



ABC NORTE REDD PROJECT



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1 PROJECT DETAILS

1.1 Summary Description of the Implementation Status of the Project

In Brazil, 58.39% of its entire 851,029,591.4 ha territory (IBGE, 2019¹) is covered by forests, representing almost 497 million hectares of forest area (FAO, 2020²) and putting it in second place for nations with most forest area worldwide. Brazil has also been at times the country with the highest levels of deforestation in the world, having lost almost 15 million hectares of its forest area from 2010 to 2020 (FAO, 2020³). The expansion of the agriculture frontier due to cattle ranching, soy farming, timber collection, infrastructure and colonization by subsistence agriculturalists has contributed to this historically high deforestation rate, which is concentrated in the northern portion of the country, where the Amazon Rainforest lies.

The primary objective of the ABC Norte REDD Project is to avoid the unplanned deforestation (AUD) of the 140,117.088 ha project area, consisting of 100% Amazon rainforest. The project area is located within a private property named “Fazenda Pacajá”, which is located between the municipalities of Portel and Bagre, in the State of Pará, Northeast Amazon.

The project proponent, ABC Agropecuária Brasil Norte SA Produção e Exportação, leased the area to a forestry company that carried out the sustainable forest management activities during almost 20 years. On 13-September-2017, despite a recurrent negative balance over the last years and an increasing deforestation pressure from external agents, the project proponent decided to maintain the Sustainable Forest Management Plan (SFMP) in Fazenda Pacajá through ceasing the contract with the former forestry company, and the investment in a certified reduced impact logging SFMP with other company combined with the expansion of social activities to local communities and enhanced surveillance in the project area. Carbon credits revenues are an important income source for making such activities feasible.

Thus, 13-September-2017 was defined as the project start date of the present project activity.

ABC Norte is the forestry company of Algar, a Brazilian family group with over 90 years of experience, and operations in the telecommunications, tourism and agribusiness sectors.

¹ IBGE – Instituto Brasileiro de Geografia e Estatística. Brasil. 2021. Available at: <<https://www.ibge.gov.br/cidades-e-estados>>. Last visited on July 03nd, 2023.

² FAO and UNEP. 2020. The State of the World’s Forests 2020. Forests, biodiversity and people. Rome. Available at: <<https://www.fao.org/3/ca8642en/ca8642en.pdf>>.

³ FAO. 2020. Global Forest Resources Assessment 2020: Main report. Rome. Available at: <<https://doi.org/10.4060/ca9825en>>.

The project is located in the State of Pará, in priority areas for conservation, according to the Ministry of Environment. The main deforestation and degradation agents acting within the reference region during the historical period were: cattle ranching, mainly producing beef cattle; and timber harvesters, acting both legally and illegally. Deforestation in the region involves spatially overlapping activities: firstly, extraction of commercially valuable tree species for sale to timber companies. The final step is the slash-and-burn deforestation of the area above for pasturelands and cattle ranching.

The increased complexity and costs associated with the sustainable operation of the forest as well as other factors such as bureaucratic constraints and price fluctuations of certified timber prices make sustainable forest management less competitive than illegal logging. Thus, revenue from the sales of the Verified Carbon Units (VCUs) is essential for the project activity to compete with profitable alternative land use scenarios.

In addition to contributing to the long-term conservation of the region, the ABC Norte REDD Project also establishes a barrier against the advancement of deforestation, making it an important contribution to the conservation of Northeast Amazon biodiversity and also to climate regulation in Brazil and South America.

The project description of ABC Norte REDD Project was validated with its joined first monitoring report. The verification period was from 13-September-2017 to 31-December-2020. For this second monitoring, the prevention of unplanned deforestation in the Project Area reduced the emission of 679,366 tCO₂e from 01-January-2021 to 31-March-2023, both days included. This figure of emissions reductions is the net anthropogenic GHG emission reductions after subtractions for project, leakage and buffer emissions.

Several measures and technologies were implemented during the monitoring period to avoid unplanned deforestation and consequent CO₂e emissions in the project area. ABC Norte maintains specialized teams for the following aims: monitoring of deforestation events using remote sensing technology, project area safety, and implementation and management of social practices. ABC Norte keeps the security houses actively occupied 24 hours a day by managing the guards' work time with shift changes. ABC Norte maintains the certification CERFLOR for sustainable forest management, which attests that forest management is conducted in compliance with environmental, social, and economic requirements. UPbio Soluções Ambiental team is also hired by ABC Norte to implement and manage social and educational activities within the scope of the Social and Environmental Responsibility Program of Fazenda Pacajá.

Environmental education and other social activities that benefit the local community will be supported, as well as improving the control of deforestation. The SOCIALCARBON® Standard is being applied to assess and monitor the project's contribution to sustainability using six key indicators: Biodiversity; Nature; Financial; Human; Social and Carbon Resources, thus improving the social and environmental conditions in the project region.

1.2 Sectoral Scope and Project Type

14. Agriculture, Forestry, Land Use (AFOLU)

Reducing Emissions from Deforestation and Degradation (REDD) through Avoided Unplanned Deforestation.

This is not a grouped project.

1.3 Project Proponent

Organization name	ABC Agropecuária Brasil Norte S.A. - Produção e Exportação (Primary PP)
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Organization name	Ecológica Assessoria Ltda.
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1.4 Other Entities Involved in the Project

Organization name	Sustainable Carbon Projetos Ambientais LTDA.
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Role in the project	Carbon credits trader and Registry Manager
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1.5 Project Start Date

The Project Start Date is 13-September-2017. This was the date of signature of the contract with the new tenant, in order to conduct a more sustainable forest management with less environmental and social impact.

Despite a recurrent negative balance over the last years and an increasing deforestation pressure by external agents, ABC Norte (i.e., the primary project proponent) decided to maintain the Sustainable Forest Management Plan (SFMP) in Fazenda Pacajá through ceasing the contract with the former forestry company. Since the owner has owned the farm and has relationship with the communities since 1979, it was his personal desire to maintain the area and to search for a more sustainable administration, with environmental conservation and benefits for the community.

Thus, several alternatives for the use of Fazenda Pacajá were evaluated, including carrying out a Carbon Project. Furthermore, as from this first action, the project proponent also decided to invest in a certified reduced impact logging SFMP combined with the expansion of social activities to local communities and enhanced surveillance in the project area. As part of this new strategy, a contract between Madeireira J&Y and ABC Norte to lease of its farm for the purposes of carrying out the SFMP in a more sustainable manner.

The mentioned contract with J&Y has much more specific environmental restrictions and obligations than the previous contract, such as:

- specific assignment only for the management exploration area
- prohibition of exploitation of other natural resources in the property
- annual exploration restriction of 100,000 m³

- contract renewal subject to an evaluation report and the evolution of the development of forestry, social, economic, and environmental activities
- mandatory investment in social programs for the local community and the surroundings of the farm and the ABC village
- mandatory recovery of degraded areas
- adoption of a chain of custody system to identify logs produced in the forest management
- SFMP management by a contracted third party, with access to all documents and information
- accountability to ABC Norte, upon submission of reports on forest production and environmental compliance.

Since the project start date, the project implemented socio-environmental responsibility and environmental education programs. Furthermore, the project started the forest management certification in 2017 and received the CERFLOR certification in 2020. The Sustainable Forest Management Plan was renewed in 2019, being valid until 2025, and, in addition, the Rural Activity License (RAL) was obtained, valid until 2025 as well.

In addition, the company also opted to maintain an internal team to take over the management in case there is any problem with the tenant, with a team formed by forest engineers, besides to already having all the monitoring control and verification of compliance with the SFMP.

This was initiated to ensure the forestry activity and the forest standing, as it is the company's main activity.

Therefore, on 13-September-2017 was conducted the main action of the company in terms of reducing GHG emissions and initiating the present REDD project and is thus the designated project start date.

Furthermore, project activity also increased the surveillance since the project start date, which helps to avoid unplanned deforestation or illegal logging within the project area by external agents.

