodiversity items that have been developed during the project design and analyzed by the project team.

Table 2: Standardizer Benefit Metrics

Category	Metric	Estimated by the End of Project Lifetime	Section Reference
GHG emission reductions or removals	Net estimated emission removals in the project area, measured against the without-project scenario	Not Applicable	-
	Net estimated emission reductions in the project area, measured against the without-project scenario	80,318,43981tCO$_2$e	3.2.2
Forest[1] cover	For REDD[2] projects: Estimated number of hectares of reduced forest loss in the project area measured against the without-project scenario	123,762.098 ha (APD)	3.1.1
	For ARR[3] projects: Estimated number of hectares of forest cover increased in the project area measured against the without-project scenario	Not Applicable	-
Improved land management	Number of hectares of existing production forest land in which IFM[4] practices are expected to occur as a result of project	Not Applicable	-

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[1] Land with woody vegetation that meets an internationally accepted definition (e.g., UNFCCC, FAO or IPCC) of what constitutes a forest, which includes threshold parameters, such as minimum forest area, tree height and level of crown cover, and may include mature, secondary, degraded and wetland forests (*VCS Program Definitions*)

[2] Reduced emissions from deforestation and forest degradation (REDD) - Activities that reduce GHG emissions by slowing or stopping conversion of forests to non-forest land and/or reduce the degradation of forest land where forest biomass is lost (*VCS Program Definitions*)

[3] Afforestation, reforestation and revegetation (ARR) - Activities that increase carbon stocks in woody biomass (and in some cases soils) by establishing, increasing and/or restoring vegetative cover through the planting, sowing and/or human-assisted natural regeneration of woody vegetation (*VCS Program Definitions*)

[4] Improved forest management (IFM) - Activities that change forest management practices and increase carbon stock on forest lands managed for wood products such as saw timber, pulpwood and fuelwood (*VCS Program Definitions*)

	activities, measured against the without-project scenario		
	Number of hectares of non-forest land in which improved land management practices are expected to occur as a result of project activities, measured against the without-project scenario	Not Applicable	-
Training	Total number of community members who are expected to have improved skills and/or knowledge resulting from training provided as part of project activities	The project will employ approximately 436 people. Considering the average job turnover for the Amazon region of 15% for 30 years, it is expected that at least 1.962 people will receive training.	2.3.14
	Number of female community members who are expected to have improved skills and/or knowledge resulting from training as part of project activities	According to the Gender and Youth in the Médio Juruá Report, 2022, females spend approximately 60% of the time that males spend in the job market. Considering the 1.962 people that are to be trained, approximately 735 women will be trained.	2.3.14
Employment	Total number of people expected to be employed in project activities[5], expressed as number of full-time employees[6]	The project will employ approximately 436 people. Considering the average job	2.3.14

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[5] Employed in project activities means people directly working on project activities in return for compensation (financial or otherwise), including employees, contracted workers, sub-contracted workers and community members that are paid to carry out project-related work.

[6] Full time equivalency is calculated as the total number of hours worked (by full-time, part-time, temporary and/or seasonal staff) divided by the average number of hours worked in full-time jobs within the country, region or economic territory (adapted from the UN System of National Accounts (1993) paragraphs 17.14[15.102]; [17.28])

		rotation for the Amazon region of 15% for 30 years, it is expected that at least 1.962 people will be employed.	
	Number of women expected to be employed as a result of project activities, expressed as number of full-time employees	According to the Gender and Youth in the Médio Juruá Report, 2022, females spend approximately 60% of the time that males spend in the job market. Considering the 1.962 people that are to be trained, approximately 735 women will be employed.	2.3.14
Livelihoods	Total number of people expected to have improved livelihoods[7] or income generated as a result of project activities	Considering the people employed and trained, which totals 1962, and the 150 families that will receive various positive impacts and considering that every family has in average 4 children in the Riozinho Community, it is expected that 2.862 people will have their livelihoods improved.	4.2 4.5.5
	Number of women expected to have improved livelihoods or income generated as a result of project activities	It is expected that 1.185 women will have their lives improved (735 through direct	4.2 4.5.5

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[7] Livelihoods are the capabilities, assets (including material and social resources) and activities required for a means of living (Krantz, Lasse, 2001. *The Sustainable Livelihood Approach to Poverty Reduction*. SIDA). Livelihood benefits may include benefits reported in the Employment metrics of this table.

		employment and 300 through direct improvements offered).	
Health	Total number of people for whom health services are expected to improve as a result of project activities, measured against the without-project scenario	People living in settlements: Approximately 150 families will have their health services improved, meaning 900 people. People living in the city of Carauari: approximately 28.000 people will be positively affected by the improved quality of health services due to the project.	4.2 2.1.4 2.1.7 2.1.8
	Number of women for whom health services are expected to improve as a result of project activities, measured against the without-project scenario	People living in settlements: Approximately 150 families, will have their health services improved, meaning 450 women. People living in the city of Carauari: approximately 14.000 women will be positively affected by the improved quality of health services due to the project.	4.2 2.1.4 2.1.7 2.1.8
Education	Total number of people for whom access to, or quality of, education is expected to improve as result of project activities, measured against the without-project scenario	There are approximately 10.000 children under 15 years in Carauari. It is expected that they all will have their education improved through the project.	4.2 2.1.8

	Number of women and girls for whom access to, or quality of, education is expected to improve as result of project activities, measured against the without-project scenario	Considering 50% of girls in school enrolment, approximately 5.000 girls will be benefitted by the project in terms of education.	4.2 2.1.8
Water	Total number of people who are expected to experience increased water quality and/or improved access to drinking water as a result of project activities, measured against the without-project scenario	Approximately 150 families, will have their water access improved, meaning 900 people.	4.2 2.1.8
	Number of women who are expected to experience increased water quality and/or improved access to drinking water as a result of project activities, measured against the without-project scenario	Approximately 150 families, will have their water access improved, meaning 450 people.	4.2 2.1.8
Well-being	Total number of community members whose well-being[8] is expected to improve as a result of project activities	It is expected that the people living in the city of Carauari and the 150 families that live in settlements in the project zone will have their well-being improved.	4.2 2.1.8
	Number of women whose well-being is expected to improve as a result of project activities	Considering the people employed and trained, which totals 1962, and the 150 families that will receive various positive impacts and considering that every family has in average 4 children in the Riozinho Community, it is expected that 1.431	4.2 2.1.8

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[8] Well-being is people's experience of the quality of their lives. Well-being benefits may include benefits reported in other metrics of this table (e.g., Training, Employment, Livelihoods, Health, Education and Water), and may also include other benefits such as strengthened legal rights to resources, increased food security, conservation of access to areas of cultural significance, etc.

		people will have their well-being improved.	
Biodiversity conservation	Expected change in the number of hectares managed significantly better by the project for biodiversity conservation,[9] measured against the without-project scenario	123,762.098 ha	5.4.1
	Expected number of globally Critically Endangered or Endangered species[10] benefiting from reduced threats as a result of project activities,[11] measured against the without-project scenario	26 species of fauna and 7 species of flora (classified as near threatened, vulnerable, endangered, critically endangered)	5.2.3 5.5.2

2 GENERAL

2.1 Project Goals, Design and Long-Term Viability

BR ARBO Forest Management S.A. is a Brazilian company that holds more than 900,000 hectares of land in the state of Amazonas, located in the Amazon Biome. The company's primary objective, as manifested through its REDD+ Project, known as the Mejuruá project, is to guarantee the long-term conservation of this territory. Moreover, by fostering favorable economic incentives for the conservation of rainforests within privately owned domains, the proponents propose positive impacts for the well-being of local communities and the conservation of biodiversity.

The Mejuruá Grouped Project is an extensive endeavor that encompasses a range of activities. It falls under the AFOLU (Agriculture, Forestry, and Other Land Uses) project category, specifically addressing the reduction of emissions resulting from deforestation and degradation (REDD). Its central focus is the implementation of the REDD+ activity within a designated 20% section of the property, spanning an area of 123,762 hectares. Furthermore, the project has been designed as a grouped initiative, with the aim of enhancing its contribution to existing forests in the future and reducing greenhouse gas emissions. This will be achieved through the addition of new project instances, specifically corresponding to the designated Legal Reserve portion, which encompasses 80% of the total property area, covering 544,354 hectares. In total, the project area will encompass 668,116 hectares.

This project has been conceived as a collaborative effort, with the purpose of showcasing how forest preservation can be both sustainable and advantageous for all stakeholders involved. Through a careful analysis of the prevailing conditions, the project's design encompasses a multitude of activities intended to

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[9] Managed for biodiversity conservation in this context means areas where specific management measures are being implemented as a part of project activities with an objective of enhancing biodiversity conservation, e.g., enhancing the status of endangered species.

[10] Per IUCN's Red List of Threatened Species.

[11] In the absence of direct population or occupancy measures, measurement of reduced threats may be used as evidence of benefit.

fulfil the established objectives of sustainable development, biodiversity conservation, community development and climate regulation. Over the course of the project lifetime, these activities will be implemented periodically, while undergoing regular evaluation, adjustment, and adaptation as deemed necessary. By steadfastly addressing deforestation prevention, biodiversity conservation, and the fulfilment of local community needs, the project endeavors to serve as an exemplary model for forest conservation and mitigation of climate change.

The Mejuruá project is actively engaged in the VCS (Verified Carbon Standard) process under Verra, a vital step in the commitment to environmental sustainability. Concurrently, the project is working towards the application for CCBA (Climate, Community, and Biodiversity Alliance) label, with the aim of highlighting substantial social and biodiversity benefits stemming from the initiative. These endeavors underscore a dedication to transparent carbon accounting and a comprehensive approach to creating positive impacts on both the environment and local communities.

2.1.1 Project Proponent (G1.1)

Table 3 provides detailed information regarding the project proponent entity.

Table 3: Project Proponent

Organization name	BR ARBO Gestão Florestal
Contact person	Carlos Roberto Canabarro Gomes
Title	Main Project Proponent (Landowner)
Address	Av. Julio de Castilhos, nº 44, 14º Pavimento, Bairro Centro Histórico, Porto Alegre/RS, CEP 90030-130
Telephone	+55 (51) 3527-4145
Email	contato@brarbo.com.br/ carlos.canabarro@brarbo.com.br

2.1.2 Project Objectives (G1.2)

The Mejuruá project, operating within the framework of this current initiative, is committed to promoting net positive impacts encompassing the realms of climate, social well-being, and biodiversity conservation. It endeavors to align its activities with the natural environment, proactively engaging in ecosystem protection and restoration while simultaneously offering robust support to local communities.

The achievement of climate benefits will be realized through a steadfast commitment to preserving the forested area within the property, along with activities focused on forest protection and monitoring. In lieu of exercising the permissible 20% clear-cutting option delineated in the Brazilian Forest Code, the property owner has chosen to implement sustainable forest management practices. This decision not only aims to generate income and benefits for local communities but also ensures minimal environmental impact and safeguards the biome against the escalating issue of legal deforestation. As a result of this resolute commitment, the project proponent willingly renounces their right to deforest a substantial area, totaling 123,762.098 hectares.

The project will place a paramount emphasis on multifaceted social initiatives designed to enhance education, healthcare, financial well-being, and the overall quality of life, encompassing:

● Establishment of a sawmill near Carauari's urban hub, fostering job creation and invigorating the local economy.

● Production and distribution of sustainable energy for Carauari city and outlying communities.

● Installation of antennas and related equipment to enable internet connectivity.

● Implementation of water treatment and accessibility measures.

● Creation of the Forest Angels Program: Gradual property title grants to riverside residents with specialized training for forest protection

● Infrastructure development for local communities.

● Refurbishment and provision of essential materials and resources for elementary public schools, ensuring access and support for children and adolescents.

● Allocation of funds for scholarships and higher education programs.

● Inauguration of the unit of the "Escola da Floresta," a collaborative initiative with the Amazonas government.

● Enhancement of healthcare services' efficiency and accessibility for local communities, including the provision of vehicles and rescue equipment.

● Establishment of a dedicated emergency communication system, promoting the use of telemedicine.

● Formation of partnerships with Brazilian universities and institutions, with the goal of improving education quality and accessibility.

● Support for the sustainable cultivation of açaí berries and other non-timber forest products, emphasizing social and gender equity for women.

● Creation of community centers as hubs for social and cultural activities, empowering local communities and enhancing overall quality of life.

Finally, the conservation of the entire BR ARBO property, encompassing approximately 900 thousand hectares of forest, will be instrumental in attaining significant biodiversity benefits. By preserving this vast expanse of natural habitat, the project is dedicated to protecting not only the rich diversity of flora and fauna but also ensuring the safety of endemic and threatened species. This conservation initiative aligns with the broader mission to foster sustainable coexistence between natural environment and human activities, through responsible conservation practices.

2.1.3 Physical Parameters (G1.3)

The total area of the property, excluding the overlapping indigenous land, is approximately 679 thousand hectares. The Avoiding Planned Deforestation (APD) project area has a size of 123,762.098 hectares of which 100% are occupied by forest formation. The areas classified as non-forest were excluded from the project area. The project is situated within the Legal Amazon region (Figure 1), specifically in the Amazon State, and is located approximately 700 kilometers in a straight line from the capital, Manaus. The transportation options to reach Carauari from Manaus are either by river or by air.
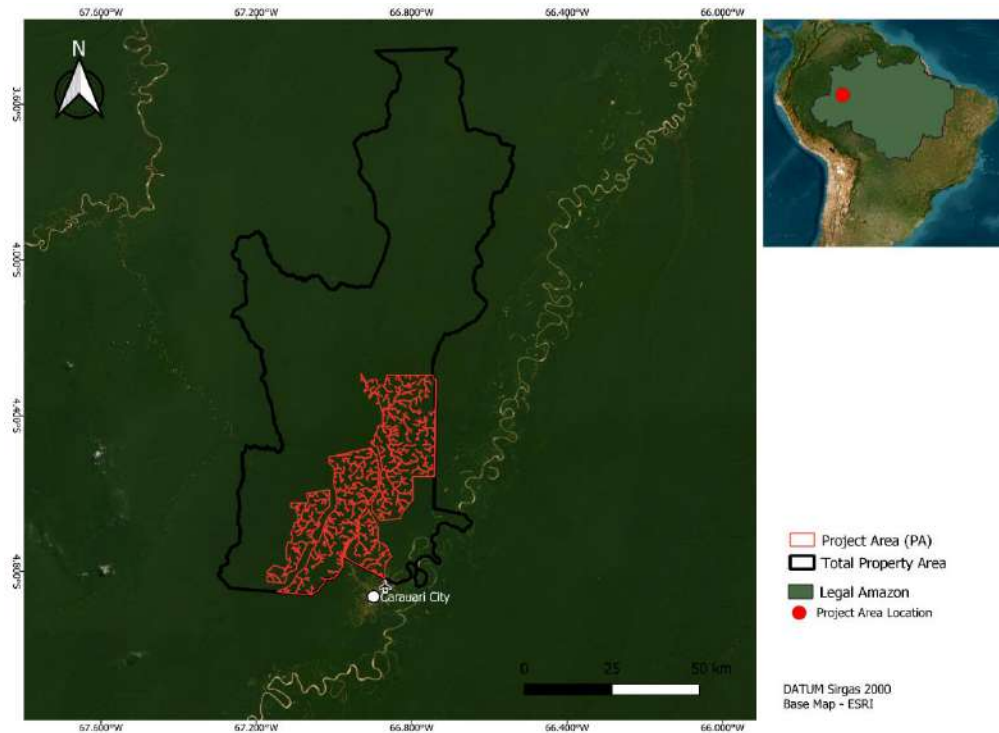
Figure 1: Project Location

The Project Area is located in Brazilian Amazon Rainforest (Amazon Biome) and is composed by alluvial open ombrophiles forest, lowland open ombrophiles forest, dense alluvial ombrophiles forest and dense lowland ombrophiles forest (rainforest). According to the Brazilian Institute of Geography and Statistics (IBGE)[12], this formation generally occupies the coastal plain capped by Pliopleistocene plateaus of the Barreiras Group.

The urban occupation with the best access and closest to the APD project area is the city of Carauari-AM, which is on the border of the property where the management project will be carried out. This will also provide near access to the sawmill facility and other structural components of the company in a logistical advantageous situation.

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[12] Instituto Brasileiro de Geografia e Estatística – IBGE. Manual Técnico da Vegetação Brasileira. 2ªed. Rio de Janeiro. ISSN 0103-9598. Rio de Janeiro. 2012.

In accordance with Map Biomas Collection 8[14], the property area has shown few changes in its territory over the years, but most of the project area is covered 99% by forest formation (Figure 2).
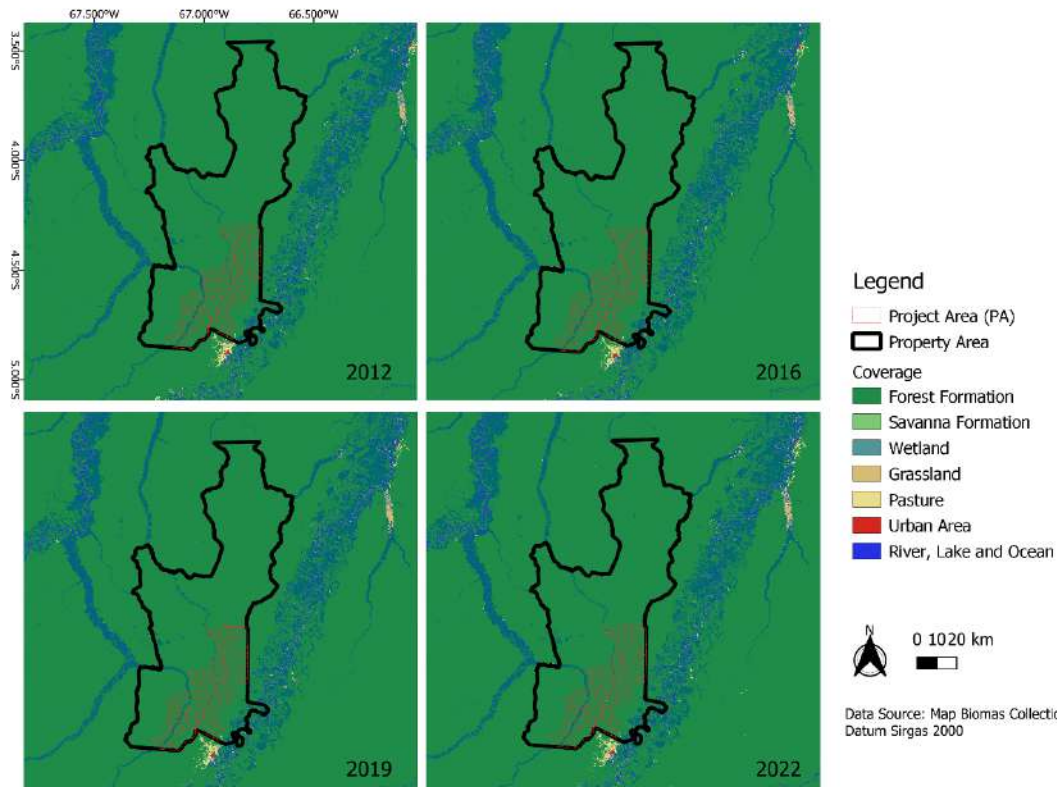
Figure 2: Land Use/Land Cover in a historical period

CLIMATE

According to Alvares et al. (2013), Brazil has been classified into 12 different climate types, with the tropical zone (A) being the largest, occupying 81.4% of the country's territory. Based on a spatial data of the global climate following the Koppen Geiger definition, the area is in a humid equatorial forest or tropical rainforest (Af) climate type, without dry season (Figure 3). The forest experiences high humidity (1400mm/year of precipitation approximately) with an average temperature around 18ºC, as stated by IBGE. The climate is influenced by the movement of trade winds and the ability of the tropical forest to retain water.

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[14] Source: https://mapbiomas.org/colecoes-mapbiomas-1
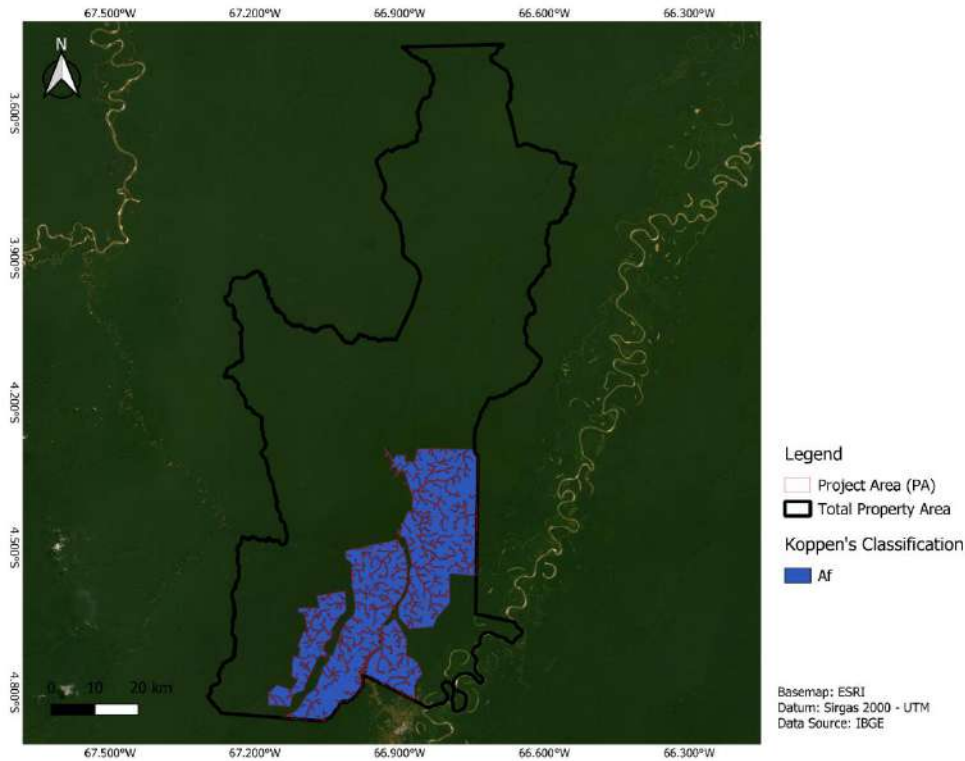
Figure 3: Koppen-Geiger Climate Classification

Temperature

According to government information, the hot season in Carauari lasts approximately 1.9 months, from August 26th to October 21st. During this period, the average daily maximum temperature remains above 29 °C. October is considered the hottest month of the year in the region, with an average maximum temperature of 29 °C and a minimum of 23 °C. The information on temperature and precipitation in Carauari, according to Weather Spark, is based on the analysis of information from 1980 to 2016 (Figure 4).
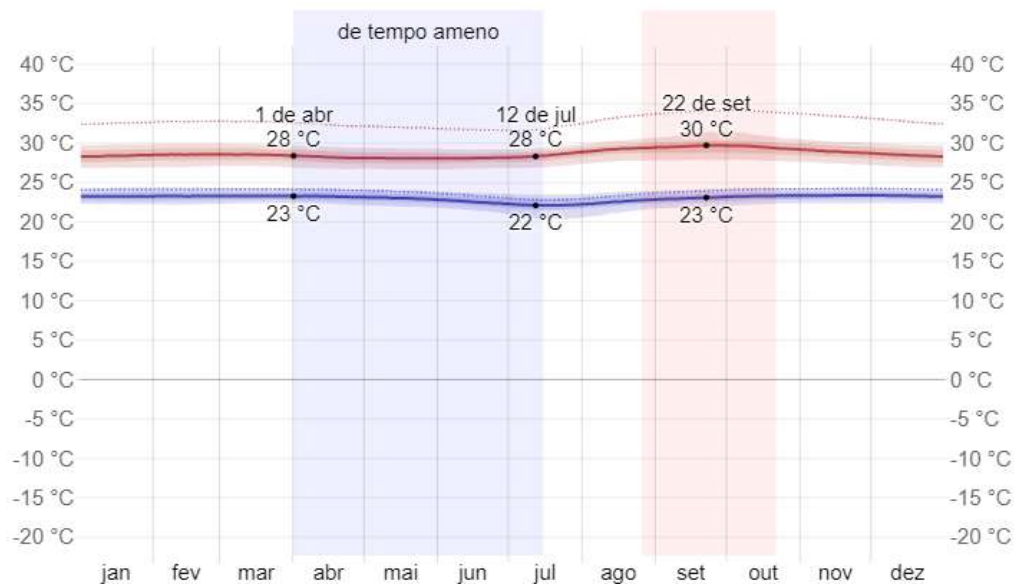
Figure 4: Carauari Temperature (Source: Weather Spark)

According to (Aleixo and Neto, 2019)[15], the two phases that govern the climatic and river dynamics impacting the lives of Amazon inhabitants are popularly known as "cheia" (period of heavy rains) and "vazante" (period of reduced rainfall), occurring in different months throughout the Amazon region.

Precipitation

Carauari has a short, hot, and overcast summer, while the winter is mild, and the sky is partially cloudy. Throughout the year, the weather is oppressive and frequently experiences precipitation (Figure 5).

Figure 5: Carauari weather - rainy and dry season (Source: Weather Spark)

To illustrate the variation between months and not just the monthly totals, we present the accumulated rainfall over a continuous 31-day period around each day of the actual year (Figure 6). Carauari experiences extreme seasonal variation in monthly rainfall.

Rainfall occurs throughout the entire year in Carauari. The rainiest month in Carauari is February, with an average of 260 millimeters of rainfall. On the other hand, the least rainy month in Carauari is July, with an average of 74 millimeters of rainfall.

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[15] https://journals.openedition.org/confins/25065
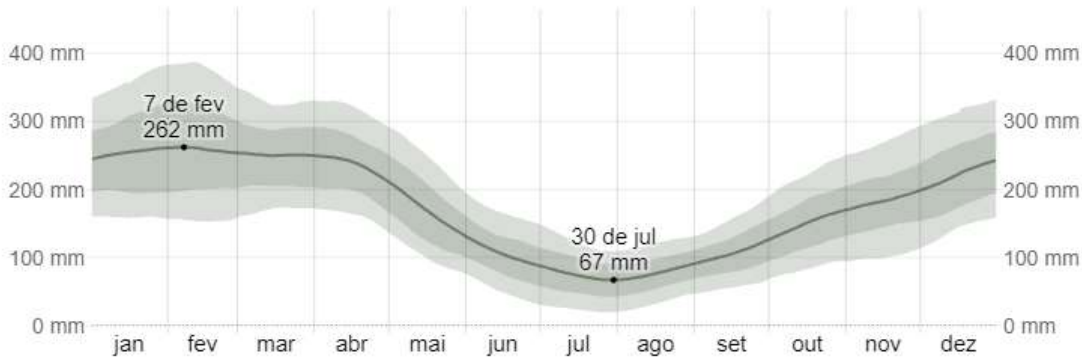
Figure 6: Rainfall Carauari (Source: Weather Spark)

HYDROLOGY

The Amazon is one of the regions with the greatest wealth of water resources. Its main river, the Amazon, is the second largest river in the world in volume and the largest in length. In the project region, the main rivers are the Rio Juruá, Rio Jutaí and Rio Biá (Figure 7). Within the property is the Igarapé Ipixuna on the left bank of the property, flowing into the Rio Biá. Most people in the area use the river as their primary means of transportation to travel to other cities, such as the capital city of Manaus, and to earn their livelihood. However, this mode of transportation is not easy, as Manaus is several days away by boat, and the only alternative is to travel by airplane.

The Amazon plain is located between the Guianas Shield to the north and the Shield to the south. It is bounded on the west by the Andes Mountain range, and on the east by the Atlantic Ocean. The Amazon basin is home to the largest river system and the largest liquid mass on the planet and is covered by the largest tropical rainforest. The Amazon basin covers an area of approximately 7 million km^2 of drainage area, of which 58% is in Brazil, 16% in Peru, 10% in Bolivia and the rest in Colombia, Ecuador and Venezuela. The Amazon River discharges, on average, 175,000 m/second, which corresponds to about 20% of the fresh water input into the world's 3/4 oceans. It is considered the largest river in the world, both in length and water volume.
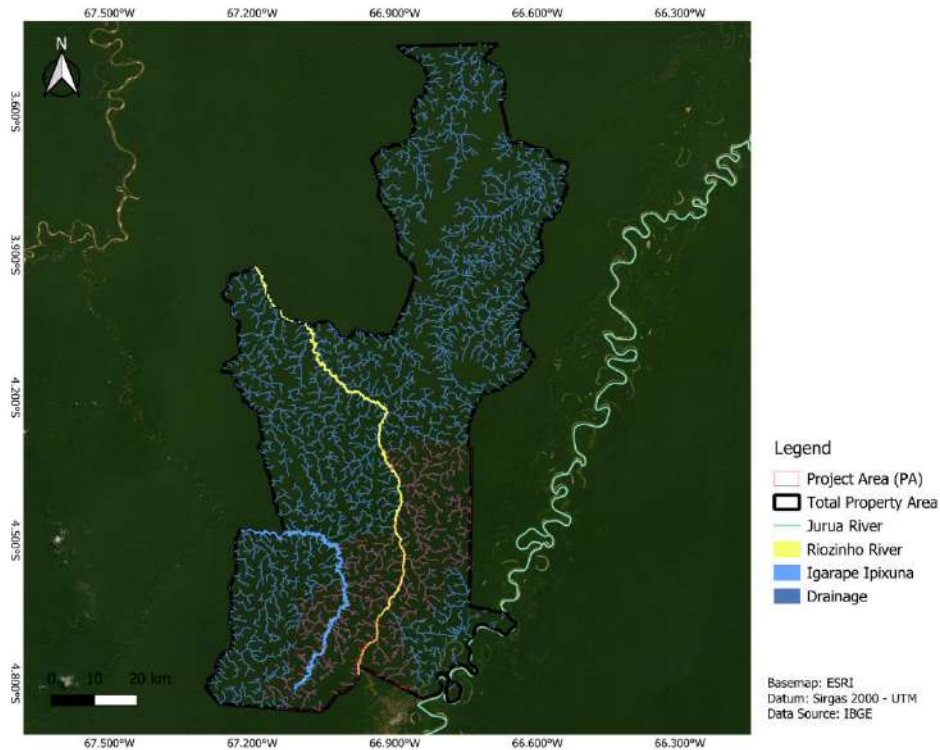
Figure 7: Hydrography Definition

Juruá River

According to Ferreira et al. (2022), the Juruá is a river with whitewater (or muddy water river) and has a low gradient from source to its mouth. It originates in Peru at an altitude of approximately 450 meters and spans a length of 3,280 kilometers. It flows through the states of Acre and Amazonas, ultimately emptying its waters into the Solimões River. The Juruá is navigable, even for large vessels, although very meandrous.

As a whitewater river in the Amazon, the Juruá gives rise to floodplain areas, which are flooded lowland forests. These areas comprise a mosaic of habitats that are subject to seasonal floods, forming numerous temporary and permanent lakes, that boast abundant biodiversity.

TOPOGRAPHY

Geology

The geology of the project area dates back to the Quaternary period, specifically the Pleistocene Gelasian stage, which began approximately 2 million years ago during the ice age. This period is identified by the formation located in the Amazon-Solimões Basin, with the oldest and most present formation known as Içá and Solimões. These formations exhibit specific conditions related to the Solimões Basin. The river with the greatest width for navigation is the Juruá River (Figure 8).
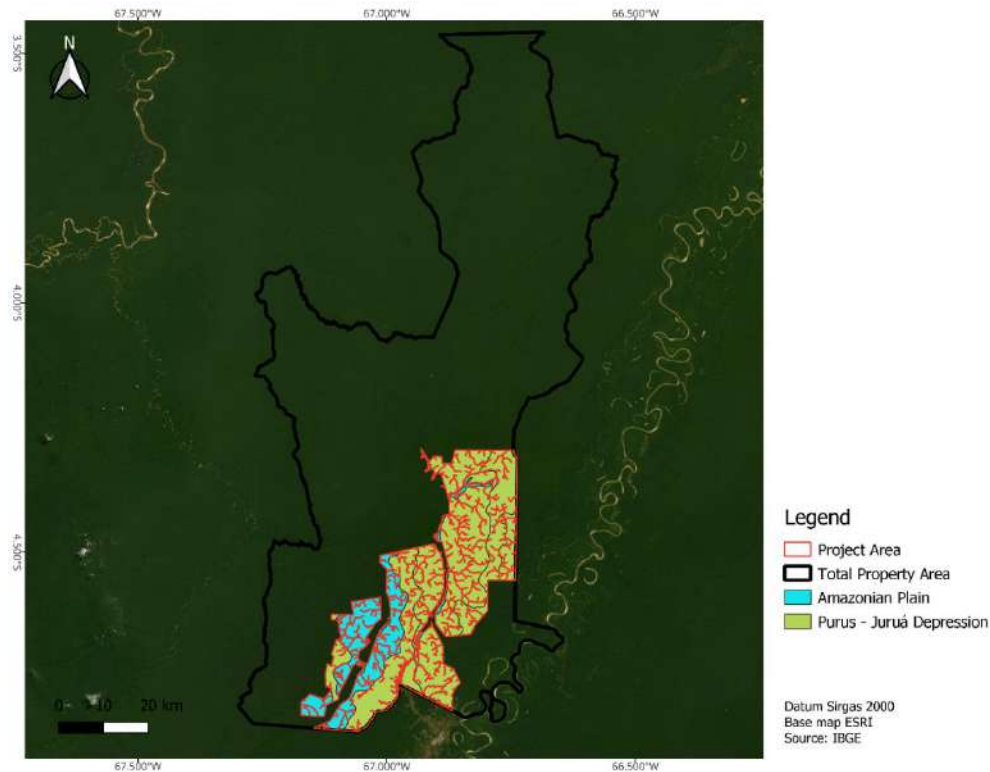
Figure 8: Geology Formation

Soil Type

The soil types of the project area, as shown in Figure 9, are identified as dystrophic red-hardy plintosols, red-yellow dystrophic argosols, red-yellow dystrophic latosols, eutrophic ta felic gleissols and eutrophic ta fluvic neosols. These types of soils, according to Embrapa's definition[16] , vary according to some basic characteristics. Plintosols are mineral soils formed under conditions of restricted water percolation subject to the temporary effect of excess moisture, generally imperfectly or poorly drained, and are characterized primarily by having significant plintitization with or without petroplintite on condition that they do not meet the requirements stipulated for the classes of Neosols, Cambissolos, Luvissolos, Argissolos, Latosols, Planosols or Gleissols. The definition of the soils found in the area can be found below (Figure 9).

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[16] Source: https://www.alice.cnptia.embrapa.br/bitstream/doc/920216/1/GeodiversidadeAMCap6.pdf
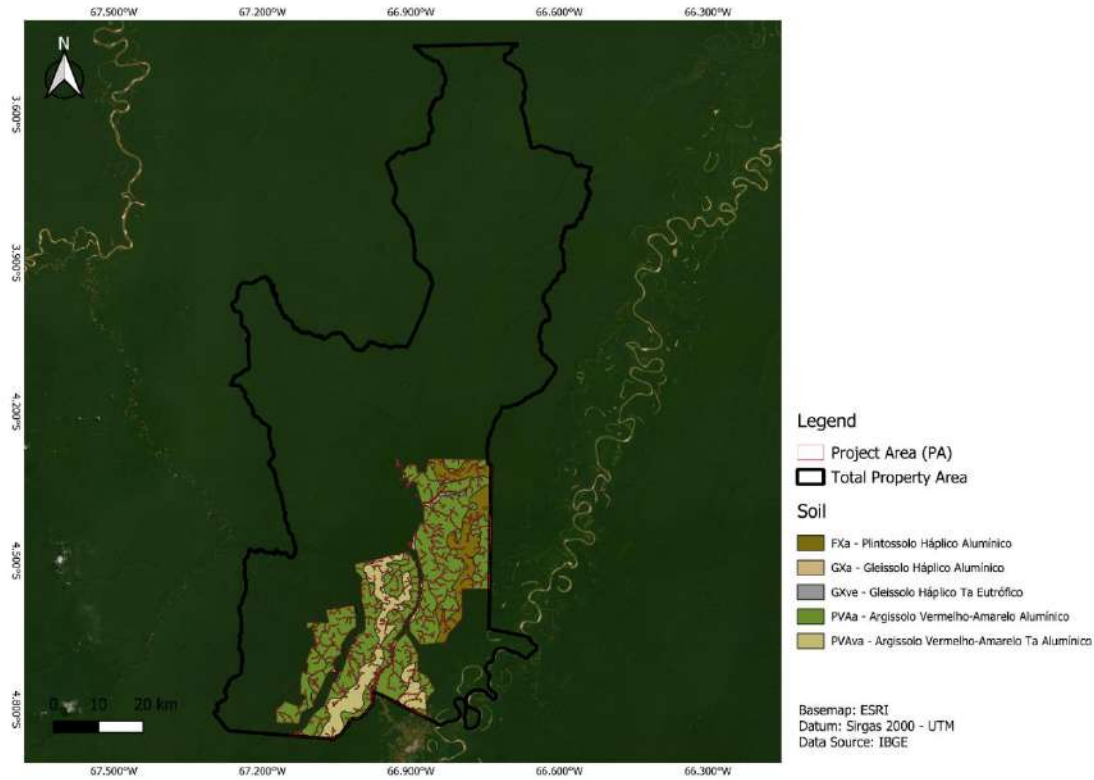
Figure 9: Type of soil

Slope

According to EMBRAPA classification, the relief in Amazonian instances varies from Wavy to Smooth Wavy with some small patches of Strong Wavy relief, between 3 and 20%, as shown in Figure 10. Due to legal suppression restrictions imposed by the Brazilian Forest Code, areas with a slope greater than 25⁰, which is approximately 46%, were excluded from the project area.
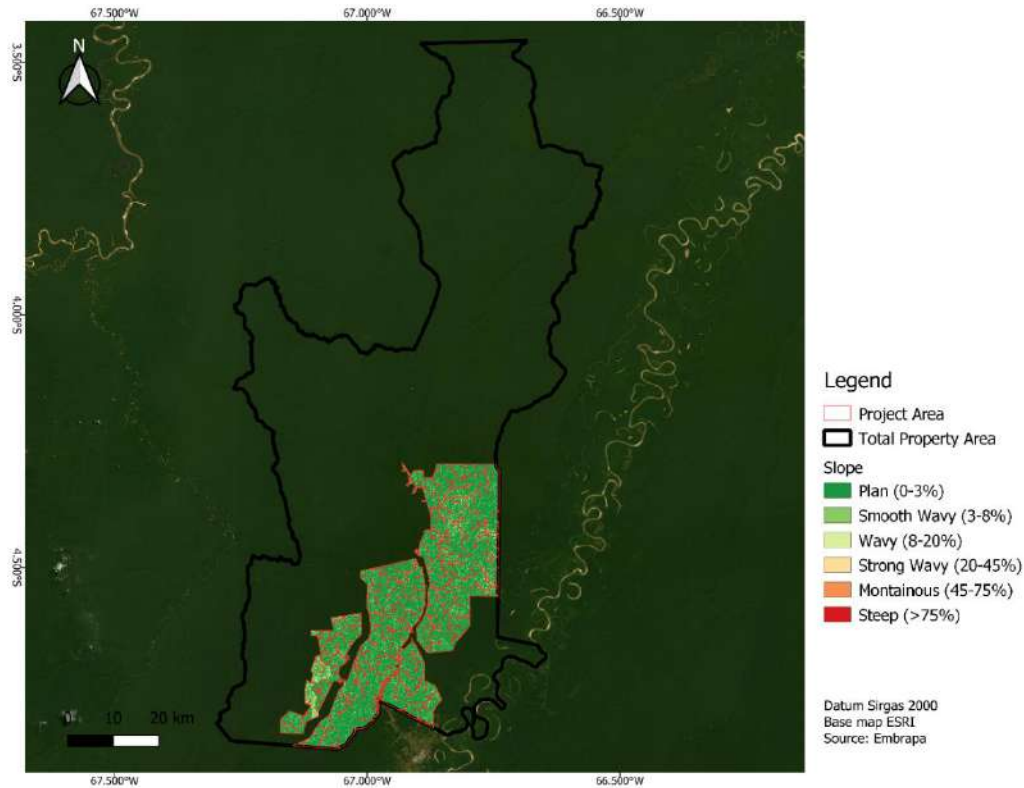
Figure 10: Slope definition

Elevation

The topographic information, as shown in Embrapa's SRTM[17] image, indicates that the terrain has low elevation, which influences the formation of rivers and local vegetation (Figure 11). According to Bispo et al (2009), about shuttle, radar, topography, and mission (SRTM) images, each variable influences vegetation in distinct ways, such as through temperature, solar exposure, hydrology, and direct control over the transport and accumulation of nutrients, biomass, and plant substances. These factors are crucial for understanding vegetation distribution and ecology. The elevation that corresponds to the altitude of the terrain is related to the altitudinal distribution of the soil and climate, conditioning different vegetation patterns in the landscape.