1.6 Project Crediting Period

The project has a crediting period of 30 years, from 13-September-2017 until 12-September-2047.

1st baseline period: 13/09/2017 to 12/09/2027

2nd baseline period: 13/09/2027 to 12/09/2037

3rd baseline period: 13/09/2037 to 12/09/2047.

1.7 Project Location

The ABC Norte REDD project is located in a private property named “Fazenda Pacajá” covered almost in its totality by native vegetation, totaling 145,680.7882 ha., which is situated between the municipality of Portel and Bagre, in the State of Pará, Northeast Amazon.

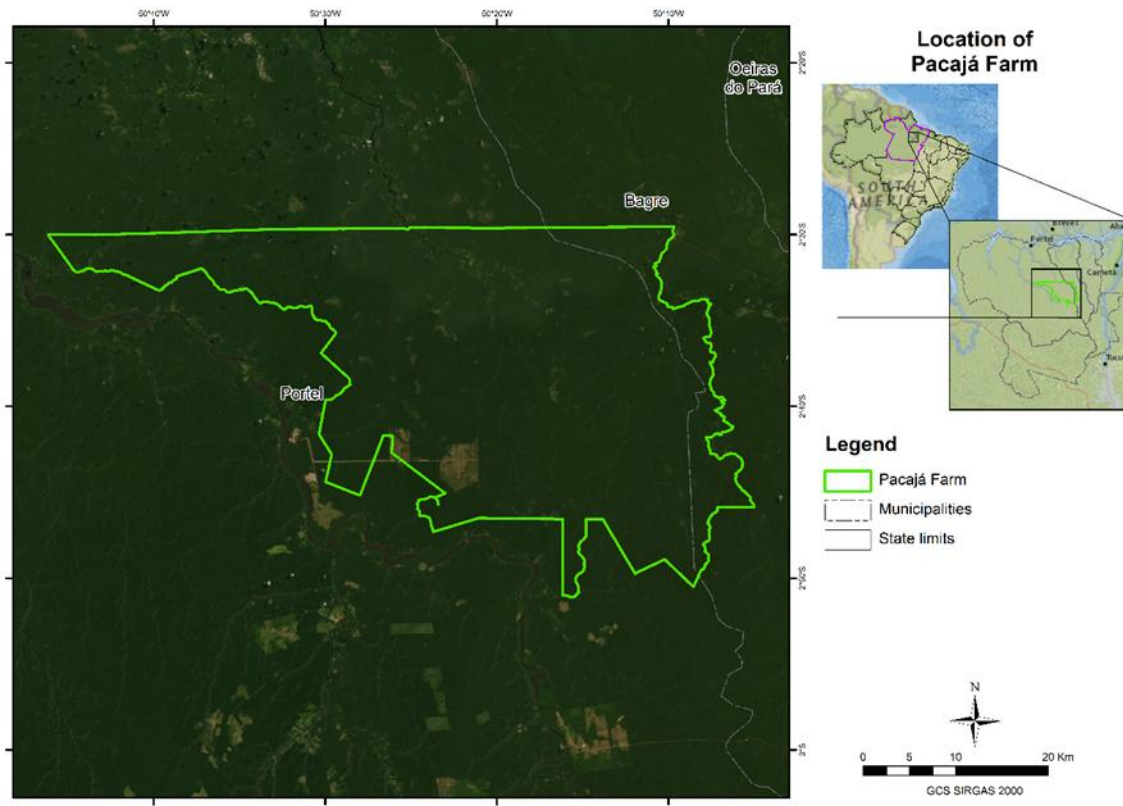
According to the logistical arrangement, Fazenda Pacajá can be accessed via a route, by river, leaving the city of Belém by the river Pará until the city of Portel at a distance of 304 kilometers. It follows the route, still by river via Pacajá River, from the city of Portel to Fazenda Pacajá, covering 180 kilometers. In total, it travels 484 km from the state capital to the farm.

In accordance with VCS requirements, stipulated in Approved VCS Methodology VM0015, version 1.1, the project area may only include areas composed of “forest”⁴ for a minimum of ten years prior to the project start date. Therefore, satellite images between 2007 and 2017, were analyzed and classified. The areas within the property that were defined as forest in 2017 and in 2007 were separated and utilized to compose the project area. In addition, some non-forest areas were also excluded, such as rivers, rocks, and non-forest vegetation.

As shown in Figure 1 below, the size of the areas that were considered “non-forest” (i.e. planned roads and non-forest vegetation or rock formations, as the area has never been deforested) within the project area was 5,247,73 ha. This was excluded from the initial area of 145,680 ha, resulting in 140,117.09 ha, which was then defined as project area.

⁴ Brazil adopts FAO forest definition: “Land with tree crown cover (or equivalent stocking level) of more than 10 percent and area of more than 0.5 hectares (ha). The trees should be able to reach a minimum height of 5 meters (m) at maturity in situ.” Available at: < <http://www.fao.org/3/x6896e/x6896e0e.htm> >. Last visit on: July, 2023.

Figure 1. ABC Norte REDD Project Area



1.8 Title and Reference of Methodology

This project utilizes the approved VCS Methodology VM0015: Methodology for Avoided Unplanned Deforestation, version 1.1, published on 03-December-2012.

Furthermore, the following tools were used:

- VT0001 - Tool for the Demonstration and Assessment of Additionality in VCS Agriculture, Forestry and Other Land Use (AFOLU) Project Activities, v3.0, published on 01-February-2012;
- AFOLU Non-Permanence Risk Tool v4.0, published on 19-September-2019.

In addition, for SOCIALCARBON Standard indicators for REDD + SFMP Projects, Version 1.2⁵ is being applied as a sustainability tool in association with VCS Standard.

1.9 Participation under other GHG Programs

This project has not been registered and is not seeking registration under any other GHG Programs.

⁵ Available at:

<https://static1.squarespace.com/static/6161c89d030b89374bec0b70/t/618a268beb78197f4e78ba15/1636443793807/Template+Submission+of+new+indicators+REDD%2BSFMP+v1.2+EN11.pdf>. Accessed on July 2023.

1.10 Other Forms of Credit

- Emission Trading Programs and Other Binding Limits: the project does not participate in any other trading program or other binding limits.
- Other Forms of Environmental Credit: The project area has not created any other form of environmental credit. This project has not been registered in any other credited activity. The project does not intend to generate any other form of GHG-related environmental credit for GHG emission reductions or removals claimed under this VCS project.

1.11 Sustainable Development

The primary objective of the ABC Norte REDD Project is to avoid the unplanned deforestation (AUD) of the 140,117.09 ha project area, consisting of 100% Amazon rainforest. The Project also has the function of establishing a barrier against the advancement of deforestation, making an important contribution to the conservation of Amazon biodiversity and also to climate regulation in Brazil and South America.

These measures contribute to several nationally stated sustainable development priorities, such as the objectives from the Brazilian Government related to the UN Sustainable Development Goals (SDGs)⁶ and the Nationally Determined Contribution (NDC).

In Brazil, the National Commission for Sustainable Development Objectives (CNODS) is responsible for internalizing, disseminating and providing transparency to the process of implementing the 2030 Agenda for Sustainable Development in Brazil⁷. The Commission is made up of eight government representatives (Government Secretariat of the Presidency of the Republic; Civil House of the Presidency of the Republic; Ministry of Foreign Affairs; Ministry of Citizenship; Ministry of Economy; Ministry of Environment; representative of the state/district levels; representative of the municipal level) and by eight representatives of civil society and the private sector. The monitoring of the country's advances in relation to the SDGs established as priorities is carried out by the Institute of Applied Economic Research (IPEA) and the Brazilian Institute of Geography and Statistics (IBGE), which are also permanent technical advisory bodies.

There is no monitoring at the specific level of projects, and progress at the national level can be accompanied by the synthesis report carried out by IBGE⁸ and by the IPEA reports⁹. In addition, in 2018 there was the SDG Award, an initiative of the Federal Government whose objective is to encourage, value and give visibility to practices that contribute to achieving the goals of the 2030 Agenda throughout the national territory. The first edition of the Award had 1045 entries to

⁶ UN's Sustainable Development Goals and targets available at: <<https://sdgs.un.org/goals>> Last visited on June, 2023.

⁷ More information on the CNODS available at < <https://www.gov.br/mre/pt-br/assuntos/desenvolvimento-sustentavel-e-meio-ambiente/desenvolvimento-sustentavel/comissao-nacional-para-os-objetivos-do-desenvolvimento-sustentavel-cnods>> Last visited on June, 2023.

⁸ Available at < <https://odsbrasil.gov.br/relatorio/sintese>> Last visited on June, 2023

⁹ Available at < <https://www.ipea.gov.br/ods/publicacoes.html>> Last visited on June, 2023

compete in four categories: government; for-profit organizations; non-profit organizations; and teaching, research and extension institutions.

The ABC Norte REDD Project main contributions to the Brazilian priority goals are listed below¹⁰. These contributions are monitored by the parameters defined by the REDD project, in addition to additional standards, such as CCB¹¹ and SOCIALCARBON. For more information, please consult the applicable social benefit report:

- **SDG 1: No poverty.**

The project positively impacts people in situations of poverty and vulnerability, mainly through investments in the local community that lives in the vicinity of the project area, thus ensuring access to basic and essential services for human development. This SDG is monitored by the SOCIALCARBON methodology in the Social resource (1. Women inclusion, 2. Expansion of community activities, 3. Associations and Cooperatives), Human (5. Public health, 6. Community education and training), Financial (7. Alternative income sources, 8. Carbon credit benefits) and Natural (11. Social and environmental investments) in the SOCIALCARBON Report. Thus, the project collaborates with targets such as:

- 1.3 “Implement nationally appropriate social protection systems and measures for all, including floors, and by 2030 achieve substantial coverage of the poor and the vulnerable”;
- 1.4 “By 2030, ensure that all men and women, in particular the poor and the vulnerable, have equal rights to economic resources, as well as access to basic services, ownership and control over land and other forms of property, inheritance, natural resources, appropriate new technology and financial services, including microfinance”;
- 1.5 “By 2030, build the resilience of the poor and those in vulnerable situations and reduce their exposure and vulnerability to climate-related extreme events and other economic, social and environmental shocks and disasters”.

- **SDG 2: Zero hunger.**

The project aims to expand training related to the management of non-timber forest products. The local community maintains a small production of cassava flour, copaiba oil and *açaí*, which is used for sale and exchanges for other supplies, non-timber forest products are used mainly for subsistence purposes.

The project itself enhances better management of non-timber forest products as, through the carbon credits sales, qualifies investments in the local community training and capacity building programs. Likewise, strengthen ecosystem conservation and preservation. This SDG is monitored

¹⁰ Available at < <https://odsbrasil.gov.br/> > Last visited June, 2023.

¹¹ CCB Standard will be applied in future monitoring periods

in the Financial resource (7. Alternative income source) and Biodiversity (13. Non-timber forest products (NTFPs) in the SOCIALCARBON Report. Guideline targets are:

- 2.4 “By 2030, ensure sustainable food production systems and implement resilient agricultural practices that increase productivity and production, that help maintain ecosystems, that strengthen capacity for adaptation to climate change, extreme weather, drought, flooding and other disasters and that progressively improve land and soil quality”.

- **SDG 3: Good Health and Well-being.**

The ABC Norte REDD Project maintains a partnership with the city hall for social assistance actions, donation of hypochlorite for water treatment in communities and visits together with a health professional for guidance. Beyond that, the project intends to implement an Occurrence Registration Form, to monitor and inform the local health center about the facts reported by the riverside communities and also offer sports-oriented activities, especially for children in the communities.

This SDG is monitored in the Social Resource (2. Expansion of community activities) and Human (5. Public health) in the SOCIALCARBON Report. Therefore, this project is aligned with the target below:

- 3.3 “By 2030, end the epidemics of AIDS, tuberculosis, malaria and neglected tropical diseases and combat hepatitis, water-borne diseases and other communicable diseases”.

- **SDG 4: Quality education.**

The project aims to invest in education for the communities affected by the project, such as basic education, professional training, environmental education, among others.

The carbon project encourages the local communities to participate in courses regarding technical skills, basic education, professional training, environmental education, among others. Moreover, the carbon project encourages the development of partnerships with educational entities striving for socioenvironmental scholarly initiatives. This SDG is monitored in the Social resource (2. Expansion of community activities), Human (6. Community education and training), Financial (11. Social and environmental investments), and Carbon (17. Stakeholder consultation) in the SOCIALCARBON Report. The targets determined by the UN that will act as a guideline for monitoring actions are:

- 4.1 “By 2030, ensure that all girls and boys complete free, equitable and quality primary and secondary education leading to relevant and effective learning outcomes”;
- 4.4 “By 2030, substantially increase the number of youth and adults who have relevant skills, including technical and vocational skills, for employment, decent jobs and entrepreneurship”;

- 4.5 “By 2030, eliminate gender disparities in education and ensure equal access to all levels of education and vocational training for the vulnerable, including persons with disabilities, indigenous peoples and children in vulnerable situations”;
- 4.6 “By 2030, ensure that all youth and a substantial proportion of adults, both men and women, achieve literacy and numeracy”;
- 4.7 “By 2030, ensure that all learners acquire the knowledge and skills needed to promote sustainable development, including, among others, through education for sustainable development and sustainable lifestyles, human rights, gender equality, promotion of a culture of peace and non-violence, global citizenship and appreciation of cultural diversity and of culture’s contribution to sustainable development”.

- **SDG 5: Gender equality.**

The Socioenvironmental Responsibility Program developed by the project elaborates different activities with the communities, on which the majority public is made up of women. Although so far there are no specific activities on women's empowerment and independence, there are women in the leadership of all communities, so they are already integrated into the decisions. Furthermore, the project intends to develop a cycle of lectures and training aimed exclusively at the female audience, with themes on gender inequality, domestic violence, and encouraging actions that develop professional activities to generate income.

The carbon project expects a continuous improvement concerning women's inclusion, such as through sponsoring events and initiatives which promote a gender equality environment. This SDG is monitored in the Social resource (1. Women inclusion, 2. Expansion of community activities, 3. Associations and Cooperatives), in the SOCIALCARBON Report. Thus, the project may have initiatives that contribute to the following targets:

- 5.2 “Eliminate all forms of violence against all women and girls in the public and private spheres, including trafficking and sexual and other types of exploitation”;
- 5.4 “Recognize and value unpaid care and domestic work through the provision of public services, infrastructure and social protection policies and the promotion of shared responsibility within the household and the family as nationally appropriate”;

- **SDG 6: Clean water and sanitation.**

As aforementioned, the project maintains a partnership with the city hall for donation of hypochlorite for water treatment in communities. This SDG is monitored in the Human Resource(5. Public health) Therefore, the ABC Norte project directly contributes to the target:

- 6.1 “By 2030, achieve universal and equitable access to safe and affordable drinking water for all”;

- **SDG 8: Decent work and economic growth.**

The project offers workshops, lectures and education for the local communities, as well as trainings for other alternative sources of income, such as pisciculture, agroforestry and poultry farming. Besides the training, they started the production, as well as the construction of the infrastructure necessary for each activity. The REDD project aims to offer training and income generation in the project region as a measure to conserve native forest standing and promote economic viability and growth in the local communities.