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[17] Source: https://www.embrapa.br/en/satelites-de-monitoramento/missoes/srtm
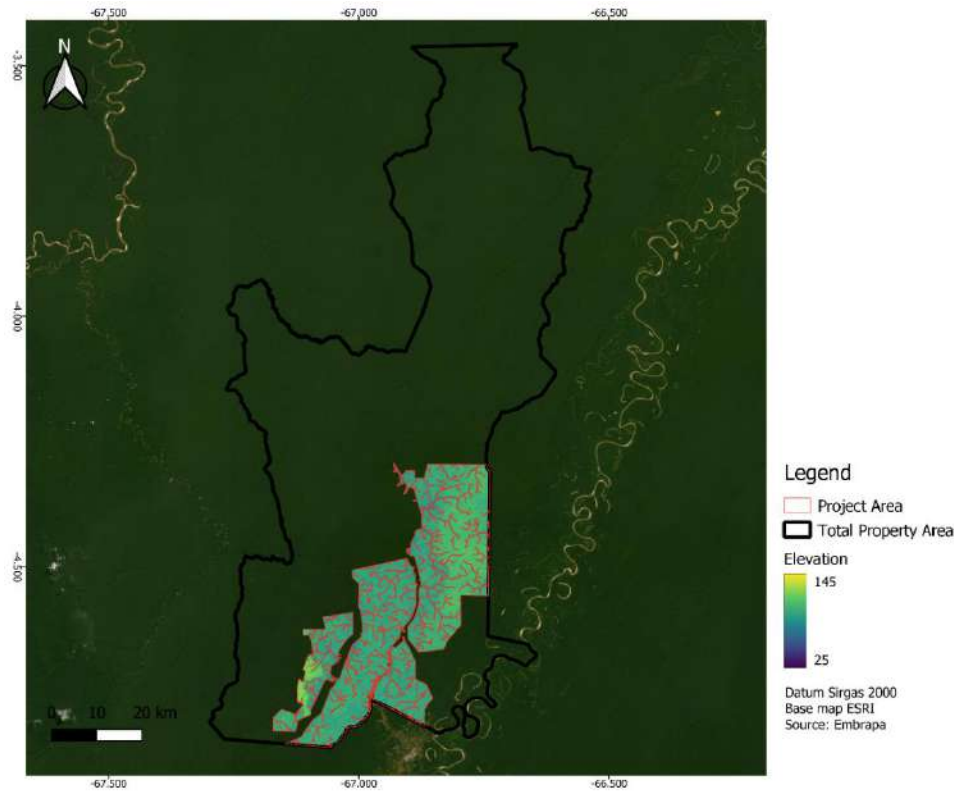
Figure 11: Elevation definition

VEGETATION AND BIODIVERSITY

Restor Data[18] indicates that the project area in the Brazilian Amazon is home to approximately 4,201 plant species, 103 amphibian species, 169 mammal species, and 516 bird species. According to Lima et al (2012), a study conducted in Carauari, Amazonas, shows that the region has a great floristic diversity, as well as commercially exploitable products. Some of the most found species were Fabaceae (inga bean, fava bean), Chrysobalanaceae (Brazil nut, macucu), Lecythidaceae (Brazil nut tree, matamatá), Moraceae (muriçoca, apuí), Myrtacea (araça-da-mata), Lauraceae (bay leaf), among others.

The phytophysiognomies (description according to IBGE[19]) present in the project area are shown in Figure 12 and Table 4.

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[18] Source: https://restor.eco/pt/platform/sites/new/analysis-results/

[19] Instituto Brasileiro de Geografia e Estatística - IBGE: Manual técnico da Vegetação Brasileira. ISSN 0103-9598. 2012
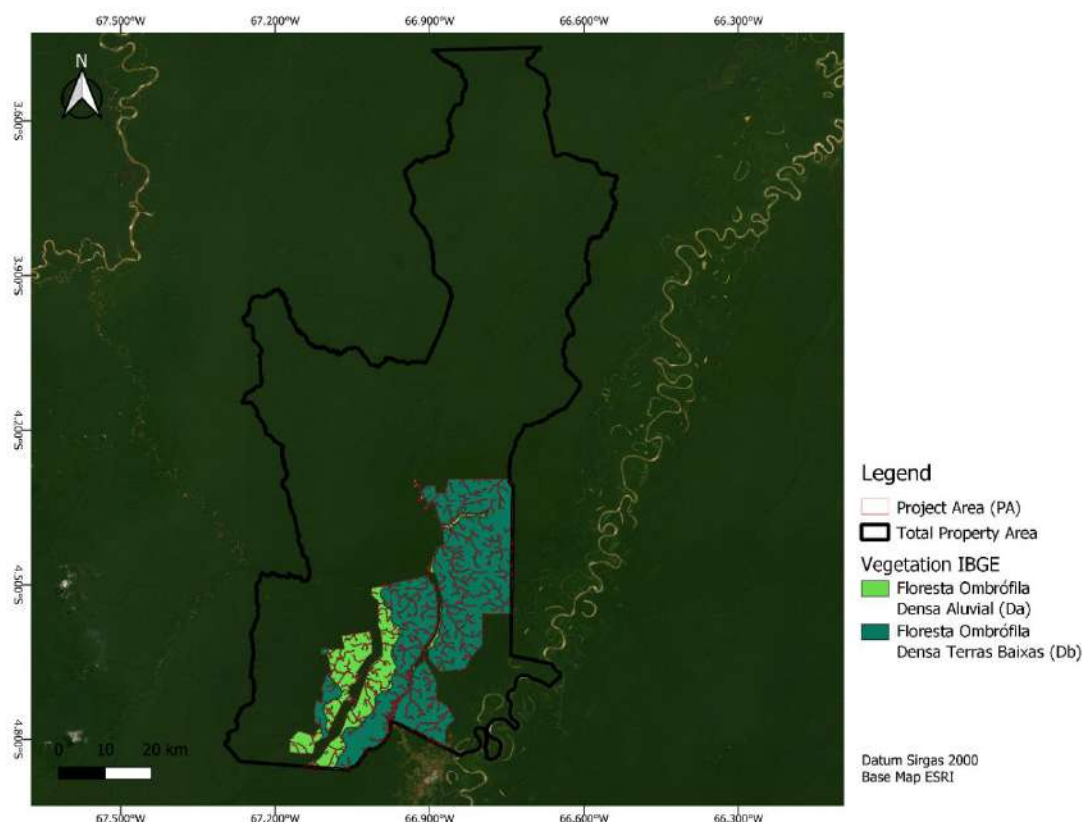
Figure 12: Vegetation cover type (Db: Dense Ombrophiles forest - lowland /Da: Dense Ombrophiles Forest - Alluvial /Aa: Open Ombrophiles Forest - Alluvial /Ab: Open Ombrophiles Forest - Lowland /Pa: Vegetation with fluvial influence)

Table 4: Vegetation Cover

Vegetation Type*	APD Area *Considering PA	(%) APD
Da	27,520.67	22%
Db	96,241.41	78%
Total	123,762.590	100%

Data Source: Shapefile of vegetation from IBGE (*Da: Ombrophiles Dense Forest Alluvial; Db: Dense Ombrophiles Forest Low Land).

Dense Ombrophiles Forest - Alluvial (Da)

It is a riverine formation or "riparian forest" that occurs along watercourses on former Quaternary plains. It is composed of fast-growing plants, including macro, meso, and microfanerophytes, usually with smooth bark, conical trunks, and sometimes the characteristic bottle shape. The forest has a uniform emergent canopy, but due to logging, its physiognomy has become quite open. The forest has many palm trees in the dominant stratum and submata, and also has nannophanerophytes and some chamaephytes among

the seedlings of the natural reconstitution of the dominant stratum. However, the forest also has many woody and herbaceous lianas, as well as a large number of epiphytes and few parasites.

Dense Ombrophilous forest - lowland (Db)

This forest formation occupies the coastal plains and is delimited by pliopleistocene tablelands of the Barreiras Group, covering a vast area that goes from the Amazon to the Northeast of Brazil, to the state of Rio de Janeiro. In the region, the floristics is composed of typical species, including *Ficus*, *Alchornea*, *Handroanthus* and *Tapirira guianensis* Aubl. Moreover, along the plains formed by the silting up of the coastal mountain ranges, and in the maritime inlets, this formation is also found on Quaternary terrains slightly above sea level. In the formation, there is a dominance of two species, *Calophyllum brasiliense* Cambess. being the most prominent from the State of São Paulo southward.

2.1.4 Social Parameters (G1.3)

The APD project area encompasses about 123,000 hectares, and its design considers the preservation of existing forests, ensuring there is no planned deforestation. Additionally, a project zone with a radius of approximately 20 kilometers from the main area was selected to analyze settlements and other stakeholders affected by the project, as can be seen in Figure 13.
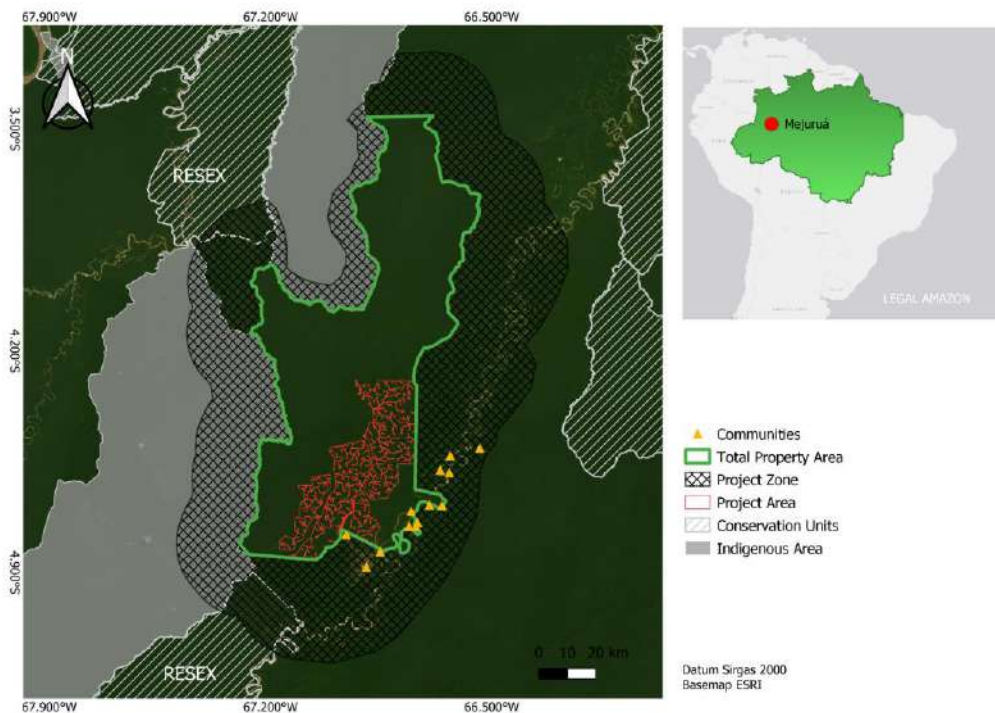
Figure 13: Project zone

Carauari, the closest city, plays a crucial role in the project's implementation. It serves as a hub for several communities in its vicinity, all of which were thoroughly mapped and categorized based on their way of life, land use, and cultural practices. As a result, Carauari is expected to be significantly impacted, as it will serve as a vital support system, providing essential supplies and a skilled workforce for the successful execution of the project.

CARAUARI CITY

According to Hilário J. V. da Costa (2022), a Carauari native and author of the book "História de Carauari," the city was one of the 45 villages that comprised the captaincy of São José do Rio Negro, created in 1758 by Francisco Melo Póvoas. Originally, the territory was inhabited by the Kanamary, Katukina, and Jamamady tribes, and before the city of Carauari was established, the territory was occupied by a rubber plantation owned by Mr. Leonel Pedrosa, a merchant who conducted his business in Monte Carmo. The municipality, initially a village, was called Xibauá, which means "arm" or "drumbeat that plays the drum." Later, it was renamed to its current name, Carauari, which means "cará do céu," derived from a type of vine that produces a tuber on its branches, which grows, matures, and falls.

The city of Carauari was made official by state law nº 311 in 1938 and is located on the banks of the Juruá river in a very high and rugged terrain. Before that, it had already been elevated to the status of village, in 1912. In the period from 1977 to 1988, Carauari was subjected to the impacts of a significant internal and external migration, resulting from the gas and oil prospecting activities carried out by Petrobras, when there was the discovery of some deposits of natural gas, but with subcommercial characteristics[20].

In 1977, the total population of the municipality was 20,162 inhabitants, with 5,536 in the urban area (27.5%) and 14,626 in the rural area (72.5%). With the start of the company's activities that year, the prospect of better salary gains was created. The rural caboclo abandoned his swidden and went in search of a job with a formal contract and the respective labor rights. Eleven years later, when the Petrobras' activities in the municipality were deactivated in February 1988, the socioeconomic scenario presented the following indicators:

- More than 70% of the population lives in urban areas while less than 30% of people live in rural areas.

- Depopulation of the rural area with the consequent abandonment of traditional extractive activities, both in native rubber plantations and in other primary sector activities.

- Disorderly growth of the urban and suburban areas of the municipal seat, with the consequent increase in deficits in infrastructure, services, and urban equipment.

- Worrying rates of unemployment, prostitution, drug use, destabilization and weakening of hundreds of families[21].

Despite the urban chaos created most workers from the rural area, who previously carried out activities in extractivism, fishing and agriculture, did not accept to return to these activities, starting to demand solutions to their problems from the Municipal Public institutions, such as housing, work and other basic needs. In 2021, the population of Carauari, according to estimates by the Brazilian Institute of Geography and Statistics (IBGE), was 28,719 inhabitants. Carauari rates reflect the situation of rural communities in the perimeter of the municipality.

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[20] Source: https://www.carauari.am.gov.br
[21] Instituto Brasileiro de Geografia e Estatística (IBGE) (27 de agosto de 2021). «Estimativas da população residente no Brasil e unidades da federação com data de referência em 1º de julho de 2021»

Figure 14: Carauari City port 2023 (Photo from: Warwick Manfrinato)

a) Data on work and income:

In 2020, the average monthly salary was 1.9 minimum wages. The proportion of employed persons in relation to the total population was 5.3%. In comparison with other municipalities in the state, it occupied positions 11 out of 62 and 35 out of 62, respectively. In comparison with cities across the country, it was in position 2558 out of 5570 and 5139 out of 5570, respectively. Considering households with monthly income of up to half the minimum wage per person, 50.9% of the population had these conditions, which placed it in position 30 out of 62 among cities in the state and in position 1220 out of 5570 among cities in Brazil[22].

b) Health data:

The average infant mortality rate in the city is 11.97 per 1,000 live births. Hospitalizations due to diarrhea are 0.7 per 1,000 inhabitants. Compared to all municipalities in the state, it ranks 46th out of 62 and 38th out of 62, respectively. When compared to cities across Brazil, these positions are 2326 out of 5570 and 2889 out of 5570, respectively[23].

c) Sanitation data:

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[22] Source: https://cidades.ibge.gov.br/brasil/am/carauari/panorama
[23] Source: https://cidades.ibge.gov.br/brasil/am/carauari/panorama

The entire population is served with water supply, compared to an average of 82.24% in the state and 83.96% in the country. The sewage of 22,508 inhabitants is not collected (21.05% of the population is served with sewage, compared to an average of 21.42% in the state and 66.04% in the country). The garbage of 5,298 inhabitants is not collected. Already 75.33% of the population is assisted with the collection of Household Waste[24].

SOCIO-CULTURAL INFORMATION

First inhabitants of the Amazon

Around 8,000 to 3,000 years ago, indigenous peoples settled along the Amazon River began making pottery. Around 5,000 years ago, small villages of horticulturists began to gain importance in the Amazon, and this marks the transition from hunter-gatherer societies to agricultural societies. The economy of these people was probably based on planting roots such as cassava, which had already been cultivated for at least 7,000 years in the region. These societies were highly developed 4,000 years ago, when they were hierarchical, densely populated and extended along the banks of the Amazon River. They left material traces of their practices, specifically the pottery and indigenous "terra preta" sites[25].

The arrival of Europeans

The arrival of Europeans in the early 16th century brought contagious diseases such as smallpox, measles, chickenpox, influenza, tuberculosis and venereal disease. Thus, indigenous populations in the Amazon were drastically reduced. During the 16th century, Spanish adventurers gave up on conquering the Amazon valley, probably because they had not found gold and other metals and because they had already conquered the wealth of the Incas in Peru. Furthermore, the Andes were a barrier to reaching the headwaters of the Amazon. The Portuguese, on the other hand, were willing to push the frontiers and break the Treaty of Tordesillas. The occupation of the territory by the Portuguese took place mainly through the evangelization of the indigenous people and the exploitation of the forest's natural products[26].

The Rubber Cycle

From the second half of the 19th century, rubber became a prominent product in the economy of the Amazon and Brazil. Dating back to the middle of the 19th century, the penetrations by the Juruá River, promoted by the pioneers of the first native rubber plantations of the rubber cycle. From that time until the end of World War II, when the arrival of the last large migratory wave of the so-called "rubber soldiers" ceased, the Brazilian Northeasterners represented the main workforce and territorial occupation of the region, while the indigenous populations gradually decreased. At that time, the literature records refer to the Cuaná, Curiqueares, Marauás, Canamaris, Catuquinas, Catauaixis and others[27].

INDIGENOUS LAND

Two indigenous lands are adjacent to the project area:

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[24] Source: https://cidades.ibge.gov.br/brasil/am/carauari/panorama

[25] Source: https://imazon.org.br/a-floresta-habitada-historia-da-ocupacao-humana-na-amazonia/

[26] Source: https://imazon.org.br/a-floresta-habitada-historia-da-ocupacao-humana-na-amazonia/

[27] Source: https://portalamazonia.com/amazonia-az/ciclo-da-borracha

a) Riozinho Indigenous Land

It is an area of 362 thousand hectares where 196 indigenous people of the Kokama and Ticuna peoples live. These territorial rights, despite being identified and declared, have not yet been ratified or registered[28].

b) Indigenous Land Rio Bia

It is an area of 1,186 thousand hectares where 488 indigenous people of the Katukina people live. These territorial rights were identified, declared, ratified and registered. In 2019, Ibama, in a joint operation with the National Indian Foundation (Funai) and the Federal Police (PF), deactivated about 60 rafts that carried out illegal mining in the Indigenous Lands (TIs) Vale do Javari, Katuquina do Rio Biá and in Cujubim Sustainable Development Reserve, in western Amazonas[29].

As evident from Figure 15, there are two indigenous communities bordering the property, along with two Conservation Units (protected areas) within the project zone. As such, these entities will also be engaged and enriched throughout the project's duration. The Conservation Units are the Rio Juruá Extractive Reserve and the Rio Jutaí Extractive Reserve, housing settlements and offering significant opportunities for research and income generation through the extraction of regional fruits such as açaí.
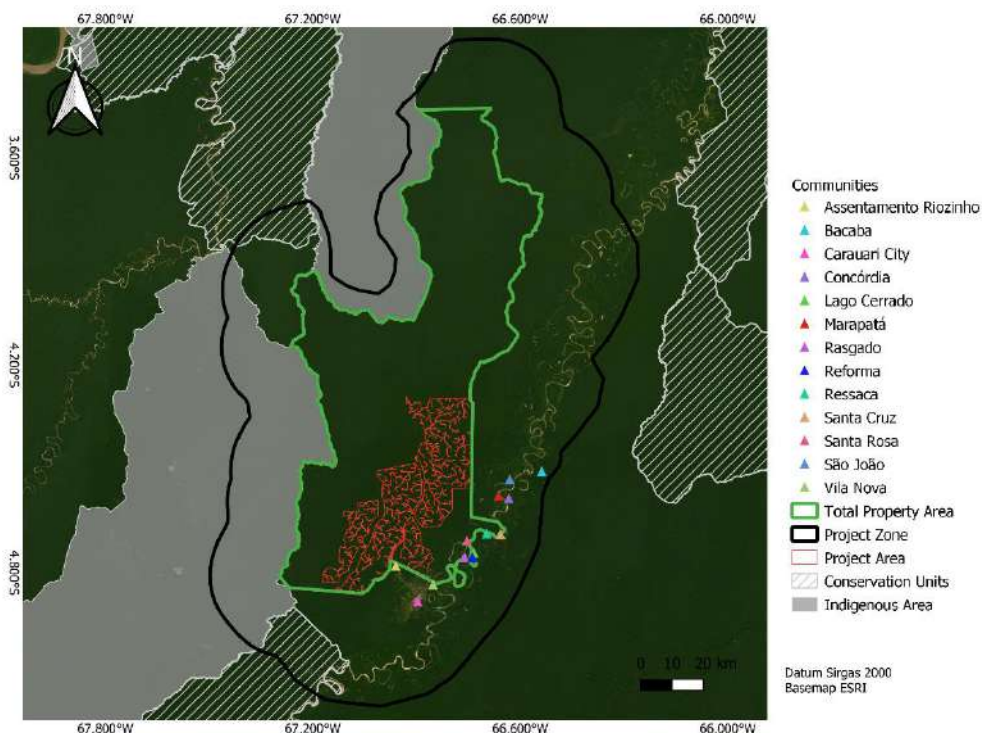
Figure 15: Indigenous land and conservation units (Protected Areas) closest the project area

According to information from the organization Indigenous Peoples of Brazil[30] Kokama, who are native to the Solimões River region, established contact with non-indigenous society in the early decades of

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[28] Source: https://terrasindigenas.org.br/pt-br/terras-indigenas/4056#demografia

[29] Source: https://terrasindigenas.org.br/pt-br/terras-indigenas/3841

[30] Source: https://pib.socioambiental.org/pt/Povo:Kokama

colonization. Forced resettlements and relocations, initially imposed by missions and later by extractive fronts, resulted in such challenging conditions for the physical and cultural preservation of these groups that many of them denied their indigenous identity for decades. However, starting from the 1980s, the Kokama identity has been progressively celebrated, driven by their political struggles alongside other indigenous peoples of the Solimões River. These battles aim to secure land rights and access to specialized healthcare, education programs, and alternative economic opportunities.

MAIN SETTLEMENTS AND COMMUNITIES

A total of 70 families are residing in nine communities (Figure 16) surrounding the Santa Rosa do Tenquê Land were interviewed, as shown in Table 5, reaching an average percentage of 43% of all families in this surrounding region. Certain communities will not only remain unsawed by direct impacts but will also reap the rewards of enhanced conditions within the region. These improvements will encompass the safeguarding of biodiversity, mitigation of climate change effects, and bolstering of support for vulnerable populations.
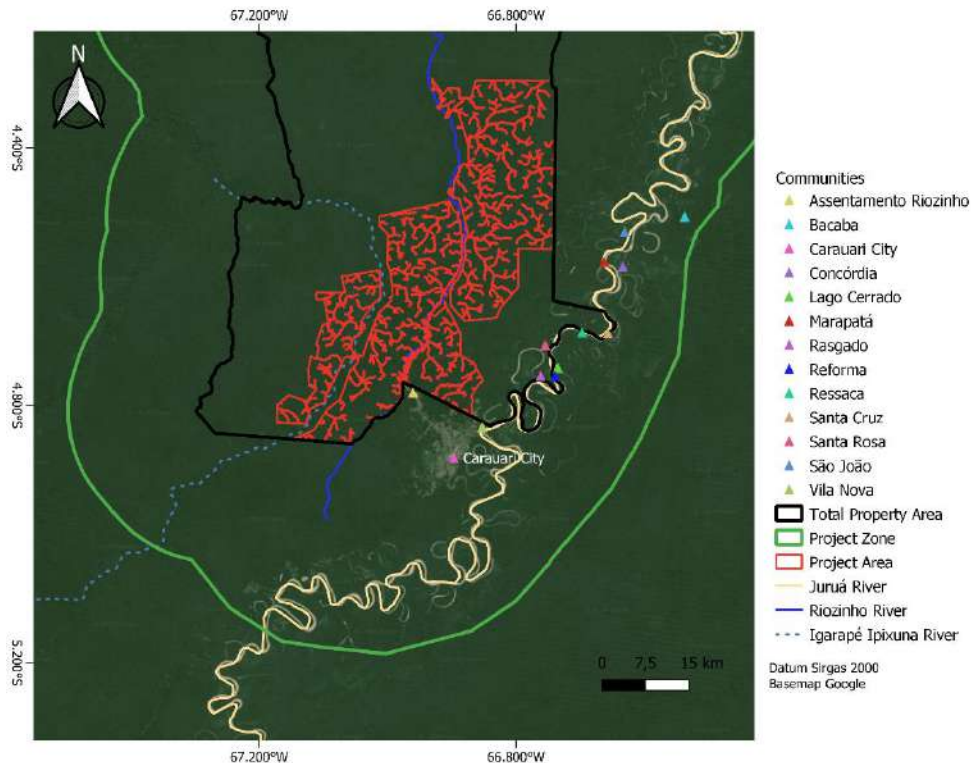
Figure 16: Communities affected by the project

During the assessment and identification of project stakeholders and interested parties, a total of 172 families in 10 communities were interviewed in the Middle Juruá and Lower Riozinho region (Figure 16). Based on interviews conducted in the communities of Bacaba, Vila Nova, Reforma, Lago Serrado, Ressaca, Santa Cruz, Concórdia, Marapatá, São João, and Assentamento Riozinho, a majority of male heads of households was observed, along with a high level of illiteracy and a scarcity of nutritious foods. It was also noted that the predominant activities are generally agriculture and fishing, serving as a means of

subsistence. All interviewed families reported receiving government benefits through the Bolsa Família program.

Regarding the structural conditions of the communities, there is a shortage of sewage and treated water facilities, limited access to electricity, and no internet connectivity. Concerning healthcare, the support they receive comes from the Carauari municipality. Among the challenges mentioned by the residents, the desired benefits are focused on the areas of health and education, as well as access to electricity and digital inclusion. The interviews will be available for auditing.

Table 5: Information on the mapped communities

Community	Heads of family	Education level
Riozinho Settlement	Man = 85% Woman = 15%	Illiterate = 45%. Fundamental complete = 4%. Incomplete fundamental = 44%. Medium complete = 7%
Vila Nova	Man = 80% Woman = 20%	Illiterate Elementary incomplete High school incomplete
Reforma	Woman = 65% Man = 45%	Illiterate Elementary incomplete
Lago Serrado	Man = 65% Woman = 45%	Illiterate Elementary incomplete Secondary incomplete
Ressaca	Man = 100% Woman = 0	Illiterate Fundamental incomplete
Santa Cruz	Man = 100% Woman = 0	Illiterate Elementary complete Elementary incomplete
Concórdia	Man = 100% Woman = 0	Illiterate
Marapatá	Man = 100% Woman = 0	Illiterate Fundamental complete Fundamental incomplete

São João	Man = 65% Woman = 45%	Illiterate
		Fundamental complete
		Fundamental incomplete
Bacaba	Man = 47% Woman = 53%	Illiterate
		Elementary complete
		Elementary incomplete
		Medium complete and incomplete

Source: BR ARBO interviews at the communities.

Regarding the structural conditions of the communities, there is a shortage of sewage and treated water facilities, limited access to electricity, and no internet connectivity. Concerning healthcare, the support they receive comes from the Carauari municipality. Among the challenges mentioned by the residents, the desired benefits are focused on the areas of health and education, as well as access to electricity and digital inclusion. The interviews will be available for auditing.

Riozinho Settlement

According to Souza et al. (2017), the creation of the Riozinho Settlement project was established based on the guidelines of the National Institute for Colonization and Agrarian Reform (INCRA). These guidelines aim to provide land access to settlers, promoting the development of the agricultural production system. Through the implementation of agrarian reform projects, INCRA obtained a preliminary license from the Amazonas Environmental Protection Institute (IPAAM) for the establishment of the settlement.

The Riozinho Settlement was established in expropriated areas of BR ARBO's property, known as Gavião and Cubiçado, for the implementation of a settlement project encompassing 4,000 hectares (Figure 17). This area is designated for subsistence agriculture, small-scale fruit cultivation, and livestock farming.

The management of local production is led by the Association of Residents of Lower Riozinho (ASMOBRI). The predominant subsistence activities include small-scale cattle farming, fruit cultivation, primarily açaí and pineapple, cassava flour production, and fishing. It's worth noting that açaí is only harvested for later sale and is not cultivated in the region.
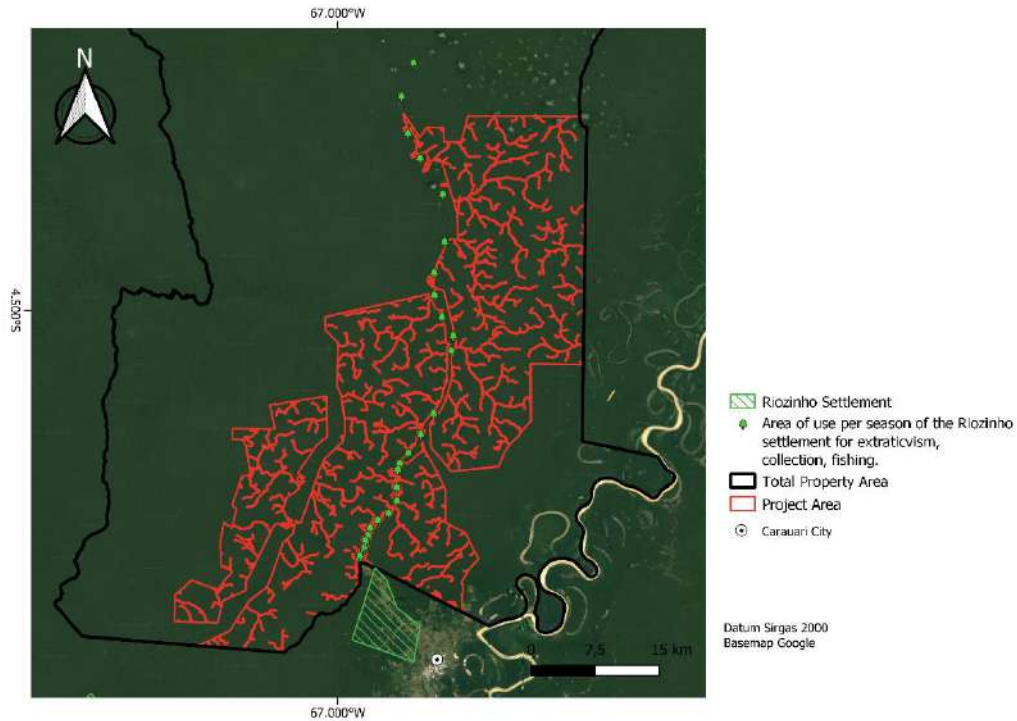
Figure 17: Riozinho Settlement location

The Riozinho Settlement will have a major role in the Mejuruá project, due to its proximity to the area and its availability to offer labor and supplies. In addition, the use of the area for subsistence occupies part of the property of BR ARBO, which will be negotiated by the project so that, in the future, these residents can have legal possession of the areas.

The community has an average of 250 families living in the area since 1988. Its origin is from rubber tappers who occupied the area. The main means of production and subsistence are fishing, açaí, and cassava flour. The Riozinho River, which flows through the community, is of great importance to them.

Figure 18: Riozinho Settlement (Source: BR ARBO interviews)

According to Abel et al. (2021), numerous social organizations and economic activities in the Amazon region are profoundly influenced by the climate and water dynamics of its rivers. These influences manifest in various ways, including the extensive waterway network, the development of productive activities in the fertile floodplains, such as agriculture, fishing, and logging, as well as the challenges posed by droughts and wildfires. Furthermore, the urban occupation along the riverbanks further emphasizes the significance of these waterways in shaping the region's social and economic landscape.

Understanding the occupation of the communities around the property, highlighting their livelihoods and needs, was an important aspect evaluated by the Mejuruá project to define the paths taken, in order not to interfere with the local way of life and benefit the communities that will be affected directly or indirectly by the project, seeking to bring improvements and protection of the Amazon rainforest and biodiversity.

2.1.5 Project Zone Map (G1.4-7, G1.13, CM1.2, B1.2)

A project boundary was defined with a 20 km buffer from the property's edge serving as the reference point. Within this demarcated zone, project initiatives will be carried out to extend benefits to vulnerable communities, as well as ensure area protection through local surveillance and satellite monitoring and safeguard the forest's biodiversity. The ultimate objective is to drive regional development by securing improvements within this specified area.

The project zone encompasses the three municipalities within the Amazonas state where the property is located: Jutaí, Juruá, and Carauari. It also covers portions of two indigenous territories and two Conservation Units, as well as the neighboring (not overlapping properties) communities that will benefit from the project (Figure 19). As indicated in the map, the Project Zone relates to a zone of influence considered, but nor overlapping entitlements.
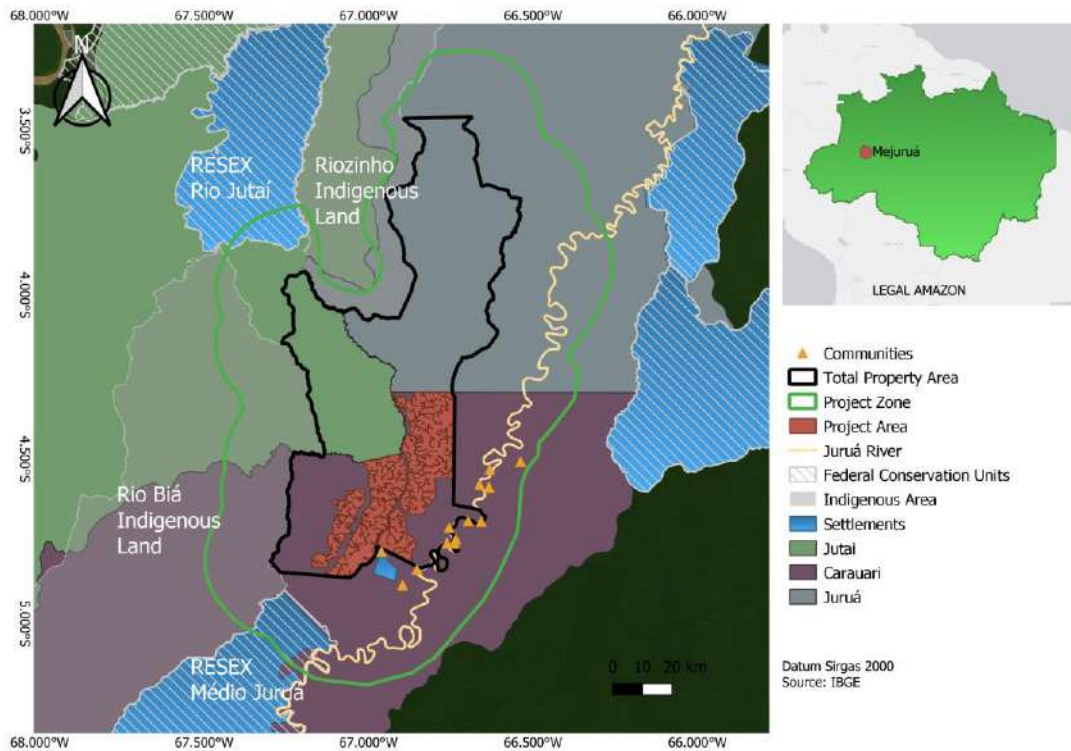
Figure 19: Project Zone and other territory indications

2.1.6 Stakeholder Identification (G1.5)

The stakeholder engagement process began with a dual focus: first, identifying communities within and around the property area that have potential or practical relationship with the project and could contribute to the project's activities (possible monitoring assistance, for example), and second, disseminating project information to institutional agents and the residents of Carauari, the nearest city to the project area. Interviews with local communities were conducted in December 2022 and January 2023, aimed at introducing the Mejuruá project and understanding the various quality-of-life improvement demands they had. Subsequently, on March 3, 2023, communication with institutional agents began to present the Conservation Project, using a combination of email exchanges and face-to-face meetings.

The identified categories listed below cover a wide range of connections between the project and local society, in different aspects.

a) People living within the project area.

Within the property boundaries, several families reside along the margins of the Riozinho River, constituting a part of the Riozinho settlement. This specific category, identified at the level of individual homes or families, was established through a survey process initiated on January 09, 2023, under a contract with an organization called "JCris Ambiental ME" based in Carauari, with support of the Baixo Riozinho Residents Association – ASMOBRI. Interviews were conducted with 27 out of the 36 families living on the banks of the Riozinho stream, which represents a coverage of 75% of the total resident population. Upon initial examination of the Mejuruá project, it became apparent that there is a strong community interest in

39

acquiring more information regarding the project, as they believe its implementation will have a positive impact and enhance the quality of life for the families involved. Regarding the social activities, this community expressed the need for the provision of electricity, treated water, healthcare, education, and support for income generation. The findings from the interview conducted with the Riozinho community, residing within the property boundaries, are detailed in section 2.1.7 (Data room reference: SC03 – Interview with Riozinho Community).

The script for the interview with the community is shown in Figure 20 (script in Portuguese, native language).

1) Informar ao entrevistado sobre o projeto	O que a família costuma comer ou tomar às refeições?
2) Informações sobre o entrevistado (a) e família	Os alimentos são suficientes?
Nome	Há energia elétrica na moradia? Quais aparelhos elétricos vocês têm em casa?
Gênero:	
Estado civil:	Água que consomem ou usam na residência, tem algum tratamento?
RG:	
CPF:	Para onde o esgoto é encaminhado?
Grau de instrução	Você já usou a internet? Para que?
Atividade	Vocês têm acesso à internet em casa?
Endereço/ localidade onde mora:	Como opera, para vocês, o atendimento médico, quando há necessidade de
Condições da moradia:	
E proprietário ou não:	assistência, alguém fica doente, ou há um parto?
Nome da esposa/esposo:	Há assistência médica preventiva para vocês?
Gênero:	Vocês se deslocam para a cidade? Como fazem o deslocamento? Com que
RG:	
CPF:	frequência? Para fazer o quê?
Grau de instrução	Os artigos que precisam ser comprados para consumo da família, como fazem
Atividade:	
Quantos filhos tem:	para obter?
idades:	Tem alguma ajuda do governo: se sim, qual?
Estão na escola ou colégio:	Outros pontos que o entrevistador considera
Do que a família vive?	relevantes para acrescentar aqui:
Quantas refeições a família faz no dia?	

Figure 20: Script for interview with the community

On September 22, 2023, an important partnership was established with the Association of Residents of Baixo Riozinho (ASMOBRI). This partnership is dedicated to providing essential support for community projects that focus on açaí management, processing, and the development of collaborative opportunities for product export. ASMOBRI is an organization actively engaged with riverside communities on BR ARBO land (Data room reference: PAE15 – Term of Intent).

b) Communities located out of town (urban area) and out of the property.