This SDG is monitored in the Social resource (3. Associations and Cooperatives), Human (6. Community education and training), Financial (7. Alternative income sources), Natural (11. Social and environmental investments), Biodiversity (Non-timber forest products (NTFPs)) in the SOCIALCARBON Report. Guideline targets are:

- 8.3 “Promote development-oriented policies that support productive activities, decent job creation, entrepreneurship, creativity and innovation, and encourage the formalization and growth of micro-, small- and medium-sized enterprises, including through access to financial services”;
- 8.6 “By 2020, substantially reduce the proportion of youth not in employment, education or training”;
- **SDG 12: Ensure sustainable production and consumption patterns.**

The carbon project nurtures a better environmental management system since increases stakeholder awareness concerning the climate changes mitigations, and whichever environmental activity the landowners intend to apply. Alongside, the project is based on encouraging sustainable development and maintaining the standing forest through the sustainable use of its resources, and it aims to optimize access to non-timber forest products and the consumption of local inputs. One of the main objectives is to reduce illegal deforestation and profit from this activity, offering alternatives for income and extraction. This SDG is monitored in the following resources: Human Resource (6. Community education and training), Financial (7. Alternative income sources), Natural (11. Social and environmental investments), Biodiversity (13. Non-timber forest products (NTFPs), and Carbon (17. Stakeholder consultation). The ABC Norte REDD Project has the following target and guideline:

- 12.2 “By 2030, achieve the sustainable management and efficient use of natural resources”
 - **SDG 13: Take urgent action to combat climate change and its impacts.**
- Another of the main objectives of the REDD project is to reduce greenhouse gas emissions through the conservation of standing forest. Thus, its activity is already an action to combat climate change and its effects. In addition, the project stimulates biodiversity monitoring initiatives in a measure to combat climate changes. This SDG is monitored in the Biodiversity (14. Biodiversity monitoring, 15. Impact on remaining flora) and Carbon (16. Buffer reduction, 18. Project performance) resources in the SOCIALCARBON Report. The targets and guidelines for this objective are:

- 13.2 “Integrate climate change measures into national policies, strategies and planning”;
- 13.3 “Improve education, awareness-raising and human and institutional capacity on climate change mitigation, adaptation, impact reduction and early warning”;
- **SDG 15: To protect, restore and promote the sustainable use of terrestrial ecosystems, to manage forests sustainably, to combat desertification, to halt and reverse land degradation, and to halt the loss of biodiversity.**

The project is based on the conservation and restoration of forests in the Amazon biome, ensuring forest services, preservation of natural resources and biodiversity. This SDG is monitored in the Natural (11. Social and environmental investments) and Biodiversity (14. Biodiversity monitoring, 15. Impact on remaining flora, 15. Impact on remaining flora) resources in the SOCIALCARBON Report. The targets and guidelines related to this objective are:

- 15.1 “By 2020, ensure the conservation, restoration and sustainable use of terrestrial and inland freshwater ecosystems and their services, in particular forests, wetlands, mountains and drylands, in line with obligations under international agreements”;
- 15.2 “By 2020, promote the implementation of sustainable management of all types of forests, halt deforestation, restore degraded forests and substantially increase afforestation and reforestation globally”;
- 15.5 “Take urgent and significant action to reduce the degradation of natural habitats, halt the loss of biodiversity and, by 2020, protect and prevent the extinction of threatened species”;
- 15.9 “By 2020, integrate ecosystem and biodiversity values into national and local planning, development processes, poverty reduction strategies and accounts”;
- 15.a “Mobilize and significantly increase financial resources from all sources to conserve and sustainably use biodiversity and ecosystems”;
- 15.c “Enhance global support for efforts to combat poaching and trafficking of protected species, including by increasing the capacity of local communities to pursue sustainable livelihood opportunities”.

Reducing deforestation and promoting sustainable development in the Amazon is also a key component to Brazil’s Nationally Determined Contribution (NDC) under the Paris Agreement. According to the Brazilian Government Ministry for the Environment (in Portuguese, Ministério do Meio Ambiente), the implementation of REDD+ activities are an important component to meet the Country’s contribution under the United Nations Framework Convention on Climate Change while preserving natural forest resources¹².

¹² Commitments available in Brazil’s INDC, from 2016, and reinforced in its update in 2020/2021. Available at <https://www4.unfccc.int/sites/NDCTaging/Pages/Party.aspx?party=BRA>

The following components of the Brazilian commitments under the Convention are reinforced by the development of the ABC Norte REDD Project:

- Strengthening and enforcing the implementation of the Forest Code, at federal, state and municipal levels;
- Strengthening policies and measures with a view to achieve, in the Brazilian Amazon, zero illegal deforestation by 2030 and compensate for greenhouse gas emissions from legal suppression of vegetation by 2030;
- Enhancing sustainable native forest management systems, through georeferencing and tracking systems applicable to native forest management, with a view to curb illegal and unsustainable practices.

In addition, beyond the project's ecological and carbon benefits, the implementation of REDD and SOCIALCARBON mechanisms together with CERFLOR seal promotes sustainable forest use. Beyond the project's ecological and carbon benefits, a proportion of the carbon credits generated will be dedicated to improving the social and environmental conditions in the project region, specifically contributing to improving deforestation control, and developing environmental education and other social activities.

SOCIALCARBON methodology will serve as a plan and guideline for carrying out activities and achieving goals, in addition to assessing progress in each monitoring period. In this way, the owners are committed and add value to the carbon project with each action taken, encouraging long-term sustainable development.

SOCIALCARBON is based on the monitoring of indicators of six aspects of the project's sustainability: carbon, social, biodiversity, financial, natural and human. The result is a hexagon that shows the evolution of the project's contributions over time.

2 SAFEGUARDS

2.1 No Net Harm

ABC Norte has conducted a social and economic impact assessment of the sustainable forest management carried out within the Project Area in 2020. The diagnosis was developed by UPBIO Soluções Ambientais for ABC Norte, within the scope of the Social and Environmental Responsibility Program of Fazenda Pacajá. The assessment included consultations with local stakeholders, who were asked about their impressions on the expected impacts related to ABC Norte activities.

The diagnosis presents official data and primary information referring to the municipality of Portel and the riverside communities addressed by the Social and Environmental Responsibility Program at Fazenda Pacajá, in addition to a territorial socioeconomic trait.

There are 13 communities in the reference region, 5 of which were analyzed by this study. According to the study, those communities are distributed mainly on the banks of the Pacajá and Jacundá rivers. These 5 communities add up to approximately 99 families, with an estimated population of 495 people. With the income generated by the carbon project, ABC Norte intends to expand this socio-environmental diagnosis to the other 10 communities in its surroundings.

Although the 10 communities were not included in the initial diagnosis or formally consulted about the project until the conclusion of the second verification, they actively participate in various services and programs promoted by ABC Norte. These initiatives include the Social Responsibility Program, the Social Action event, the Educator of Tomorrow Program, and healthcare services provided by the Basic Health Unit located at the Fazenda Pacajá headquarters. These activities are regularly offered and directly benefit members of the communities, which include Caminheiros do Bem, Deus Proverá, Fonte de Luz, Nossa Senhora da Aparecida/Santa Rosa, Nossa Senhora da Luz, Nova Jerusalém, São Sebastião do Cipoal, and Vista Alegre communities.

This consistent engagement demonstrates that these communities are well-integrated into the actions and initiatives promoted by ABC Norte, regularly accessing and benefiting from the services provided. Their participation indicates a clear awareness of the organization's activities and shows that, even without formal consultation, the project has fostered positive impacts. Moreover, it supports the conclusion that the sustainable management operations and the carbon project in the region do not generate conflicts or negative impacts for these communities.

The table below provides details on the identified potential risks:

Table 1. Main social, economic and environmental impacts of the ABC Norte REDD Project

Activity	Aspect	Impact	Effect		Comments/ Observation
			Beneficial	Adverse	
REDD: Carbon credit project	Environmental - Conservation of Amazon Rainforest	Greenhouse Gas Emissions Reductions	X		Monitored by the Carbon resource: - Project performance Monitored by the Natural resource: - Quality control

REDD: Carbon credit project	Environmental - Conservation of Amazon Rainforest	Monitoring and supervision to avoid deforestation of forest within the project area.	X		Monitored by the Biodiversity resource: - Impact on remaining flora Monitored by the Natural resource: - Quality control
REDD: Carbon credit project	Social - Conservation of Amazon Rainforest	Conflict management with communities in the project area, due to banning of timber product extraction.		X	Monitored by the Carbon resource: - Stakeholder consultation Monitored by the Human resource: - Conflict management
REDD: Carbon credit project	Social/Economic - Empowerment	Increased independence of the communities in the project area.	X		Monitored by the Social resource: - Associations and cooperatives - Expansion of community activities - Women inclusion Monitored by the Human resource: - Community education and training Monitored by the Financial resource: - Alternative income sources Monitored by the Natural resource: - Social and environmental investments Monitored by the Biodiversity resource: - Non timber forest products (NTFPs)

REDD: Carbon credit project	Social/economic - Application of the Social Carbon methodology	Encouragement and investment in social, economic and environmental aspects in the project region.	X	Monitored by the Social resource: - Expansion of community activities Monitored by the Human resource: - Community education and training Monitored by the Financial resource: - Carbon credit benefits Monitored by the Natural resource: - Social and environmental investments Monitored by the Carbon resource: - Project performance
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The identified impacts will be monitored through the indicators described on the last column of the table above.

In addition to the risks described above, Ecológica Assessoria has identified other risks that could affect the project activity, which are described by the SOCIALCARBON indicators. These risks are described on Table below:

Table 2. Significant risks to the project

Activity	Aspect	Risk	SOCIALCARBON Indicators that will monitor the identified potential risks
REDD carbon project	Environmental - Uncertainties relating to standing forest in the future.	Non permanence of carbon: Time which carbon will remain stocked in live biomass, without being emitted into the atmosphere. Due to the uncertainties related to what will happen to the forest in future, there is a risk of non-permanence of forest carbon.	Monitored by the Carbon resource: Buffer reduction

REDD carbon project	Environmental/Social - Land demarcation process	Risk of land invasion by deforestation agents	Monitored by the Natural resource: - Land Tenure Monitored by the Human resource: - Conflict management
REDD	Environmental - Sustainable forest management plan	Risk of non-performance of the sustainable forest management plan	Monitored by the Financial resource: - Alternative income sources Monitored by the Biodiversity resource: - Non timber forest products (NTFPs)

During this second monitoring period there was no record of significant harms in regard to the risks described above. ABC Norte maintained the established procedures to monitor and report on environmental or socioeconomic impacts from its forest operations throughout the entire monitoring period and also as part of the monitoring of the non-permanence risk, which shall be evaluated at each verification event. Nevertheless, this risk is also being assessed by the SOCIALCARBON Indicator described on the last column of the table above.

Any social conflict regarding the project will be assessed following Algar and ABC's Code of Conduct, and the Security Procedures detailed in section 4.4 Monitoring Plan. ABC Norte works to resolve conflicts based on conversation and the promotion of basic and environmental education. In this way, the REDD project itself and the expansion of the Social Responsibility Program conducted by the company are ways of mitigating conflicts and maintaining good relationships with the communities.

2.2 Local Stakeholder Consultation

The purpose of the local stakeholder consultation is:

- Ensure that all stakeholders are aware and informed about the REDD project and its objectives;

- Assist the project proponent/developer in identifying potential topics for local communities;
- Provide different opportunities to stakeholders for discussion and participation in the validation process.

The main stakeholders considered in this project are:

- The communities located within the project's reference region and near the project area's boundary
- ITERPA
- UP Bio
- Prefeitura de Portel
- J&Y
- JPR
- Secretaria Estadual de Meio ambiente e Sustentabilidade
- Secretaria Municipal de Meio Ambiente - Portel
- Secretaria de Educação de Portel
- Grupo Martins
- NBX Florestal
- AMPLA Consultoria
- M&D Advogados
- Instituto Nacional de Colonização e Reforma Agrária (INCRA)
- WWF – Brazil;
- Instituto Brasileiro do Meio Ambiente e dos Recursos Naturais (IBAMA).
- Instituto Chico Mendes de Conservação da Biodiversidade (ICMBio);
- Serviço Florestal Brasileiro
- Programa Municípios Verdes
- CEPAM
- Sysflor
- UFRA
- IFT Pará

It is important to highlight that, despite the project start date is September 2017, the first formal consultation on the carbon project was held in 2021. However, one of the main activities carried out by ABC Norte, related to the development of the REDD project, was the reapprochement with the communities, and carrying out diagnoses, both for the evaluation of suggestions and comments on the conduct of the management plan, social management and illegal activities in

the surroundings of Fazenda Pacajá, as well as to understand the needs and needs of the families. These consultations and technical visits started in 2017.

Due to the worldwide Corona Virus pandemic that was established in 2020, security and protection measures had to be taken to carry out the consultation with stakeholders. To contain new cases and avoid agglomerations, stakeholder consultation was carried out remotely during the validation. Thus, the Stakeholder consultation was divided in two steps: an online meeting and a local consultation with the community within and near the project instance area, where the leakage management area was defined.

To stakeholders located in urban areas, mostly government agencies, an explanatory letter was sent, briefly presenting the project. Moreover, they were also invited to attend a remote conference, with an email as a reminder for the meeting.

Furthermore, in general, these consultations also communicated:

- The project implementation, including the project results and the importance of forest conservation activities.
- The risks, costs and benefits the project brings to local stakeholders.
- The benefit sharing mechanism.
- Procedures related to resolve eventual conflicts with stakeholders.
- The process of VCS Program validation and verification and the validation/verification body's site visit.
- During the Local Stakeholder Consultations, no comments or suggestions regarding the project design were made.

In addition, a permanent communication channel with local stakeholders was created in order to receive any comments or suggestions regarding the present REDD project. During the visit, an informative folder was distributed, containing address, e-mail and telephone number of Ecológica Assessoria and ABC Norte. Thus, the channel is available for any comment, suggestion or criticism. These will be registered and forwarded to the responsible part. In addition, the communities also have contact with the Social Responsibility Program team through message app, besides the monthly visits held by the ABC Norte Social Responsibility Program. All the results of the consultation are described in the VCS PD.

All comments received, and outcomes are documented and stored in digital format. The SOCIALCARBON methodology also analyze the frequency and methods used for addressing the outcomes of each local stakeholder consultation, which are analyzed at each verification event.

It is important to state that all relevant laws and regulations covering workers' rights in Brazil are followed by ABC Norte and are communicated to each employee upon hiring¹³.

¹³ Applicable Brazilian legislation for workers' rights is available in Law nº 5,452 < http://www.planalto.gov.br/ccivil_03/decreto-lei/dele5452.htm> and NR-31 from the Work Ministry < <https://www.gov.br/trabalho-e-previdencia/pt-br/composicao/orgaos-especificos/secretaria-de-trabalho/inspecao/seguranca-e-saude-no-trabalho/normas-regulamentadoras/nr-31-atualizada-2022-retif.pdf>>

Of the communities identified as stakeholders, five were directly impacted by the project activities until March 2023 (Cristo Salvador, Divino Espírito Santo, São Sebastião do Cipoal, Nossa Senhora do Carmo, and Monte Sião); all of these were consulted prior to validation. In addition, the project includes extensive monthly community activities in each of the five communities. Alongside social impact activities, training, and healthcare, communities also have the opportunity to provide comments and requests to the Upbio team. No comments or inquiries about the REDD Project were made; the communities' requests mainly pertained to infrastructure, housing, health, and education.