The identification of communities residing close to the property was conducted through a survey process carried out by "JCris Ambiental ME" on December 17, 2022, following the same approach as indicated in Figure 19. This survey reached individual homes or families within these communities, covering approximately 43% of the total known communities. The lower percentage of interviewed families can be attributed to two main factors. Firstly, during the end of the year period, community members often travel to celebrate Christmas and New Year festivities. Secondly, during the period of social benefit payments, the majority of community heads of households visit the municipality urban center to receive the benefits of Auxílio Brasil (banking), which they use to supplement their purchases and other end-of-year acquisitions. While these communities are not directly dependent on BR ARBO for their daily activities, they do create ongoing social relations with property members and often report to BR ARBO members. They can play a role in the project's efforts to combat deforestation and can also benefit from the project's activities. Regarding the social activities, this community expressed the need for the provision of electricity, treated

water, healthcare, a communication system, education, professional courses, and support for income generation (Data room reference: SC04 – Interview with surrounding communities).

c) People living in the town of Carauari

Carauari, with an estimated population of 28,719 people, exhibits an average monthly salary of formal workers (2020) amounting to 1.9 times the minimum wage. In terms of education, the schooling rate for 6- to 14-year-old (2010) stands at 90.2%, positioning Carauari at the 5462nd spot nationwide of 5570. The municipality has a GDP per capita [2020] of R$ 12,591.08, ranking 3906 in the country[31].

Due to its proximity to the project area, located just a few kilometers away, the project proponent recognizes the entire population of Carauari as a local stakeholder, even though they may not directly depend on the project. Considering that any activities in the area can potentially impact the city, both positively and negatively, it is crucial to take into account its perspectives. As part of this effort, on April 4, 2023, a public hearing was conducted at the Chamber of Deputies in Carauari, where BR ARBO's Forestry Conservation project was presented. To ensure broad participation, invitations were prominently posted in public places a few days prior to the meeting, effectively informing the community about the event. As highlighted during the public meeting, the residents of Carauari stand to benefit from the project in two significant ways: first, by preserving the forest and its ecosystem services, and second, by creating employment opportunities through the project and contributing to the sustainable development of the region (Data room reference: SC05 – Carauari meeting attendance list, SC06 – Carauari meeting minutes).

d) Local Entities and Regional acting entities

A number of non-governmental organizations are actively operating in the region known as "Médio Juruá," where Carauari is located. These organizations represent specific segments of the local population and are considered important stakeholders in the context of the project. Many of these entities are dedicated to environmental issues, particularly the protection and conservation of the Amazon rainforest. Their work extends beyond the immediate vicinity of Carauari and encompasses the entire Amazon Forest, making them key stakeholders in the project.

In March 2023, a series of emails was sent to various institutional audiences, providing them with detailed information about the project and directing them to the BR ARBO website for further resources. These emails aimed to engage stakeholders and encourage them to share their opinions and comments. The list of consulted stakeholders is provided below (Data room reference: SC01 – Stakeholder e-mails):

- Governors of the state of Amazonas

- Secretary of the Environment from Amazonas

- City Hall of Carauari

- City Hall of Juruá

- City Hall of Jutaí

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[31] Source: https://cidades.ibge.gov.br/brasil/am/carauari/panorama

- Municipal Council of Juruá

- Municipal Council of Jutaí

- Amazon Environmental Protection Institute (IPAAM)

- National Indian Foundation Alto Solimões (FUNAI)

- Sustainable Amazon Foundation

- Extractive Reserve of Médio Juruá

- Uacari Sustainable Development Reserve

- Association of Agroextractivist Residents of Baixo Médio Juruá;

- Association of Agroextractivist Residents of the Uacari Sustainable Development Reserve

- Association of Rural Producers of Carauari

- Extractivist Residents Association of the community of São Raimundo

e) Local government municipal level

At the municipality level, as ruled by the Brazilian Constitution, the government is organized under the executive power, in this case represented by the Mayor of Carauari and his staff, and the legislative power, represented by the House of Representatives of the municipality Carauari, all freely elected by the population. In this project we are considering these legally constituted authorities as stakeholders, as they legally represent the interests of the local people, comprising all listed under (a), (b) and (c) above.

A public meeting was held on April 4, 2023, at the House of Representatives in the town of Carauari. The purpose of the meeting was to introduce the Forestry Conservation project of BR ARBO to the local community, with the presence of the vice mayor and councilors (Data room reference: SC05 – Carauari meeting attendance list, SC06 – Carauari meeting minutes).

f) State level government

As ruled by the Brazilian Constitution, the country is a federation of states with a strong Federative Pact (legal structure of tranfering roles in governance). The state of Amazonas is where the area is located and most of the legal licensing processes take place within the state level jurisdiction. Thus, there is a tacit understanding that the State of Amazonas is a major stakeholder to our project. As such, the state jurisdiction, from the position of the Governor to secretariats and autharquies have been fully considered in the design of the project. Numerous meetings were held between BR ARBO team and government organizations including a meeting with the Governor of the State of Amazonas took place on April 03, 2023, where the project was thoroughly presented to the Governor and his team. On that date, a letter of intent was signed between representatives of the Mejuruá project and the Governor. In this letter, the State Government expressed its support for the project in various aspects, committing to actively engage in

subsequent actions. The document is available in the project's data room (Data room reference: SC07 – Photo of the meeting with the Governor).

Additionally, during the meeting, the Governor had the opportunity to showcase a model school initiative, called "Escola da Floresta" developed by the state government for installation in forest regions across the state. As a result of the meeting, the project owners made a commitment to include a pilot unit of this school as one of the social initiatives within the Mejuruá project.

g) Federal government

The federal government has a basic rule in environmental issues as most of the subject is ruled by federal laws. Federal environmental administration entities are also included as identified stakeholders to this project.

2.1.6.1 – Recognizes tenure rights.

Regarding land tenure recognition for the settlements, the proponent acknowledges the legal rights held by occupants over the land they utilize. This applies to both the communities utilizing BR ARBO's land and natural resources (the Riozinho Settlement) and the communities located in the vicinity of the property. These settlements primarily consist of small-scale subsistence farming and family-level extractive activities. The primary extractive activity in these settlements is river and lake fishing (occasional and "despesca" periods), which is abundant in the Amazon region. These types of settlements are commonplace throughout the Amazon region, including within the Project Zone.

As a rule, in Brazil the adverse possession legal figure is defined by the Brazilian Constitution, by the Brazilian Civil Code, among other regulations.

The main rules are translated to English, as follows:

1.   CONSTITUTION OF THE FEDERATIVE REPUBLIC OF BRAZIL – 1988

Art. 191. Anyone who, not being the owner of rural or urban property, owns as his own, for five uninterrupted years, without opposition, an area of land, in a rural area, not exceeding fifty hectares, making it productive through his work or of his family, having his home there, will acquire the property.

2.   BRAZILIAN CIVIL CODE - Law # 10.406 – 2002

CHAPTER II

Acquisition of Real Estate Property

Section I

About Usucapion

Art. 1,239. Anyone who, not being the owner of a rural or urban property, owns as their own, for five uninterrupted years, without opposition, an area of land in a rural area not exceeding fifty hectares, making

it productive through their work or that of their family, having on it their home, the property will be acquired by them....

§ 1 The title of domain and the concession of use will be conferred on the man or woman, or both, regardless of marital status.

.... Art. 1,241. The possessor may request the judge to declare the property acquired, through adverse possession.

Single paragraph. The declaration obtained in accordance with this article will constitute a suitable title for registration with the Property Registry Office.

Therefore, the Brazilian law clearly recognizes the right to ownership after 5 years of use in the situations that are typical to the local communities in the Mejuruá project property. However, the issuance or the formal ownership title is subject to a non-opposition condition, and the submission of the case to a due legal process. In the Mejuruá project, the owners of the property do recognize the rights of other communities located within the property, so characterizing the "non opposition" legal condition. This is made material by the "Forest Angels" program, described in section 2.1.8 of this document. The program grants the rights of tenure and later of property over the land in a facilitated process, bearing in mind the cultural characteristics and natural limitations of the beneficiary families.

In relation to communities that are outside the property, as the owners of the land in question are third parties to the Mejuruá project, it is the project's intention to assist these communities, to the extent possible, in navigating the necessary processes to secure recognition of their rights, provided that the legal conditions are met.

2.1.7 Stakeholder Descriptions (G1.6, G1.13)

Stakeholders were identified by taking into account those who utilize the natural resources within BR ARBO's property, the communities situated in the vicinity of Gleba Santa Rosa do Tenquê, residents of Carauari, as well as local and regional entities. Descriptions of these groups will be provided in the following sections.

a) **People living on the banks of Riozinho stream.**

Interviews were carried out with 27 of the 36 families residing on the banks of the Riozinho stream located around Gleba Santa Rosa do Tenquê, with a reach of 75% of the total number of residents. These families are involved in açaí extraction on BR ARBO's property and stand to gain from the social initiatives of the Mejuruá project, such as the Forest Angels program. The Forest Angels program offers land grants to individuals residing in the area without formal land tenure and provides training in sustainable forest management. In exchange, these participants are expected to actively engage in area surveillance to prevent instances of illegal deforestation. Additionally, several residents have expressed their interest in contributing their labor to Mejuruá project. The list of family representatives interviewed in the Riozinho Settlement is shown in Table 6.

Table 6: People from the Riozinho community interviewed

Family representative	Age	Children
Ana Lucia Miguel Alquino	39	4
Antonia Vieira da Silva	67	6
Antonio de Souza Albuquerque	59	5
Antonio Neblina Maraes	65	0
Antonio Olavo Soriano Moraes	70	3
Antonio Santos do Lino	56	6
Coracir Marcelino Batista	65	7
Edmilson Vale dos Santos	65	11
Edson Pinheiro Teixeira	58	3
Estrolábio da Cruz Guimaraes	55	0
Francisco Damiao A. Bezerra	54	3
Francisco Genivaldo B. de Freitas	49	0
Francisco Passarinho Albuquerque	43	2
Genus Silva da Silva	32	2
Ildeone Ferreira Santiago	43	9
Ismael Lopes da Silva	Uninformed	5
José Bastos do Amaral	58	5
José Carlos Nunes da Silva	53	0
José Ferreira de Souza	26	4
Lorival Vieira da Silva	65	4
Manoel Messias Feirosa	65	0
Maria Aparecida da S. Diamantino	61	5

Miguel Serafim Filho	57	3
Paulo Cesar Castro dos Santos	57	11
Raimundo Barros da Silva	65	4
Silvana de Oliveira	29	4
Valderir Dutra de Souza	Uninformed	

Table 7 shows the diagnosis of the communities interviewed around the BR ARBO property.

Table 7: Diagnosis of the surrounding communities interviewed

Essential service	
Electricity	Does not have
Potable water	Does not have
Domestic sewage	Does not have
Internet access	Does not have
Communication: Telephony/Radiophone	Does not have
Health care	Municipal headquarters

b) Communities living out of town and out of the property.

Interviews were also carried out with residents of communities in Carauari City situated near Gleba Santa Rosa do Tenquê. Although these communities do not depend on the BR ARBO area for their sustenance, they also have the opportunity to benefit from the social programs initiated by the Mejuruá project. Several communities have the potential to become project partners through their involvement in initiatives aimed at fostering sustainable regional development. Moreover, specific communities such as Concórdia, Lago Serrado, São João, Vila Nova, and Santa Cruz have shown a keen interest in providing labor for various projects under the Mejuruá project.

The communities interviewed, and their location are shown in Table 8.

Table 8: Surrounding communities interviewed

Community	Number of resident families	Number of families interviewed	Outreach of interviews in the community	Geographic Coordinates DATUM SIRGAS 2000

Vila Nova	28	05	18%	S: -04 50' 21.52064" W: -66 50' 49.87870"
Reforma	08	03	37%	S: -04 45' 22.20449" W: -66 44' 18.27652"
Lago Serrado	13	03	23%	S: -04 44' 14.67237" W: -66 44' 14.99071"
Ressaca	09	03	33%	S: -04 41' 03.21766" W: -66 41' 45.68699"
Santa Cruz	05	05	100%	S: -04 41' 17.60288" W: -66 39' 25.97887"
Concórdia	10	02	20%	S: -04 35' 27.91323" W: -66 38' 34.46602"
Marapatá	04	01	25%	S: -04 34' 48.87098" W: -66 39' 47.66689"
São João	13	11	84%	S: -04 32' 06.19094" W: -66 37' 00.40577"

Table 9 shows the diagnosis of the communities interviewed around the BR ARBO property.

Table 9: Diagnosis of the surrounding communities interviewed

Characteristics	Essential services								
	Vila Nova	Reforma	Lago Serrado	Ressaca	Santa Cruz	Concórdia	Marapatá	São João	Bacaba
Electricity	Yes	Partially	Yes	Yes	Partially	Yes	Partially	Partially	Yes
Potable water	Yes	No	Yes	No	No	Yes	No	No	Yes
Sewage	No	No	No	No	No	No	No	No	No
Internet access	No	No	No	No	No	No	No	No	No

Health care	Munici pal headq uarter s	Municip al headqu arters	City hall resc ue	City hall resc ue	Municip al headqu arters	City hall resc ue	Municip al headqu arters	Municipa l headqua rters	City hall resc ue

c) People living in the town of Carauari.

A public meeting was conducted in Carauari on April 4, 2023, with invitations posted at public service points in advance to inform the community about the event. The meeting had the participation of elected representatives, including the Mayor and deputy mayor of Carauari City Hall, ensuring representation of local interests. Directors of various non-governmental entities in the region were also present, some of whom had been previously contacted through letters or academic correspondence. Additionally, individuals from the general public who were interested in the project attended the meeting.

During the meeting, the project owners and developers had the opportunity to present the project and distribute a printed copy of the comprehensive project report to the attendees. Representatives and other participants raised questions and sought further information about the project activities and its potential impacts on the local community. Clarifications were provided, and requests made during the meeting were noted for consideration during the project's development and implementation phases to enhance the planned social initiatives. Engaging with the residents of Carauari and their representatives is crucial as they can provide valuable input into the project's design and ensure its contributions to the city's development.

d) Local Entities and Regional acting entities.

Several meetings were conducted between the project owners and the deputy mayor of the Municipality of Carauari, along with his team, to discuss various aspects of the project. These meetings focused on topics such as project impacts, social initiatives sponsored by the project, and the engagement of local communities. Furthermore, a significant meeting took place on April 3, 2023, between the project owners and the Governor of the State of Amazonas. During this meeting, a comprehensive presentation of the project was delivered to the Governor and his team. The Governor also introduced the concept of a model school called "Escola da Floresta", which is designed to be established in forest regions across the state. As part of the project's commitment to social initiatives, the project owners pledged to include a pilot unit of the "Escola da Floresta" in Carauari. This collaboration showcases the shared vision and dedication to promoting educational opportunities within local communities.

Other communities located within the project zone hold the potential to participate in the Mejuruá project by forming partnerships and contributing to its initiatives if new project areas are added.

2.1.8 Project Activities and Theory of Change (G1.8)

The project activities were proposed after conducting a comprehensive diagnostic survey with the community, followed by engaging in meetings with various stakeholders to address the community's improvement demands. The central aim of the Mejuruá project is to secure the long-term conservation of a

vast expanse of native forest spanning 679,335 hectares. This endeavor contributes to climate change mitigation by avoiding the release of 80,318,439 tCO_2e over the course of the project's lifespan. Furthermore, by employing economic incentives to promote rainforest conservation within the project area, the initiative aims to generate net positive impacts that enhance the well-being of local communities. These impacts will be realized through the implementation of activities that have been developed based on community diagnoses and stakeholder meetings.

A concise summary of the proposed activities within the project is described below. The expected outputs, outcomes, and impacts resulting from the project activities were developed according to the theory of change, following the guidelines provided in the SBIA Manual for REDD+ Projects (Richards and Panfil, 2021) (Table 10). The outputs, which represent the tangible short-term results of the project activities, will be achieved within the initial years of project implementation. These outputs will ultimately contribute to the realization of the project's overarching objectives, which entail generating positive social and biodiversity outcomes and impacts.

ENVIRONMENTAL BENEFITS

The project's core activities are centered around three main objectives: mitigating climate change, conserving biodiversity, and enhancing the well-being of the communities. The following is a list of planned activities related to these objectives:

Forest Biomass Inventory

The Forest Inventory's objective is to gather both quantitative and qualitative data on the existing forest biomass within the project area. This comprehensive assessment enables accurate quantification of the carbon stored in the forest. The outcome includes the establishment of sample plots for data collection purposes. Apart from determining carbon storage levels, this process will also allow the identification of various flora species present in the area.

Sustainable Forest Management

The project proponent will implement Sustainable Forest Management with Reduced Impact Logging (RIL), recognized as a sustainable practice. RIL involves the selective logging and responsible management of native timber species of commercial interest, ensuring that only a limited volume is extracted.

Under the Mejuruá project, each year, a designated plot spanning 5,457.10 hectares will be carefully managed, adhering to specific criteria and limitations outlined. After the management process, the plot will be left undisturbed, allowing for natural forest regeneration to occur over a period of at least 30 years. In the subsequent year, a new plot will be selected for management, creating a rotational activity that covers the entire area divided into 30 plots, with one plot managed per year. This process will be eventually fully certified by the FSC, showcasing the project's commitment to sustainable practices and responsible forest management. Besides that, this activity will contribute to the socioeconomic development within the Project Zone by fostering employment opportunities and generating income.

Surveillance and Patrolling

To bolster the safeguarding efforts, dedicated local patrols will be established to monitor the territory and protect it from an array of threats, including criminal fires, illegal logging, private property appropriation, illegal hunting, and the introduction of invasive exotic species. These vigilant patrols will diligently adhere to predefined surveillance routes, ensuring extensive coverage of the area.

Moreover, leveraging advanced technology, such as satellite images, drone flights, and data from reliable sources like PRODES, DETER/INPE, MapBiomas, and ESA, will serve as an additional tool in this conservation endeavor. These cutting-edge resources will empower the owners to swiftly pinpoint areas that demand immediate attention and prompt response.

The overarching goal is to provide comprehensive protection, thereby deterring any unauthorized activities within the area and fostering a thriving ecosystem for both native flora and fauna.

Forest Angels Program

The Forest Angels Program is designed to progressively award property titles to approximately 100 families who have occupied farm areas in good faith for a substantial duration, facilitated by agreements inked with these families. To stimulate their proactive involvement in forest conservation, these families will undergo specialized training to aid in forest surveillance and protection. This initiative will not only contribute to forest conservation but also empower local communities, enabling them to play an active role in sustainable resource management and fostering a sense of ownership over their environment.

Wildfire prevention

In the Amazon rainforest, natural fires are exceptionally rare. Even during the dry season, when conditions become more conducive to fires, the high humidity in the region acts as a deterrent against the occurrence of numerous hotspots. However, human activities have had a substantial impact on the prevalence of fire, resulting in a rapid alteration of the Amazon rainforest's natural state, particularly through deforestation. To safeguard the carbon stocks in the project area, the initiative will employ several strategies. These include the installation of monitoring towers equipped with smoke-detecting cameras, complemented by satellite data and analysis to identify areas at the highest risk of fires, and training brigade members in firefighting techniques. These actions will contribute to the preservation of ecosystem services and, consequently, enhance the well-being of the communities.

Leakage control

The proponent possesses no other properties beyond the one mentioned in this initiative. Leakage is anticipated to arise mainly from alterations in land use, such as farming, ranching, and logging in the vicinity of the project site. These activities are often perceived as more financially profitable than sustainable land management practices. Nonetheless, the proponent firmly believes that the successful implementation of the Mejuruá project, with its significant positive impacts on sustainable development across economic, environmental, and social aspects, will serve as a compelling example for other landowners to emulate. To reinforce this endeavor, the project will offer training in sustainable forest management and support the development of Sustainable Agriculture Land Management practices.

Power plant

As part of the forest management project, a 5 MW thermoelectric power plant will be integrated into the industrial activities. The power generation will be fueled with wood residues from the sawmill, making it a completely renewable energy source. The surplus electricity generated will be made available for distribution to the town, replacing the current Diesel-based generation. This represents a complementary positive environmental impact delivered by the Mejuruá project.

SOCIAL BENEFITS

The project's activities, aimed at social benefits, are directly related to job creation and the improvement of quality of life resulting from the implementation of sustainable forest management and the financial resources acquired through the carbon project. These activities were thoughtfully designed through a collaborative effort with PricewaterhouseCoopers (PwC) and will be detailed further below.

Industrial activities

The forest products derived from the Sustainable Forest Management activity, encompassing Reduced Impact Forest Exploitation, will undergo processing in a sawmill strategically situated near Carauari's urban center. Furthermore, a thermoelectric power plant will be erected to facilitate power generation. These initiatives will yield outputs including the development and installation of the enterprise project. Apart from generating employment opportunities, these actions will invigorate the local economy by catalyzing economic activities within the Project Zone.

Electric Power

The installation of the power plant will generate renewable energy primarily for self-consumption within the project and supply surplus electricity to the town of Carauari. Moreover, the project aims to extend the benefits of renewable and affordable electricity to remote communities by providing out-of-the-box photovoltaic generation kits. These kits will be distributed to approximately 150 off-grid houses located within the project area, contributing to the improvement of their quality of life.

Internet

Antennas and associated peripherals will be strategically installed in communities to enable easy internet access and communication, including emergency communication, thus preventing community isolation and promoting digital inclusion.

Freshwater

Water treatment equipment, including ultrafiltration systems powered by photovoltaic technology, will be provided to meet domestic needs, ensuring access to clean drinking water, and stored in dedicated drinking water tanks.

Accessibility

The project aims to enhance living conditions for the 150 families residing along the river by upgrading their home infrastructure and installing disability-friendly toilets to accommodate individuals with reduced mobility. This endeavor will play a significant role in elevating their overall quality of life.

Education and skill development

The project entails a comprehensive approach to improve education quality in the community. It will involve renovating and equipping existing elementary public schools, ensuring accessibility for children and youth. Perimeter walls will be constructed around the schools, addressing a specific request from the community.

To further support education, the project will allocate funds for scholarships and programs that aim to increase access to higher education for local youth, with a special focus on reducing gender inequality.

Additionally, the project will contribute to the establishment of the first unit of the "Escola da Floresta," a specialized schooling project initiated by the Government of Amazonas. This school will be strategically built near the project area, providing unique opportunities for education and development.

Health

The proponent is dedicated to enhancing the operation and accessibility of healthcare services for local communities. To achieve this, the project will furnish vehicles and rescue equipment, including ambulances, to facilitate swift rescue operations. Moreover, a specialized internet or radio system will be established for seamless emergency communications between communities, the municipality headquarters, and hospitals.

In addition to these measures, the project will actively promote and support the use of telemedicine, leveraging medical and information technology to facilitate remote care. By implementing these initiatives, the project aims to significantly improve healthcare services and emergency response capabilities in the area.

Collaboration with Universities

The project seeks to forge partnerships with Universities and Brazilian institutions to achieve the following objectives:

- Support the teacher training and development program, encompassing institutions beyond the community, to enhance the quality of education and foster knowledge sharing.

- Identify and analyze risks and solutions in healthcare, with the goal of periodically bringing health personnel to the area.

- Facilitate the delivery of online courses for the community, thereby eliminating the challenges associated with often unfeasible travels in the region.

- Provide essential devices to enable telematics education, ensuring access to educational resources and opportunities.

By establishing these partnerships, the project aims to foster a robust and well-rounded educational and healthcare infrastructure, benefiting the community's overall well-being and growth.

Sustainable Agriculture Land Management (SALM)

To enhance environmental resilience and contribute to sustainable development, the project will offer comprehensive training in advanced forest management. This includes agroforestry techniques and conservation practices, fire prevention and management, use of GPS, tree nursery management, area protection and surveillance activities) will be provided for the surrounding communities. Moreover, technological tools such as solar panels and agricultural equipment will be supplied to further support the development of these practices.

NTFPs and Açaí berries

The project aims to support and redirect the açaí berries value chain towards enhanced social and gender equity, along with economic balance that favors the local communities. BR ARBO intends to act as a centralized buyer for the local production of berries, in order to guarantee a stronger negotiation position for local farmers and enhance the establishment of fairtrade agreements with international buyers and exporters. The social benefits of the project can be extended to the entire region, creating a positive ripple effect. Furthermore, the same successful initiatives can also be applied to other Non-Timber Forest Products (NTFPs), using the BR ARBO Açai case as a paradigm and setting an example for sustainable and inclusive practices in the region. To accomplish this, an output will involve mapping stakeholders for proposal adherence and providing training to members, especially women, to effectively operate the sustainable production of "açai" berries.

Community life

The project has as objective to establish community centers that serve as spaces for a wide range of social and cultural activities. These centers will be instrumental in funding indigenous cultural initiatives, as well as providing meeting places for both adults and children. The facilities will include movie theaters equipped with projectors, baby clubs, and cultural spaces.

Moreover, the project will actively support community-led initiatives aimed at fostering social cohesion. This will involve assisting in the creation of sports facilities, such as soccer fields, and organizing community festivals to promote a sense of unity and belonging among the residents.

Mitigating the Effects of Drought

The Mejuruá project, in partnership with the local municipal government and research institutions, aims to tackle the exacerbation of drought effects due to climate change within the project area. This endeavor will involve conducting a comprehensive community survey to pinpoint the significant challenges confronted by communities affected by drought. Subsequently, adaptation measures will be formulated, with project funding allocated for their planning and implementation.

The expected output, outcomes, and impacts resulting from the project activities, as explained by the theory of change, are detailed, and structured in Table 10.

Table 10: Project Activities and Theory of Change

Activity description	Expected climate, community, and/or biodiversity			Relevance to project's objectives
	Outputs (short term)	Outcomes (medium term)	Impacts (long term)	
Forest Biomass Inventory	Sample plots installed in the different phytophysiognomies of the project area.	Knowledge of the carbon stored in the area. Contribution to accounting for reduced emissions.	Contribution to the mitigation of climate change. Contribution to biodiversity conservation.	Conducting a comprehensive biomass inventory enables precise quantification of the carbon stored in the forest. Moreover, through the Mejuruá project, the identification of the inventoried flora species provides valuable knowledge about the tree species present, facilitating the design of effective strategies for their protection.
Sustainable Forest Management of the Mejuruá project	Implementing a forest management plan with FSC certification. Training people for management activities.	Enhance technical and institutional capacities to foster partnerships and implement optimal forest management practices.	Natural Forest Regeneration Contribution to the mitigation of climate change. Contribution to biodiversity conservation.	Sustainable forest management will avoid the emission of approximately 80,318,439 tCO_2e for the project lifespan.

	Hiring people to implement management activities. Managed area per year. Elaborate and implement ongoing monitoring actions.	Income generation. Job generation. Maintenance of ecosystem services.	Sustainable development Socioeconomic development in the Project Zone	Once the plot is managed, it is left undisturbed for at least 30 years, allowing the forest regeneration process to take place. This activity ensures long-term benefits for society, the economy, and the environment.
Surveillance and Patrolling	Hiring local patrols. Acquisition of tools for prevention and detection of degradation.	Enhancing the understanding of areas most vulnerable to deforestation/degradation . Reduce deforestation pressure. Avoidance of GHG emissions. Illegal logging protection. Illegal hunting prevention. Invasive exotic species prevention. Maintenance of ecosystem services.	Contribution to the mitigation of climate change. Contribution to biodiversity conservation. Improvement on well-being of the communities.	By hiring security and patrol teams, as well as providing the necessary tools, the conservation of a 123,762-hectare area of native forest will be ensured. This proactive measure will prevent illegal predatory actions that jeopardize native biodiversity and pose a threat to ecosystem services such such as carbon stock.
Implementation of Forest Angels Program which	Agreements signed with the local community. Forest protection training.	Land deed access. Permanence of families in the territory.	Contribution to the mitigation of climate change.	The Forest Angels program aims to facilitate land

focuses on implementing a land regularization plan to grant title deeds to riverside individuals who have inhabited the Project Area		Promoting stakeholder engagement in conservation activities. Reduce deforestation pressure.	Contribution to biodiversity conservation. Empowerment of local communities. Enhancing the perception of local communities regarding the conservation of natural resources.	regularization and sustainable land use for families occupying areas within BR ARBO property. Concurrently, these families will receive training to identify forest threats and implement recommended measures. This initiative ensures the families' continued presence in the territory and actively engages them in forest conservation efforts.
Wildfire prevention	Feasibility analysis for installation of monitoring towers. Firefighting training in forest areas.	Fire prevention. Enhance firefighting efficiency. Maintenance of 123,762ha of native forest area. Maintenance of ecosystem services.	Low incidence of fire outbreaks. Contribution to the mitigation of climate change. Contribution to biodiversity conservation. Improvement on well-being of the communities.	The use of fire is a primary technique employed in illegal deforestation activities in the Amazon, leading to significant damage to biodiversity and a substantial increase in CO_2 emissions into the atmosphere. Combating this destructive practice is crucial to ensure the preservation of the forest and the

				invaluable ecosystem services it provides.
Installation of a 5 MW thermoelectric Power Plant supplied exclusively with wood residues produced at the sawmill	Project elaboration. Installation of a thermoelectric power plant.	Fulfill the energy demand of the sawmill. Replace the current Diesel-based power in Carauari. Income generation for stakeholders. Job generation.	Affordable and Clean Energy. Contribution to the mitigation of climate change. Sustainable development. Socioeconomic development in the Project Zone.	The installation of a thermoelectric power plant will not only meet the sawmill's demand but also provide a surplus that will replace the current Diesel-based generation in Carauari. This activity will contribute to climate change mitigation while also promoting social development in the Project Zone.
Installation of a sawmill to process the forest product from the Sustainable Forest Management	Project elaboration. Installation of a sawmill.	Enhance technical and institutional capacities to foster partnerships and implement best practices in sawmill activities. Income generation for stakeholders. Job generation	Socioeconomic development in the Project Zone.	The sawmill will process certified wood harvested through sustainable management. This activity will generate income for various stakeholders, create new job opportunities, and contribute to the socioeconomic development in the Project Zone.

Electricity provision	Mapping of communities to be benefited. Distribution of out-of-the-box photovoltaic generation kits to approximately 150 off-grid homes located in the project area.	Enhance access to basic services for the community.	Empowerment of local communities. Improvement in the quality of life of communities.	The initial diagnosis conducted in the local communities has identified the need to enhance electricity provision. In response to this demand, the Mejuruá project will provide affordable electricity to the remote communities, significantly improving their quality of life.
Internet provision	Mapping of communities to be benefited. Installation of antennas and associated peripherals in communities.	Internet provision for mapped communities. Facilitation of communication.	Facilitating digital inclusion Preventing community isolation. Empowerment of local communities. Improvement in the quality of life of communities.	The digital inclusion of communities, especially those living in isolated areas, brings about numerous benefits such as increased income, improved communication during emergencies, and knowledge enrichment, ultimately leading to their empowerment.
Provision of water treatment equipment	Mapping of communities to be benefited. Provision of water treatment equipment,	Access to clean drinking water.	Empowerment of local communities. Improvement in the quality of life of communities.	The initial diagnosis conducted in the local communities has identified the need to improve access to

	including ultrafiltration systems powered by photovoltaic technology. Construction of drinking water tanks.			clean drinking water. In response to this demand, the Mejuruá project will provide freshwater infrastructure to meet the communities' domestic needs, enhancing the well-being of these families.
Enhance accessibility for families living near the Project Area.	Mapping of communities to be benefited (150 families). Installation of disability friendly toilets to accommodate individuals with reduced mobility.	Upgrading families' home infrastructure.	Improvement in the quality of life of communities.	Through the installation of disability-friendly toilets, the project will promote independence for individuals with reduced mobility, while creating a more inclusive and accessible environment.
Education and skill development	Mapping the demands for improving the infrastructure of schools Construction of perimeter walls.	Allocate funds for scholarships and programs that aim to increase access to higher education for local youth, with a special focus on reducing gender inequality.	Enhancement of quality education. Improvement in the quality of life of communities. Ensure equal opportunities.	In terms of education in Carauari, the city's schooling rate for 6- to 14-year-olds (as of 2010) stands at 90.2%, placing the city at a relatively low position nationally[32]. However, with the Mejuruá

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[32] Source: https://cidades.ibge.gov.br/brasil/am/carauari/panorama

		Establish the first unit of the "Escola da Floresta," a specialized schooling project initiated by the Government of Amazonas.		project, several initiatives will be implemented to improve the educational landscape, ranging from infrastructure enhancements to funding scholarships and educational programs for local youth. These efforts aim to provide better opportunities and access to quality education for the local communities, ultimately contributing to their overall development and well-being.
Accessibility of healthcare services for local communities.	Provision of vehicles and rescue equipment. Providing a specialized internet or radio system for seamless emergency communications between communities, the county seat, and hospitals. Promote and support the use of telemedicine, leveraging medical and	Access to essential healthcare.	Improvement of healthcare service. Improvement in the quality of life of communities.	The initial diagnosis conducted in the local communities also identified the need to improve access to healthcare. In response to this demand, the Mejuruá project will implement various actions to enhance health services for the local communities,

	information technology to facilitate remote care. Establish a permanent presence of nurses in the communities to act as obstetricians, catering to the healthcare needs of women.			including infrastructure improvements and hiring healthcare professionals. These efforts aim to ensure better access to healthcare and improve the overall well-being of the residents.
Collaboration with Universities	Establish partnerships with Universities and Brazilian institutions. Support the teacher training. Identify and analyze risks and solutions in healthcare. Facilitate the delivery of online courses for the community. Provide essential devices to enable telematics education.	Access to educational resources and opportunities.	Improvement of the quality of education. Promote knowledge sharing. Improvement of healthcare service Improvement in the quality of life of communities.	The partnership with universities will yield significant benefits for local communities, encompassing not only the education sector but also the health domain. In the education area, it will enable, for example, the exchange of knowledge, support teacher training, and facilitate access to specialized courses for community members. In the health area, the collaboration will contribute to a better understanding of health-related risks in the area, leading to improved healthcare

				services and strategies tailored to the community's specific needs.
Support the development of sustainable agriculture Land Management (SALM) and agroforestry practices in local communities.	Mapping stakeholders with potential to adhere to SALM. Advanced training in forest management. Supplying technological devices to promote the practice.	Income generation for producer. Job generation. Improvement of food security	Increased environmental resilience. Ensure sustainable food production systems. Contribution to the mitigation of climate change. Sustainable development. Socioeconomic development in the Project Zone.	The support for the development of SALM will bring significant opportunities for socioeconomic development in the region of Carauari. It will ensure sustainable food production and contribute to the mitigation of climate change by preventing deforestation in new areas.
Develop and manage the sustainable production of "açaí" berries and other non-timber forest products (NTFPs)	Mapping stakeholders with potential to adhere to the proposal. Act as a centralized buyer for the local production of berries. Train members of the local communities, mainly women, to develop, manage and operate the sustainable production of "açaí" berries.	Engagement of women. Guarantee a stronger negotiation position for local farmers. Enhance the establishment of fairtrade agreements with international buyers and exporters. Income generation for producer.	Enhance social and gender equity. Ensure sustainable food production systems. Contribution to the mitigation of climate change. Sustainable development. Socioeconomic development in the Project Zone.	Supporting the development of "açaí" berries and other non-timber forest products production will create significant opportunities for socioeconomic development in the Carauari region. It will ensure sustainable food production and contribute to climate change mitigation by

		Job generation. Improvement of food security.		preventing deforestation in new areas.
Establishing community centers as venues for social and cultural activities	Constructing community centers that serve as versatile spaces for a wide range of social and cultural activities. Assisting in the creation of sports facilities. Organizing community festivals to foster a sense of unity and belonging among the residents	Promotion and access to culture	Empowerment of local communities. Improvement in the quality of life of communities.	During the community's diagnosis, actions to enhance community life were identified. The Mejuruá project will facilitate the construction of a community center, promoting the sense of belonging, fostering social cohesion, and preserving cultural diversity in the region.
Mitigating the Effects of Drought	Emergency questionnaire administration to assess the ongoing impact of the drought that the community is currently experiencing. Implementation of assistance measures aimed at mitigating the effects of drought, informed by the findings from the questionnaire.	Conducting collaborative research with educational institutions to evaluate the long-term impacts of climate change in the municipality. Implementing climate change mitigation measures informed by the outcomes of institutional research.	Contribution to the mitigation of climate change. Improvement in the quality of life of communities.	Climate change has already brought about significant impacts in various Amazonas communities, including prolonged periods of severe drought that affect the way of life and traditional subsistence activities within these communities. The implementation of these mitigation measures is essential

				to achieving the project's goals of enhancing the social well-being of the community in the project area and minimizing the adverse effects of drought.

2.1.9 Climate, Biodiversity and Community Benefits Assessment Period (G1.9)

Project Start Date: The Mejuruá project started on May17th, 2023. It is the day after the project proponent filed a request for the license to perform one of the main Project Activities, which is the Sustainable Forest Management. Renewal of the Prior Authorization for the Sustainable Forest Management Plan (APAT), was submitted on May 16, 2023, as documented by the application protocol (Data room reference: PAE09 - Renew Request Protocol)

Project Lifetime: The Project Lifetime is set at 90 years, divided into two distinct periods: the first 30 years, is the Crediting Period associated with the APD VCS Project, encompassing the implementation and operation of all Project Activities as described in the VCS PD; and the following 60 years, during which the Project Activities will be maintained and operated to ensure the conservation of the forest and the sustainable development of the region and local community.

Thus, the project activity instances are scheduled to be monitored for a period of 90 years, from May 17th, 2023, to May 16th, 2113.

GHG Accounting, Community and Biodiversity Benefits:

The Mejuruá project is set to generate GHG emission reductions that are eligible for issuance as Verified Carbon Units (VCUs) for a period of 30 years. Throughout the entirety of the project, rigorous monitoring of the benefits bestowed upon the community will be diligently conducted, accompanied by regular submissions for verification to the CCBA. The verification process will take place on a periodic basis, guaranteeing consistent and enduring positive impacts on both the community and biodiversity.

2.1.10 Differences in Assessment Periods

The Mejuruá Project is a fully private undertaking and, therefore subject to private corporate decisions, within the existing legal boundaries. The PP has decided to develop the project as a perennial activity and is fully committed to keeping it so. The perennity of this forest conservation private initiative, together with its scale, aims at strongly contributing to the global balance of GHG emissions. Sustainability and perennity are linked in the project concept, including from the financial standpoint.

Within the perennity concept, the project proponent has defined 90 years as the Project Lifetime and as Project Longevity, in association with three 30-year cycles of one of the main project activities, which is the Sustainable Forest Management (please refer to document NPR07 – Sustainable Wood Flow Agreement).

The 90 years set as the Project Lifetime is therefore divided into two different periods:

- *30 first years being the Crediting Period associated with the APD VCS Project, encompassing the implementation and operation of all Project Activities.*

- *60 subsequent years, during which the Project Activities will be maintained and operated to ensure the conservation of the forest and sustainable development of the region and the local community.*

The operational and financial planning and the respective monitoring are set for the entire Project Lifetime. The industrial installations are being invested in during the early years of the project life but will remain in

place and fully operational during the entire project life, with the due technical maintenance and updates while the activities on the field are planned to proceed regularly and continuously during the 3 cycles.

The same concept applies to social initiatives, engagement with the local community, and local biodiversity conservation.

For the 60 years following the crediting period, the long-term planning process will follow a decennial review based on the foreseeable changes in the socioeconomic local scenarios and technological advances to secure the main objectives of the Mejuruá Project, namely the conservation of the forest and sustainable development of the region and the local community.

The Mejuruá start date corresponds to the initiation of activities that resulted in the generation of GHG emission reductions for the initial instance of the project activity. The start date for the new instance will either be the same as or later than the grouped project start date, which is set as May 17th, 2023.

2.1.11 Implementation Schedule (G1.9)

For a comprehensive overview of the project's progress, Table 11 provides a detailed account of the implementation schedule.