Moreover, during the Verification site visit, four out of the five communities participating in the PRS were visited. Interviews were conducted in the Monte Sião community with three residents, including the community leader. In the Divino Espírito Santo community, contact was made with three residents, including the assistant leader and the minister of the local church. Moving to the São Sebastião do Cipoal community, interviews were conducted with five individuals, including the Secretary of the Association. Finally, in the Nossa Senhora do Carmo community, five representatives were interviewed, with the community leader present. Unfortunately, the Cristo Salvador community could not be included in the verification visit due to logistical challenges. Situated farthest from the ABC village, this community can only be accessed by river, requiring a two-hour journey. The available boat had limited passenger capacity, necessitating two trips to transport the entire team. Moreover, the preceding activity took longer than anticipated, affecting the adherence to the initially scheduled timeline. The verification visit occurred in July 2023, coinciding with Brazil's school vacation period, which significantly impacted community participation, as many families chose to relocate temporarily.

Despite these challenges, the project remains actively engaged in communication with stakeholders, primarily aiming to foster partnerships, particularly focused on the Socio-environmental Responsibility Program (PRS). In January 2021, ABC Norte convened meetings with Portel Municipality's City Council and various municipal secretariats to present and discuss the PRS and Sustainable Forest Management at Pacajá Farm. Representatives expressed satisfaction with ABC Norte's community work. The company also maintains direct and regular dialogue with local residents through monthly visits and accessible communication channels. In June 2021, Ecológica and ABC Norte held educational sessions in five communities, highlighting forest preservation and carbon credit sales. Informative booklets were distributed during a Children's Day event, enhancing community awareness. For further details on Stakeholder Consultation, refer to Section 6.1.6, Indicator 18. Also, the channel continued available for any comment, suggestion or criticism. In addition, the communities also maintain contact with the Social Responsibility Program team through the message app, besides the monthly visits held by the program.

The ABC Norte REDD Project is committed to establishing a mechanism for ongoing communication and grievance reporting to allow all relevant stakeholders to raise concerns about potential negative impacts during project implementation. Recognizing the importance of expanding and strengthening communication with all stakeholders, including communities not yet formally consulted about the project, an Action Plan was developed.

The first phase of the Action Plan will involve reaching out to all remaining communities through a dedicated effort to inform them about the project, communicate the established channels for

grievances and inquiries, and foster closer connections between the communities, the project team, and project activities by the end of 2024¹⁴.

The second phase will be conducted during the 5th edition of Social Action will take place on December 6, 2024, at Fazenda Pacajá. Among the planned activities is a session led by teams from ABC Norte and UPbio, gathering representatives from neighboring communities to discuss key aspects of the project. During the session, the project's objectives and expected contributions to local development will be presented. Additionally, official communication channels and the grievance mechanism will be explained, outlining the process for submitting concerns or disputes and the steps for resolution¹⁵.

The third phase will occur during the stakeholder consultation for the project's revalidation, following the new methodology. This latter phase will include all identified stakeholders, covering the communities surrounding the project area. According to VCS Standard v.4.2, the baseline reassessment period was reduced to six years for AUD projects. The ABC Norte REDD Project, which started on 13-September-2017, would complete six years on 12-September-2023. However, due to the short remaining monitoring period to complete this baseline - less than five months between 01-April-2023, and 12-September-2023 - a FAR was raised by the VVB team, indicating that, as of 01-April-2023 (the first day after the end of the second monitoring period), the project should renew its baseline. Consequently, from that date, the project enters its second crediting period, following the new consolidated methodology VM0048.

As part of this process, a new consultation with the stakeholders will be conducted, with the aim of informing them about the project's objectives, risks, and benefits, and ensuring broad stakeholder participation. During the consultation, the main communication channels with the project proponent and the project's grievance redress mechanism will also be presented. For the 13 communities surrounding Fazenda Pacajá, these activities will be organized in person to facilitate direct dialogue and foster closer engagement. For institutional stakeholders, companies, NGOs, and other involved groups, a remote consultation will be organized to accommodate their needs and availability.

The fourth and final phase of this Action Plan involves renewing the contract with Upbio – the third-party company responsible for the Socioenvironmental Responsibility Program – to include all 13 communities in its activities, starting in February 2025. This will ensure that all communities be directly impacted by the ABC Norte REDD+ Project, fostering closer engagement with the communities and reinforcing the use of communication and grievance channels. The

¹⁴ This phase was completed in November 2024, the communities Deus Proverá, Vista Alegre, and Nova Jerusalém were consulted, this will be reported in detail in the next Monitoring Report.

¹⁵ This phase was completed in December 2024, with the presence of the VVB for interviews with the communities. All communities were invited, and transportation and fuel were provided to facilitate their attendance. However, only eight communities participated, four of which had already been interviewed by the VVB in previous processes, while the other four had not. Considering that five communities had already been interviewed during the Validation and Verification processes conducted so far, this phase brings the total number of interviewed communities to nine. Are they (1) Divino Espírito Santo, (2) São Sebastião do Cipoal, (3) Nossa Senhora do Carmo, (4) Nossa Senhora de Aparecida/Santa Rosa, (5) Deus Proverá, (6) Cristo Salvador, (7) Vista Alegre, (8) Monte Sião and (9) Nova Jerusalém.

Action Plan is better described in Appendix IV. In cases where communities cannot be reached, the additional plan outlined in Appendix V will be carried out.

After the conclusion of this Monitoring Period, the project continued engaged with the Stakeholder Consultation process, in October 2023 the project initiated engagement with another community (Caminheiros do Bem), which is located within the farm area, although it is not situated within the Project Area (as per Figure 2). Two visits have been conducted so far, after the current monitoring period, in addition to the Community's participation in the Annual Social Action Event (More information regarding the event in section 2.3).

On October 28, 2023, an introductory visit was conducted with 14 residents of the Caminheiros do Bem community at the residence of Mrs. Neca. The visit aimed to establish a dialogue and explain the PRS and the Carbon Project and its objectives. It was agreed that another meeting would be held for the official presentation of the PRS, including participation from the community.

On November 22, 2023, a second meeting took place with fourteen participants attended from Caminheiros do Bem and Fonte de Luz communities. On this meeting, the project was presented, focusing on the objectives of the PRS, historic of the social and environmental actions carried out since 2018 in communities near Fazenda Pacajá. The residents asked questions and expressed satisfaction. It was highlighted that the PRS and Upbio Team serves as a communication channel for the project.

As a means of community inclusion in the PRS, there was a planned activity scheduled for February 20, 2024. However, the activity did not take place due to lack of consent from the Community, who informed the Upbio team through the communication channel via Whatsapp. The main reasons for the community not providing consent were the absence of established leadership at the time. Out of respect for the request, the activity was canceled. To address this situation, the project continues to maintain contact with the community in order to build trust and obtain consent in the future. This situation will continue to be monitored in the upcoming Verifications.

In July 2024, the project initiated the identification of High Conservation Values (HCVs). As part of this process, the communities of Santa Rosa/Nossa Senhora Aparecida and Nossa Senhora da Luz were visited, and communication channels were established. Following this initial contact, the Santa Rosa/Nossa Senhora Aparecida community reached out to the Proponent to request inclusion in the Social Responsibility Program, which was implemented starting in October 2024.

On 23-October-2024, an informational activity was held in the Nossa Senhora de Aparecida/Santa Rosa community to strengthen engagement and share relevant information about sustainability and initiatives promoted by ABC Norte. During the meeting, details were presented on wildlife monitoring activities, the ABC Norte REDD+ Project, and training programs focused on income generation for local communities. Additionally, informational materials were distributed to the nine residents in attendance, enhancing understanding of the company's actions and encouraging active participation in socio-environmental development initiatives.

On November 15, 2024, ABC Norte carried out another planned action, sending a team to visit the communities of Deus Proverá, Nova Jerusalém, and Vista Alegre. During the visits, the REDD+ carbon project, communication channels, and grievance mechanism were presented.

As visits to the Caminheiros do Bem, Fonte de Luz, Nossa Senhora de Aparecida/Santa Rosa, Deus Proverá, Nova Jerusalém, and Vista Alegre communities were conducted after March 2023, it was considered that during this monitoring period no formal Local Stakeholder Consultation was conducted with the communities covered by the Social Responsibility Program (PRS) and, thus no comments from these meetings were documented. The ongoing pandemic, which lasted until 2022, the Validation process of the VCS, which continued until early-2023, and the logistical access difficulties were the main reasons for not holding formal Stakeholder Consultation meetings during this period.

This indicates that, to date, 12 out of the 13 communities identified by the project have been formally consulted. To ensure engagement with all communities, the project will continue as outlined in the Action Plan detailed in Appendix IV and V.

2.3 AFOLU-Specific Safeguards

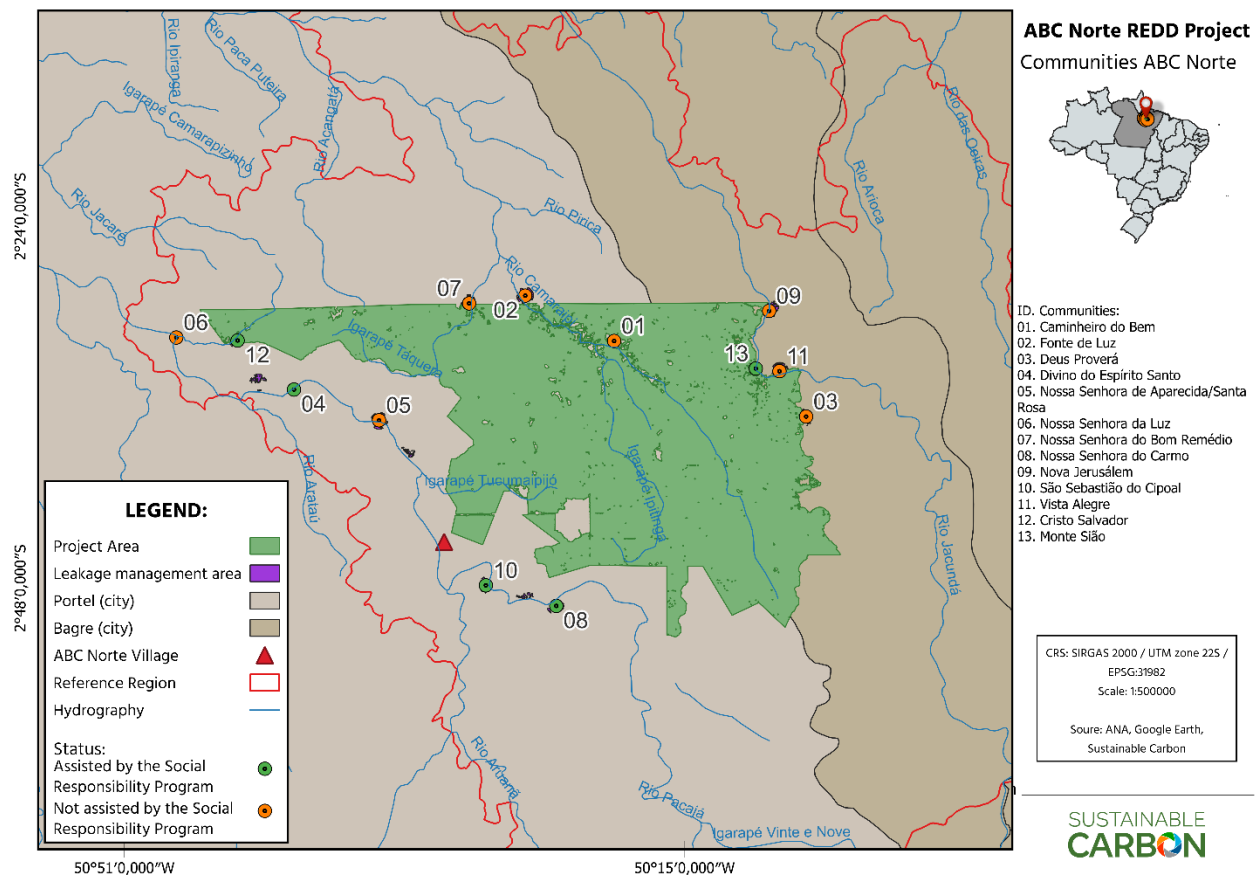
Local Stakeholder Identification and Background

Stakeholders were identified through research and previous social activities developed by ABC Norte in the project area. The main stakeholders included representants from communities located within the project's reference region and near the project area's boundary, Governmental agents, Environmental and Agricultural Agencies, and private sector. The list is available at section Local Stakeholders Consultation above.

According to the Socio-economic report, it was identified that, among the estimated population of 495 people, divided into 99 families, there are 76% adults, 22% children and 2% of people with special needs (PNE). The communities were formed, in their majority, by matriarchs and patriarchs, each community being identified with the name of its patron Saint, in which 79% of the residents of the communities are catholic. It is important to note that environmental and social activities carried out by the project try to benefit all communities. This was measured by SOCIALCARBON indicators during the current monitoring period, which analyzed the extent of alternative income generation sources and further programs and alternative income sources, besides the applied methods for local stakeholders' consultation.

Figure 2 below shows the location of communities, outside the project area that are predicted to be impacted by the project.

Figure 2. Location of the communities around the Project Area



Due to the dynamic nature of these communities' displacement, it is common for new communities to emerge from time to time – starting with just one or two families and expanding over time. Currently, there are 13 communities surrounding the Project Area, of which 5 are already being directly impacted by the project's activities through the Social Responsibility Program implemented by Uppbio.

Risks to Local Stakeholders

The project proponent understands that some risks are inherent to the project activity, and that others may arise from stakeholder's doubts. Considering this, the table below presents potential risks and impacts to local stakeholders and measures taken to mitigate those.

Table 3. Risks to Local Stakeholders

Aspect	Impact	Effect	Comments/ Observation
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		Beneficial	Adverse	
Sustainable Forest Management Plan	Logging		X	ABC Norte works with the Sustainable Forest Management Plan, exploring a volume below the authorized by the Exploitation License. In addition, sustainable management certifications (FSC) are guarantees of a planned management that reduces impacts on the environment and communities. Monitored by the Biodiversity resource: - Impact on remaining flora Monitored by the Natural resource: - Quality Control
Sustainable Forest Management Plan	Reduced access to land due to expansion of exploration		X	The region where the communities live is not within the Management Plan, and therefore will not be affected by logging activities. In any case, the expansion of the exploration is not foreseen, and, if any, it will be communicated and carried out in order to avoid the displacement of residents or limitation of land access. Monitored by the Natural resource: - Quality Control - Land Tenure

Resources	Withdrawal of natural, economic and cultural resources (water, food, alternative income, cultural events, etc.) from families		X	The region where the communities live is not within the Management Plan, and therefore will not be affected by logging activities. The project's objective is to guarantee financial resources to maintain sustainable and certified wood management and also to expand the socio-environmental benefits for the communities within and around the Project Area. Thus, certifications and the use of Social Carbon are a guarantee that there will be no reduction in access and/or withdrawal of resources from impacted families. Monitored by the Biodiversity resource: - Non-timber forest products (NTFPs) Monitored by the Carbon resource: - Stakeholder consultation Monitored by the Financial Resource: - Alternative income sources
Land access	Reduced access to traditional areas		X	The management plan area does not include communities' access regions, and therefore, they will not be affected by the maintenance of activities. There are no plans to expand the management area, and communities are guaranteed access to customary land. Monitored by the Natural resource: - Quality Control - Land Tenure

Land use	Displacement of families due to project activity		X	Families will not be removed from the area currently used. ABC Norte maintains a relationship with the families, and one of the objectives of the carbon project is to expand social and environmental benefits. ABC Norte recognizes the permanence and land use of the families in the project area, and any changes will be previously communicated. Monitored by the Human resource: - Conflict management Monitored by the Natural resource: - Land Tenure
Food Security	Withdrawal of land used for food production or income generation		X	The management plan area does not include communities' access regions, and therefore, they will not be affected by the maintenance of activities. The areas for planting / ranching for subsistence or for selling for income generation will not be included in the management plan and the removal of these lands is not planned. Monitored by the Biodiversity resource: - Non-timber forest products (NTFPs) Monitored by the Natural resource: - Land Tenure

Climate change adaptation	Adaptations and impacts related to the climate crisis	X	The main objective of the project is forest conservation, avoiding unplanned deforestation. The maintenance of the standing Forest is essential to mitigate the effects of the climate crisis and the maintenance of natural resources for the population. The project also contributes to achieving climate justice, since the groups that suffer most from climate change are the vulnerable and traditional communities. Monitored by the Financial resource: - Carbon Credit Benefits Monitored by the Natural resource: - Social and environmental investments Monitored by the Carbon resource: - Project performance
Discrimination or sexual harassment	Involvement of project proponent or any other entity in any form of discrimination or sexual harassment	X	The project activity doesn't endorse any form of discrimination based on gender. Brazil has ratified ILO Conventions 45 (Underground Work (Women) Convention) and 111 (Discrimination (employment and occupation) Convention)¹⁶. In addition, Algar/ABC has an internal code of conduct, including a supplier code of conduct to guide and guarantee the ethics and safety of its workers and activities.