Table 11: Schedule for the development of the main activities of the Mejuruá project

Date	Milestone(s) in the project's development and implementation
May 17th, 2023 - May 16th, 2053	GHG accounting period
January 04th, 2021 up to now	Surveillance rounds in Gleba Santa Rosa do Tenquê (Data room reference: PAE01 to PAE03 – Surveillance rounds)
December 9th, 2021- 1st semester 2024	Sawmill: design and procurement (Data room reference: SP01 to SP07 – Sawmill Budget)
December 17th, 2022	An interview was conducted with 39 individuals from the local communities with the aim of compiling a list of actions that these communities could as be vital for enhancing their quality of life (Data room reference: SC03 – interview with surrounding communities).
January 11th, 2023	A presentation on the Mejuruá project was followed by an interview involving 21 members of the Riozinho Community, with the aim of compiling a list of vital actions for enhancing their quality of life (Data room reference: SC04 – interview with Riozinho Community).
January 20th, 2023- April 18th, 2023	Forest inventory: measurement of biomass in permanent sample plots across the project area; and execution of the floristic inventory in selected plots within the project area (Data room reference: Forest Inventory Folder).

March 10th, 2023	Emails were dispatched to institutional stakeholders, notifying them of the project and the resort's availability on the BR ARBO website, along with a request for contributions and comments (Data room reference: SC01 – E-mails to stakeholders).
April 03rd, 2023	A meeting was held between project stakeholders and the Governor of the State of Amazonas to introduce the Mejuruá project, culminating in the signing of an Agreement of Intent to secure necessary resources and cooperation (Data room reference: GA01 – Letter of Intent).
April 04th, 2023	The inaugural public meeting convened at the Carauari House of Representatives, bringing together public figures and leaders from non-governmental organizations to provide a comprehensive explanation of the Mejuruá project (Data room reference: SC05 – Carauari meeting attendance list, SC06 – Carauari meeting minutes).
May 20th, 2023	Technical note on infrastructure parameters for forest management (PAE42 – Forest Management Technical Note)
June 06th, 2023	BR ARBO Project – Social Action Plan (Data room reference: SA04 – Social Action Plan)
June 09th, 2023	Acknowledgment and agreement terms for the Land Regularization of occupants of Fazenda BR ARBO, documented in the Board of Directors' meeting minutes (Data room reference: PAE13 – Minutes of the board director's meeting).
June 22nd, 2023; and July 17th, 2023	First Lease Agreements with users/residents participating in the Forest Angels program are being celebrated (Data room reference: PAE14 – Lease agreement).
June 30th, 2023	Uploading the VCS PD into the Verra registry system.
August 11th, 2023; September 19th, 2023; May 08th, 2024	Report illegal activities on the property to the competent bodies (Data room reference: PAE33 - Police report of fire near the farm, PAE41 and PAE39 – Report of illegal deforestation).
September 22nd, 2023	Establishment of an Agreement of Intent between BR ARBO and the Association of Residents of Baixo Riozinho (ASMOBRI), covering negotiations related to land regularization and açaí management (Data room reference: PAE15 – Term of Intent).
October 05th, 2023	Communication of the carbon project audit to stakeholders (SC20 – Carbon project audit communication).

October 19th, 2023- November 20th, 2023	VCS Project Validation/Verification.
November 3rd, 2023	Communication of the CCB standard to stakeholders (Data room reference: SC15 – CCB standard communication)
November 17th, 2023 – November 25th, 2023	Interview with communities about the impacts of drought in the region (Data room reference: SC14 – Drought Diagnosis)
December 19th, 2023	Budget for monitoring towers (PAE20 - Information about fire monitoring towers)
February 2nd, 2024	Issuance of prior authorization for the Sustainable Forest Management Plan by the government of Amazonas (Data room reference: PSD 18 - Approval of prior authorization of the sustainable forest management plan)
February 5th, 2024	Publication in the official gazette of the state of Amazonas of the prior authorization of the Sustainable Forest Management Plan (Data room reference: PSD 19 - Official Gazette Publication)
Upcoming event: 2nd semester 2023	Uploading the CCB PD into the Verra registry system
Upcoming event: 2nd semester 2024	CCB Project Validation/Verification
Upcoming event: 1st semester 2024 – 1st semester 2053	Wildfire prevention: installation of monitoring devices, firefighting team training and promptness.
Upcoming event: 1st semester 2024 – 1st semester 2053	Accessibility of healthcare services for local communities: provide vehicles, rescue equipment, specialized communication systems, promote telemedicine, and ensure the presence of healthcare professionals.
Upcoming event: 1st semester 2024 – 1st semester 2053	Support the development of Sustainable Agriculture Land Management: advanced training in forest management; supplying technological devices to promote the practice.
Upcoming event: 1st semester 2024 – 1st semester 2026	Develop and manage Sustainable Non-Timber Forest Products (NTFPs): Identify potential stakeholders, centralize berry purchasing, and provide training for local community members.
Upcoming event: 2nd semester 2024 – 1st semester 2025	Sawmill and 5 MW thermoelectric Power Plant: construction, equipment installation, setup, and startup.

Upcoming event: 2nd semester 2024 – 1st semester 2053	Electricity provision: distributing and maintaining off-grid photovoltaic generation kits for homes, providing user assistance.
Upcoming event: 2nd semester 2024 – 1st semester 2051	Internet provision: distribution of out-of-the- box antenna kits, providing user assistance.
Upcoming event: 2nd semester 2024 – 1st semester 2025	Water treatment equipment: supplying ultrafiltration systems with photovoltaic power and building drinking water tanks.
Upcoming event: 2nd semester 2024 – 1st semester 2025	Enhancing accessibility: installation of disability friendly toilets.
Upcoming event: 2nd semester 2024 – 2nd semester 2025	Education and skill development: assessing school infrastructure needs, aiding in improvement implementation, and supporting the inaugural 'Escola da Floresta' unit.
Upcoming event: 2nd semester 2024 – 1st semester 2053	Education actions: forge partnerships, assist in teacher training, assess healthcare challenges and solutions, facilitate online courses, and supply necessary devices for remote learning.
Upcoming event: 2nd semester 2025 – 1st semester 2051	Sustainable Forest Management (SFM)- execution of selective harvesting in plots of the project area.
Upcoming event: 2nd semester 2025 – 1st semester 2027	Establishing community centers: construct versatile community centers for social and cultural activities, including sports facilities
Upcoming event: 2nd semester 2025 – 1st semester 2053	Social and Cultural Activities: Organize community festivals to foster unity and a sense of belonging among residents.

2.1.12 Risks to the Project (G1.10)

There are potential risks, both natural and human-induced, that can affect the anticipated climate, community, and biodiversity benefits over the project lifetime. It is crucial to identify and address these risks through appropriate measures to ensure the project's success and sustainability. The following table outlines some of the potential risks and corresponding mitigation measures (Table 12).

Table 12: Natural and human-induced risks

Identify Risk	Potential impact of risk on climate, community and/or biodiversity benefits	Actions needed and designed to mitigate the risk
Socioeconomic Vulnerabilities	Communities in project areas may face socioeconomic challenges such as lack of access to basic services and poverty. These vulnerabilities can undermine community development and conservation efforts.	Engaging with community members and stakeholders to understand their needs and aspirations. Facilitating capacity-building programs to enhance local skills and knowledge.
Unsustainable Practices	Human activities like deforestation, pollution, and overexploitation of resources can degrade ecosystems and threaten biodiversity.	Enforcing regulations and implementing monitoring systems to prevent illegal activities. Encouraging sustainable livelihoods and alternative income-generating activities.
Wildfires (human-induced).	During drier years, the forest faces the risk of fires, which can not only undermine the climate benefits of the project but also pose risks to the community and biodiversity.	Implementing a comprehensive fire management strategy, including the analysis of the viability of the installation of monitoring towers equipped with smoke detecting cameras and satellite data analysis to identify high-risk fire areas. Trained "Forest Angels" teams will proactively prevent fires from spreading, alongside the surveillance team.
Ecological Disruptions	Natural disasters and ecological imbalances can negatively impact biodiversity. This includes habitat destruction, species displacement, and loss of ecosystem services.	Promoting sustainable land management practices to minimize ecological disruptions. Supporting research and monitoring to assess ecological changes and adapt strategies accordingly.

Extreme Weather Events	Climate change increases the frequency and intensity of extreme weather events such as droughts. These events can damage infrastructure, disrupt communities, and harm biodiversity.	Protecting natural ecosystems that act as buffers against extreme weather. Conducting risk assessment and emergency response plans.

2.1.13 Benefit Permanence (G1.11)

The Mejuruá project activities are poised to yield a range of benefits, encompassing not only ecological advantages but also significant social benefits that will exert a positive and lasting impact on the surrounding communities, extending beyond the project's temporal scope.

In the context of sustainable forest management, community engagement and empowerment are paramount. Embracing sustainable forest practices will endow local communities with access to relevant training and capacity building, thereby honing their expertise in sustainable forest management and the provision of ecosystem services. This enhanced skill set creates new avenues for income generation, enabling them to pursue additional opportunities and improve their economic prospects. Moreover, the involvement of local communities in project decisions fosters a sense of ownership and responsibility, leading to enhance governance and fortified social cohesion within the project zone, a key determinant of their long-term progress.

The Mejuruá project's education-focused measures, such as support for local elementary public schools and the allocation of funds for scholarships and higher education programs, exemplify an enduring dedication to fostering the intellectual growth and prospects of the region's youth. These measures hold the potential to leave a legacy of enhanced education and socio-economic opportunities providing lasting benefits to the local communities.

Recognizing the pivotal role of women in forest-dependent livelihoods, the project adopts participatory micro-business approaches to empower this group by involving them in decision-making processes and providing them with access to resources and benefits. This inclusive strategy facilitates the development of self-financed and sustainable projects, obviating the need for external support to ensure continued operation.

Additionality, the project's dedicated endeavors to enhance knowledge regarding the abundance of fauna and flora are of paramount importance, as they act not only in identifying species and habitats necessitating protection but also in laying the groundwork for formulating effective strategies for their conservation. These efforts assume a crucial role in the continued protection and conservation of these ecological elements.

2.1.14 Financial Sustainability (G1.12)

The financial strategies employed for the Mejuruá project have proved effective in ensuring both a steady flow of funds and a promising projected revenue stream. Through strategic utilization of revenue sources such as carbon credit sales and forest management business, the project demonstrates a robust financial foundation. Feasibility studies and financial analysis have confirmed the sustainability of these mechanisms in supporting ongoing climate action, conservation efforts, and community development. For those

interested in a more in-depth understanding of the project's financial aspects, comprehensive information can be shared with relevant stakeholders under the protection of a non-disclosure agreement.

2.1.15 Eligibility Criteria for Grouped Projects (G1.14)

This is a Grouped Project, and it was designed firstly as an Avoided Planned Deforestation and Avoided Unplanned Deforestation can be incorporated in the future, applying VM0007 Methodology v.1.7. Thus, according to elements mentioned in Section 3.6 of the VCS Standard v.4.7, projects may include multiple project activities where the methodology applied to the project allows more than one project activity, as is the case with this project.

As a grouped project, permits the addition of new instances of project activities in the future during the project's timeline, following the validation process. This grouped project has one clearly defined geographic area within which the initial project activity instances shall be developed but does not define a capacity limit for this project activity in terms of its total geographic area .

New geographic areas willing to become instances of the project shall demonstrate compliance with the applicability conditions of the methodology, according to those applied for each project activity . Next, Table 13 shows the general requirements needed for grouped projects, and Table 14 contains the set of eligibility criteria that every new project activity instance needs to fulfil to be included in the Mejuruá project. The left side lists the eligibility criteria according to VCS Standard v4.7, and the right side gives a description of how this project attends it.

Table 13: Grouped Project eligibility criteria

VCS Standard Eligibility Criteria	Mejuruá project attendance
3.6.10 Grouped projects shall specify one or more clearly defined geographic areas within which project activity instances may be developed.	The project area to compose its initial instance is clearly defined in the VCS documentsproject (detailed information about its location is given in Section 1.13). All new instances will occur within the BR ARBO property.
3.6.11 Determination of baseline scenario and demonstration of additionality are based upon the initial project activity instances.	The project does not anticipate the addition of new instances with a planned deforestation land use scenario. The legally permitted deforestation area (20% of the total area) will be covered under the planned management, with no additional areas remaining for inclusion in the planned deforestation category. However, it is assumed that all new instances will be subject to the reference scenario for unplanned deforestation and land degradation.

3.6.12 As with non-grouped projects, grouped projects may incorporate multiple project activities	This project consists at this moment solely of the activity involving the APD approach.
3.6.13 The baseline scenario for a project activity shall be determined for each designated geographic area, in accordance with the methodology applied to the project.	The geographical area presents only one type of activity (APD), so that only a single baseline scenario has been outlined.
3.6.14 The additionality of the initial project activity instances shall be demonstrated for each designated geographic area, in accordance with the methodology applied to the project.	The additionality of the initial project activity instances will be designed for each project activity and the respective geographic area.
3.6.15 Where factors relevant to the determination of the baseline scenario or demonstration of additionality require assessment across a given area, the area shall be, at a minimum, the grouped project geographic area.	All relevant factors necessary to the baseline scenario and additionality indication are assessed across the project area.

Table 14: Criteria for the Inclusion of New Project Activity Instances

VCS Standard Eligibility Criteria	Mejuruá project Activity Instance One
3.6.16 Grouped projects shall include one or more sets of eligibility criteria for the inclusion of new project activity instances. A set of eligibility criteria shall ensure that new project activity instances:	The set of eligibility criteria for inclusion of new project activity instances will be provided for each combination of project activity and geographic area specified in the project description. The Mejuruá project meet the applicability conditions by having the following characteristics:
Meet the applicability conditions set out in the methodology applied to the project.	All new instances will meet the applicability conditions established in the project methodology.

Use the technologies or measures specified in the project description.	All new instances to be included in this project activity will be assessed using the definitions and measures applied for the initial instances.
Apply the technologies or measures in the same manner as specified in the project description.	All new instances to be included will be subject to the same technologies or measures as specified in this project description in Section 5.
Are subject to the baseline scenario determined in the project description for the specified project activity and geographic area.	All new instances to be included will be submitted to the baseline scenario to be determined in the project description, in Section 3.4, for the specific project activity and geographic area.
Have characteristics with respect to additionality that are consistent with the initial instances for the specified project activity and geographic area.	All new instances to be included will be consistent with the initial instances in terms of financial, technical and will be within the same geographic area.
3.6.17 Grouped projects provide for the inclusion of new project activity instances subsequent to the initial validation of the project. New project activity instances shall:	
Occur within one of the designated geographic areas specified in the project description.	The Mejuruá project geographic limits are well defined, as detailed in Section 3.
Conform with at least one complete set of eligibility criteria for the inclusion of new project activity instances. Partial conformance with multiple sets of eligibility criteria is insufficient.	It is assumed that the set of eligibility criteria is all the requirements presented in Section 1.4 of this PD. All new instances will comply with all the demands in this chapter for inclusion of new project activity instances.
Be included in the monitoring report with sufficient technical, financial, geographic, and other relevant information to demonstrate conformance with the applicable set of eligibility criteria and enable evidence gathering by the validation/verification body.	All new instances will be included in the monitoring report with technical, geographic and any other relevant information sufficient to demonstrate instance compliance, with the same quality and reliability employed for the first instances of this project description.

Have evidence of project ownership, in respect of each project activity instance, held by the project proponent from the respective start date of each project activity instance (i.e., the date upon which the project activity instance began reducing or removing GHG emissions).	Evidence of the Mejuruá project ownership held by the proponent from the respective start date is available in Section 1.12 of the VCS Mejuruá document.
Have a start date that is the same as or later than the grouped project start date.	The start date for the new instance will be the same as or later than the grouped project start date, which is May 17th, 2023.
Only eligible for crediting from the start of the verification period in which they were added to the grouped project.	Instances will be eligible for credit only from the verification period in which they were added to the grouped project.
Not be or have been enrolled in another VCS project.	The Mejuruá project will not seek or receive another form of VCS project.
Adhere to the clustering and capacity limit requirements for multiple project activity instances set out in 3.6.8 - 3.6.9.	There is no capacity limit applicable to the project activity type (APD) considered in the grouped project in terms of geographic area in the single instance, covering 123,762.098 hectares. However, it has been established that such limit will respect the specified area for addition of the new instances, from which historical deforestation rates will be ascertained to predict deforestation quantities in the baseline scenario.

2.1.16 Scalability Limits for the Grouped Projects (G1.15)

There is no capacity limit applicable to the project activity type (APD) considered in the grouped project in terms of geographic area. However, it has been established that all new instances will occur within the BR ARBO property. Mejuruá project does not recognize capacity limits of economic or managerial nature, nor thresholds for project expansion beyond which there may be negative impacts on biodiversity.

2.1.17 Risk Mitigation Approach for Grouped Projects (G1.15)

Not applicable. The project cannot be expanded beyond its scalability limit. The risk mitigation measures identified in this document regarding climate, community, and biodiversity benefits are applicable to all project activity instances.

2.2 Without-project Land Use Scenario and Additionality

2.2.1 Land-Use Scenarios without the Project (G2.1)

To delineate land use scenarios in the absence of the project, the VCS-approved tool VT0001, known as the "Tool for the demonstration and assessment of additionality in VCS agriculture, forestry and other land use (AFOLU) project activities", was applied[33]. Within the proposed project boundary, three land-use scenarios have been identified:

Scenario I: Continuation of pre-project land use.

Landowners maintain the preserved forest area sustainably without commercial exploitation. Protection measures focus on safeguarding the legal reserve area (80% of the property). The project generates no financial returns, resulting in a negative Net Present Value (NPV) of $337,000 over 30 years.

Scenario II: Sustainable logging through Forest Management Plan.

Selective cutting and reduced impact practices are employed. The landowner obtains a deforestation permit and develops an approved Sustainable Forest Management Plan (SFMP) with construction costs accounting for approximately 75% of the total operation cost (Silva, 2020).

Scenario III: Wood harvesting followed by cattle farming.

Planned deforestation occurs for commercial purposes, particularly cattle ranching. The National Forest Code permits clearing up to 20% of the forest area in the Legal Amazon for economic activities. Cattle pastures represent a significant portion of the deforested area, contributing over 30% to the regional economy where the Mejuruá project is located.

For further details, please see VCS Mejuruá document.

2.2.2 Most-Likely Scenario Justification (G2.1)

Based on the analysis conducted for land-use scenarios and taking into consideration common practices, the most credible scenario for the BR ARBO business in the absence of carbon credit revenue is Scenario (III) - Wood harvesting followed by cattle farming. This approach involves utilizing timber resources on 20% of the land designated for the APD project area. Logging in the Amazon region is a widespread practice that occurs both legally and illegally, with or without the approval of sustainable forest management plans. The National Forest Code permits the clearance of up to 20% of the forested area in the Legal Amazon for various economic activities, including cattle ranching, agriculture, and commercial logging (Bicalho & Hoefle, 2015).

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[33] Source: https://verra.org/wp-content/uploads/imported/methodologies/VT0001v3.0.pdf

As per MapBiomas' 2022 report[34], nearly 96% of confirmed deforestation is directly linked to agricultural expansion. This trend is particularly prevalent in the Amazon region, which accounted for 59% of the total deforested area during the specified period. Within the area where the Mejuruá project is being implemented, extensive beef cattle farming plays a vital role in the regional economy, contributing over 30% to its Gross Domestic Product (GDP)[35].

Conversely, Scenario I, which suggests continuing with the pre-project land use, is not viable as it only adds to the landowner's costs without generating any additional revenue. Scenario II, focused on sustainable logging through Forest Management Plans, encounters significant challenges. Existing plans often prove ineffective due to regulatory loopholes that permit early harvesting of timber from entire areas, rather than following a sustainable plot-by-plot approach (Fearnside, 2018). Additionally, conflicting financial interests and the impracticality of waiting for long periods to generate income from forests further compound the issue.

2.2.3. Additionality (G2.2)

Without the presence of the Mejuruá REDD+ project, the scenarios outlined in sections 3.1 (Climate), 4.1 (Community), and 5.1 (Biodiversity) would come to fruition, inevitably impacting climate, community, and biodiversity adversely. The analysis of common practices suggests that without this project, the forested areas of the property would likely be converted for cattle ranching, thereby contributing to increased deforestation in this vital ecological region, the Amazon Forest. This practice would be void of any expected benefits for preserving local flora and fauna or enhancing the quality of life for local communities.

Hence, the Mejuruá project not only acts as a safeguard against deforestation across an extensive native forest landscape — efforts that curtail carbon emissions and enhance contributions to climate and biodiversity conservation — but also champions a comprehensive set of initiatives to empower local communities. These initiatives provide a wide range of benefits that extend throughout the entire project zone, ensuring a multi-faceted and positive impact.

The project's implementation not only generates revenue from forest management ventures but also secures income through carbon credits. These financial streams not only assure but accelerate the development of all activities reliant on carbon accreditation, providing the essential resources for their growth and long-term sustainability. The financial additionality analysis was conducted using the VCS tool VT0001, version 3.0, and is available in the VCS Mejuruá document. In summary, the baseline scenario, which involves wood harvesting followed by cattle farming, demonstrates a robust internal rate of return of 34.63% per annum. Additionally, the net present value for the APD activity is estimated to be approximately $ 401 million, considering a discount rate of 10%. In contrast, the project activity scenario focused on forest management, and without the inclusion of carbon credit revenues, incurs financial costs without corresponding economic gains, resulting in a NPV of $ 12.5 million. The project financial spreadsheet is available for use in the audit process.

In addition to the investment analysis, a common practice analysis was conducted to assess the degree to which comparable activities to the proposed VCS AFOLU project activity have already proliferated in the geographical area of the activity's conceptualization, other than any registered VCS AFOLU project

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[34] Source: https://storage.googleapis.com/alerta-public/dashboard/rad/2022/RAD_2022.pdf
[35] Instituto Brasileiro de Geografia e Estatística – IBGE. https://cidades.ibge.gov.br

activities (VCS tool VT0001, version 3.0, step 4). In this analysis, activities similar to the proposed project were assessed in the municipalities of Carauari, Jutaí, and Juruá. Sustainable forest management, regulated through a management plan, was examined in relation to the proposed VCS REDD+ project. Only four sustainable forest management projects were licensed in Carauari-AM from 2018 to 2022, averaging around 220 hectares each. No records of such projects were found in Jutaí and Juruá. Although sustainable forest management exists in the region, it is on a much smaller scale than the proposed VCS REDD+ project. Notably, the Sustainable Forest Management Plan governs designated areas like Permanent Preservation Areas (APP), Legal Reserve (RL), and restricted-use zones, while other areas require specific authorization for vegetation removal. The financial gains from forest management may not outweigh the opportunity cost of deforestation, making these activities less attractive.

2.2.4 Benefits to be used as Offsets (G2.2)

Not applicable. No specific climate, community, and biodiversity benefits are planned to be utilized as offsets, apart from the Verified Carbon Units (VCUs) generated by the VCS Mejuruá project verification.

2.3 Stakeholder Engagement

2.3.1 Stakeholder Access to Project Documents (G3.1)

BR ARBO's comprehensive forest conservation project, encompassing property details, sustainable forest management practices, industrial facilities, impact assessments, and the REDD+ project, is available on the BR ARBO website (brarbo.com.br) in both English and Portuguese versions. The project description document and monitoring reports will be accessible on both the BR ARBO website and the VERRA website after validation and verification period. Furthermore, regular meetings will be organized in the city of Carauari, involving various stakeholders, to provide updates on the project and address any inquiries or uncertainties (described in item 2.3.8).

2.3.2 Dissemination of Summary Project Documents (G3.1)

The BR ARBO Forest Conservation project was introduced to the interviewed communities between December 2022 and January 2023. It was also presented to the Governor of the state of Amazonas in a face-to-face meeting on April 3, 2023, and to the Vice Mayor, councilors, and the Carauari community in a meeting held on April 4, 2023. Moreover, a copy of this project was shared with other institutional stakeholders via email (further details in section 2.1.6). Stakeholders can also find the project available on the BR ARBO website.

Monitoring results will be communicated to stakeholders through open public forums and annual community interviews. Additionally, a Project Newsletter, distributed both online and in print, will provide quarterly updates on the project's progress.

2.3.3 Informational Meetings with Stakeholders (G3.1)

In December 2022 and January 2023, a comprehensive field survey was conducted involving the communities surrounding Gleba Santa Rosa do Tenquê and the Riozinho Community located within the project area (Figure 21). These interviews were carried out by a specialized team from JCris Ambiental-ME, who ensured effective communication by employing an appropriate level of language and respecting

the cultural characteristics of the target communities. The interviewers traveled along the river, visiting individual homes and families residing in the region.

The primary objective of these interviews was to introduce the Mejuruá REDD+ project and gain insights into the unique needs and aspirations of the communities. To facilitate understanding, an explanatory leaflet was provided to the interviewees, helping them grasp the project's objectives more effectively. The interviews captured essential demographic information such as the respondents' names, marital status, identification documents, number of children, among other relevant details. Furthermore, respondents were given the opportunity to articulate specific actions they believed would contribute to improving their living conditions.

These interviews serve as a valuable tool for mapping the distinct demands of the communities, enabling the project team to tailor initiatives and interventions accordingly.

Figure 21: Interview with local communities

A new round of interviews was conducted between November 11th and 25th, 2023, with the communities in and around the Santa Rosa do Tenque plot. The aim was to update them on the project and administer a questionnaire to assess the impacts of the drought (Figure 22).

Figure 22: Second round of Community Interviews

In addition to conducting interviews with local communities, a series of meetings were organized to engage with key stakeholders and present the project. Stakeholders were invited through formal letters, emails and posters in the city. Ongoing dialogue between the project owners and the deputy mayor, along with municipal government officials in Carauari, played a crucial role in fostering a continuous exchange of ideas and information about the project. Notably, a significant meeting took place on April 03, 2023, where the project owners had the opportunity to present the project in its entirety to the Governor of the State of Amazonas and his staff (Figure 23).

Figure 23: Meeting in Manaus with Governor and secretary chief from Casa Civil held on 3 April,2023

During this meeting, the Governor also showcased a model school designed by the state government, intended for installation in forest regions throughout the state. As a result, the project owners made a commitment to include a pilot unit as one of the social initiatives of the project in Carauari, further solidifying their dedication to community development.

On April 4, 2023, a public meeting was held in the House of Representatives in Carauari, which saw the presence of all elected representatives, the Speaker of the House, the deputy mayor, and various leaders from non-governmental entities in the region (Figure 24). Additionally, citizens with a vested interest in the project attended the meeting. The entire session was recorded, and a transcription of the minutes, as well as a list of attendees, are readily available for audit purposes.

Figure 24: Public meeting in Carauari held on 4 April, 2023

2.3.4 Community Costs, Risks and Benefits (G3.2)

The Mejuruá project was introduced to stakeholders during the initial engagement phase, comprising interviews with communities, meetings, and email communications (Item 2.3.3). Throughout these interactions, stakeholders were encouraged to express their concerns and provide insights into social needs that the project should address for the betterment of the entire community.

Interviews were conducted with the traditional communities residing on and around the property. The main objective of these interviews was to introduce the BR ARBO Forestry Conservation Project and to identify improvement needs within the communities, thereby providing support for their diverse requirements (item 2.1.7). The outcomes of these interviews highlighted the absence of vital services, such as electricity, clean water supply, proper sewage systems, internet access, effective communication, and medical assistance. The findings from this survey underscore the families' keen interest in staying updated on the progress of the Mejuruá project and underscore their strong belief that the project will yield positive impacts for enhancing the overall quality of life in the served communities.

In addition to the diagnostic research conducted with the traditional communities, a physical meeting was convened at the Carauari City Council, involving council members and local residents. Throughout this session, stakeholders deliberated on pivotal aspects that should be taken into account during the formulation of the Mejuruá project. The overarching objective was to ensure that the proposed activities don't adversely affect the practices of the communities inhabiting the property and its vicinity. Within the spectrum of topics explored, the emphasis was on the imperative to engage associations and riverside communities in the developmental trajectory of the project, recognizing the paramount importance of sustainable management of açaí and other non-timber products for fostering local resources. Moreover, discussions encompassed elements like the economic empowerment of associations operating in the region and the matter of providing land to families dwelling within BR ARBO's property.

The outcomes of the diagnostic survey, combined with the insights gathered from the meetings, were subjected to analysis by the project implementers to determine their integration into the overarching strategy. Elaborate details concerning the social activities that will unfold throughout the project can be found in item 2.1.8. These meticulously devised activities are intended to effect substantial enhancements in the communities' quality of life. All expenses associated with these initiatives will be covered by the project's sponsor.

Over the course of the project, additional interactions will be facilitated to ensure stakeholders remain informed about the project's progress and to gather their invaluable input. The project's communication strategy, along with the methods for conducting update sessions, is detailed in section 2.3.8 of this document.

It's important to note that the BR ARBO website (https://www.brarbo.com.br/) is accessible to all, offering a comprehensive report that provides detailed information about the project. This report is regularly maintained to ensure its accuracy and relevance. Stakeholders are encouraged to share their thoughts on the Mejuruá project through email contato@brarbo.com.br. All feedback will be carefully reviewed, either for potential integration into the project or for addressing any potential conflicts.

2.3.5 Information to Stakeholders on Validation and Verification Process (G3.3)

The Mejuruá project was introduced to stakeholders during the VCS development period (refer to item 2.1.6). Subsequent initiatives have been implemented to keep stakeholders informed. On November 3, 2023, a newsletter detailing the CCB audit process, encompassing the public comment, validation, and verification procedures, was published on the BR ARBO website. Additionally, on November 10, 2023, emails containing this information were dispatched to the following public bodies, entities, and private associations:

- SEMA - State Secretariat for the Environment of Amazonas;
- IPAAM- Institute of Environmental Protection of Amazonas;
- Carauari City Hall;
- Vice Mayor of Carauari;
- ICMBio - Chico Mendes Institute for Biodiversity Conservation - Carauari Region;
- CR FUNAI- National Indian Foundation - Alto Solimões - Carauari jurisdiction;
- Juruá City Hall;
- Jutaí City Hall;
- Jutaí Chamber of Councilors;
- Carauari Rural Workers Union.

In addition to the following community associations:

- ASPROC- Carauari Producers Association;
- AMAB - Association of Agroextractivist Residents of Baixo Medio Jurua - Mrs. Fernanda Moraes;
- AMECSARA - Association of Extractive Residents of the Community of São Raimundo - Mr. Raimundo Nonato Lima;
- ASMAM - Mrs. Rosângela Lima da Cunha;
- ASMOBRI - Association of Residents of Lower Riozinho - Mr. Josimar Pereira;
- JCris Ambiental - environmental consultancy company,

●   Mr. Diego Guimarães da Silva - employee of the Carauari rural production secretariat.

From November 17 to November 25, 2023, meetings were held with local communities along the banks of Baixo Rio Juruá and Riozinho to present the Mejuruá Project - CCB Standard. The communities were also informed about the upcoming public consultation and audit process for this standard. Additional planned initiatives involve the dissemination of information in public spaces, including the Carauari city hall headquarters, Carauari city council, and various public and private establishments with a high influx of people. Ms. Jacqueline, the BR ARBO manager, and Mr. Givanildo Freitas from JCris Consultoria are actively engaged in publicizing the project and establishing communication with the communities.

2.3.6 Site Visit Information and Opportunities to Communicate with Auditor (G3.3)

Upon confirmation of the VVB visit date, the project proponent will proactively apprise the communities and other stakeholders of the forthcoming in-person audit process. This communication will be disseminated via email to the institutions involved. Additionally, for communities lacking internet access, personal visits will be conducted to clearly articulate the purpose and objectives of the auditor's visit, fostering effective engagement and understanding. Communication between the auditor and the communities on the day of the audit will be facilitated with the assistance of an independent third party, capable of translating information between both parties if the selected VVB does not speak the native language.

2.3.7 Stakeholder Consultations (G3.4)

The consultations with the different stakeholders respected local customs, values, institutions, and High Conservation Values.

The project proponent has engaged a specialized team in Socio-Environmental Diagnosis, JCris Ambiental - ME, to conduct interviews with the Riozinho communities residing within BR ARBO's property boundaries, as well as nine other surrounding communities between 12/17/2023 and 01/12/2023 (as described in item 2.1.7). Firstly, JCris Ambiental introduced the Forestry Conservation Project of BR ARBO to these communities, outlining its objectives which include environmental benefits, forest preservation to mitigate global warming, maintaining water systems, and supporting the various needs of the local community. Subsequently, interviews were conducted to identify the main improvement demands expressed by the communities and integrate them into the ongoing social project within the Mejuruá project (the diagnosis results are presented in item 2.1.7). The main demands identified by these communities (electricity, drinking water, domestic sewage, internet access, communication improvements, health care) were incorporated into the design of the Mejuruá project.

As part of the consultations, the interview included the participatory identification of ecosystem services important for communities and high conservation values. As such, residents were asked to comment on their livelihood. For many interviewees this included the use of forest resources and fishing.

Furthermore, the project proponent conducted email correspondence and organized meetings with government agents, NGOs, and the population of Carauari to introduce the project and actively incorporate their valuable suggestions into the project design (Figure 25). Several requests made by the representatives were noted to be met during the development and implementation processes of the project, in order to improve the social actions to be carried out.

Figure 25: art of the minutes of the meeting held at Carauari City Hall

Evidence of these interactions is documented and available in the project's data room.

2.3.8 Continued Consultation and Adaptive Management (G3.4)

Stakeholder engagement will remain a top priority, marked by consistent meetings and public forums designed to deliver project updates, address stakeholders' concerns, and thoughtfully integrate community input. These gatherings will function as collaborative platforms, encouraging active engagement from stakeholders who can contribute significantly to project evolution. Timely communication with pertinent entities and local leaders will be achieved through email updates that highlight the ongoing progress of the Mejuruá project.

To ensure comprehensive outreach, a quarterly project newsletter will be distributed in both digital and physical formats. This will serve communities with limited internet access, providing them with insights into the evolution of the Mejuruá project. Additionally, plans are in place to provide internet access to selected communities, further facilitating their engagement and updates on the project. Scheduled community interviews are also part of the plan to ensure continuous engagement and address any concerns.

For effective communication and prompt conflict resolution, a dedicated channel (www.brarbo.com.br / contato@brarbo.com.br) empowers stakeholders to express its insights throughout the project phases. A physical access point has been devised to facilitate personal communication with BR ARBO employees.

The engagement initiatives, interaction frequencies, and accomplishments are summarized in Table 15.

Table 15: Stakeholder Engagement Plan

Engagement action	Stakeholders engaged	Frequency	History

Project Newsletter, virtual and flyers	All	Quarterly	Three publications were made in 2023 on the company's website and in public environments: - Publication of the project summary[36] - Communication of the VCS audit process (data room reference: SC20) - Communication of the CCB standard (data room reference: SC15)
Public open audiences	General public, Community leaders, etc.	1 year	1 event executed on April 4th, 2023 (data room reference: SC05 and SC06).
Presential meetings with auth authorities and Communities leaders	Governor, Mayor, city counselors, etc.	2 years	2 rounds executed on April 3rd, 2023 and April 4th, 2023 (data room reference: SC06 and SC07).
Direct communication through email	Pertinent entities, Community leaders, etc.	6 months	2 rounds executed February 2023 (project presentation) and November, 2023(VCS audit) (Data room reference: SC01 and SC20)
Project Website Info	General Public	Permanent	In place
Feedback e-mail address	All	Permanent	In place
Interviews with communities (household level)	Communities in Project Zone	1 year	2 rounds executed in 2023 (Data room reference: SC03, SC04 – project presentation and SC14 - drought diagnosis)

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[36] https://www.brarbo.com.br/

Presential access point at premises	All	Permanent	To be implemented
Open day events at the premises	All	1 year	To be implemented

All the suggestions received during these interactions will be directed to the responsible department to examine and discuss the potential inclusion in the project's development, ensuring that community input plays a crucial role in shaping the project's outcomes and benefits. This approach serves as a means of delving into the project's progression, while also gleaning insights from community feedback to identify adaptive measures that can enhance the execution of project activities.

2.3.9 Stakeholder Consultation Channels (G3.5)

The consultation and communication process involved multiple strategies to engage various stakeholders. Firstly, formal letters and emails were sent to institutional stakeholders, providing comprehensive information about the project and directing them to the BR ARBO website for further details. These stakeholders were also invited to contribute their valuable insights and comments.

Secondly, public meetings were conducted, bringing together the local population of Carauari, elected representatives, the Speaker of the House, and the deputy mayor holding office in the municipal government. These meetings facilitated an ongoing dialogue on the project, its impacts, and social aspects, ensuring that the interests of the local population were adequately represented. During the meeting, the project owners and developers seized the opportunity to provide a comprehensive explanation of the project, offering the audience a tangible copy of the complete project report that detailed its various aspects.

Additionally, interviews were conducted directly with members of community including heads of families, farmers, fishermen, domestic workers, and retirees to present the Mejuruá project and understand their specific demands. An informative leaflet was utilized during these interviews to enhance the participants' comprehension of the project's objectives.

All attendees of the meetings and interviews acknowledged their presence by signing a participation list. These diverse channels of consultation and communication enabled the project to actively engage with stakeholders, promoting transparency, participation, and mutual understanding. The evidence of these valuable interactions is diligently preserved in the project's data room (SC01 – Stakeholder e-mails, SC03 and SC04 – Interview with communities, SC06 and SC05 – Carauari meeting, SC07 – meeting with the Governor).

Furthermore, the BR ARBO website (https://www.brarbo.com.br/) offers a comprehensive and detailed report about the project. This report is consistently updated to ensure its information remains up-to-date and pertinent.

2.3.10 Stakeholder Participation in Decision-Making and Implementation (G3.6)

To facilitate inclusive community participation while respecting cultural sensitivities and gender considerations, the community engagement process was meticulously designed to ensure that all

community members comprehended the project thoroughly. In this regard, supplementary materials such as a flyer and a map were employed to enhance project comprehension. Also, the interviews conducted with communities included specific questions aimed exclusively at women, with the objective of understanding the activities they would like to see integrated into the project, thereby generating positive impacts for both them and their families.

Through a range of engagement initiatives, which include meetings, interviews, emails, website resources, and the distribution of informational materials (as detailed in section 2.3.8), stakeholders will receive regular updates regarding the progress of the Mejuruá project. They will also be encouraged to provide suggestions for improvement or adaptation as the project continues to unfold. Additionally, tailored workshops will be organized for specific groups to introduce project activities and collect feedback for implementation.

The overarching goal is to ensure that every community member, including both men and women as their representatives, is thoroughly informed about project updates and actively engaged in its ongoing development. This comprehensive approach is designed to cultivate a collaborative atmosphere where local insights and feedback hold significant value. This dynamic not only guarantees transparency but also strengthens the project's foundation, allowing it to align more effectively with the needs and aspirations of the communities it serves.

2.3.11 Anti-Discrimination Assurance (G3.7)

BR ARBO keeps a Conduct Code which includes the ruling of anti-discrimination, among several relevant points like inclusive labor hiring, anti-corruption guidelines and others. These guidelines are applicable to all stakeholders associated with BR ARBO, including executives, staff, contractors, suppliers, service providers, customers, and anyone else with whom we engage. This document is readily accessible to auditors in the project data room.

The summary of the document follows:

BR ARBO GESTÃO FLORESTAL S/A - CODE OF CONDUCT

1. Introduction

2. Vision, Mission and Values

   a. Vision

   b. Mission

   c. Values

   • Sustainability

   • Environment

   • Community

   • Biodiversity

- Ethic

- Security

- Value Sharing

3. Work Environment

    a.   Legality and transparency

    b.   Human rights

    c.   Healthy and constructive relationships

    d.   Company Representation

    e.   Respect and inclusion - non discrimination

    f.   Relationship with suppliers and service providers

    g.   Relationship with customers

    h.   Use and protection of company's assets

    i.   Anti-Corruption

4. Ethics

    a.   Ethics

    b.   Reporting Channel

    c.   Consequences of violations

5. Internal Work Regulations

2.3.12 Feedback and Grievance Redress Procedure (G3.8)

A transparent communication channel has been established to facilitate ongoing expression of stakeholders' concerns and to effectively resolve any conflicts or grievances that may arise throughout all stages of the project, including planning, implementation, and monitoring.

The grievance redress procedure to be used in the case of conflicts or disputes with local stakeholders, will follow the steps:

- Step 1: receiving grievances

  Grievances and other comments will be received openly and continuously through the contact e-mail of the Company, regardless of who is the complaining party.

Punctual occasions like public meetings will also be a vehicle for such points.

- Step 2: process at the Company level

    Once a grievance is received, it will be screened at two levels within BR ARBO: the local level, by the Carauari Manager, and the company headquarters, where it will be submitted to the Board of Directors. The grievance will be submitted to the Board in the case it is not solved satisfactorily at the local level. Solutions may go through amicable negotiations and get to formal agreements between the company and the conflicting party. If not solved at these levels, the issue will undergo the following phases. Additionally, a special committee may be created to support the negotiations with the grievant party, if adequate.

- Step 3: mediation

    If not solved in Step 2, grievances will go through a mediation process by means of a private independent mediation office, to be selected and hired.

- Step 4: arbitration or court

    If not solved in Step 3, grievances will be submitted to arbitration or to the relevant courts, if the grievant so decides.

All conflicts or grievances will be promptly addressed, ensuring a reasonable timeframe for resolution.

Furthermore, comprehensive documentation of the resolutions will be maintained. In this sense, once a particular grievance has been received and processed at the Company level, a protocol will be generated, documenting the nature of the given grievance and the progress of resolving it.

This protocol will be publicized through the company's webpage. Every quarter the protocol will be updated with the steps taken, until it reaches its final resolution.

2.3.13 Accessibility of the Feedback and Grievance Redress Procedure (G3.8)

The documentation of grievances and project responses will be documented through a protocol that will be generated for each complaint and made publicly available on the company's webpage. This protocol will be updated every quarter, documenting progress, until a final resolution is reached.

The Protocol to be used follows:

Protocol number:	
Date of receiving grievance:	
Grievant party:	
Other stakeholders involved:	
Description of grievance:	
Steps taken for resolution:	
1°steps:	
2° steps:	
3° steps:	
4° steps:	
Resolution:	

Figure 26: Protocol of grievance resolution

2.3.14 Worker Training (G3.9)

Worker Training

The concept of the Mejuruá project is to conserve the forest through a range of interconnected activities, creating a virtual cycle of value for the forest and the community related to it.

The activities foreseen in the Mejuruá Project are the following:

- *Forest Biomass Inventory*

- *Aerial monitoring*

- *Surveillance and Patrolling*

- *Wildfire prevention*

- *Biodiversity Protection*

- *Sustainable Forest Management*

- *Industrial activities*

- *Social activities*

The project will create new jobs, mainly focused on the industrial activity, as described below:

Industrial activity:

The position for each activity within the industrial process is detailed in Table 16.

Table 16: Activities in the industrial process

Activity	Position	Position per shift (approx.)
Organization of the yard and supply of production lines	loader operators	2
Sawmill (2 production lines)	foreman	1
	line operators	30
	forestry chain of custody controller	1
Palletizing	operators	2
Warehouses	operators	1
Sharpening rooms	operators	4
Pannels	foreman	1
	line operators	28
	operators	2
Floors	foreman	1
	line operators	12
	operators	2
Decking	foreman	1
	line operators	15
	operators	1
Line maintenance	mechanics	3
	electricians	2
	construction assistants	2
Thermoelectric	central supervisor operators	1

	operators	3
	operators	3
	operators	1
Head office in Carauari	responsible	1
	administrative assistants	5
	logistical assistants	3
	auxiliaries	6
Licensing office	forest engineer	1
	forest technicians	3
Forest exploitation	forest engineer	5
	forest technicians	5
Deposits	foreman	2
	operators	10
Transport from warehouse to port	lorry operators	3
Ferry loading	operators	3
Total	Permanent jobs per shift (aprox.)	167
	Total permanent jobs (aprox.)	340

Field activity

The position for each activity within the field activity is detailed in Table 17.

Table 17: Activities in the field activity

Project Activities	Team/equipment	Duration (in months)	Minimum quantity	Positions per team	Total positions
100% Forest Inventory	Inventory Teams	5	4	6	24

Directional Cutting of Trees	cutting teams	5	10	2	20
Demarcation of Drag Trails	trail teams	5	5	2	10
dragging the logs	skidder tractors	5	5	1	5
exploration infrastructure	D-6 Crawler Tractors	5	2	1	2
Accommodation and loading of logs	wheel loaders	5	3	1	3
transport of logs	semi-trucks	6	4	1	4
logistics and general support to field activities		6	8	2	8
supervision, administration and general management			20	1	20
Total	Total jobs during the months per year (approx.)				96

As indicated above, there will be approximately 340 permanent jobs created and 96 jobs on a rotating basis. The types of jobs will vary, ranging from managerial positions, to positions that require specific technical skills, and positions that are operational by nature.

The skill set to perform all needed jobs may not be available from the start of operations. In that sense workers' training will be needed in the beginning for the proper technical expertise to run the different industrial machines. Specific training sessions may be conducted by the supplier of the different industrial equipment to instruct the supervisors.

Also, operators will receive training in order to perform the tasks in a better way and comply with safety norms. These training sessions may in the beginning be conducted by instructors from outside of Carauari. In the medium to long term, however, the aim is forming these training programs to be conducted by locals who have been properly trained and can pass on their knowledge.

Additionally, workers training will be done in order to widen the skill set of local employees, permitting an upward mobility in job opportunities. As the project will employ hundreds of local residents, in the long run it is expected that the skills to fill technical jobs and even managerial positions will be made available locally, through the impact of workers training through the years.

Table 18 indicates the types of training that will be offered to the different categories of employees.

Table 18: Training by employment category

		Training new technical skills		General training		
		Training by equipment supplier	Local training for skill improvement	Integration	Work safety	Environmental sustainability
Category of employment	Wood Processing Operator	x		x	x	x
	Power Plant Operator	x		x	x	x
	Supporting Services Operator		x	x	x	x
	Forest Inventory Operator		x	x	x	x
	Harvesting Operator		x	x	x	x
	Logistics Operator		x	x	x	x
	Warehouse, Yard, Dock Operator		x	x	x	x
	Social Assistant		x	x	x	x

Training new technical skills refers to specific knowledge and skillsets that an employee may have to acquire to perform his or her job. This may include a very specific understanding of how certain equipment operates. It may also include skills that may not be currently available in the region, such as forklift driving. Preferably these training efforts will take place locally. In some cases, employees may have to receive training elsewhere due to lack of local availability.

General training refers to a knowledge base that all employees will have to be exposed to. This includes integration into the company's culture, including work safety and environmental sustainability.

2.3.15 Community Employment Opportunities (G3.10)

The Mejuruá project will aim to hire most employees from the city of Carauari and its surrounding settlements. Given the poor socio-economic conditions of the municipality of Carauari, which according to IBGE, 2010 ranks at 5.209 out of the 5.570 Brazilian municipalities in terms of Municipal Human Development Index, at the beginning of the project, some jobs requiring technical skills or experience in upper management will have to be sourced from larger cities, such as Manaus. The aim, however, is to employ as many local people as possible, giving preference to residents of Carauari. In that sense, people from the communities will be given an equal opportunity to fill all work positions (including management) if the job requirements are met.

In any case, even if at first the Mejuruá project may depend on the skills of people brought to the project from outside of the project zone, in the medium term the project expects to employ overwhelmingly locals. The training efforts described will play a significant role in permitting locals to be employed by the project. The Mejuruá project hopes thus to contribute to the improvement of local skills allowing for other future projects, with the need of similar skillsets to take advantage of the training efforts conducted by the Mejuruá project.

2.3.16 Relevant Laws and Regulations Related to Worker's Rights (G3.11)

The project's endeavors, including area protection, forest management, the operation of a sawmill, and the establishment of a thermoelectric power plant, will necessitate the recruitment of personnel. Employee hiring will adhere to Brazilian labor regulations, and these laws will be duly communicated to employees during the hiring process.

The Constitution of the Federative Republic of Brazil, under Chapter 2, Article 17, outlines the rights of both urban and rural workers[37]. These encompass various entitlements such as safeguarded employment relationships to prevent arbitrary or unjust terminations, the Severance Indemnity Fund (FGTS), mandated minimum wages, annual Christmas bonuses, compensation for overtime, additional pay for night shifts, provisions for maternity and paternity leave, granted vacations, and coverage through work accident insurance, among other provisions.

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[37] Consolidação das Leis do Trabalho – CLT e normas correlatas. Brasília: Senado Federal, Coordenação de Edições Técnicas, 2017. 189 p.

The Consolidation of Labor Laws (CLT), established by Decree-Law No. 5,452 on May 1, 1943, governs individual and collective labor relations in Brazil. Furthermore, Law No. 13,467 on July 13, 2017[38], amended the CLT to align it with contemporary labor dynamics. Regulatory Norms, on the other hand, encompass obligations, rights, and responsibilities to be upheld by employers and workers to ensure a secure and healthful work atmosphere.

Law 5889, enacted on June 8, 1973, governs labor relations within the rural context. This legislation recognizes that due to the unique nature of agricultural labor, regulations such as laws nº 605 of 01/05/1949, 4090 of 07/13/1962; 4725 of 07/13/1965, including amendments from Law nº 4903 of 12/16/1965, as well as Decree-Laws nº 15 of 07/29/1966; 17 of 08/22/1966, and 368 of 12/19/1968, are also applicable[39].

In the Mejuruá project, both categories will be presented. Sustainable Forest Management may be classified as a rural activity and therefore covered by the regulations applicable to such activities. However, the sawmill and power plant will not fall under the rural classification.

Specific rules may be found or developed within the corresponding workers' union, applicable to these situations within the specific jurisdiction. These rules often tend to be more stringent than general legislation and will be fully and promptly adhered to by the Project.

2.3.17 Occupational Safety Assessment (G3.12)

An assessment of significant safety risks was conducted for the following project activities: area protection, forest management, sawmill operation, and thermoelectric power plant operation. For all these activities, specific occupational safety training will be imparted, with the aim of equipping workers with essential knowledge, skills, and information to actively avert accidents, occupational illnesses, and other potential hazards linked to their work. The following section provides further details about these precautionary measures.

To safeguard the project area, specialized monitoring teams will be dispatched to conduct patrols of both the property and the forest management perimeter. The primary objective of these patrols is to deter any encroachments. In instances where agricultural or pastoral activities are being conducted in the adjacent zones, an assessment will be made regarding the viability of establishing "firebreak" areas. This assessment aims to effectively curtail the spread of forest fires. During activities related to firefighting and forestry supervision, potential risks such as exposure to flames, inhalation of toxic smoke, and insect bites may emerge. To mitigate these risks, the employed professionals will undergo comprehensive training, utilize suitable personal protective equipment, strictly adhere to safety protocols, ensure robust communication channels, and devise a strategic firefighting plan that takes into consideration weather conditions, topography, available resources, and evacuation routes.

Engaging in activities related to forest management and industrial operations (sawmill and thermoelectric power plant) inherently carries the potential for work safety risks. In response to these potential concerns, a comprehensive safety policy will be implemented within the operational framework. This policy will encompass a range of measures, including thorough safety training, the provision of both personal and collective protective equipment, diligent supervision, clearly defined emergency response protocols, and

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[38] Source: https://www.planalto.gov.br/ccivil_03/_ato2015-2018/2017/lei/l13467.htm
[39] Source: https://www.planalto.gov.br/ccivil_03/leis/l5889.htm

other pertinent components. These initiatives collectively aim to effectively mitigate potential hazards and prioritize the safety of all individuals involved.

In the context of forest management, there are risks associated with falling trees, the handling of toxic plants, and potential bites from poisonous animals. To effectively mitigate these risks, comprehensive planning will be conducted for all forest management activities. This will encompass strategic decisions regarding the positioning of tree cutting the controlled direction of tree falls, the identification of hazardous zones, and a thorough assessment of prevailing climate conditions. Furthermore, specialized training will be provided to personnel involved in these tasks. This training aims to equip workers with the knowledge needed to identify poisonous animals and toxic plants, establish preventive measures, and administer first aid in the event of contact with either toxic plants or bites from poisonous animals.

All activities will be conducted in strict accordance with the current Regulatory Norms related to occupational safety, as published by the Ministry of Labor[40]. These norms include, but are not limited to: NR 04 (Specialized services in safety and occupational medicine), NR 05 (Internal Commission for accident prevention), NR 06 (Personal protective equipment - PPE), NR 10 (Safety in installations and services in electricity), NR 12 (Transport, movement, storage, and handling of materials), NR 12 (Safety at work in machines and equipment), NR 23 (Protection against fire), and NR 31 (Safety and health at work in agriculture, livestock, forestry, and aquaculture).

2.4 Management Capacity

2.4.1 Project Governance Structures (G4.1)

The governance structure of the Mejuruá project follows as shown in Figure 27. The owner and proponent hired ATA, coordinating Plant for the development of the project. Both are responsible for developing, implementing and monitoring the project. Other service providers were hired to support the different parts of the project, such as the financial plan, management execution and others. There will also be the part that deals with the transaction of carbon credits and the benefits generated by the project, completing a cycle of governance and organization of actions and the respective responsible parties.

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[40] Source: https://www.gov.br/trabalho-e-emprego/pt-br/acesso-a-informacao/participacao-social/conselhos-e-orgaos-colegiados/comissao-tripartite-partitaria-permanente/normas-regulamentadora/normas-regulamentadoras-vigentes
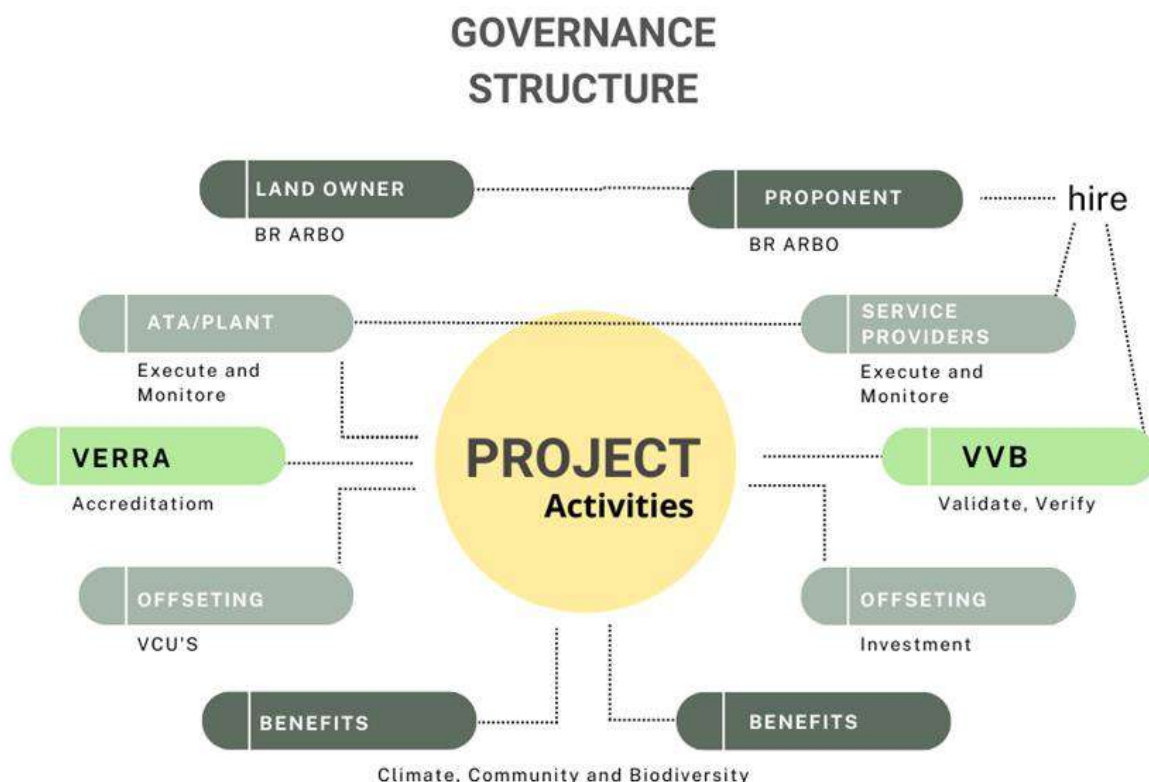
Figure 27: Project Governance Structure

2.4.2 Required Technical Skills (G4.2)

The skills needed to implement the project encompass several key areas, such as geoprocessing, biomass inventory, compliance with recognized standards and methodologies like VCS (Verified Carbon Standard) and CCB (Climate, Community, and Biodiversity Standards). Additionally, it is essential to master carbon calculations and estimates of greenhouse gas (GHG) emission reductions and be well-versed in relevant national policies.

The project also requires a robust social engagement approach, which includes socio-economic, cultural, and productive diagnoses to ensure its relevance and acceptance by the involved communities. In this regard, conducting public workshops is fundamental to promote participation and dialogue with the communities.

Another crucial aspect is participatory monitoring, which demands skills in conducting surveys and biodiversity monitoring. This will enable a comprehensive assessment of the project's impact and ensure the preservation of natural resources.

Based on the provided biosketches, it is evident that the project proponent's technical staff possesses extensive experience of over ten years in AFOLU carbon projects. This expertise includes the use of

advanced methodological tools and effective community engagement, biodiversity assessment, and accurate carbon measurement and monitoring.

These qualifications highlight the confidence in the team's ability to successfully carry out the project and achieve significant results in the fight against climate change and the promotion of sustainable development.

The Project Proponent team, formed by the high-level employees of BR ARBO Forest Management is formed by:

- *Carlos Roberto Canabarro Gomes*

Currently director of BR ARBO since April 2009, having worked as a consultant between 2002 and 2009, when he was invited to join the board of directors. He has a Bachelor's degree in Accounting Sciences – Accountant, from the Faculty of Accounting and Administrative Sciences São Judas Tadeu Porto Alegre/RS in 1983, registered with the CRC/RS under nº 37.564-0 and in Legal and Social Sciences – Law, from the University of Vale do Rio dos Sinos –UNISINOS São Leopoldo/RS in 1993, registered with the OAB/RS under nº 34.132. In addition to the degrees, among other specializations, the following stand out: Extension Course in Business Law - Institute of Cultural Development – IDC-Direito – 1st semester/2002 and Professional Tax Law – Institute of Cultural Development – IDC-Direito – 2nd semester/2002; University Extension Course: The Law of Corporations: Accounting aspects and their implications – Federal University of Rio Grande do Sul - UFRGS - May/87. Regarding his professional career, he was administrative-financial director of APLUB Capitalização S.A., between March 2007 and April 2008; financial director of Cia de Seguros Previdência do Sul from November 2005 to February 2007; director of Companhia Brasileira Corretora de Seguros e Previdência - Cibra from July 2001 to October 2005. He also held the position of Accountant in this same company between November 1981 and June 2001, when he was promoted to director. He has extensive experience in the accounting, financial, tax and corporate law areas, as well as extensive experience in relations with regulatory agencies, local authorities and public bodies.

- *Ricardo Luis Ludke*

Director of Forestry Operations at BRARBO. Graduated in Forestry Engineering (UFV); Master's degree in Forestry Science, M.Sc. (UFV – Analysis and evaluation of the environmental impacts of Sustainable Forest Management in the Amazon, in two environments: Várzea and "Terra Firme") and; Executive MBA in Business Management (FGV). Son of a sawmill owner and rural producer, he brings the activity of wood production in his natural formation.

25 years of expertise in the Timber Industry, in Corporate and Community Forestry Management; implementing, conducting and auditing Forest Certification (FSC) processes and structuring business plans for the wood production chain.

He coordinated, managed and directed the forestry department of large and medium-sized timber companies, in the states of Amazonas and Rondônia, and provided consultancy in the states of Pará, Mato Grosso and Roraima, in sawmills, plywood and laminate industries and in wood processing. With experience in forest inventory for different purposes, reduced impact forestry, forest management and reforestation. With expertise in the areas of logistics, forest management and planning, exploration and production of logs. In addition to coordinating the FSC Forest Certification processes.

- *Jacqueline Reis Penha*

Administrative Manager of the BR ARBO Gestão Florestal S.A. branch in Carauari/AM, since 2014, with a bachelor's degree in Business Administration from Faculdade Estácio in the state of Amazonas in 2016; Postgraduate MBA in Strategic People Management, from Faculdade Estácio do Amazonas in 2018; currently studying an MBA in People Management and Human Resources, from Faculdade BookPlay; Courses and specializations: English for Business, by Aslan Idiomas, completed in September 2021 and Advanced English, at Aslan Idiomas, completed in June 2022. As professional experience, in addition to the period at BR ARBO, I worked as an administrative assistant at APLUB - Association of Liberal University Professionals of Brazil, between 1996 and 2014.

The development team, coordinated by ATA Consultoria is formed by:

ATA Consultoria – Coordinator and developer

- *Ricardo Gustav Neuding*

Founder of ATA Consultoria em Sustentabilidade e Valor, established in 2005. At ATA he manages numerous strategic projects related to sustainability for Brazilian and international companies in the fields of industry, construction, agribusiness and logistics, always aimed at generating value. Among the many projects he has worked on so far at ATA, he has led projects located in the Amazon, related to forestry associated with metallurgical production, mining connected with environmental preservation, the production of forestry inputs for different national and international value chains, among others. A Mechanical Production Engineer, he graduated from the Polytechnic School of the University of São Paulo in 1973 and also attended the Law School of the Paulista University.

- *Jaime Eduardo Bunge*

Partner at ATA Sustentabilidade e Valor, where he develops projects in the areas of forestry, agriculture and biofuels. He has led several sustainability projects in the agricultural sector, including Biosev, Marfrig, BRFoods, CitrusBR, Duratex and others. He coordinated the water assessment for The Nature Conservancy in the Guandu basin. Conducted the study for ADM in Oil Palm in São Domingos do Capim - PA to determine the impact of project modalities, including oil palm reforestation, natural vegetation recomposition, pasture recovery, including different baseline scenarios, methodologies, calculation of leakage, net emission reductions and sequestered volumes.

- *Roberto Marin*

Business administrator graduated from the European Business School, London, with specialization courses in France and Spain. Partner at ATA Sustentabilidade e Valor, with extensive experience in developing carbon management strategies, including the evaluation of GHG emission reduction projects, carbon pricing and reporting for different disclosure platforms. He has been developing risk assessments related to environmental projects, including in the Amazon, defining criteria for social impact, biodiversity and greenhouse gas reduction.

Plant Inteligência Ambiental – Developer

● *Warwick do Amaral Manfrinato*

Warwick Manfrinato is an agronomist, graduated from ESALQ - University of São Paulo in 1987 (www.esalq.usp.br) and holds a postgraduate degree from the Center for Nuclear Energy in Agriculture in 2001 (CENA, University of São Paulo), where his research focused on soils and carbon stocks in the dynamics between pastures and tropical forests, with an emphasis on forest restoration in watersheds and anthropized environments. Currently, he is the director of Plant Inteligência Ambiental (www.plantbr.com), a company focused on ecosystem services and sustainability consulting for forests and agribusiness. He was also an associated researcher at the Institute of Advanced Studies at the University of São Paulo, Brazil (IEA - USP).

He served as the director of the Department of Protected Areas (DAP) at the Ministry of the Environment (Biodiversity Secretariat), where he worked on building numerous public policies, such as the Blue Brazil Initiative and Biosphere Reserves. He created programs to strengthen territorial-based conservation policies in Brazil, in addition to his responsibilities at the Biodiversity Secretariat. He also served as the president of the Atlantic Forest Biosphere Reserve Institute; an organization linked to UNESCO.

● *Adriana Pedrosa Diniz*

Biologist with a sandwich degree from Federal University of Ouro Preto and Ohio University/USA and a master's degree in Natural Sciences from Federal University of Ouro Preto. Currently, Adriana is a PhD student in the field of forest restoration (Unicamp/ Forestry Ecology and Restoration Laboratory LERF-USP). Currently, she serves as the General Coordinator at Plant Environmental Intelligence, where her responsibilities include overseeing processes, conceptualizing and structuring projects, and leading diverse multidisciplinary teams, among other tasks.

● *João Antonio da Silva*

They earned a Bachelor's degree and teaching certification in Biological Sciences from the State University of Northern Paraná (UENP) and completed a Master's degree in Forest Resources at the University of São Paulo (USP), at the 'Luiz de Queiroz' School of Agriculture (ESALQ). During their master's program, they specialized in the field of forest restoration, focusing their work on tree seedling production. Currently, they serve as a Project Manager at Plant, where they concentrate their efforts on carbon-related projects and also engage in geoprocessing activities.

● *Maria de Lourdes Faria Resende*

Geographer and Humanist graduated from the Federal University of Jequitinhonha and Mucuri Valleys (UFVJM) with a Postgraduate degree in Communication and Media from Universidade Paulista-UNIP. She was coordinator and maintainer of the UNIP pole in São Gonçalo do Sapucaí-MG, and currently works as a project manager at Plant.

● *Jéssy Anni Vilhena Senado*

Forest Engineer graduated from the Federal Rural University of the Amazon (UFRA). Master of Science, with an emphasis in Forest Resources, from the Luiz de Queiróz College of Agriculture at the University of São Paulo (ESALQ/USP), and a PhD student conducting research in Sustainable Forest Management

at the same institution. Currently holds the position of Environmental Analyst at Plant Environmental Intelligence. She has experience in the field of Ecosystem Conservation, with a focus on Native Forest Management and Recovery of Degraded Areas in the Amazon.

2.4.3 Management Team Experience (G4.2)

The Mejuruá project management team is made up of highly qualified professionals for all actions, from project implementation to monitoring, bringing together workers from different areas of knowledge for the development and execution of the project.

BR Arbo Forest Management

BR ARBO's experience with forest conservation can be translated into numbers, over the 49 years it acquired the property, Gleba Santa Rosa do Tenquê in November 1974. The company maintains more than 99.97% of its area intact with native forests. This was due to the implementation of small and medium-sized productive projects capable of ensuring ownership of the land and its forests, such as Heveiculture, Swine Farming, Poultry Farming and a single sawmill, now discontinued, as well as a small Livestock Farm and a Sustainable Forest Management Project. This set of small activities, intermittent and staggered over time, were able to promote the company's permanence and care for its forests.

In addition to this, there is the maintenance of a minimum staff, involved in the maintenance of the property and its forests, on an ongoing basis since its acquisition. Added to this, over the last two decades, there has been permanent communication between the company and the community through the region's main radio station about the location of the limits of its forest and the prohibition of practices that are harmful to the environment, such as deforestation, for example.

The company's experience with Sustainable Forest Management dates back to more than two decades, when in 2000 it had a forest management project approved and implemented, including at the time EIA/RIMA and promotion of public hearings were required. In 2016, the project received the FSC green seal.

Closer interaction with adjacent communities and residents who use non-timber extractive natural resources (açaí harvesting and rubber tree latex) had more visibility during the recent forest certification, which elected açaí as a HVC attribute - (High Value for Conservation) where he carried out a small diagnosis, and in a more vigorous way, but still on the rise and recent, when the decision was made to implement a carbon credit project. In view of the project, a succession of small diagnoses and dialogues with the users of its forests began to regularize them through lending and the establishment of partnership intentions with the Riozinho community for the industrialization of açaí pulp.

ATA Consultoria – Relevant Projects

ATA developed the Guide to good practices for carrying out REDD projects in Brazil, launched in Glasgow during COP26 by the NBS Brazil Alliance. This organization is composed by the most relevant project developers in Brazil and the Guide produced by ATA serves as an important reference for high quality projects.

ATA supported the development of guidelines for Fundo Vale conservation and reforestation projects. These guidelines will help Vale, one of Brazils largest companies, in establishing their ambition of conserving over 400.000 hectares of forests and reforest over 100.000 hectares of degraded land. ATA structured the Action Plan to mitigate risks for the Headwaters of the Pantanal together with WWF. This project served as basis for WWF's engagement in the protection of water resources in the Pantanal region.

Plant Inteligência Ambiental –Relevant projects

- *Florestal Santa Maria/BUNGE – REDD - Project development: 2009-2012*

Conception and development of a REDD project in the State of Mato Grosso. The property size is 71,000 hectares, avoiding approximately 30 million tons of CO_2 emissions. The project has been validated by Rainforest Alliance and Imaflora, registered with VCS (Verified Carbon Standard), and has a purchase agreement with Bunge Environmental Markets (ERPA) in place.

- *The Coca Cola Company*

Brazilian Tropical Forest and Water Program, Coca-Cola Brazil Institute. Reforestation of degraded areas to protect watersheds, involving the community in the preservation of natural areas, and generating employment and income for disadvantaged groups in the region. The project was designed to achieve reforestation efforts for watershed protection and a significant amount of CO_2 sequestration, following approved methodologies under the Clean Development Mechanism of the Kyoto Protocol. This project has become Coca-Cola's contribution to the Clinton Global Initiative.

- *Amazon 4.0 Project*

Development of studies on (i) non-timber forest products within economic activities in the Amazon Forest, aimed at understanding options and opportunities for entrepreneurial communities and alignment with the value chain of sustainable forest use; (ii) Entrepreneurship with genomics and the feasibility of using different techniques and technologies associated with genomic knowledge of plants, animals, and microorganisms in the Amazon.

- *INDIA: in partnership with ProNatura (France)*

Client: EADS (Airbus and SpotImage Corporation)

Project Green Hands is an initiative in India that restores areas affected by the tsunami and communities in eastern India, as well as the interior regions of the Coimbatore and Puducherry provinces. Our team conducted an assessment of the forest situation and community evaluation in collaboration with the Auroville Forestry Division, contributing to activities that enhance access to MDL (Market Development Loan) markets and environmental services. (www.pronatura.org.br)

- *Citrosuco - Fischer Group*

Orange exporters are required by clients to report Greenhouse Gas emissions throughout the product chain, demonstrating the carbon footprint of each stage for future emission reduction considerations. Based on the company's needs, an Environmental Master Plan was produced, encompassing climate change,

emissions reduction, and social and environmental policies. This project was developed between 2007-2010.

2.4.4 Project Management Partnerships/Team Development (G4.2)

The project relies on the collaboration of other companies for the development of the actions, as listed below:

● Green Horse: Financial advisor & modeler of financial projections. Contact person: Domenico Vinci, CEO, Corso Giacomo Matteotti 10, Milano, Italy, Phone +39 345 883.7239, domenico.vinci@greenhorseadvisory.com.

● PricewaterhouseCoopers Business Services s.r.l.: Professional Services to the Project Proponent as Industrial Advisor (in this document also mentioned as "PricewaterhouseCoopers" or "PwC"). Contact person: Pier Paolo Masenza, Partner, Piazza Tre Tori 2, Milan, Italy, Phone +39 02 77851, pierpaolo.masenza@pwc.com.

2.4.5 Financial Health of Implementing Organization(s) (G4.3)

Financial information regarding BR ARBO is of a commercially sensitive nature. It may be disclosed to pertinent stakeholders upon the signature of a non-disclosure agreement. This information will be available for audit purposes as well.

2.4.6 Avoidance of Corruption and Other Unethical Behavior (G4.3)

BR ARBO Forest Management has no record of corruption or other unethical forms of behavior. All legal information about the company can be made available to the auditor if required.

2.4.7 Commercially Sensitive Information (*Rules* 3.5.13 – 3.5.14)

BR ARBO financials are commercially sensitive information and can be shared with any relevant stakeholder upon the signature of a non-disclosure agreement. The information will be available for the auditors if requested. In addition, information on prices of products sold to the market and prices of goods to be purchased shall be treated in the same way.

2.5 Legal Status and Property Rights

2.5.1 Statutory and Customary Property Rights (G5.1)

The designated region for the project lies within the boundaries of the Legal Amazon, and is under private ownership by the applicant, who possesses all legitimate rights of ownership, access, and utilization. This is substantiated by duly authenticated documentation. The property encompasses areas spanning across the municipalities of Carauari, Jutaí, and Juruá.

Encompassing the project area are the Riozinho and Rio Biá indigenous lands, the Médio Juruá and Médio Jutaí Resex conservation areas, along with the township of Carauari and approximately 70 communities situated along the banks of the Médio Juruá. Notably, property entitlements concerning indigenous lands, conservation zones, and settlements are overseen by federal authorities. The authenticity of property

documentation will be accessible for audit purposes. Furthermore, the distinct delineations of these areas within the project vicinity are visually represented in the provided image (refer to Figure 28).
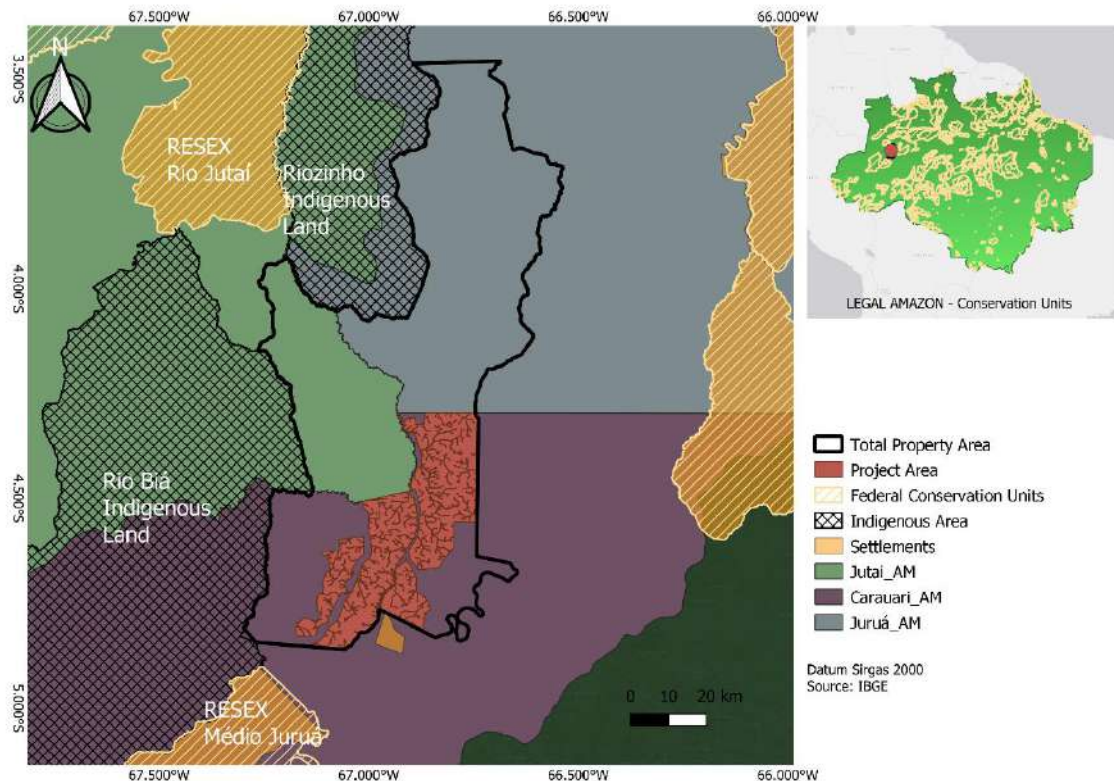
Figure 28: Territorial borders in the project area

2.5.2 Recognition of Property Rights (G5.1)

Taking into consideration the initial scope of the project, a comprehensive mapping was conducted, encompassing all areas of communal, conservation, and indigenous use, as well as those inhabited by other residents of the rural communities of Carauari. The primary objective is to safeguard customary rights and facilitate access to these resources that are vital for these communities. This inclusive approach extends to settlements near the property and vulnerable communities that will receive support to legalize their lands and maintain access to the forest from which they derive their means of subsistence.

2.5.3 Free, Prior and Informed Consent (G5.2)

In order to execute the project, a process of public consultation was undertaken to present the planning of forest protection and conservation actions, inviting communities and key representatives of local entities and public institutions to engage in discussions and decisions regarding the project.

The session took place on April 4, 2023, at the Plenary of the Municipal Chamber of Carauari, in the Amazonas region. Notable figures participated in the session, including the President and Vice-President of the Chamber, several council members, the Mayor and Vice-Mayor of the city, prominent local representatives, and representatives from BR ARBO. The Governor of the State of Amazonas was also

interviewed for decisions. Further information about this meeting can be found in section 2.3, Stakeholder Consultation, specifically sections 2.3.3 and 2.3.7 of this document. Comprehensive documentation containing information and consent from the local community can be made available in its entirety upon request.

2.5.4 Property Rights Protection (G5.3)

The project activities do not anticipate any form of population relocation. This assertion is substantiated within this document through the comprehensive description of project activities and further supported by firsthand observations conducted in the field, as well as interviews with members of the community. Quite the opposite, the project has been meticulously designed to honor the designated areas of traditional community use, a commitment underscored by the clearly defined project area boundaries. There will be no relocation of any community, and they will remain where they are in the process of project performance.

2.5.5 Illegal Activity Identification (G5.4)

The project aims to conduct comprehensive cartography and monitor areas to detect illicit activities. The Amazon region faces significant pressures due to deforestation, which is one of the main focal points of the project. Utilizing a Geographic Information System (GIS) platform, in conjunction with tools like Deter, Prodes, MapBiomas, and other satellite imagery, fire outbreaks and irregular activities will be closely monitored. The intention is to channel efforts towards combating and mitigating illegal activities in this region. Through remote analysis (GIS), instances of illegal deforestation have been identified within the property area, within the project zone, and notably along the riverbanks. These areas will be under continuous surveillance to spot any changes and respond appropriately to safeguard the region. Other illegal activities such as wildlife trafficking have not been identified.

In addition to monitoring, the project plans to assist in land regularization for properties surrounding and within the project area. The objective is to allocate lands to uphold and protect the established communities in the region.

2.5.6 Ongoing Disputes (G5.5)

Settlers have been identified within the property area, mostly at the riverside. Despite the absence of formal property rights, BRArbo has always accepted their presence on the property. These settlers are mostly part of communities already identified and considered in this document. Recognizing the need for a resolution to this tenure situation for riverside residents, the project initiator has acknowledged their requirement for access to vital services and both public and private funding. To prevent potential conflicts and offer support, the project will proactively engage in the regularization of this pre-existing zone. This will be achieved through a comprehensive land regularization plan that grants land titles to those riverside inhabitants who have, in good faith, inhabited these areas of the property for a reasonable span of time. This initiative guarantees them resources and income while ensuring minimal impact on the sustainable use of the Amazon Rainforest. This approach will be facilitated through the "Angels of the Forest Program" (Data room reference: PAE13 – Minutes of the meeting with the association of residents of Baixo Riozinho, PAE 14 – lending contracts).

2.5.7 National and Local Laws (G5.6)

The project's various activities, encompassing area protection, forest management, operation of a sawmill, and the establishment of a thermoelectric power plant, will require personnel recruitment in compliance with Brazilian labor regulations, communicated during hiring. These regulations, outlined in the Constitution of the Federative Republic of Brazil, Chapter 2, Article 17, secure rights for urban and rural workers, including employment stability, Severance Indemnity Fund (FGTS), minimum wages, bonuses, overtime compensation, night shift pay, parental leave, vacations, work accident insurance, and more. The Consolidation of Labor Laws (CLT)[41], established by Decree-Law No. 5,452 on May 1, 1943, governs labor relations, adapted by Law No. 13,467 on July 13, 2017. Regulatory Norms, ensuring workplace safety, will apply. Law 5889 of June 8, 1973, oversees rural labor relations, recognizing agricultural labor's uniqueness and incorporating related regulations.

In a comprehensive examination of the legal framework, the project adheres to the principles set forth in the Federal Constitution. This includes Article 225[42], which underscores the commitment to contribute to an ecologically balanced environment, paragraph 1 (I) and (III), emphasizing the project's role in promoting the conservation and restoration of crucial ecological processes. The National Environmental Policy, governed by Law No. 6,938 of August 31, 1981[43], enunciates its dedication to the objectives of conserving, enhancing, and restoring environmental quality conducive to life.

Concerning the national land use policy, the pivotal regulatory framework is the Vegetation Code, designated as law 12,651 and enacted in May 2012. This legislation not only defines the forest categories that necessitate conservation within private properties but also stipulates the maximum expanse of native vegetation that can be transformed into alternative land uses for economic objectives.

All activities were carried out in strict compliance with current legal mandates, including those detailed in the most plausible baseline scenario.

The project is also in direct alignment with Federal Law No. 12,187[44], enacted on December 29, 2009, establishing the National Climate Change Policy.

Furthermore, the project aligns with Law 14,119/2012[45], which defines key concepts, objectives, guidelines, actions, and criteria for the implementation of the National Policy for Payment for Environmental Services (PNPSA). This law also establishes the National Register of Payment for Environmental Services (CNPSA) and the Federal Program for Payment for Environmental Services (PFPSA).

As per Law 14,119/21[46], carbon sequestration is recognized as an ecosystem service that brings significant societal benefits by preserving, restoring, or enhancing environmental conditions (Article 2, § II). Moreover, the Federal Program for Payment for Environmental Services (PFPSA) will facilitate efforts to conserve

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[41] Source: https://www.planalto.gov.br/ccivil_03/_ato2015-2018/2017/lei/l13467.htm

[42] Source: https://www.planalto.gov.br/ccivil_03/_ato2015-2018/2017/lei/l13467.htm

[43] Source: https://www.planalto.gov.br/ccivil_03/_ato2015-2018/2017/lei/l13467.htm

[44] Source: https://www.planalto.gov.br/ccivil_03/_ato2007-2010/2009/lei/l12187.htm

[45]Source:
http://www.planalto.gov.br/ccivil_03/_ato20192022/2021/lei/L14119.htm#:~:text=L14119&text=Institui%20a%20Pol%C3%ADtica%20Nacional%20de,adequ%C3%A1%2Dlas%20%C3%A0%20nova%20pol%C3%ADtica.

[46] Source: http://www.planalto.gov.br/ccivil_03/_ato2019-2022/2021/lei/L14119.htm

areas under native vegetation that might otherwise be earmarked for conversion to alternative economic uses (Article 7, § VII).

The project also demonstrates respect for local residents through a consultative approach that embraces principles of free, prior, and informed consent (FPIC)[47]. This approach aligns with both the International Labour Organization (ILO) Convention No. 169[48] and the United Nations Declaration on the Rights of Indigenous Peoples. These communities have been actively involved since the project's inception.

2.5.8 Approvals (G5.7)

The Mejuruá project, located in the state of Amazonas, aims to promote environmental conservation and prevent both planned and unplanned deforestation in the region. The project area, as outlined in section 2.1, specifically item 2.1.5, encompasses three municipalities in Amazonas: Carauari, Juruá, and Jutaí.

The project's endeavors align with the voluntary market approach of REDD+, and its impact and significance are endorsed by the Ministry of the Environment (MMA). Documentation pertaining to this validation is made available through an official note[49] issued at the federal level.

As project approvals were secured through a public consultation process and the proper documentation regularization of the APD with Amazonas government. It is important to highlight that the project was meticulously developed and will be carried out strictly in accordance with legal requirements and, consequently, in alignment with all the regulations and principles set forth by Brazil's administrative bodies such as FUNAI, IBAMA, INCRA, ICMBIO, and others.

The sustainable forest management in the APD area will be conducted following approval by the relevant governmental authority of the Amazonas state. This project is supported by a letter of intent that highlights the synergy between the project proponents and the Government (Data room reference: GA01 – Letter of intent between State of Amazonas and BR ARBO Gestão Florestal)

2.5.9 Right to Claim Benefits (G5.8)

The project proponent is also the owner of the land, and the legality of the land use can be proven by means of ownership documents registered and recognized at the regional notary's office, which will be available for audit (Data room reference: Land tenure & processes).

2.5.10 Other Programs (G5.9)

Not Applicable. The Mejuruá project is not registered in any other GHG programs rather than VCS and CCB at the Verra.

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[47] Source: https://www.fao.org/indigenous-peoples/our-pillars/fpic/en/
[48] Source: https://www.ilo.org/dyn/normlex/en/f?p=NORMLEXPUB:12100:0::NO::P12100_ILO_CODE:C169
[49] Source: Floresta+ Carbono — Ministério do Meio Ambiente e Mudança do Clima (www.gov.br)

2.5.11 Double Counting (G5.9)

Double counting is prevented by registering the Mejuruá project within the VERRA registry system, following the VCS and CCB standards. This ensures that the sales of VCUs (Verified Carbon Units) are transparently tracked, registered, and retired.

3   CLIMATE

3.1 Without-Project Climate Scenario

3.1.1 Without-Project Estimated Greenhouse Gas Emissions (CL1.1)

Baseline emissions are estimated using module VM0006 v1.3 – Estimation of baseline carbon stock changes and greenhouse gas emissions from planned deforestation/forest degradation and planned wetland degradation (BL-PL) in accordance with VM0007 v1.7 – REDD+ Methodology Framework (REDD+ MF).

Deforestation in the Baseline Scenario

The annual area of baseline planned deforestation ($AA_{planned,i,t}$) is calculated according to VM0006 BL-PL v1.3 (Equation 5):

$$AA_{planned,i,t} = \left(A_{planned,i} * D\%_{planned,i,t} \right) * L - D_i$$

Where:

$AA_{planned,i,t,}$ Annual area of baseline planned deforestation for stratum i at time t; ha

$D\%_{planned,i,t}$ Projected annual proportion of land that will be deforested in stratum i during year t. If actual annual proportion is known and documented (e.g., 25% per year for 4 years), set to proportion; %

$A_{planned,i,}$ Total area of planned deforestation over the baseline period for stratum i; ha

$L-D_i$ Likelihood of deforestation for stratum i; %

The determination of the total area of planned deforestation during the baseline period (Aplanned,i,t) takes into account the immediate site-specific threat of deforestation, which is influenced by the legal permissibility for deforestation, the suitability of the project area for non-forest land use conversion, government approval for deforestation, and a management plan for deforestation. The specific details for calculating Aplanned,i,t can be found in Section 3.4. In this case, Aplanned,i,t was estimated to be 123,762.098 ha. The annual proportion of land projected to be deforested in stratum i during year t (D%planned,i,t) is determined based on suppression plans. In this context, D%planned,i,t was considered to be 5.99% per year. It is important to note that the scope of this analysis only includes private areas, as

specified in the VMD0006 v1.3 requirements. Therefore, the parameter L-Di is set to 100%. The outcomes of baseline deforestation are documented in VCS Mejuruá, section 4.1.1.

Carbon Stock Change per pool in the Baseline Scenario

Initial stocks are derived from direct measurements through forest inventories, while stocks in the post-deforestation categories are sourced from peer-reviewed literature.

Aboveground Tree Biomass

The calculation of the baseline carbon stock change in aboveground tree biomass ($\Delta CAB\_tree,i$) is based on the comparison between the forest carbon stock in aboveground tree biomass ($C_{ABtree,bsl,i}$) and the post-deforestation carbon stock in aboveground tree biomass (CAB_tree,post,i), as outlined in VMD0006 v1.3 (Equation 6):

$$\Delta C_{AB_{tree,i}} = C_{AB_{tree_{bsl}},i} - C_{AB_{tree_{post}},i}$$

Where:

$\Delta CABtree,$ Baseline carbon stock change in aboveground tree biomass in stratum i; t CO_2- e ha^{-1}

$CABtreebsl,$ Forest carbon stock in aboveground tree biomass in stratum i; t CO_2-e ha^{-1}

$CABtreepost,$ Post-deforestation carbon stock in aboveground tree biomass in stratum i; t CO_2- e ha^{-1}

i 1, 2, 3, … M strata

The forest carbon stock in aboveground tree biomass (CAB_tree,bsl,i) was estimated through field measurements in fixed sample plots, using representative stratified random sampling following the requirements of VMD0001 v1.1. The post-deforestation carbon stock in aboveground tree biomass (CAB_tree,post,i) is derived from peer-reviewed literature. The outcomes of carbon stock change and aboveground tree biomass are documented in VCS Mejuruá, section 4.1.2.

Belowground Tree Biomass

The calculation of the baseline carbon stock change in belowground tree biomass ($\Delta CAB\_tree,i$) is based on the comparison between the forest carbon stock in belowground tree biomass ($C_{ABtree,bsl,i}$) and the post-deforestation carbon stock in belowground tree biomass (CAB_tree,post,i), as outlined in VMD0006 v1.3 (Equation 8):

$$\Delta C_{BB\_tree,i} = C_{BB_{tree_{bsl}},i} - C_{BB_{tree_{post}},i}$$

Where:

$\Delta CBBtree,i$ Baseline carbon stock change in belowground tree biomass in stratum i; t CO_2- e ha^{-1}

$CABtreebsl,i$ Forest carbon stock in belowground tree biomass in stratum i; t CO_2-e ha^{-1}

$CABtreepost,i$ Post-deforestation carbon stock in belowground tree biomass in stratum i; t CO_2- e ha^{-1}

i 1, 2, 3, … M strata

Forest carbon stock in belowground tree biomass ($C_{ABtree,bsl,i}$) is calculated through root-to-shoot ratios taken from peer reviewed literature. Considering that the post-deforestation carbon stock in the aboveground tree biomass (CAB_tree,post,i) already accounts for the total biomass, the post-deforestation carbon stock in belowground tree biomass (CBB_tree,post,i) was set as zero. The outcomes of carbon stock change in belowground tree biomass are documented in VCS Mejuruá, section 4.1.2.

Wood Products

The mean stock extracted biomass carbon by class of wood product (CXB,ty,i) is calculated according to VMD005 v1.1 (Equation 1):

$$C_{XB,ty,i} = \frac{1}{A_i} * \sum_{j=1}^{S}(V_{ex,ty,j,i} * D_j * CF_j * \frac{44}{12})$$

Where:

CXB,ty,i Mean stock of extracted biomass carbon by class of wood product ty from stratum i; t CO_2-e ha-1

Ai Total area of stratum i; ha

Vex,ty,j Volume of timber extracted from within stratum i (does not include slash left onsite) by species j and wood product class ty; m3

Dj Mean wood density of species j; t d.m.m-3

CFj Carbon fraction of biomass for tree species j; t C t-1 d.m.

j 1, 2, 3, … S tree species ty Wood product class – defined here as sawnwood (s), wood-based panels (w), other industrial roundwood (oir), paper and paper board (p), and other (o)

44/12 Ratio of molecular weight of CO_2 to carbon, t CO_2-e t C-1Baseline carbon stock in wood products ($C_{WP,i}$) is calculated through direct volume extraction estimation (Option 1), according to VMD0005 v1.1 Equation 2:

$$C_{WP,i} = \sum_{ty=s,w,oir,p,o} C_{XB,ty,i} * (1 - WW_{ty})$$

Where:

CWP,i Carbon stock entering the wood products pool from stratum i; t CO_2-e ha-1

CXB,ty,i Mean stock of extracted biomass carbon by class of wood product ty from stratum i; t CO_2-e ha-1

WWty Wood waste. The fraction immediately emitted through mill inefficiency by class of wood product ty; dimensionless

ty Wood product class – defined here as sawnwood (s), wood-based panels (w), other industrial roundwood (oir), paper and paper board (p), and other (o)

i 1, 2, 3, … M strata

The calculation of the carbon entering the wood products pool at the time of deforestation and expected to be emitted over 100 years (CWP100,i) is based on Equation 3 of VMD0005 v1.1:

$$C_{WP100,i} = C_{WP,i} - C_{WP,i} * (1 - SLFp) * (1 - Ofp)$$

Where:

CWP100,i Carbon stock entering the wood products pool at the time of deforestation that is expected to be emitted over 100-years from stratum i; t CO_2-e ha-1

CWP,i Carbon stock entering wood products pool at time of deforestation from stratum i; t CO_2-e ha-1

SLFty Fraction of wood products that will be emitted to the atmosphere within 5 years of timber harvest by class of wood product ty; dimensionless

OFty Fraction of wood products that will be emitted to the atmosphere between 5 and 100 years of timber harvest by class of wood product ty; dimensionless

ty Wood product class – defined here as sawnwood (s), wood-based panels (w), other industrial roundwood (oir), paper and paper board (p), and other (o)

i 1, 2, 3, … M strata

The outcomes of carbon stocks in the wood products pool in the baseline are documented in VCS Mejuruá, section 4.1.2.

Carbon Stock Change in All Pools in the Baseline Scenario

The net carbon stock changes in all pools in the baseline (ΔCBSL,i,t) is calculated according to the following equation from VMD0006 v1.3:

$$\Delta C_{BSL,i,t} = AA_{planned,i,t} \times (\Delta C_{AB_{tree,i}} - \Delta C_{WP,i} + \Delta C_{AB_{non-tree,i}} + \Delta C_{LI,i})$$

$$+ \left(\sum_{t-10}^{t} AA_{planned,i,t} \right) \times (\Delta C_{BB_{tree,i}} + \Delta C_{BB_{non-tree,i}} + \Delta C_{DW,i}) * \left(\frac{1}{10} \right)$$

$$+ \left(\sum_{t-20}^{t} AA_{planned,i,t} \right) \times \left(C_{WP100,i} + \Delta C_{SOC,i} \right) * \left(\frac{1}{20} \right)$$

Where:

ΔCBSL,i,t   Sum of the baseline carbon stock change in all terrestrial pools in stratum i in year t, t CO_2-e.

AAplanned,i,t   Annual area of baseline planned deforestation for stratum i in year t; ha

CWP100,i   Carbon stock entering the wood products pool at the time of deforestation that is expected to be emitted over 100-years from stratum i; t CO_2-e ha^{-1}.

ΔCAB_tree,i   Baseline carbon stock change in aboveground tree biomass in stratum i; t CO_2-e ha^{-1}.

ΔCBB_tree,i   Baseline carbon stock change in belowground tree biomass in stratum i; t CO_2-e ha^{-1}.

ΔCAB_non-tree,i   Baseline carbon stock change in aboveground non-tree biomass in stratum i; t CO_2-e ha^{-1}.

ΔCBB_non-tree,i Baseline carbon stock change in belowground non-tree biomass in stratum i; t CO_2-e ha^{-1}.

ΔCWP,i Baseline carbon stock change in wood products in stratum i; t CO_2-e ha^{-1}.

ΔCDW,i Baseline carbon stock change in dead wood in stratum i; t CO_2-e ha^{-1}.

ΔCLI,i   Baseline carbon stock change in litter in stratum i t CO_2-e ha^{-1}.

ΔCSOC,i Baseline carbon stock change in soil organic carbon in stratum i; t CO_2-e ha^{-1}.

i   1, 2, 3, … M strata.

t   1, 2, 3, … t* years elapsed since the projected start of the project activity.

The outcomes of net carbon stock changes in all pools in the baseline period are documented in VCS Mejuruá, section 4.1.3.

Non-CO2 Emissions in the Baseline Scenario

The baseline greenhouse gas emissions resulting from deforestation activities within the project area were calculated according to Equation 15 from module VMD0006 v1.3:

$$GHG_{BSL,E,i,t} = E_{FC,i,t} + E_{BiomassBurn,i,t} + N_2O_{direct-N,i,t}$$

Where:

$GHG_{BSL,E}$ Greenhouse gas emissions as a result deforestation activities within the project boundary in the stratum i in year t; $t\ CO_2$-e

$E_{FC,i,t}$ Net CO_2-e emission from fossil fuel combustion in stratum i in year t; $t\ CO_2$-e

$E_{BiomassBurn,i,t}$ Non-CO_2 emissions due to biomass burning in stratum i in year t; $t\ CO_2$-e

$N_2O_{direct-N,i,t}$ Direct N_2O emission as a result of nitrogen application on the alternative land use within the project boundary in stratum i in year t; $t\ CO_2$-e

i 1, 2, 3, …M strata

t 1, 2, 3, …t* years elapsed since the start of the REDD VCS project activity

Net CO_2-e emissions from fossil fuel combustion ($E_{FC,i,t}$) and nitrogen application ($N_2O_{direct-N,i,t}$) in the baseline scenario were conservatively excluded.

Non-CO_2 emissions from biomass burning ($E_{BiomassBurn,i,t}$) were calculated according Equation 1 from module VMD0013 v1.2:

$$E_{biomassbur\,n,i,t} = \sum_{g=1}^{G} \left(\left(\left(A_{burn,i,t} \times B_{i,t} \times COMF_i \times G_{g,i} \right) \times 10^{-3} \right) \times GWP_g \right)$$

Where:

$E_{biomassburn,i,t}$ Greenhouse gas emissions due to biomass burning in stratum i in year t of each GHG (CO_2, CH_4, N_2O) ($t\ CO_2e$)

$A_{burn,i,t}$ Area burnt for stratum i in year t (ha)

$B_{i,t}$ Average aboveground biomass stock before burning stratum i, year (t d.m. ha^{-1})

$COMF_i$ Combustion factor for stratum i (unitless)

$G_{g,i}$ Emission factor for stratum i for gas g ($kg\ t^{-1}$ d.m. burnt)

GWP_g Global warming potential for gas g ($t\ CO_2/t$ gas g)

g
(unitless)   1, 2, 3 ... G greenhouse gases including carbon dioxide, methane and nitrous oxide

i   1, 2, 3 … M strata (unitless)

t   1, 2, 3, … t* time elapsed since the start of the project activity (years)

The burnt area (Aburn,i,t) corresponds to the annual area of planned deforestation in the baseline case (AAplanned,i,t). The combustion and emission factors are default values adopted from the IPCC (2006). Global warming potential is a default factor from the latest IPCC assessment report.

The average aboveground biomass stock before burning (Bi,t) is calculated according to Equation 2 from module VMD0013 v1.2:

$$B_{i,t} = (C_{AB\_tree,i,t} + C_{DWi,t} + C_{LI,i,t}) \times 12/44 \times (1/CF)$$

Where:

Bi,t   Average aboveground biomass stock before burning for stratum i, year t (tonnes d.m. ha-1).

CAB_tree,i,t   Carbon stock in aboveground biomass in trees in stratum i in year t (t CO_2e ha^{-1}).

CDWi,t   Carbon stock in dead wood for stratum i in year t (t CO_2e ha^{-1}).

CLI,i,t   Carbon stock in litter for stratum i in year t (t CO_2e ha^{-1}).

12/44   Inverse ratio of molecular weight of CO_2 to carbon (t CO_2e ha^{-1}).

CF   Carbon fraction of biomass (t C t^{-1} d.m).

i   1, 2, 3 … M strata (unitless).

t   1, 2, 3, … t* time elapsed since the start of the project activity (years).

Dead wood (CDWi,t) and litter (CLI,i,t) were excluded from the baseline, and thus were not accounted for in the calculation of aboveground biomass stock before burning (Bi,t). The outcomes of non-CO_2 emissions in the baseline are documented in VCS Mejuruá, section 4.1.4.

Net GHG emissions in the Baseline Scenario

The baseline net GHG emissions for planned deforestation is determined according to VMD0006 v1.3 (Equation 1):

$$\Delta C_{BSL,planned} = \sum_{t=1}^{t*} \sum_{i=1}^{M} \left(\Delta C_{BSL,i,t} + GHG_{BSL-E,i,t} \right)$$

Where:

ΔCBSL,planned   Net greenhouse gas emissions in the baseline from planned deforestation up to year t*; t CO_2-e.

ΔCBSL,i,t   Net carbon stock changes in all pools in the baseline stratum i in year t; t CO_2-e.

GHGBSL-E,i,t Greenhouse gas emissions as a result of deforestation activities within the project boundary in the baseline stratum i in year t; t CO_2-e yr^{-1}.

i 1, 2, 3, …   M strata.

t 1, 2, 3, …   t* years elapsed since the projected start of the project activity.

The table 19 shows the results of net GHG emissions in the baseline scenario of the Mejuruá project:

Table 19: Net GHG emissions in the baseline case from APD in the baseline

Year	ΔCBSL,planned (tCO$_2$-e)	ΔCBSL,planned accumulated (tCO$_2$-e)
2023	2,609,570.22	2,609,570.22
2024	4,261,911.64	6,871,481.86
2025	4,396,881.91	11,268,363.77
2026	4,531,852.18	15,800,215.95
2027	4,666,822.45	20,467,038.39
2028	4,801,792.71	25,268,831.10
2029	4,936,762.98	30,205,594.09
2030	5,071,733.25	35,277,327.34
2031	5,206,703.52	40,484,030.86
2032	5,341,673.79	45,825,704.64
2033	5,396,379.84	51,222,084.48
2034	5,402,856.95	56,624,941.43
2035	5,409,334.06	62,034,275.49

2036	5,415,811.18	67,450,086.67
2037	5,422,288.29	72,872,374.96
2038	5,428,765.40	78,301,140.36
2039	5,435,242.51	83,736,382.87
2040	1,440,776.06	85,177,158.93
2041	1,033,378.82	86,210,537.75
2042	904,885.67	87,115,423.42
2043	776,392.51	87,891,815.94
2044	647,899.36	88,539,715.29
2045	519,406.20	89,059,121.50
2046	390,913.05	89,450,034.54
2047	262,419.89	89,712,454.43
2048	133,926.73	89,846,381.17
2049	5,433.58	89,851,814.75
2050	0.00	89,851,814.75
2051	0.00	89,851,814.75
2052	0.00	89,851,814.75
2053	0.00	89,851,814.75

3.2 Net Positive Climate Impacts

3.2.1 With-Project Estimated Greenhouse Gas Emissions

The greenhouse gas emissions from the project line will be evaluated according to VMD0015 v2.2. Ex-ante estimates will be made, considering projections of forest degradation caused in the project area by timber harvesting as well as the infrastructure involved in forest management. Ex-post estimates will be based on monitored data throughout the project's lifetime.

Emissions arising in the logging gap

Calculate the biomass of the total volume extracted from within each logging stratum is calculated according to VMD0015 v2.2 (Equation 11):

$$C_{EXT,z,i,t} = \sum_{j=1}^{S} (V_{EXT,j,z,i,t} * D_j * CF_j * \frac{44}{12})$$

Where:

$C_{EXT,z,I,t}$ Biomass carbon stock of timber extracted within the project boundary for logging stratum z, in stratum I in year t; t CO_2-e

$V_{EXT,j,z,I,t}$ The volume of timber extracted of species j for logging stratum z, in stratum I in year t; m3

D_j Basic wood density of species j; t d.m.m^{-3}

CF_j Carbon fraction of biomass for tree species j; t C t^{-1} d.m.

z   1, 2, 3, …Z logging strata

j   1, 2, 3, … SPS tree species t 1, 2, 3, …

t   years elapsed since the start of the project activity

Emissions arising in the logging gap are calculated according to VMD0015 v2.2 (Equation 10):

$$C_{LG,i,t} = \sum_{z=1}^{Z} (C_{EXT,z,i,t} + (LDF_{z,i} * V_{EXT,z,i,t} * \frac{44}{12}))$$

Where:

$C_{LG,i,t}$ Actual net project emissions arising in the logging gap , in stratum i in year t; t CO_2-e

$C_{EXT,z,i,t}$ Biomass carbon stock of timber extracted within the project boundary for logging stratum z, in stratum i in year t; t CO_2-e

$LDF_{z,i}$ Logging damage factor for logging stratum z, in stratum i; t C m^{-3}

$V_{EXT,z,i,t}$ Volume extracted from logging stratum z, in stratum i in year t; m^3

Z   1, 2, 3, …Z logging strata

i   1, 2, 3, … M strata

t   1, 2, 3, … t years elapsed since the start of the project activity

The outcomes of emission arising in the logging gap in the project scenario are documented in VCS Mejuruá, section 4.2.1.

Emissions arising through logging infrastructure

Skid Trail Creation

GHG emissions from the creation of skid trails is estimated by multiplying the total length of skid trails created and a skid trail emission factor, according to VMD0015 v2.2, equation 13:

$$\Delta C_{SKID,i,t} = L_{SKID,i,t} * SK_i$$

Where:

$\Delta C_{SKID,i,t}$ Change in carbon stock resulting from skid trail creation in stratum i in year t; t CO_2-e

$L_{SKID,i,t}$ Length of skid trails in stratum i in year t; m

SK_i Skid trail emissions factor (Average emissions resulting from dead wood created in the process of skid trail creation per length of skid trail) in stratum i; t CO_2-e m^{-1}

t   1, 2, 3, … t* years elapsed since the start of the project activity

Skid trail emissions factor is calculated according to VMD0015 v2.2, Equation 14:

$$SK_i = (C_{dest,i} + \Delta C_{SOC,sk,i}) * \frac{1}{10,000} * W_{SKID}$$

$$C_{dest,i} = C_{AB\_tree\_dest,i} + C_{BB\_tree\_dest,i} + C_{AB\_non-tree,i} + C_{BB\_non-tree,i}$$

Where:

SK,i Skid trail emission factor (Average emissions resulting from dead wood created in the process of skid trail creation per length of skid trail) in stratum I; t t CO_2-e m^{-1}

$C_{dest,i}$ Mean live carbon stock of trees and non-tree biomass assumed to be killed per unit area in creation of skid trail in stratum I; t CO_2-e ha^{-1}

$\Delta C_{SOC,sk,i}$ Carbon stock change in organic carbon resulting from skid trail creation in stratum I; t CO_2-e ha^{-1}

W_{SKID} Mean width of skid trails in stratum I; m

$C_{AB\_tree\_dest,i}$ Carbon stock in aboveground tree biomass assumed to be killed per unit area resulting from the creation of the skid trail in stratum I; t CO_2-e ha^{-1}

$C_{BB\_tree\_dest,i}$ Carbon stock in belowground tree biomass assumed to be killed per unit area resulting from the creation of the skid trail in stratum I; t CO_2-e ha^{-1}

$C_{AB\_non-tree,i}$ Carbon stock in aboveground non-tree biomass in stratum I; t CO_2-e ha^{-1}

$C_{BB\_non-tree,i}$ Carbon stock in belowground non-tree biomass in stratum I; t CO_2-e ha^{-1}

1/10,000   Conversion of units from hectares to m^2

i   1, 2, 3, … M strata

Logging Roads Creation

GHG emissions resulting from the creation of roads are calculated according to VMD0015 v2.2 (equation 17):

$$\Delta C_{ROAD,i,t} = A_{ROAD,i,t} * C_{BSL,i}$$

Where:

$\Delta C_{ROAD,i,t}$ Change in carbon stock resulting from logging road creation in stratum i in year t; t CO2-e

$A_{ROAD,i,t}$ Area of roads in stratum i in year t; ha

$C_{BSL,i}$ Carbon stock in all pools in the baseline case in stratum i; t CO_2-e ha^{-1}

i   1, 2, 3, … M strata

t   1, 2, 3, … t* years elapsed since the start of the project activity

Logging Decks Creation

GHG emissions resulting from the creation of logging decks are calculated according to VMD0015 v2.2, equation 18:

$$\Delta C_{DECKS,i,t} = A_{DECKS,i,t} * C_{BSL,i}$$

Where:

$\Delta C_{DECKS,i,t}$ t CO_2-e   Change in carbon stock resulting from logging deck creation in stratum i in year t;

$A_{DECKS,i,t}$ Area of logging decks in stratum i in year t; ha

$C_{BSL,i}$ Carbon stock in all pools in the baseline case in stratum i; t CO_2-e ha^{-1}

i   1, 2, 3, … M strata

t   1, 2, 3, … t* years elapsed since the start of the project activity

Emissions arising through logging infrastructure are calculated according to VMD0015 v2.2, equation 12:

$$C_{LR,i,t} = \Delta C_{SKID,i,t} + \Delta C_{ROAD,i,t} + \Delta C_{DECKS,i,t}$$

Where:

$C_{LR,i,t}$ t; t CO_2-e   Actual net project emissions arising from logging infrastructure in stratum i in year t; t CO_2-e

$\Delta C_{SKID,i,t}$ t CO_2-e   Change in carbon stock resulting from skid trail creation in stratum i in year t; t CO_2-e

$\Delta C_{ROAD,i,t}$ t CO_2-e   Change in carbon stock resulting from logging road creation in stratum i in year t; t CO_2-e

$\Delta C_{DECKS,i,t}$ t CO_2-e   Change in carbon stock resulting from logging deck creation in stratum i in year t; t CO_2-e

i   1, 2, 3, … M strata

t   1, 2, 3, … t years elapsed since the start of the project activity.

The outcomes of emissions arising through logging infrastructure in the project scenario are documented in VCS Mejuruá, section 4.2.2.

Carbon Stock in Wood products in Project Line

Changes in carbon stock in the project scenario due to wood products have been calculated using the same equations as the baseline. The outcomes of carbon stocks in the wood products pool in the project scenario are documented in VCS Mejuruá, section 4.2.3.

Forest Regeneration in the Project Scenario

In the project line, sustainable forest management is carried out, duly certified with FSC. After the management activities are completed, the managed area remains untouched until the end of the project's lifetime. Therefore, it is plausible to consider the carbon sequestration achieved through the natural forest regeneration that will occur in the area. To calculate the sequestered carbon, a value of 3.03 tCO_2/ha was used, sourced from peer-reviewed literature (West et al. 2014). The value of regeneration was multiplied by the managed area per year until reaching the carbon value equivalent to the net project emissions arising in the logging gap (CLG,i,t). The outcomes of Carbon sequestration through natural regeneration in the project scenario are documented in VCS Mejuruá, section 4.2.4 (Forest Regeneration in the Project Scenario).

Total Emission from Selective Logging in the Project Scenario

The greenhouse gas (GHG) emissions from logging activities in the project scenario were estimated ex-ante and will be monitored ex-post, based on post exploration reports. The ex-post estimates are based on GHG emissions resulting from the logging gap, logging infrastructure, and carbon stock in the wood product pool, in accordance with VMD0015 v2.2 (Equation 9):

$$\Delta C_{P,SelLog,j,t} = \sum_{t=1}^{t} \left(C_{LG,j,t} + C_{LR,j,t} - C_{WP,i,t} \right)$$

Where:

$\Delta C_{P,SelLog,i,t}$ Net carbon stock change as a result of degradation through selective logging of FSCcertified forest management areas in the project area in the project case in stratum i in year t; t CO_2-e

$C_{LG,i,t}$ Actual net project emissions arising in the logging gap in stratum i in year t; t CO_2-e

$C_{LR,i,t}$ Actual net project emissions arising from logging infrastructure in stratum i in year t; t CO_2-e

$C_{WP\ i,t}$ Carbon stock in wood products pool from stratum i, in year t; t CO_2-e

t 1, 2, 3, … t years elapsed since the start of the project activity

The subtraction of carbon sequestered through natural regeneration, as explained in the previous section (4.2.4), has also been included (equation 9). Table 20 shows the results of net emissions in the project scenario of the Mejuruá project:

Table 20: Net emissions in the project scenario

Year	$C_{LG,i,t}$ (tCO$_2$)	$C_{LR,i,t}$ (tCO$_2$)	Regeneration (tCO$_2$)	$\Delta C_{P,SelLog,i,t}$ (tCO$_2$)
2023	0.00	0.00	0.00	0.00
2024	0.00	0.00	0.00	0.00
2025	0.00	0.00	0.00	0.00
2026	162,476.06	77,691.21	0.00	240,151.48
2027	324,952.11	155,382.41	7,563.54	472,755.20
2028	324,952.11	155,382.41	22,690.62	457,628.12
2029	324,952.11	155,382.41	37,817.70	442,501.04
2030	324,952.11	155,382.41	52,944.78	427,373.96
2031	324,952.11	155,382.41	68,071.87	412,246.88
2032	324,952.11	155,382.41	83,198.95	397,119.79
2033	324,952.11	155,382.41	98,326.03	381,992.71
2034	324,952.11	155,382.41	113,453.11	366,865.63
2035	324,952.11	155,382.41	128,580.19	351,738.55
2036	324,952.11	155,382.41	143,707.27	336,611.47
2037	324,952.11	155,382.41	158,834.35	321,484.39
2038	324,952.11	155,382.41	173,961.43	306,357.31
2039	324,952.11	155,382.41	189,088.52	291,230.23
2040	324,952.11	155,382.41	204,215.60	276,103.14
2041	324,952.11	155,382.41	219,342.68	260,976.06
2042	324,952.11	155,382.41	234,469.76	245,848.98

2043	324,952.11	155,382.41	249,596.84	230,721.90
2044	324,952.11	155,382.41	264,723.92	215,594.82
2045	324,952.11	155,382.41	279,851.00	200,467.74
2046	324,952.11	155,382.41	294,978.08	185,340.66
2047	324,952.11	155,382.41	310,105.16	170,213.58
2048	324,952.11	155,382.41	325,232.25	155,086.50
2049	58,197.82	27,828.46	340,359.33	-254,348.84
2050	0.00	0.00	343,068.54	-343,068.54
2051	0.00	0.00	343,068.54	-343,068.54
2052	0.00	0.00	343,068.54	-343,068.54
2053	0.00	0.00	126,888.36	-126,888.36
Total	**7,369,620.40**	**3,523,932.78**	**5,157,206.95**	**5,735,967.32**

3.2.2 Net Impact (CL2.2)

A Net GHG emissions reduction estimates are based in equation 2 from VM0007 v1.7:

$$NER_{REDD} = \Delta C_{BSL\text{-}REDD} - \Delta C_{WPS\text{-}REDD} - \Delta C_{LK\text{-}REDD}$$

Where:

NERREDD   Total net GHG emission reductions of the REDD project activity up to year t* (t CO_2e)

$\Delta C_{BSL\text{-}REDD}$ Net GHG emissions in the REDD baseline scenario up to year t* (t CO_2e)

$\Delta C_{WPS\text{-}REDD}$ Net GHG emissions in the REDD project scenario up to year t* – from Module MREDD (t CO_2e)

$\Delta C_{LK\text{-}REDD}$ Net GHG emissions due to leakage from the REDD project activity up to year t* (t CO_2e)

Table 21 shows the results of total net GHG emissions reductions of the REDD project activity of the Mejuruá project:

Table 21: Total net GHG emissions reductions of the REDD project activity

Year	Estimated baseline emissions or removals (tCO₂e) ΔCBSL-REDD	Estimated project emissions or removals (tCO₂e) ΔCWPS-REDD	Estimated Leakage emissions (tCO₂e) ΔCLK-REDD	Estimated net GHG emission reductions or removals (tCO₂e) NERREDD
2023	2,609,570.22	0.00	187,424.64	2,422,146
2024	4,261,911.64	0.00	300,043.83	3,961,868
2025	4,396,881.91	0.00	300,043.83	4,096,838
2026	4,531,852.18	240,151.48	255,943.19	4,035,758
2027	4,666,822.45	472,755.20	211,842.54	3,982,225
2028	4,801,792.71	457,628.12	211,842.54	4,132,322
2029	4,936,762.98	442,501.04	211,842.54	4,282,419
2030	5,071,733.25	427,373.96	211,842.54	4,432,517
2031	5,206,703.52	412,246.88	211,842.54	4,582,614
2032	5,341,673.79	397,119.79	211,842.54	4,732,711
2033	5,396,379.84	381,992.71	211,842.54	4,802,545
2034	5,402,856.95	366,865.63	211,842.54	4,824,149
2035	5,409,334.06	351,738.55	211,842.54	4,845,753
2036	5,415,811.18	336,611.47	211,842.54	4,867,357
2037	5,422,288.29	321,484.39	211,842.54	4,888,961
2038	5,428,765.40	306,357.31	211,842.54	4,910,566
2039	5,435,242.51	291,230.23	211,842.54	4,932,170
2040	1,440,776.06	276,103.14	0.00	1,164,673

2041	1,033,378.82	260,976.06	0.00	772,403
2042	904,885.67	245,848.98	0.00	659,037
2043	776,392.51	230,721.90	0.00	545,671
2044	647,899.36	215,594.82	0.00	432,305
2045	519,406.20	200,467.74	0.00	318,938
2046	390,913.05	185,340.66	0.00	205,572
2047	262,419.89	170,213.58	0.00	92,206
2048	133,926.73	155,086.50	0.00	-21,160
2049	5,433.58	-254,348.84	0.00	259,782
2050	0.00	-343,068.54	0.00	343,069
2051	0.00	-343,068.54	0.00	343,069
2052	0.00	-343,068.54	0.00	343,069
2053	0.00	-126,888.36	0.00	126,888
Total	89,851,814.75	5,735,967.32	3,797,408.52	80,318,439

3.3 Offsite Climate Impacts (Leakage)

3.3.1 Types of Expected Leakage (CL3.1)

Activity Shifting Leakage

Given the project scope, the total area of monitored deforestation caused by the baseline agent for planned deforestation, AdefLK,i,t, is always zero. This is because there are no forested areas within the lands managed by the identified deforestation agent that are legally allowed to be suppressed, regardless of the project boundary. Consequently, any greenhouse gas (GHG) emissions resulting from activity shifting to evade planned deforestation are assumed to be zero in both ex-ante and ex-post estimates.

Therefore, the newly calculated forest clearance by the baseline agent for planned deforestation, where no leakage is occurring, is simply the average number of hectares deforested per year across all concessions managed by the agent. The agent of deforestation, project owner, has no other managed land. The area has no forested wetlands within the project area. The agent of deforestation in this case has only one area

predicted to this project and the proponent have the official request and the plan to deforest 20% of Santa Rosa do Tenquê property, in accordance with Brazilian Forest Code.

Market Effects Leakage

Since the baseline agent of deforestation does not engage in fuelwood or charcoal collection, market leakage is confined to the leakage resulting from reduced timber harvest.

3.3.2 Quantity of Expected Leakage (CL3.1, 3.3)

Leakage caused by market effects equals the baseline emissions from logging multiplied by a leakage factor, and, if applicable, a leakage management factor (Equation 2 from VMD0011 v1.0).

Where:

LKMarketEffects,timber timber harvest; t CO_2-e — Total GHG emissions due to market- effects leakage through decreased

LFME — Leakage factor for market-effects calculations; dimensionless

ALT,i — Summed emissions from timber harvest in stratum i in the baseline case potentially displaced through implementation of carbon project; t CO_2-e

i — 1,2,3,…M strata

To calculate the leakage factor for market effects (LFME), we took into account the relationship between the average merchantable biomass as a percentage of the total aboveground tree biomass for each forest type (PMLFT) and the merchantable biomass as a percentage of the total aboveground tree biomass for stratum i within the project boundary (PMPi). The PMLFT was estimated based on available literature data. According to Homma (2011), out of the 45 billion m3 of Amazon wood stocks, approximately 14 billion m3 was considered marketable. Therefore, we adopted a PMLFT of 31% for the legal Amazon region. The LFME was adopted as 0.2, as the total tree biomass above ground is considered to be 40% lower in the project area when compared to the Amazon (PMLFT > 15% to PMPi).

Summed emissions from timber harvest potentially displaced through implementation of carbon project is estimated according to VMD0011 v1.0 (equation 3):

Where:

ALT,i — Summed emissions from timber harvest in stratum i in the baseline case potentially displaced through implementation of carbon project; t CO_2-e

CBSL,XBT,i,t — Carbon emission due to displaced timber harvests in the baseline scenario in stratum i in time t; t CO_2-e

i — 1, 2, 3, …M strata

t — 1, 2, 3, … t* years elapsed since the projected start of the REDD project activity

Carbon emissions due to displaced timber harvests in the baseline scenario is calculated according to VMD0011 v1.0 equation 4:

Where:

$C_{BSL,XBT,i,t}$ Carbon emission due to timber harvests in the baseline scenario in stratum i at time t; t CO_2-e

$V_{BSL,EX,i,t}$ Volume of timber projected to be extracted from within the project boundary during the baseline in stratum i at time t; m^3

D_{mn} Mean wood density of commercially harvested species; t d.m.m^{-3}. The value must be the same as that used in the module CP-W if this pool is included in the baseline.

CF Carbon fraction of biomass for commercially harvested species j; t C t d.m.$^{-1}$. The value must be the same as that used in the module CP-W if this pool is included in the baseline.

LDF Logging damage factor; t C m-3 (default 0.53 t C m-3 for broadleaf and mixed forests; 0.25 t C m-3 for coniferous forests)

LIF Logging infrastructure factor; t C m-3 (default 0.29 t C m^{-3})

i 1, 2, 3, … M strata

t 1, 2, 3, … t* years elapsed since the projected start of the REDD project activity

The table 22 shows the results of net GHG emissions due to market-effects leakage of the Mejuruá project:

Table 22: Net GHG emissions due to market-effects leakage

Year	Lkmaf	CBSL,XBT,i,t	ALT,i	$LKMarketEffects,Timber$	ΔCLK-ME (tCO$_2$-e)
2023	1.00	937,123.19	937,123.19	187,424.64	187,424.64
2024	1.00	1,500,219.15	1,500,219.15	300,043.83	300,043.83
2025	1.00	1,500,219.15	1,500,219.15	300,043.83	300,043.83
2026	0.85	1,500,219.15	1,500,219.15	255,943.19	255,943.19
2027	0.71	1,500,219.15	1,500,219.15	211,842.54	211,842.54
2028	0.71	1,500,219.15	1,500,219.15	211,842.54	211,842.54

2029	0.71	1,500,219.15	1,500,219.15	211,842.54	211,842.54
2030	0.71	1,500,219.15	1,500,219.15	211,842.54	211,842.54
2031	0.71	1,500,219.15	1,500,219.15	211,842.54	211,842.54
2032	0.71	1,500,219.15	1,500,219.15	211,842.54	211,842.54
2033	0.71	1,500,219.15	1,500,219.15	211,842.54	211,842.54
2034	0.71	1,500,219.15	1,500,219.15	211,842.54	211,842.54
2035	0.71	1,500,219.15	1,500,219.15	211,842.54	211,842.54
2036	0.71	1,500,219.15	1,500,219.15	211,842.54	211,842.54
2037	0.71	1,500,219.15	1,500,219.15	211,842.54	211,842.54
2038	0.71	1,500,219.15	1,500,219.15	211,842.54	211,842.54
2039	0.71	1,500,219.15	1,500,219.15	211,842.54	211,842.54
2040	0.00	63,439.64	63,439.64	0.00	0.00
2041	0.00	0.00	0.00	0.00	0.00
2042	0.00	0.00	0.00	0.00	0.00
2043	0.00	0.00	0.00	0.00	0.00
2044	0.00	0.00	0.00	0.00	0.00
2045	0.00	0.00	0.00	0.00	0.00
2046	0.00	0.00	0.00	0.00	0.00
2047	0.00	0.00	0.00	0.00	0.00
2048	0.00	0.00	0.00	0.00	0.00
2049	0.00	0.00	0.00	0.00	0.00
2050	0.00	0.00	0.00	0.00	0.00

2051	0.00	0.00	0.00	0.00
2052	0.00	0.00	0.00	0.00
2053	0.00	0.00	0.00	0.00
Total		**25,004,069.20**	**25,004,069.20**	**3,797,408.52**	**3,797,408.52**

3.3.3 Leakage Mitigation (CL3.2)

Mitigating market effects leakage can be achieved by incorporating sustainable management practices with FSC certification, as outlined in the project specifications, which will ensure the provision of certified timber.

3.4 Climate Impact Monitoring

3.4.1 Climate Monitoring Plan (CL4.1)

To monitor changes in any carbon reservoir, any non-CO2 greenhouse gas (GHG), and any emission sources expected to contribute cumulatively more than 20% of the total GHG emissions, and leaks, the VCS Monitoring Plan will be followed, and this information will be disclosed in the monitoring report. The changes that occur in the project area will constantly be monitored by satellite, terrestrial surveillance and data from PRODES and DETER. In case new and more precise carbon stock data become available, they may be utilized to estimate reductions in anthropogenic greenhouse gas emissions, given that these data satisfy the requirements specified by the VM0007 v1.7 Methodology. More specific information can be found in VCS Project Description, section 5.3 (Monitoring Plan).

3.4.2 Dissemination of Monitoring Plan and Results (CL4.2)

The Mejuruá project will be monitored in accordance with the plan outlined in the VCS Project Description. The dissemination of information will be carried out through the Monitoring Report, which will be published on the VERRA platform. Additionally, the project proponent will make all relevant files and guidelines available for access on their website, mirroring the content found on the VERRA platform.

3.5 Optional Criterion: Climate Change Adaptation Benefits

3.5.1 Regional Climate Change Scenarios (GL1.1)

The project is located in the central region of the Amazon Rainforest, one of the world's most significant carbon reservoirs that directly influences global temperature regulation. Substantial efforts are dedicated to conserving the forest, as the discussion surrounding the point of no return has become pressing (Lovejoy & Nobre, 2019). This critical juncture represents a situation where advanced deforestation jeopardizes the stability of the forest ecosystem.

The impacts stemming from this scenario are detrimental across various scales. At a regional level, the reduction in tree evapotranspiration negatively impacts the water balance, impairing the ecosystem's ability to influence rainfall patterns. The Amazon Rainforest plays a pivotal role in feeding the so-called "flying

rivers," a phenomenon that transports a substantial water mass from the Amazon region to the southern parts of the country, sustaining rainfall patterns in those areas[50].

The compromise of these flying rivers would have significant ramifications for the Midwest, Southeast, and South regions, which are agriculturally vital areas. Disrupting this rainfall pattern could result in complete crop losses, generating concerns regarding food supply and leading to substantial economic losses for the country.

The situation in the Amazon region has significantly worsened with the current drought. On October 10, 2023, the Rio Negro, flowing through Manaus, reached a record-low level of only 14.29 meters. This marks the fourth worst drought in over a century, with records dating back over a hundred years. The situation is approaching the historic drought of 2010 when water levels plummeted to 13.63 meters.[51]

Furthermore, the region of the Juruá River, which is part of the project zone, is experiencing the effects of an extended dry period. The government of Acre, the state where the Juruá River holds extreme importance, has declared a state of emergency due to the drought and is promoting campaigns to raise awareness about the rational use of water[52]. The lack of rainfall affects not only water supply but also agriculture, with low soil humidity hindering planting and the quality of agricultural products.

State governments are drawing attention to the conscientious use of water during this period of scarcity, not only for the survival of communities but also for the preservation of the Amazon ecosystem and the viability of the ongoing project. On a global scale, the preservation of the Amazon Rainforest plays a fundamental role in mitigating climate change, particularly concerning global warming. The presence of substantial carbon stocks in this ecosystem plays a prominent role in carbon absorption and storage, contributing to the reduction of atmospheric carbon dioxide.

3.5.2 Climate Change Impacts (GL1.2)

The impacts of climate change directly affect the local community. A significant portion of the local community within the project zone relies heavily on the benefits provided by the local biodiversity, including access to essential resources like water and food.

In the face of climate change, these resources are directly affected. As mentioned in the previous section (3.5.1), one of the key concerns in the region is the imbalance in water availability and the point of no return for the Amazon Rainforest. Consequently, rivers are directly impacted, potentially experiencing significant drops in their water levels. This situation undeniably affects local fish populations. Fishing is a common activity in the region, and many families depend on it for their livelihoods. Thus, any circumstances that harm fish populations directly impact the local people. Moreover, the reduction in river water volume directly affects water quality, leading to immediate contamination risks for both people and indirectly, through the consumption of contaminated fish.

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[50] Source: https://riosvoadores.com.br/o-projeto/fenomeno-dos-rios-voadores/
[51] Source: https://www.estadao.com.br/sustentabilidade/quais-os-efeitos-para-o-amazonas-da-4-pior-seca-da-historia-do-rio-negro-nprm/#:~:text=A%20seca%20extrema%20na%20Amaz%C3%B4nia,h%C3%A1%20mais%20de%20um%20s%C3%A9culo.
[52] Source: https://agencia.ac.gov.br/governo-do-estado-alerta-populacao-do-jurua-sobre-o-uso-consciente-da-agua/

The drought that struck the Amazon region in the second half of 2023 underscores the concern about climate change. There were historic lows in the region's rivers, directly affecting the population, as they are entirely dependent on the rivers not only for food (fishing) but also for logistics. The rivers are used for the transportation of supplies and people to other regions. This, in turn, has a direct impact on many children who rely on boats for their school transportation. The lack of boats has prevented numerous students from reaching schools, leading to the cancellation of several classes in the region due to a lack of transportation.[53]

The rise in temperature is another factor that can detrimentally affect the well-being of the local population. This factor can lead to increased droughts in the project area, which directly impacts the agricultural practices of the local population. Such events significantly jeopardize food security for the local communities.

In terms of biodiversity, the populations suffer direct losses due to climate change. As previously mentioned, aquatic populations face countless challenges due to reduced water levels in rivers caused by prolonged droughts, as observed in various parts of the world. Drought events can be particularly devastating in tropical regions like the project area. Drought, exacerbated by deforestation, leads to habitat reduction, setting off a chain reaction where larger animals found in the region are at risk of extinction. As demonstrated, the trees within the Amazon Rainforest are also diminishing in size due to the effects of global warming. The impacts of such an event are immeasurable, resulting in a cascade of effects on habitats, fauna, flora, and the local population.

3.5.3 Measures Needed and Designed for Adaptation (GL1.3)

The measures needed and designed for adaptation within the Mejuruá project are closely aligned with its core objectives of mitigating climate change, conserving biodiversity, and enhancing the well-being of local communities. These measures are developed based on a comprehensive Theory of Change (ToC), which outlines the pathways through which the project activities lead to specific outputs, outcomes, and impacts. The following outlines the key measures for adaptation:

1. Forest Management and Protection:

   ● Sustainable Forest Management Practices: The project's implementation of Reduced Impact Logging (RIL) ensures that only a limited volume of native timber species is extracted, allowing natural forest regeneration over a 30-year period. This measure directly contributes to climate change adaptation by maintaining carbon stocks and ecosystem services, thereby enhancing the resilience of the forest ecosystem.

2. Surveillance and Preventive Measures:

   ● Local Patrols and Technology Utilization: The establishment of local patrols and the use of advanced technology, including satellite images and drone flights, contribute to the early detection and prevention of threats such as fires, illegal logging, and invasive species introduction. By promptly addressing these threats, the project enhances the ecosystem's ability to withstand and recover from disturbances.

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[53] Source: https://g1.globo.com/am/amazonas/noticia/2023/09/29/seca-no-amazonas-deixa-2200-alunos-estao-sem-acesso-a-escola.ghtml

3. Community Engagement and Empowerment:

- Forest Angels Program: The program's focus on land regularization, training, and involving local families in forest protection activities empowers communities to actively engage in conservation efforts. By securing property titles and involving families in forest surveillance, the project promotes local ownership and stewardship, fostering adaptive capacity within communities.

4. Wildfire Prevention and Control:

- Monitoring and Rapid Response: Firefighting training and advanced technology, enhances the project's capacity to prevent and control wildfires. This measure ensures timely intervention and minimizes the impact of fires on the forest ecosystem and local communities.

5. Sustainable Agriculture Land Management (SALM):

- Training in Agroforestry and Conservation Practices: Through advanced forest management training, agroforestry techniques, and conservation practices, the project empowers local communities with alternative livelihoods that enhance food security and environmental resilience. This measure diversifies income sources and reduces dependency on activities that contribute to deforestation.

6. Community Infrastructure and Services Enhancement:

- Access to Clean Water and Sanitation: Providing water treatment equipment and disability-friendly toilets improves the quality of life for communities. Ensuring access to clean water and sanitation supports adaptive capacity by reducing health risks and enhancing community well-being.

7. Education and Skill Development:

- Quality Education and Healthcare Services: Through partnerships with universities and Brazilian institutions, the project enhances education quality and healthcare services. Training, scholarships, and technology facilitate remote education and healthcare delivery, promoting adaptive learning and healthcare practices.

8. Renewable Energy and Economic Opportunities:

- Thermoelectric Power Plant and Sawmill: The integration of a renewable energy power plant and sawmill provides economic opportunities and reliable electricity. By reducing reliance on diesel-based power and generating income, this measure enhances local economic resilience and adaptive capabilities.

9. Diversification of Livelihoods:

- Supporting Non-Timber Forest Products (NTFPs) Value Chain: The project's support for açaí berries and other NTFPs' sustainable production diversifies income sources for local

communities. By fostering fairtrade agreements and value chain enhancements, this measure strengthens economic resilience while preserving the forest ecosystem.

10. Mitigating the Effects of Drought:

- The Mejuruá project is committed to mitigating the impacts of drought through the identification of specific impacts by conducting a local survey in partnership with the municipal administration to diagnose critical challenges faced by the communities. Based on this identification, adaptation actions are prioritized, which will be planned and funded by the project. The implementation and monitoring of adaptation actions are in accordance with CCB guidelines, ensuring an effective response to the drought situation and reinforcing the Mejuruá project's commitment to the local community and municipal authorities.

These measures collectively contribute to enhancing the adaptive capacity of local communities and the forest ecosystem in the face of climate change impacts. By aligning these measures with the Theory of Change, the project ensures that its activities lead to tangible outputs, outcomes, and impacts that address both short-term adaptation needs and long-term resilience goals.

4 COMMUNITY

4.1 Without-Project Community Scenario

The critical analyses presented in this Project Document (PD) have been carefully crafted to provide support for the oversight and certification of the comprehensive project centered around Gleba Santa Rosa do Tenquê. This document contains essential information aimed at facilitating well-informed decision-making, thereby promoting the achievement of social, environmental, and economic benefits. The comprehensive identification and thorough analysis of stakeholders and potential scenarios trace their origins to the enlightening manual authored by Richards, M., and Panfil (2011). This manual, titled "Social and Biodiversity Impact Assessment (SBIA) Manual for REDD+ Projects: Part 1 - Core Guidance for Project Proponents," serves as the foundation of this endeavor. For the assessment of the community in a scenario preceding the project's actions, remote sensing analyses were conducted, along with an evaluation of studies carried out on-site through articles, interviews, and field studies.

4.1.1 Descriptions of Communities at Project Start (CM1.1)

There are some dwellings within the APD area, where families live that depend on the forest and the river for survival and also rely on Carauari. In the project area and its coverage zone, three municipalities are included: Jutaí, Juruá, and Carauari. In these locations, communities interconnected with their respective municipalities inhabit regions nearby or even within the project area (APD). As a result, specific areas that maintain direct contact with the project region will be identified and mapped. Upon this recognition, mitigation and support actions will be implemented targeting these families.

Within the project area, a variety of community groups are present, encompassing municipalities, rural communities, settlements, indigenous territories, and extractive reserves. A significant portion of the communities mapped in the area are within the territorial boundaries of the municipality of Carauari, with

some also located in Juruá-AM. Families typically settle along the riverbanks, from which they derive their sustenance and income. Once the communities were identified, interviews were carried out at 9 different sites, engaging with over 60 families. The goal was to gain insights into their present socio-economic circumstances and overall welfare. By focusing on their needs and addressing their queries, this assessment aimed to develop a strategic action plan aimed at benefiting the families.

The Riozinho Settlement is the community nearest to and actively engaged in using the forest resources within the property known as Gleba Santa Rosa do Tenquê. Local management of this area is overseen by the Association of Residents of Baixo Riozinho (ASMOBRI). Unfortunately, the riverine communities in this region lack official land titles for the areas they inhabit. This absence of documentation prevents them from accessing vital resources such as rural property registration and participation in socio-environmental programs, among other potential benefits.

The project's primary aim is to conduct an assessment of these lands, which are essential for the communities' subsistence through activities such as fishing, agriculture, and the sustainable harvesting of native açaí. The ultimate goal is to regularize the land tenure situation, thereby benefiting these families. This will be achieved through various means, including lease agreements and other collaborative arrangements with ASMOBRI members.

The inquiries and evaluations conducted through questionnaires were compiled to provide a more structured assessment of the region, as shown in Table 23.

Table 23: Community general information

Community	Location	Way of living	Essential Services	Improvements
Riozinho Settlement	Closest to Gleba Santa Rosa Farm (Project Area)	Fishing, Agriculture (Açai, Pineapple, Cassava)	Medical assistance (only in Carauari)	Internet Electric Power Treated Water Communication (Telephone access) Health support Education support (Schools) Job creation Protecting and monitoring natural resources
Bacaba	Juruá River Border	Fishing, Agriculture	Electric Power Treated water	Health center Community house

			Medical assistance (only in Carauari)	Water distribution network Pier Communication system Improved electricity Nursery Medical assistance Professional courses
Vila Nova	Closest to Gleba Santa Rosa Farm (Project Area)	Fishing, Agriculture	Electric Power Treated water Medical assistance (only in Carauari)	Internet Health center Artesian well Professional courses
Reforma	Juruá River Border	Fishing	Electric Power (Partially) Medical assistance (only in Carauari)	24-hour electricity Drinking water Schools Medical care Nursery Professional courses
Lago Serrado	Juruá River Border	Fishing	Electric Power Treated water Medical assistance (only in Carauari)	Communication system High school IT/Internet 24-hour power Trapiche Nursery Professional Courses
Ressaca	Juruá River Border	Fishing	Electric Power Medical assistance (only in Carauari)	School Treated water Solar energy Medical care

				Nursery
Santa Cruz	Juruá River Border	Fishing	Electric Power (Partially) Medical assistance (only in Carauari)	Treated water Solar energy Communication system School Pier River preservation Medical assistance
Concórdia	Juruá River Border	Fishing	Electric Power Treated water Medical assistance (only in Carauari)	Community housing 24-hour water and electricity Internet Fishing equipment Solar system Medical assistance
Marapatá	Juruá River Border	Fishing	Electric Power (Partially) Medical assistance (only in Carauari)	24-hour electricity Drinking water Communication system Pier Medical assistance
São João	Juruá River Border	Fishing, Agriculture	Electric Power (Partially) Medical assistance (only in Carauari)	Treated water 24-hour electricity Pier Communication system Solar energy Accommodation Health center IT Nurses

| | | | | Medical Assistance |
| | | | | Professional Courses |

4.1.2 Interactions between Communities and Community Groups (CM1.1)

The identified family groups reside in remote regions of the territory, characterized by a notable absence of formal social structures, representative organizations, or authorities chosen through indigenous methods. Interaction among these family groups primarily takes place within the realms of religion, education, cultural gatherings, and, notably, in the context of commerce or joint endeavors aimed at specific tasks, such as road construction. It's common for individuals to engage in temporary employment arrangements, trading their labor for daily wages.

Moreover, social interactions frequently occur when these communities' journey to the city of Carauari. Here, they engage in activities such as buying, selling, and bartering goods, accessing the port, and utilizing essential services such as banks and healthcare centers. This connection to Carauari serves as a pivotal lifeline for these isolated groups, bridging them to broader society and its vital resources.

4.1.3 High Conservation Values (CM1.2)

According to the HCV guide[54], it is necessary the interpretation of the six HCVs within a specific local or national framework. This process involves determining the presence of HCVs within the area of interest, which may be a management unit, plantation, concession, etc. It also involves assessing the potential negative effects of project activities on HCVs across the wider landscape.

In this way, all aspects were evaluated by the project proponent, prioritizing the areas that are of importance to the local community and for the conservation of the ecosystem (Table 24 and 25).

Table 24: HCV description- ecosystem services

High Conservation Value	HCV 4 – Ecosystem services –
Qualifying Attribute	The rivers and the forest (extractivism) are essential for the survival of the local communities, who live mainly from fishing and extractivism. The river is also the most common means of transportation for the riverside communities. In addition, there are no roads in this area, so transportation to other places is by river or by airplane. Conserving the Amazon rainforest means protecting an important biome for mitigating climate change.
Focal Area	Project Zone - the selected area as a whole has the proposed preservation of rivers and forest in the project area enlarged with the buffer as defined in this document.

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[54] Common Guidance for the Identification of HCV | HCV Network

	The focal area includes the portions of the Juruá River, Riozinho River and Igarapé Ipixuna, located inside the Project zone all of them inside the Amazon Rainforest.

Table 25: HCV description- areas that are fundamental for the livelihoods of communities

High Conservation Value	HCV 5 – Community Needs – fundamental areas for livelihood
Qualifying Attribute	The fundamental areas for livelihood may be identified as follows: a) Access to water bodies for feed: they are the main supply source for fish, other aquatic species and freshwater. b) Access to water bodies for transportation: as there are no roads in the area, the access to the town of Carauari and other locations for different purposes, including health assistance, purchase of main goods, social activities and interaction, all depend on the water bodies as logistic means. c) The areas where communities live, mainly at the riverside, where they develop different small-scale activities such as extractivism and familiar agriculture, most of them following traditional practices to be preserved as cultural heritage. d) Areas where communities gather for leisure, cultural events, rituals and traditional religious practices. e) Areas that are already protected, such as conservation units and indigenous areas. Many essential resources are currently lacking within communities, making it imperative for the project to prioritize addressing these elements.
Focal Area	Communities' areas (item 2.1.4)

4.1.4 Without-Project Scenario: Community (CM1.3)

Due to the expansion of deforestation in the state of Amazonas and urban development, the prospects for both land use and deforestation in the region may intensify. However, beyond the backdrop of illegal deforestation, the decision of landowners to prioritize preservation over deforestation is the key to safeguarding biodiversity, environmental balance, and the global importance of the Amazon, setting an example for other landowners to choose preservation for their properties as well.

In the absence of intervention, the advancing deforestation could threaten and harm the environment and local communities. Furthermore, the landowner's intervention in implementing a project on their land will bring benefits to the local communities connected to the project, whether they reside near the property or engage in extraction and fishing activities within the area. In this way, these vulnerable communities, which

previously lacked access to electricity, clean water, the internet, healthcare, and other essentials, can obtain these benefits, contributing to the protection and conservation of the forest.

Efforts will be made to provide essential support and attention to these vulnerable families, thus avoiding adverse consequences and facilitating significant improvements in their quality of life.

It is worth noting that, since the inception of the project and even before its implementation, the most isolated communities had maintained some level of interaction with the municipalities of Carauari and Juruá. Many of these communities are integral parts of the rural areas of these municipalities, creating an environment conducive to the exchange of knowledge and collaboration, both of which are essential resources for the project's success.

4.2 Net Positive Community Impacts

4.2.1 Expected Community Impacts

The anticipated impacts for the Mejuruá project are described in this section. All expenses will be covered by the project proponent, and no costs will be charged to the communities. The project does not foresee any negative impacts and risks to the communities.

Table 26: Expected community impacts

Community Group	Settlement Riozinho
Impact(s)	Offering jobs, digital inclusion, help with land regularization, support for health and education, access to electricity and training on sustainable practices & forest conservation
Type of Benefit/Cost/Risk	Direct benefit: The impacts are expected to occur soon, and are already in addition to the project costs. These will soon include the installation of satellite internet, analysis of communities that need to be regularized, the provision of jobs to work in sustainable management and supplies for education and health. Have no costs or risks for communities.
Change in Well-being	The impacts are positive and have a specific dimension, affecting the areas closest to the project area

Community Group	Communities Vila Nova, Concórdia, Ressaca, São João, Lago Cerrado, Marapatá, Rasgado e Santa Rosa and the town of Carauari
Impact(s)	Wildfire reduction and prevention
Type of Benefit/Cost/Risk	Direct benefit: Fire mapping and tracking to contain illegal burning activities. Combat training and tools offered to communities.

Change in Well-being	The impacts are positive and have a specific dimension, affecting the areas closest to the project area

Community Group	Communities Vila Nova, Concórdia, Ressaca, São João, Lago Cerrado, Marapatá, Rasgado e Santa Rosa and Carauari City
Impact(s)	Improved water quality and access to water.
Type of Benefit/Cost/Risk	Direct benefit: Many areas do not have access to treated water, do not dispose of sewage properly and the quality of drinking water is unhealthy, leading to health problems. In this way, the project will improve the treatment process and access to drinking water, which will consequently also benefit the health of residents.
Change in Well-being	The impacts are positive and have a specific dimension, affecting the cities closest to the project area

Community Group	Communities Vila Nova, Concórdia, Ressaca, São João, Lago Cerrado, Marapatá, Rasgado e Santa Rosa and Carauari City
Impact(s)	Capacity building and income generation through, training and employment.
Type of Benefit/Cost/Risk	Direct benefit: The project's actions, such as sustainable management, will generate jobs, and consequently training that will enable local residents to work.
Change in Well-being	The impacts are positive and have a specific dimension, affecting the cities closest to the project area

Community Group	Communities Vila Nova, Concórdia, Ressaca, São João, Lago Cerrado, Marapatá, Rasgado e Santa Rosa and Carauari City
Impact(s)	Workshops and dialogues with women in the communities
Type of Benefit/Cost/Risk	Direct benefit: Conversation circles and workshops will be held for the women, in order to empower them and give them support and knowledge so that they can work on the project, generating income for their families and receiving other benefits.
Change in Well-being	The impacts are positive and have a specific dimension, affecting the areas closest to the project area

Community Group	Communities Vila Nova, Concórdia, Ressaca, São João, Lago Cerrado, Marapatá, Rasgado e Santa Rosa and Carauari City
Impact(s)	Workshops and talks about safety at work
Type of Benefit/Cost/Risk	Direct benefit: Many local people will be hired to work in management, from forestry to sawmilling and transportation. As such, everyone should receive instructions and materials on safety at work, as well as talks and workshops that will help them deal with inhospitable areas, venomous animals and possible accidents at work. They will also receive a first aid course.
Change in Well-being	The impacts are positive and have a specific dimension, affecting the areas closest to the project area

Community Group	Communities Vila Nova, Concórdia, Ressaca, São João, Lago Cerrado, Marapatá, Rasgado e Santa Rosa and Carauari City
Impact(s)	Program Forest Angels training
Type of Benefit/Cost/Risk	Direct benefit: The program aims to train and support residents so that they can act as forest angels to help protect and monitor the areas. They will be hired to help with the program and will receive all the training and support they need to act safely.
Change in Well-being	The impacts are positive and have a specific dimension, affecting the areas closest to the project area

Community Group	Communities Vila Nova, Concórdia, Ressaca, São João, Lago Cerrado, Marapatá, Rasgado e Santa Rosa and Carauari City
Impact(s)	Improve of water resources
Type of Benefit/Cost/Risk	Direct benefit: Performing water quality assessments and implementing the distribution of water filters within the project area. Installing water pumps, water tanks, and hydraulic systems to guarantee a consistent water supply for homes and schools. Broadening the impact by incorporating extra water pumps, water tanks, and hydraulic systems

	to cater to a larger local community. Ultimately, this initiative aims to improve the overall health and well-being of the population.
Change in Well-being	The impacts are positive and have a specific dimension, affecting the areas closest to the project area

4.2.2 Negative Community Impact Mitigation

The main project activities have been designed to ensure a positive impact on the well-being of traditional communities. However, in the course of the project's monitoring and supervision activities, there may be stronger application of legal measures against individuals involved in unauthorized land activities. However, this will improve the overall well-being of the area by discouraging illegal activities.

To address any potential concerns within traditional communities, the Mejuruá project is committed to implementing comprehensive land regularization initiatives such as the Forest Angels Program. This strategic approach aims to acknowledge and respect the longstanding property rights of groups that have traditionally exercised their tenure rights. The execution of this nuanced process will be executed with the utmost precision, taking into account the establishment of effective communication channels and responsive mechanisms to handle grievances, both of which have been thoughtfully incorporated into the project's framework.

Furthermore, the implementation of the project's activities will lead to the enhancement of areas identified as High Conservation Values (HCVs). By intensifying the conservation of forest cover, the project will notably improve the regions vital to the sustenance of local communities. At the same time, the project will contribute to the enhancement of areas crucial for the preservation of traditional cultural identities.

It is important to note that the amelioration of income possibilities will certainly affect the communities as a whole. Therefore, tensions may arise between individuals contemplated with job opportunities, for instance, with others for which this benefit has not been provided.

Another negative impact may be the attraction of activities related to drug distribution and consumption in the region, as a result of higher income levels of the local population. The Amazon region, due to its natural characteristics, is already an environment that may facilitate this threat.

4.2.3 Net Positive Community Well-Being

Considering the project's initial scope, the positive net impacts on the overall well-being of all identified community groups are evident. This can be demonstrated by comparing the social baseline (without the project's land use scenario) with the project scenario, considering the planned activities and the theory of change matrix. In this regard, the Mejuruá project aims to bring about significant changes in community well-being, encompassing digital inclusion, reduction of forest fires, improvements in health and education, enhancement of water access and water quality, training, qualification, job creation, and household income improvement.

The families residing within the property lack legal documentation of land ownership. To address this issue, BR ARBO has developed the Anjos da Floresta program, which aims to grant land titles to riverside dwellers

occupying these areas. The program initiates by identifying eligible families, who will be contacted by BR ARBO to offer financing contracts. This will facilitate land regularization in the region and promote the sustainable use of their lands with the necessary legal authorizations. Additionally, the program prioritizes the training and empowerment of riverside communities to identify forest threats and implement legally enforceable measures to prevent environmental degradation. This approach aligns with the state of Amazonas' Guardians of the Forest Program (Bolsa Floresta + 42). By actively participating in the program, riverside dwellers not only gain access to training but also pave the way for future land titles. Consequently, the financing agreement will transition into a formal land ownership title, ensuring the sustainable use of land within the Amazon rainforest biome.

4.2.4 High Conservation Values Protected

The Mejuruá project analyzed and identified areas of extreme importance for the subsistence of communities, which include the project area and areas crucial for the cultural identity of the community and for the use of the forest as a means of livelihood, defining these spaces as High Conservation Value areas (HCVs). The project does not intend to generate negative impacts; on the contrary, the project's actions will bring benefits to the communities and protection of the forest and these high conservation value spaces. There are no identified potential risks, although there is always the possibility of unforeseen events occurring. In this way, the proponent will be in constant contact with the communities and local representatives so that changes can be made if necessary, prioritizing local customs and ways of life and reinforcing the project's objective of protecting and conserving the Amazon.

4.3 Other Stakeholder Impacts

4.3.1 Impacts on Other Stakeholders (CM3.1)

The project was planned in order to avoid any type of negative impacts, while bringing benefits to local communities and other stakeholders. In this way, the positive impacts generated will be related to:

- Protect the forest, biodiversity, and water sources in the region while maintaining the livelihoods of local communities.
- Bring technological improvements.
- Generate jobs and improve the local economy.
- Bring improvements in healthcare and education.

4.3.2 Mitigation of Negative Impacts on Other Stakeholders (CM3.2)

According to what was mentioned in the above item, the project does not intend to generate negative impacts on communities and other stakeholders. However, if conflicts arise during the project implementation process, they will be resolved through a direct communication channel with the responsible parties representing the proponent. The goal is to resolve all conflicts in a way that always generates benefits for local communities and protects the Amazon rainforest.

4.3.3 Net Impacts on Other Stakeholders (CM3.3)

The project will stop deforesting in the region, preventing negative impacts, by protecting and introducing beneficial solutions, such as sustainable management, which will generate work and income for the local, without significantly impacting the forest.

4.4 Community Impact Monitoring

4.4.1 Community Monitoring Plan (CM4.1, CM4.2, GL1.4, GL2.2, GL2.3, GL2.5)

The monitoring plan includes the identification of communities and other stakeholders, outlines the variables, and specifies the methods that will be employed for monitoring throughout the project's duration, as summarized in Table 27.

Table 27: Community Monitoring Plan

CCB Monitoring Plan			
Project Activities/Indicator	Description of Activity	Measurements/Method	Period of monitoring
Communication	Report to stakeholders from e-mail	E-mail to responsible person for communities to communicate to all of them about the project actions	Every six months
	Local representative to answer questions and receive questions about the project	Monthly reports with update information	Continuous
	Community centers routine	Assessment by a person in charge to inform how the community centers are functioning	Annual
Digital Inclusion	Control of internet installation	Semiannual reports to update the number of antennas installed, how many families will	Semiannual

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		benefit and if the network is working	
	Number of families with internet access	Interviews with families to find out how internet access and use is going	Annual
	Internet quality monitoring	Interviews with families to find out how internet access and use is going	Annual
	Digital and technological instruments distribution	Annual reports to know how many materials were distributed to which communities/families and how is the state of use and conservation	Annual
Health Improve	Furnish vehicles and rescue equipment distribution	Reports with images and data on the current state and the number of families benefited	Annual
	Number of families beneficiated with health resources		Annual
	Rescue communication improve and telemedicine support		Annual
Education Improve	Renovating existing equipment, accessibility improve	Reports with images and data on the current state and the number of families benefited	Annual
	Funds for scholarship monitoring		Annual
	Help to fund the first unit of "Escola da Floresta" a project by the government of Amazonas		Annual
	Number of families with education benefits		Annual

Water improve	Number of water treatment equipment distributed	Semiannual reports to update the amount of equipment installed, how many families will benefit and if the network is working	Annual
	Disability-friendly toilets installation		Annual
	Number of families beneficiated from this water actions	Interviews with families	Annual
Energy improve	Installation of a power plant for renewable energy	Semiannual reports to update the amount of equipment installed, how many families will benefit and if the network is actually working	Annual
	Number of photovoltaic generation kits delivered		Annual
	Number of families beneficiated with energy	Interviews with families	Annual
Industrial activities/sawmill	Number of people employed	Reports with images and data on the current state and the number of families benefited	Annual
	Economic improve		Annual
	Number of families beneficiated		Annual
Agriculture and extrativism	Sustainable Agriculture Land Management (SALM)	Reports with images and data on the current state and the	Annual
	NTPF's and açai berries		Annual

	Woman empowered to independence	number of families benefited.	Annual
Forest improves and protection	Wildfire prevention	Local surveillance, analysis of remote images, issuance of monthly reports with analysis of fire outbreaks and criminal burnings	Annual
	Leakage control	Local surveillance, remote image analysis, reporting with leak analysis	Monthly
	Forest Angels Program	Reports from those responsible to find out if they are complying with the program notice and if it is being effective	Monthly
	Biomass Inventory	Reports of those responsible with all data generated in the field	On baseline review
	Sustainable Forest Management	Reports of those responsible with all data generated in the field	Annual
	Surveillance and Patrolling	Reports, images, and information on field vigil actions	Quarterly

	Number of families participating/working in the forest programs	Interview with local families	Annual

The Project Lifetime, set at 90 years, is divided into two periods: the first 30 years as the Crediting Period for the implementation and operation of all Project Activities, and the subsequent 60 years focused on maintaining these activities to ensure forest conservation and sustainable regional development. Operational, financial, social, and biodiversity planning and monitoring are established for the entire duration. For the latter 60 years, a decennial review process will adapt to changes in socioeconomic scenarios and technological advances to secure the project's main objectives.

4.4.2 Monitoring Plan Dissemination (CM4.3)

The monitoring plan will be made available online as part of the Monitoring Report on the Mejuruá project website, specifically tailored for the voluntary carbon market audience. Furthermore, a copy of the Monitoring Report will be sent via email to all identified stakeholders. The report will be adapted to be more comprehensive for those communities and other parts.

4.5 Optional Criterion: Exceptional Community Benefits

4.5.1 Exceptional Community Criteria (GL2.1)

The communities covered by the project are located in municipalities below the national poverty line, where a significant portion of families live in extreme poverty, mainly due to the isolated and hard-to-reach nature of the area. According to data from IBGE[55] (2003), Carauari, the closest city to the project area, was ranked 65th out of 5507 cities in the Brazilian poverty index ranking, and it was in 4th place in the ranking for the state of Amazonas.

4.5.2 Short-term and Long-term Community Benefits (GL2.2)

The Mejuruá project will yield both short-term and long-term benefits for the Riozinho Community, located within the project area, as well as for other communities in the project zone, including Bacaba, Vila Nova, Reforma, Lago Serrado, Ressaca, Santa Cruz, Concórdia, Marapatá, and São João.

On December 17, 2022, and January 9, 2023, interviews were conducted with these communities to gain insight into their primary improvement needs (item 2.1.7). This diagnostic information served as the foundation for crafting a social plan aimed at delivering benefits to these communities.

The short-term community benefits include:

1. Implement a land regularization plant (Forest Angel Program): The acknowledgment and agreement regarding the Land Regularization for occupants of Fazenda BR ARBO were discussed and documented in the Board of Directors' meeting minutes on September 9, 2023.

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[55] Source: https://cidades.ibge.gov.br/brasil/am/carauari/pesquisa/36/30246?tipo=ranking

2. Training in forest protection and forest management.

3. Support for the development of Sustainable Agroforestry and Non-Timber Forest Products (NTFP).

4. Distribution of out-of-the-box photovoltaic generation kits to approximately 150 off-grid homes.

5. Installation of antennas and associated peripherals in communities.

6. Provision of water treatment equipment.

7. Installation of disability-friendly toilets for individuals with reduced mobility.

8. Improvement of school infrastructure.

9. Provision of infrastructure to improve healthcare services.

10. Establishment of partnerships with universities and other institutions.

11. Construction of a community center.

The medium and long-term community benefits encompass:

1. **Preservation of Ecosystem Services:** Maintaining the preservation of 544,354.67 hectares of native forest, ensuring the continued provision of vital ecosystem services.

2. **Socioeconomic Development:** Fostering socioeconomic growth within the project zone by implementing Sustainable Forest Management, establishing a sawmill, introducing a thermoelectric power plant, and supporting the development of Smallholder and Community Forest Enterprises (SALM) and Non-Timber Forest Products (NTFPs). This will also promote job creation.

3. **Enhanced Well-being:** Elevating the well-being of communities by improving access to essential services, including electricity and internet provision, access to clean drinking water, and essential healthcare. Furthermore, enhancing family home infrastructure to ensure better living conditions.

4. **Community Empowerment:** Empowering local communities through the provision of land deeds, improved access to basic services, enhanced educational resources and opportunities, engaging women in the production of açai berries, and facilitating access to culture by establishing a community center. These initiatives aim to bolster community self-reliance and cultural preservation.

4.5.3 Community Participation Risks (GL2.3)

During the participatory social engagement process with the local community, risks associated with community involvement were thoroughly examined. This encompassed a comprehensive dialogue encompassing both advantageous and unfavorable aspects concerning the establishment of a REDD+

project within the community. The primary objective was to identify and establish appropriate incentives for conservation efforts and active participation in REDD+ related initiatives. These discussions delved into topics including price volatility, the necessity of upholding various commitments (technical, social, and economic in nature), strategies for addressing disagreements among community members, and the extent of community engagement with the project, among other pertinent considerations.

We are currently developing risk management strategies, including a communication mechanism for suggestions and complaints, ensuring that community members always have an open channel to voice their opinions and receive immediate feedback. Additionally, we are establishing a benefits distribution mechanism in collaboration with the community, which will be subject to regular reviews to ensure their needs are promptly met and in line with conservation incentives.

To ensure the appropriate and aligned use of project resources, as well as to prevent any potential misuse for political reasons, we have chosen to maintain these resources in a trust fund. This approach ensures that fund utilization remains in accordance with annual investment and implementation plans and is overseen in accordance with the endorsement of the REDD+ committee and in harmony with the agreed-upon needs in the theory of change.

The urgent necessity to regularize the status of families living within the BR ARBO area was extensively discussed in a gathering held at the Carauari City Council. Since the inception of the enterprise in the 1970s, the population of the region has notably increased, resulting in numerous families constructing their residences along the riverbanks traversing the Farm. However, this settlement was informal, and due to the absence of ownership or property titles, these families confront exclusion from various social benefits offered by the government, alongside challenges in accessing essential services.

As a result, BR ARBO has developed an encompassing land tenure regularization plan as an integral part of its initiative to generate carbon credits through forestry endeavors (REDD - Reducing Emissions from Deforestation and Forest Degradation). This plan is designed to confer property titles to riverside residents who, in good faith, have inhabited these portions of the farm for a substantial period, with the goal of equipping them with skills for income generation while concurrently upholding the sustainable utilization of the Amazon Forest. Lease agreements are already being formalized with the initial families set up to benefit from these arrangements. This undertaking signifies the largest private land regularization project in the history of the city of Carauari.

4.5.4 Marginalized and/or Vulnerable Community Groups (GL2.4)

Marginalized and/or vulnerable groups are defined through the analysis of the territory, directing to the communities closest to the project area and that are within the project zone, and will receive the benefits generated by the project. The community participation risks are show in table 28.

Table 28: Community Participation Risks

Community Group 1	Communities Vila Nova, Concórdia, Ressaca, São João, Lago Cerrado, Marapatá, Rasgado e Santa Rosa, Carauari City and Riozinho Settlement

Net positive impacts	The net positive benefits will be generated through the actions that will take place throughout the project, bringing improvements in relation to health, education, transportation, the economy, digital inclusion, energy and other necessary improvements that were informed through interviews and conversations with local residents.
Benefit access	The possible barriers and risks in relation to the benefits are due to the remote location of the site, which is difficult to access. These will be improved through access to information and improvements in river transportation systems and the supply of inputs, as well as the protection of natural assets which are the means of local subsistence.
Negative impacts	The project does not intend to generate negative impacts, so the aim is the conservation and protection of the forest and the well-being of local communities. If there are any unforeseen impacts, these will be analyzed, and the necessary decisions made so that neither party is affected.

4.5.5 Net Impacts on Women (GL2.5)

Historically, women's involvement in productive activities stems from access to land and aligns with roles assigned over time. The implementation of the project will contribute to increasing women's empowerment to a higher degree, especially in terms of environmental education. The project will prioritize accessibility to health services, scholarships, through partnership with açaí cooperatives, training these women so that they can create their independence. Women will also benefit from the açaí extraction program, the harvesting and sale of the action carried out by women.

4.5.6 Benefit Sharing Mechanisms (GL2.6)

A comprehensive action plan has been formulated to serve as the foundation for all community development activities, including those funded by the REDD+ project. Within this framework, the benefits distribution mechanism is designed to address the communities' priorities regarding the allocation of REDD+ revenues. This process has been developed with a keen consideration for safeguarding and benefiting the most marginalized and vulnerable members of the community. The directions are rooted in insights acquired from community interviews and assessments, with a primary focus on addressing the utmost priorities concerning family well-being. The interviews with the Carauari population and its government representatives also played a significant role, allowing them to share their impressions about the project and offer suggestions that emphasize the well-being of the communities. These consultations will be consistently reiterated throughout the project's lifespan to ensure that their aspirations are consistently addressed.

4.5.7 Benefits, Costs, and Risks Communication (GL2.7)

The process of social engagement with the local community involved a public consultation explaining the development of a REDD+ project. This dialogue addressed various topics, including the need to fulfill commitments encompassing technical, social, and economic aspects, as well as effectively addressing actions for the protection of the Amazon Rainforest. The process is ongoing, and throughout implementation, regular meetings will persist to ensure that the community remains informed about fund utilization, milestones achieved, and the need for any necessary adaptations. REDD+ is a long-term process that thrives on continuous feedback and adjustments to ensure the achievement of its objectives. This requires ongoing risk assessment and the evolution of risk management strategies that will occur through monitoring.

4.5.8 Governance and Implementation Structures (GL2.8)

As outlined in section 2.4.1 Project Governance Structures (g4.1), the management of the Project will be overseen by the proponent, namely BR ARBO Forest Management and ATA Consulting. Community involvement in project management will occur through established communication channels and regular community meetings, all conducted in adherence to the principles of Free, Prior, and Informed Consultation.

4.5.9 Smallholders/Community Members Capacity Development (GL2.9)

The Mejuruá project will undertake actions that bring benefits to all neighboring communities, encompassing the enhancement of the production chain, fostering community associations, and incorporating vulnerable groups into economic activities. To train the community, courses and training will be held on sustainable management, legal extractivism, work safety, safe operation in the forest and other opportunities during the project process that may require access to essential courses and information. As a result, the project's initiatives will yield a positive impact by bolstering family autonomy, ensuring improved living and working conditions.

5   BIODIVERSITY

5.1 Without-Project Biodiversity Scenario

5.1.1 Existing Conditions (B1.1)

The project zone encompasses two Conservation Units: Jutaí River Extrative Reserve (RESEX Rio Jutaí) and Juruá Medium Extrative Reserve (RESEX Médio Juruá). The National System of Conservation Units of Nature - SNUC, was established by Law No. 9,985 of July 18, 2000[56]. SNUC defines conservation unit (CU) as: "A territorial space and its environmental resources, including jurisdictional waters, with relevant natural characteristics, legally established by the Government, with conservation objectives and defined limits, under a special administration regime, to which adequate protection guarantees apply."

Comprehensive studies were conducted to assess the flora species within the project zone under current conditions, including analyses of Protected Area Forest Plan and published articles from two Extractive Reserves located in this area: RESEX Rio Jutaí e RESEX Médio Juruá.

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[56] Source: https://www.planalto.gov.br/ccivil_03/leis/l9985.htm

Table 29 provides a list of the fauna species found in the studies carried out in these RESEXs and their classification according to the Red List categories: Endangered (EN), Vulnerable (VU), Lower risk (LR), or Near Threatened (NT). The complete list can be found in Appendix 3.

Table 29: Fauna species in Project Zone, classified as Endangered (EN), Vulnerable (VU), Lower risk (LR), or Near Threatened (NT)

RESEX	Class	Species	Red List Category	Reference
RESEX Rio Jutaí	Reptilia	*Podocnemis expansa*	LR	ICMBio, 2011 - Protected Area Forest Plan
RESEX Rio Jutaí	Reptilia	*Podocnemis unifilis*	VU	ICMBio, 2011 - Protected Area Forest Plan
RESEX Rio Jutaí	Reptilia	*Podocnemis sextuberculata*	VU	ICMBio, 2011 - Protected Area Forest Plan
RESEX Rio Jutaí	Mammalia	*Ateles chamek*	EN	Silva et al. 2017
RESEX Rio Jutaí	Mammalia	*Cacajao calvus*	VU	Silva et al. 2017
RESEX Rio Jutaí	Mammalia	*Cebus unicolor*	VU	Silva et al. 2017
RESEX Rio Jutaí	Mammalia	*Lagothrix lagothricha poeppigii*	VU	Silva et al. 2017
RESEX Rio Jutaí	Mammalia	*Trichechus inunguis*	VU	ICMBIO, 2011
RESEX Médio Juruá	Mammalia	*Tayassu pecari*	VU	Abrahams, 2017
RESEX Médio Juruá	Mammalia	*Tapirus terrestris*	VU	Abrahams, 2017
RESEX Médio Juruá and RDS Uacari	Mammalia	*Atelocynus microtis*	NT	Scabin, 2020
RESEX Médio Juruá and RDS Uacari	Mammalia	*Speothos venaticus*	NT	Scabin, 2020

RESEX Médio Juruá and RDS Uacari	Mammalia	*Leopardus wiedii*	NT	Scabin, 2020
RESEX Médio Juruá and RDS Uacari	Mammalia	*Panthera onca*	NT	Scabin, 2020
RESEX Médio Juruá and RDS Uacari	Mammalia	*Pteronura brasiliensis*	EN	Scabin, 2020
RESEX Médio Juruá and RDS Uacari	Mammalia	*Priodontes maximus*	VU	Scabin, 2020
RESEX Médio Juruá and RDS Uacari	Mammalia	*Myrmecophaga tridactyla*	VU	Scabin, 2020
RESEX Médio Juruá and RDS Uacari	Mammalia	*Alouatta seniculus*	LC, VU, NT	Scabin, 2020
RESEX Médio Juruá and RDS Uacari	Mammalia	*Ateles chamek*	EN	Scabin, 2020
RESEX Médio Juruá and RDS Uacari	Mammalia	*Cacajao calvus*	VU	Scabin, 2020
RESEX Médio Juruá and RDS Uacari	Mammalia	*Callicebus cupreus*	LC, VU	Scabin, 2020
RESEX Médio Juruá and RDS Uacari	Mammalia	*Callicebus torquatus*	LC, VU	Scabin, 2020
RESEX Médio Juruá and RDS Uacari	Mammalia	*Cebuella pygmaea*	VU	Scabin, 2020
RESEX Médio Juruá and RDS Uacari	Mammalia	*Cebus unicolor*	VU	Scabin, 2020
RESEX Médio Juruá and RDS Uacari	Mammalia	*Lagothrix cana*	VU	Scabin, 2020
RESEX Médio Juruá and RDS Uacari	Mammalia	*Pithecia monachus*	LC, VU	Scabin, 2020

RESEX Médio Juruá and RDS Uacari	Mammalia	*Saguinus fuscicollis*	LC, VU	Scabin, 2020
RESEX Médio Juruá and RDS Uacari	Aves	*Mitu tuberosum*	NT	Scabin, 2020
RESEX Médio Juruá and RDS Uacari	Aves	*Psophia leucoptera*	NT	Scabin, 2020
RESEX Médio Juruá and RDS Uacari	Aves	*Tinamus guttatus*	NT	Scabin, 2020
RESEX Médio Juruá and RDS Uacari	Mammalia	*Trichechus inunguis*	VU	ICMBIO, 2011

In the Rio Jutaí Extractive Reserve, fish is an abundant source of animal protein and represents one of the main food sources for the residents.

The floral inventory was developed as part of the VCU estimations. Periodic surveys for the same will be conducted in line with the Monitoring Plan provided in the VCS PD. The species list can be found in Table 30.

Table 30: Tree species in the project area, classified as Least concern (LC), Near Threatened (NT), Vulnerable (VU), Critically Endangered (CR), Endangered (EN), Data Deficient (DD) and Not Evaluated (NE)

Species common name	Scientific name	IUCN category
Abacatirana	*Persea laevigata*	LC
Abiu	*Pouteria caimito*	LC
Abiurana	*Pouteria guianensis*	LC
Açaí	*Euterpe precatoria*	LC
Acapu	*Vouacapoua americana*	CR
Algodão-brabo	*Cochlospermum vitifolium*	LC
Amapá	*Brosimum parinarioides*	LC
Amarelinho	*Pogonophora schomburgkiana*	LC
Anani	*Symphonia globulifera*	LC

Andiroba	*Carapa guianensis*	LC
Angelim-fava	*Hymenolobium excelsum*	NE
Angelim-pedra	*Hymenolobium petraeum*	LC
Angelim-rajado	*Zygia racemosa*	LC
Angelim-vermelho	*Dinizia excelsa*	LC
Apuí	*Ficus trigona*	LC
Apunã	*Iryanthera olacoides*	NE
Aquariquara	*Minquartia guianensis*	NT
Araçá	*Psidium guineense*	LC
Arara-tucupi	*Parkia decussata*	NE
Arurá-branco	*Osteophloeum platyspermum*	LC
Arurá-vermelho	*Iryanthera paraensis*	LC
Babaçú	*Attalea speciosa*	LC
Bacaba	*Oenocarpus bacaba*	NE
Bacuri	*Platonia insignis*	NE
Balata	*Chrysophyllum sanguinolentum*	LC
Barba de lontra	*Faramea sessifolia*	NE
Breu	*Protium heptaphyllum*	LC
Breu-sucuruba	*Trattinnickia rhoifolia*	LC
Breu-vermelho	*Protium puncticulatum*	LC
Buriti	*Mauritia flexuosa*	NE
Cabari	*Clathrotropis macrocarpa*	LC
Cacau	*Theobroma cacao*	NE
Cacaurana	*Theobroma obovatum*	LC

Caferana	*Dendrobangia boliviana*	LC
Caju-açu	*Anacardium giganteum*	NE
Cajuí	*Anacardium spruceanum*	NE
Canela-de-velho	*Rinorea macrocarpa*	NE
Capança	*Ryania angustifolia*	LC
Capitiú	*Siparuna guianensis*	LC
Caraipé	*Leptobalanus octandrus*	NE
Carapanauba	*Aspidosperma carapanauba*	LC
Cardeiro	*Scleronema micranthum*	LC
Casca-doce	*Glycydendron amazonicum*	LC
Castanha-de-cutia	*Joannesia heveoides*	LC
Castanharana	*Lecythis pisonis*	NE
Castanha-sapucaia	*Lecythis zabucajo*	LC
Cedrinho	*Erisma uncinatum*	LC
Cedromara	*Cedrelinga catenaeformis*	NE
Copaíba-angelim	*Copaifera multijuga*	LC
Copaíba-cuiarana	*Copaifera glycycarpa*	LC
Copaíba-jacaré	*Eperua oleifera*	LC
Copaíba-marimari	*Copaifera guyanensis*	NE
Coração-de-negro	*Swartzia corrugata*	LC
Cumaru	*Dipteryx odorata*	DD
Cupiúba	*Goupia glabra*	LC
Cupiubarana	*Qualea sp.*	
Cupuí	*Theobroma subincanum*	LC

Embaúba	*Cecropia concolor*	LC
Embaubarana	*Pourouma guianensis*	LC
Envira	*Bocageopsis multiflora*	LC
Envira-amarela	*Xylopia nitida*	LC
Envira-preta	*Bocageopsis pleiosperma*	LC
Envirataia	*Duguetia riparia*	LC
Envira-tauari	*Pouteria macrophylla*	LC
Escorrega-macaco	*Peltogyne paniculata*	NE
Fava	*Parkia ulei*	LC
Fava-amargosa	*Vatairea guianensis*	LC
Favinha	*Stryphnodendron pulcherrimum*	LC
Gitó	*Guarea guidonia*	LC
Goiaba-de-anta	*Bellucia dichotoma*	LC
Guariúba	*Clarisia racemosa*	LC
Inajá	*Attalea maripa*	LC
Ingá	*Inga alba*	LC
Ipê	*Handroanthus serratifolius*	EN
Itaúba	*Mezilaurus itauba*	VU
Itaubarana	*Leptolobium nitens*	LC
Jacaranda	*Dalbergia amazonica*	LC
Jacareuba	*Calophyllum brasiliense*	LC
Jambo	*Syzygium cumini*	LC
Jarana	*Lecythis lurida*	LC
Jatobá	*Hymenaea courbaril*	LC

João-mole	*Neea oppositifolia*	LC
Jutaí-pororoca	*Hymenaea parvifolia*	LC
Lacre	*Vismia guianensis*	LC
Limãorana	*Maclura tinctoria*	LC
Lingua-de-tucano	*Sorocea amazonica*	NE
Louro	*Ocotea neesiana*	LC
Louro chumbo	*Licaria crassifolia*	LC
Louro-amarelo	*Licaria rigida*	NE
Louro-arabá	*Ocotea sp.*	
Louro-aritu	*Licaria guianensis*	LC
Louro-faia	*Roupala montana*	LC
Louro-gamela	*Sextonia rubra*	LC
Louro-preto	*Nectandra reticulata*	LC
Louro-puxuri	*Licaria puchury-major*	NE
Louro-rosa	*Aniba parviflora*	LC
Macacaúba	*Platymiscium trinitatis*	LC
Macucu	*Aldina heterophylla*	VU
Mandioqueiro	*Ruizterania albiflora*	NE
Maparajuba	*Manilkara bidenta*	LC
Maria mole	*Alchornea glandulosa*	LC
Marupá	*Simarouba amara*	LC
Mata-mata	*Eschweilera coriacea*	LC
Melancieira	*Alexa grandiflora*	NE
Morototó	*Didymopanax morototoni*	LC

Muiracatiara	*Astronium lecointei*	NE
Muirajibóia	*Swartzia ulei*	LC
Muirajiboia-amarela	*Swartzia recurva*	LC
Muirajiboia-preta	*Bocoa viridiflora*	NE
Muirapiranga	*Brosimum rubescens*	NE
Muiratinga	*Maquira sclerophylla*	LC
Muirauba	*Mouriri brachyanthera*	LC
Munguba	*Pseudobombax munguba*	LC
Mungubarana	*Pachira macrocalyx*	NE
Muru-muru	*Astrocaryum urostachys*	LC
Mururé	*Brosimum acutifolium*	LC
Mututi	*Pterocarpus officinalis*	NT
Pajurá	*Couepia bracteosa*	NE
Palmeira	*Attalea oleifera*	LC
Pama	*Perebea mollis*	LC
Paracanaúba	*Lecointea amazonica*	LC
Paracutaco	*Swartzia polyphylla*	LC
Para-para	*Jacaranda copaia*	LC
Paricá	*Schizolobium amazonicum*	LC
Patauá	*Oenocarpus bataua*	NE
Paxiúba	*Socratea exorrhiza*	LC
Pente-de-macaco	*Apeiba tibourbou*	LC
Pequiá	*Caryocar brasiliense*	LC
Pequiá-marfim	*Aspidosperma desmanthum*	LC

Pequiarana	*Caryocar glabrum*	LC
Preciosa	*Aniba canelilla*	LC
Pupunharana	*Duckeodendron cestroides*	LC
Puruí	*Duroia macrophylla*	NE
Ripeiro	*Eschweilera micrantha*	LC
Roxinho	*Peltogyne catingae*	LC
Seringa	*Hevea brasiliensis*	LC
Socoró	*Mouriri guianensis*	LC
Sorva	*Couma guianensis*	NE
Sucupira-amarela	*Enterolobium schomburgkii*	LC
Sucupira-preta	*Diplotropis purpurea*	LC
Sucupira-vermelha	*Andira parviflora*	LC
Sucuúba	*Himatanthus articulatus*	LC
Tacacá	*Sterculia excelsa*	LC
Tamanqueira	*Zanthoxylum rhoifolium*	LC
Tanibuca	*Terminalia tetraphylla*	NE
Taperebarana	*Touroulia amazonica*	DD
Taquari	*Mabea taquari*	LC
Tarumã	*Vitex triflora*	LC
Tauari-branco	*Couratari guianensis*	VU
Tauari-vermelho	*Cariniana micrantha*	NE
Taxi	*Tachigali vulgaris*	LC
Tento	*Ormosia paraensis*	LC
Timborana	*Pseudopiptadenia suaveolens*	LC

Tintarana	*Vochysia guianensis*	LC
Tucumã	*Astrocaryum aculeatum*	LC
Ucuuba	*Virola michelii*	LC
Ucuuba-branca	*Virola venosa*	LC
Urucurana	*Sloanea grandiflora*	LC
Uxi-coroa	*Duckesia verrucosa*	LC
Uxi-liso	*Endopleura uchi*	LC
Uxirana	*Sacoglottis amazonica*	LC
Uxi-torrado	*Sacoglottis guianensis*	LC
Xixuá	*Monteverdia guyanensis*	NE
Xuru	*Allantoma lineata*	NE

The Amazon Rainforest, renowned for its remarkable endemism of flora and fauna, stands as one of the most biodiverse regions on the planet (Dirzo and Raven, 2003). This tropical forest provides a multitude of crucial ecosystem services to humanity, including acting as a buffer against pests and diseases, regulating water flows to prevent floods and droughts, modulating the climate at both local and regional levels, and contributing to the containment of global warming through the carbon stocks present in its plants and soil (Myers, 1997). However, studies indicate that more than three-quarters of the Amazon rainforest has experienced a decline in resilience since the early 2000s (Boulton et al. 2022). PRODES, the project for Monitoring Deforestation in the Legal Amazon by Satellite, has revealed a concerning trend. Between 2018 and 2022, the Brazilian Amazon biome experienced a significant increase of approximately 52,691 km² of deforested area[57]. Among deforestation agents, the agricultural sector stands out, with temporary crops, especially grain cultivation, playing a crucial role in the deforestation of municipalities within the Amazon Biome (Santos et al. 2021). In relation to the drivers of forest degradation that lead to disturbances, noteworthy factors include logging, fires, and extreme droughts exacerbated by climate change (Lapola et al. 2023).

In the period from July to October 2023, the Amazon region has experienced a severe drought, particularly in the central-northern part[58], where the BR ARBO property is situated. Research indicates an increasing trend of water stress in the Amazon throughout the 20th century. Rare instances of fires, traditionally observed in much of the Amazon, are expected to become more frequent. When coupled with deforestation, these fires may trigger a transition to a low biomass forest (Malhi et al. 2009). Approximately 83% of the Amazon's remaining native vegetation is approaching a critical tipping point (20-25% forest loss), which

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[57] Terra Brasilis. PRODES. http://terrabrasilis.dpi.inpe.br/app/dashboard/deforestation/biomes/amazon/increments. Accessed on July 26, 2023.

[58] Source: https://clima.cptec.inpe.br/gpc/pdf/Nota_seca_AMZ_2023_INPE-INMET_04out2023.pdf

would significantly impact the forest's capacity to maintain itself[59]. These changes are leading to unprecedented consequences for biodiversity, which has evolved under specific climatic conditions. Any disruption to this ecosystem can trigger a domino effect, potentially impacting not only the region's wildlife but also global ecological systems and the countless services they provide to humanity.

5.1.2 High Conservation Values (B1.2)

The project area holds global significance in terms of biodiversity values, as it connects protected areas and harbors a wealth of endangered and endemic species. The extensive preserved area serves as a crucial sanctuary for these species, maintaining connectivity with the surrounding forests. Therefore, the project zone constitutes a set of ecosystems that, if not protected, could be threatened by deforestation, forest degradation, and other factors leading to biodiversity loss.

Table 31: Impact of the project on High Conservation Values

High Conservation Value	HCV 1 - Threatened species - *Podocnemis unifilis, Podocnemis sextuberculata, Ateles chamek, Cacajao calvus, Cebus unicolor, Lagothrix poeppigii, Trichechus inunguis, Tayassu pecari, Tapirus terrestris, Pteronura brasiliensis, Myrmecophaga tridactyla, Alouatta seniculus, Ateles chamek, Cacajao calvus, Cebuella pygmaea, Cebus unicolor, Lagothrix cana, Trichechus inunguis, Handroanthus serratifolius, Mezilaurus itauba, Aldina heterophylla, Couratari guianensis*
Qualifying Attribute	The mentioned species are located within the project area and hold significant value for conservation, as their conservation status is considered threatened.
Focal Area	Given that the Mejuruá project aims at conserving extensive forested areas, the species found within the project zone are directly benefited.

High Conservation Value	HCV 2 - Large landscape-level areas - Extractive Reserve of Rio Jutaí and the Extractive Reserve of Médio Juruá
Qualifying Attribute	The project zone encompasses two conservation units: the Extractive Reserve of Rio Jutaí and the Extractive Reserve of Médio Juruá. Given the extensive scope of the REDD+ Mejuruá project area, it plays a significant role in connecting these regions. On a landscape level, its contribution is essential for maintaining conservation at a broader scale.
Focal Area	Maintain connectivity between conservation units at the landscape level.

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[59] Source: https://ipam.org.br/amazonia-pode-atingir-ponto-de-inflexao-ainda-nesta-decada/

High Conservation Value	HCV 3 - Threatened ecosystems – Juruá River
Qualifying Attribute	The Juruá River flows into the Amazon River. This river has an extensive basin of economic significance and immeasurable importance for biodiversity. Due to its size, it harbors a wide variety of aquatic species, making it equally relevant for terrestrial animals that rely on this ecosystem.
Focal Area	The project's zone encompasses a vast stretch of the Juruá River. Furthermore, the property boundaries run alongside the river, thus providing direct benefits for the preservation of this ecosystem.

5.1.3 Without-project Scenario: Biodiversity (B1.3)

Without the implementation of the project, the area could be legally converted into a non-forested area for probable agricultural or livestock use. In this scenario, the landscape would undergo significant fragmentation, thus affecting various species, especially animals, as the expansion of the pasture matrix would disrupt the movement of fauna in the area. Therefore, the absence of the project would result not only in the loss of carbon stocks but also in the reduction of habitat for endemic and even threatened species present in the region.

5.2 Net Positive Biodiversity Impacts

5.2.1 Expected Biodiversity Changes (B2.1)

Due to the project implementation, the various biodiversity-related elements present in the impact zone will be positively affected, as described in the following tables.

Table 32: Impact on animal species found in the project area

Biodiversity Element	Animal species
Estimated Change	Positive impact: maintenance of species richness
Justification of Change	The project will be tasked with conserving a substantial expanse of preserved forest, which will have a direct impact on maintaining biodiversity within the project area. Furthermore, the project will enhance forest connectivity at a landscape level, enabling wildlife movement and habitat preservation.

Table 33: Impact on forest cover in the project area

Biodiversity Element	Connectivity of forest cover in the project zone
Estimated Change	Maintenance of forest cover
Justification of Change	The project's preservation area is situated between two conservation units. Consequently, the project area serves the vital function of connecting these two conserved regions, acting as an ecological corridor for animal species.

5.2.2 Mitigation Measures (B2.3)

The implementation of sustainable forest management practices is anticipated throughout the project's lifespan. However, this type of activity can have limited impact on the biodiversity of the execution area. Some of the expected negative impacts include disturbance to fauna due to machine operations, direct impact on harvested species, opening of clearings at the harvesting site, creation of skid trails and yards. It is worth noting that this management is duly certified by the FSC and strives to minimize negative impacts on the project area. Furthermore, harvesting only takes place once every thirty years. As a result, disturbances are temporary, occurring for a brief period during activities, followed by a period of non-intervention to allow for proper recovery and conservation of the fauna.

5.2.3 Net Positive Biodiversity Impacts (B2.2, GL1.4)

The Mejuruá project assumes the responsibility of conserving an extensive forest cover, spanning over 123,000 hectares of the Amazon rainforest. When compared to the baseline scenario, which involves land use for beef cattle production, i.e., converting the area into pasture, the positive impacts on biodiversity are manifold. The conservation of this area itself brings direct benefits to wildlife conservation and their habitats. Furthermore, the project area is situated between two conservation units; thus, its conservation plays a crucial role in maintaining connectivity between these units and preserving the overall landscape's vegetation integrity. Considering the immense biodiversity found in the Amazon rainforest, the preservation of these vast expanses of forest cover serves as a refuge for wildlife, especially in light of the growing concerns surrounding climate change.

5.2.4 High Conservation Values Protected (B2.4)

Mejuruá is a conservation project committed to safeguarding vast forested landscapes, aiming to safeguard both the fauna and flora within privately owned land. By actively promoting habitat preservation and landscape integrity, the project seeks to protect endemic and endangered species. All activities conducted under this project strictly adhere to rigorous standards, including those established by the FSC, to ensure the area's conservation without compromising biodiversity.

One of the key objectives of the Mejuruá project is to maintain connectivity between two distinct conservation units. This strategic approach further enhances the preservation of animal species and their habitats. Importantly, the project's commitment to following stringent standards guarantees that there will be no adverse effects on the High Conservation Value (HCV) components tied to biodiversity within the designated project area. Through its comprehensive efforts, the Mejuruá Conservation Project strives to

make a substantial contribution to the protection of valuable ecosystems and species while upholding the principles of responsible conservation practices.

5.2.5 Species Used (B2.5)

The project does not include planting seedlings or introducing animals. Therefore, the introduction of any species is not foreseen within the project scope.

5.2.6 Invasive Species (B2.5)

The project area consists entirely of preserved forests. Therefore, exotic species are not found in the project area, and there are no plans to introduce any during the project's execution.

5.2.7 Impacts of Non-native Species (B2.6)

The introduction of exotic species is not foreseen during the project's execution.

5.2.8 GMO Exclusion (B2.7)

Project activities do not involve the introduction of any plant or animal species, including GMOs.

5.2.9 Inputs Justification (B2.8)

This project aims at conserving the area and implementing sustainable forest management with FSC certification. Therefore, project activities do not foresee the use of inputs such as fertilizers, chemicals, or pesticides in the project area.

5.2.10 Waste Products (B2.9)

Significant amounts of waste are not expected to be generated due to the project implementation. The waste generated from forest management activities will be properly disposed of, complying with the requirements established to obtain FSC certification.

5.3 Offsite Biodiversity Impacts

5.3.1 Negative Offsite Biodiversity Impacts (B3.1) and Mitigation Measures (B3.2)

Negative impacts on biodiversity outside the project area resulting from project implementation are unlikely. This is because the project is focused on conservation and will not displace any potential threats to external areas.

5.3.2 Net Offsite Biodiversity Benefits (B3.3)

The project aims to promote local and surrounding conservation, bringing positive impacts to biodiversity. Furthermore, it is important to emphasize that no negative impacts are foreseen outside the project area, reinforcing its conservation proposal.

By focusing efforts on the conservation of the Mejuruá area, not only will local biodiversity benefit, but also the biodiversity in the surrounding areas. This is achieved through the promotion of habitat connectivity, enabling species transition. Connectivity between different natural areas plays a fundamental role in maintaining biological diversity, allowing animals to move freely, seek resources, and establish new populations.

In addition to direct benefits for biodiversity, the project can also have positive impacts on local communities. The conservation of the Mejuruá area can generate economic opportunities through sustainable tourism, providing jobs and income for the residents of the region. This can strengthen the appreciation and preservation of biodiversity, involving communities as partners in conservation.

Therefore, the Mejuruá conservation project has the potential to bring comprehensive positive results, both for local and surrounding biodiversity and the involved communities. Its careful and strategic implementation, considering socioeconomic and environmental aspects, can serve as a successful example in the pursuit of harmonious coexistence between human development and the preservation of natural ecosystems.

5.4 Biodiversity Impact Monitoring

5.4.1 Biodiversity Monitoring Plan (B4.1, B4.2, GL1.4, GL3.4)

The monitoring plan aims to assess the impact of the project on the area's biodiversity, ensuring that project activities are in line with conservation objectives and required standards. The monitoring approach will follow the SBIA Manual guidelines, which recommend choosing Pressure, State, and Response indicators that accurately reflect local conditions and can be effectively monitored.

Monitoring Team Structure: Monitoring will be conducted by a specialized team, including a monitoring manager responsible for overall supervision, a group of experts providing technical guidance, a monitoring group collecting field data, and an auditing group to review results.

Monitoring Protocol: A project-specific monitoring protocol will be developed, crafted by professionals specialized in each aspect to be monitored. This protocol will set clear standards to be followed by contracted teams during each monitoring period. Additionally, workshops and training sessions will be conducted to ensure all monitoring team members fully understand the purposes, contents, procedures, and methods of the monitoring process.

Indicator Selection: The protocol emphasizes the choice of multiple indicators, acknowledging the complexity of natural systems and potential fluctuations for various reasons. It also aligns with SBIA Manual recommendations by choosing indicators that can be easily monitored and reflect local conditions, ensuring an accurate assessment of the project's impact on biodiversity.

Fauna Monitoring Program: The plan proposes implementing a local fauna monitoring program, covering various animal groups, such as fish, amphibians, reptiles, birds, and mammals. For each group, specific sampling protocols will be established. Furthermore, citizen science technologies will be employed to engage the local community in the monitoring process. The importance of monitoring economically significant and threatened species is highlighted, contributing significantly to the conservation of these species.

Frequency and Reporting: Monitoring will occur before each verification, and reports will be submitted before this period, enabling a precise analysis of results and corrective measures, if necessary.

The table below provides a summarized overview of the monitoring plan.

Table 34: Summarized overview of the monitoring plan

Activity Description	Biodiversity Variable	Sampling Methods
Mammal's Monitoring	Species Richness, Threatened Species, Endemic Species, Game Species	Active Search (Line/Belt Transect), Camera Traps
Birds' Monitoring	Species Richness, Threatened Species, Endemic Species, Game Species	Active Search (Point/Line count method)
Reptiles and Amphibian's Monitoring	Species Richness, Threatened Species, Endemic Species, Game Species	Active Search (Purposive sampling, Line/belt transects)

5.4.2 Biodiversity Monitoring Plan Dissemination (B4.3)

During each verification period, both the monitoring plan and the outcomes of each assessment will be promptly made available on the VCS and CCB websites. This will allow stakeholders to easily download them. Additionally, these documents will also be fully published on the BR ARBO Forest Management website, owned by the project proponent. Furthermore, the project proponent will be responsible for distributing printed copies of the monitoring manual and summaries of the monitoring reports among the local stakeholders.

5.5 Optional Criterion: Exceptional Biodiversity Benefits

5.5.1 High Biodiversity Conservation Priority Status (GL3.1)

The table below presents the endangered and critically endangered species found within the project area.

Table 35: Endangered and critically endangered species found within the project area

Species	Red list category
Ateles chamek	Endangered
Pteronura brasiliensis	Endangered
Handroanthus serratifolius	Endangered
Vouacapoua americana	Critically Endangered

5.5.2 Trigger Species Population Trends (GL3.2, GL3.3)

The table below presents the threatened species found within the project area.

Table 36: *Ateles chamek* **- Threatened species found in the project area**

Trigger Species	*Ateles chamek*
Population Trend at Start of Project	IUCN Red List threat category Endangered
Without-project Scenario	Without the project's implementation, that is, in the baseline scenario, complete deforestation of the area for livestock use would occur. In this scenario, this monkey species, which is entirely dependent on tree cover for survival, would lose a significant portion of its habitat and also the connectivity between two conservation units that harbor populations of this species would be compromised.
With-project Scenario	The project's primary objective is to preserve the conservation area, which not only serves as direct habitat for the species but also plays a crucial role in maintaining landscape-level vegetation connectivity, particularly because of the project area's location between two conservation units. Additionally, the project will be responsible for monitoring the species and ensuring its presence within the project zone.

Table 37: *Pteronura brasiliensis* **- Threatened species found in the project area**

Trigger Species	*Pteronura brasiliensis*
Population Trend at Start of Project	IUCN Red List threat category Endangered
Without-project Scenario	Without the project's implementation, that is, in the baseline scenario, complete deforestation of the area for livestock purposes would occur. In this scenario, not only would the loss of terrestrial habitat happen, but rivers would also be affected by the increased use of boats for the baseline project's development, especially in large rivers. Since these species are entirely dependent on the aquatic environment for their survival, populations would be directly impacted.
With-project Scenario	The project's primary objective is to preserve the conservation of the area and, consequently, the habitat of the species. With the implementation of the project, the species' populations will have greater

security, as rivers will not be overloaded with vessels. Additionally, the project will be responsible for monitoring the species and ensuring its presence within the project zone.

Table 38: *Handroanthus serratifolius* **- Threatened species found in the project area**

Trigger Species	*Handroanthus serratifolius*
Population Trend at Start of Project	IUCN Red List threat category Endangered
Without-project Scenario	Without the implementation of the project, that is, in the baseline scenario, there would be total deforestation of the area for cattle ranching. In this scenario, tree species such as the ipê would be directly impacted. Some individuals with decades of existence, which can be considered seed sources, would be felled in the absence of the project, affecting not only the individual but also the propagation of the species.
With-project Scenario	The primary goal of the project is the conservation of the area and the protection of all species present within the project area. With the project's implementation, this species is safeguarded within a vast expanse of forest, ensuring greater security for its survival and, therefore, providing more favorable conditions for the species to perpetuate, as it is currently at risk.

Table 39: *Vouacapoua americana* **- Threatened species found in the project area**

Trigger Species	*Vouacapoua americana*
Population Trend at Start of Project	IUCN Red List threat category Critically Endangered
Without-project Scenario	Without the implementation of the project, that is, in the baseline scenario, there would be total deforestation of the area for cattle ranching. In this scenario, tree species such as the Acapu would be directly impacted. Individuals with decades of existence, which can be considered seed sources, would be felled in the absence of the project, affecting not only the individual but also the propagation of the species. Furthermore, it is crucial to emphasize that the situation is even more alarming, as the species in question is dangerously approaching extinction. This imminent threat to its existence makes the situation extremely concerning and underscores the urgency of implementing the project to prevent the irreparable loss of this species.

With-project Scenario	The primary goal of the project is the conservation of the area and the protection of all species present within the project area. With the project's implementation, this species is safeguarded within a vast expanse of forest, ensuring greater security for its survival and, therefore, providing more favorable conditions for the species to perpetuate, as it is currently at risk.

- **APPENDIX**

APPENDIX 1: BIBLIOGRAPHY

Abel E.L.S., Delgado R.C., Vilanova R.S., Teodoro, P.E., Silva-Junior C.A., Abreu M.C., Silva G.F.C. (2021). Environmental dynamics of the Juruá watershed in the Amazon. Environ Dev Sustain. 23, 6769–6785.

Abrahams M.I., Peres C.A., Costa H.C.M. (2017). Measuring local depletion of terrestrial game vertebrates by central-place hunters in rural Amazonia. PLOS One. 12(10): e0186653.

Alvares C.A., Stape J.L., Sentelhas P.C., Gonçalves J.L.M., Sparovek G. (2013). Köppen's climate classification map for Brazil. Meteorol. 22, 6, 711-728.

Bicalho A.M.S. M., Hoefle S.W. (2015). Conservation units, environmental services and frontier peasants in the Central Amazon. In: WOOD, D.C. (Org.), Climate Change, Culture, and Economics. Bradford: Emerald Scientific, 67-105.

Bispo P.C., Valeriano M.M., Kuplich T.M. (2009). Relation of local geomorphometric variables with the vegetation of the Madeira-Purus interfluve (AM/RO). Acta Amaz. 39, 81-90.

Boulton C.A., Lenton T.M., Boers N. (2011). Pronounced loss of Amazon rainforest resilience since the early 2000s. Nature Climate Change. 12, 271–278.

CMBio - Instituto Chico Mendes de Conservação da Biodiversidade (2011). Plano de Manejo da Reserva Extrativista do Rio Jutai. Ministério do Meio Ambiente.

Costa, H. J. V. (2022). História de Carauari-AM - Manaus, Gráfica Ziló, 320p.

Dirzo R., Raven P.H. (2003). Global State of Biodiversity and Loss. Annual Review of Environment and Resources. 28,137-167.

Fearnside, P.M. Challenges for sustainable development in Brazilian Amazonia. Sustain. Dev. 26 (2), 141-149.

Ferreira R.P., Lopes P.F.M., Campos-Silva J.V., Silvano R.A.M., Begossi A. (2022). The Upper Juruá Extractive Reserve in the Brazilian Amazon: past and present. Braz. J. Biol. 82.

Lapola D.M., Pinho P., Barlow J. Aragão L.E.O.C., Berenguer E., Carmenta R., Liddy H.M., Seixas H., Silva C.V.J., Silva-Junior C.H.L. et al. (2023). The drivers and impacts of Amazon Forest degradation. Science 379 (6630), 349.

Lima R.B.A., Silva J.A.A., Maragon L.C., Ferreira R.L.C., Silva R.K.S. (2012). Florística e diversidade em um trecho de floresta ombrófila densa de terras baixas, Carauari, Amazonas, Brasil. Rev. Bras. Cienc. Agrar. 7 (3), 485-492.

Lovejoy T.E., Nobre C. (2019). Amazon tipping point: Last chance for action. Sci. Adv. 5, (12).

Malhi Y., Aragão L.E.O.C., Galbraith D., Meir P. (2009). Exploring the likelihood and mechanism of a climate-change-induced dieback of the Amazon rainforest. PNAS. 106 (49), 20610-20615.

Myers, N. (1997). The world's forests and their ecosystem services. In: Daily GC (Ed). Nature's services: societal dependence on natural ecosystems. Washington DC: Island Press.

Richards, M. and Panfil, S.N. Social and Biodiversity Impact Assessment (SBIA) Manual for REDD+ Projects: Part 1 – Core Guidance for Project Proponents. Climate, Community & Biodiversity Alliance, Forest Trends, Fauna & Flora International, and Rainforest Alliance. Washington, DC. 2011.

Santos A.M., Silva C.F.A., Almeida-Junior P.M., Rudke A.P., Melo S.N. (2021). Deforestation drivers in the Brazilian Amazon: assessing new spatial predictors. J. Environ. Manage. 15:294:113020.

Scabin A. B. (2020). Efeitos cascata da caça na Amazônia Ocidental. Doctoral thesis. Federal University of Rio Grande do Norte.

Silva E.F., Gonçalves J.R., Dutra W.C., Lima I.J., Franco C.L.B., Maranhão L., Lopes V.L., Valsecchi J. (2017). Primates in three protected áreas in the middle Solimões basin, Brazilian Amazon. Número temático: Pesquisa e Conservação de Primatas em Áreas Protegidas da Amazônia. Biodiversidade Brasileira. 7 (2).

Silva E.F., Silva G.F., Figueiredo E.O., Mendonça A.R., Santana C.J.O., Fiedler N.C., Silva J.P.M., Aguiar M.O., Santos J.S. (2020). Optimized forest planning: allocation of log storage yards in the Amazonian sustainable forest management area. For. Ecol. Manag. 472, 118231.

Souza S., Oliveira K., Cruz M. (2017). Modo de vida camponês e políticas públicas no assentamento Riozinho – Carauari-Am. Revista Geonorte. 8 (28). 161-177.

West T.A.P., Vidal E., Putz F.E. Forest biomass recovery after conventional and reduced-impact logging in Amazonian Brazil. For. Ecol. Manag. 314, 59-63.