¹⁶ Available at < https://www.ilo.org/dyn/normlex/en/f?p=NORMLEXPUB:11200:0::NO::P11200_COUNTRY_ID:102571>

Expertise and prior experience in Land Management and Carbon Project	Carbon project management and internal management and social activities	X	The team responsible for the development of the project, mapping and socio-environmental diagnosis has previous experience and technical knowledge to conduct the project. Ecológica Assessoria is responsible for the Carbon Project development; Ecológica Institute experience in forest projects dates back to 1998 with ten projects and contracts. In addition, the Ecológica Assessoria team has successfully validated and verified more than 50 voluntary emission reduction projects, over twelve years. ABC Norte has a dedicated forest management team to organize, monitor and conduct the Sustainable Forest Management Plan in Fazenda Pacajá.
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Respect for Local Stakeholders Resources

ABC Norte recognizes, respects and supports local stakeholders' customary tenure/access rights to territories and resources. The project will never encroach on private property or relocate people off their lands without consent. In the event there are any ongoing or unresolved conflicts over property rights, usage or resources, the project shall undertake no activity that could exacerbate the conflict or influence the outcome of an unresolved dispute.

ABC Norte has a stable relation with the communities, with activities in the region dating back to 1979. In 2017 the company took over the management of the area and the SMFP, also initiating social actions with the communities, with the Social and Environmental Responsibility Program (PRS). Although there are 13 communities identified in the region, monthly visits from a technical team are currently provided in only 5 of them so far, due to difficulties in transportation and communication with the other communities. With the carbon project revenue, the program is expected to reach all communities.

According to the VCS PD, the ABC Norte REDD Project will expand the socio-environmental diagnosis to the other communities identified in its surroundings. This expansion has not been possible during this Monitoring Period, mainly due to logistical challenges and the respectful and integral approach that shall be made with each of the communities that are not yet part of the Socioenvironmental Responsibility Program (PRS). Thus, so far, the project has focused on the communities strategically located for territory management and engagement with other communities. It is important to note that, as shown in Figure 2, the locations of the communities involved in the project so far form a strategic barrier to contain deforestation, with four along the Pacajá River and one at the other end of the property. Additionally, the Monte São community is located very close to the Vista Alegre community, and Cristo Salvador is relatively near Nossa

Senhora da Luz, Monte Sião and Cristo Salvador, which are involved in the PRS and are directly impacted by the project's activities, serve as support points for approaching Vista Alegre and Nossa Senhora da Luz in the future. It is important to emphasize that the distance of the displacements also strongly impacts the expansion of project's activities, as it is not feasible to visit all the 13 communities identified as stakeholders in a timely manner. Nonetheless, the ABC Norte REDD Project is committed to extending the Local Stakeholder Consultation to all 13 communities during the revalidation of the next baseline.

Therefore, until now, the project has impacted only five communities (Monte Sião, Cristo Salvador, Nossa Senhora do Carmo, São Sebastião do Cipoal, and Divino Espírito Santo), in addition to the attempts to approach Caminheiros do Bem in 2023, as mentioned in the previous section. However, even though the remaining communities are still not formally covered by the PRS, the project is indirectly reaching them and even other that are not located within the project's influence zone. Every year, the project hosts an Annual Social Action event at the farm, where the communities have access to healthcare services, lectures, citizenship services, and a fair where they can sell their products. This event is not limited to the communities identified as Stakeholders, but also to all riverine and rural communities that can attend. In the 2023 event, 21 communities were attended. Invitations are disseminated through WhatsApp groups with the communities and partners of the Portel municipality, where they are widely publicized to other interested parties.

Figure 3. Invitation to Social Action Event at Pacajá Farm, where the ABC Norte REDD Project is located



The objective of the Social Responsibility Program (PRS) is to expand and reach all communities listed in the Reference Region (according Figure 2) throughout the Project's lifecycle, but this expansion requires planning, increased investment, and social strategies for engagement. It is important to mention that the expansion of the PRS is directly associated with the activities of the REDD+ project. In other words, the inclusion of additional communities in the PRS implies that they will also be introduced to the project and consulted regarding its activities. As mentioned in section 2.2 above, the remaining communities identified as stakeholders will be consulted during the baseline revalidation process.

ABC Norte is the legal owner of the project area, however, has a verbal agreement with the communities to maintain the current use of land, as long as they commit to forest preservation and leave no environmental liabilities. There is no legal agreement since all contacts with the community are made prioritizing conversation and good relationship. In addition, the company prevents the community from being required to sign any documents, in order to avoid embarrassment and misunderstandings. The SMFP does not include the region occupied by the communities.

No community member has been or will be removed from their land, on the contrary, communities will be supported through programs and incentives the project proponent will instigate. In addition, the project did not introduce any invasive species or allow an invasive species to thrive through project implementation. If the project implements any reforestation project with non-native species over native species in the future, the possible risks and adverse effects of exotic species will be justified and explained to communities.

Communication and Consultation

The project took all appropriate measures to communicate and consult with local stakeholders in an ongoing process for the life of the project. As described above, the project conducted a local stakeholders consultation and meetings during the validation of the project, which were monitored by SOCIALCARBON certification. This consultation communicated: The project implementation, including the project results and the importance of forest conservation activities.

- The risks, costs and benefits the project brings to local stakeholders.
- The benefit sharing mechanism.
- Procedures related to resolving eventual conflicts with stakeholders.
- The process of VCS Program validation and verification and the validation/verification body's site visit.

Grievance redress and conflict management procedures, as well as benefit sharing mechanisms, have been discussed with communities through stakeholders consultations. Furthermore, a

permanent communication channel with local stakeholders was created in order to receive any comments or suggestions regarding the present REDD project. The Grievance Redress Procedure is published on the official Algar Farming social media page¹⁷. All comments received were responded. Moreover, in case of any grievances, this will be resolved in a suitable timeframe whenever possible, taking into account culturally-appropriate conflict resolution methods.

Furthermore, ABC Norte maintains constant communication with the stakeholders, during the visits for the social diagnosis report and activities conducted with the communities, or during meetings with the local government. This permanent communication channel with local stakeholders is available to receive any comments or suggestions regarding the project.

Regarding conflicts, there were no land tenure-related conflicts during this monitoring period. However, incidents of burning have occurred within the Pacajá Farm boundaries, mainly for cassava cultivation and timber theft, carried out by a resident of the Monte São/Santa Terezinha community. ABC Norte addresses these conflicts by following Standard Operating Procedures 11 - Conflict Mediation, initiating contact with community leaders to educate residents on farm boundaries, forestry activities, and the prohibition of burning and timber appropriation. Upon clarifying facts with the community, ABC Norte reports incidents to authorities, requests support for monitoring, and enhances communication channels, including messaging apps, social media, monthly technical visits, and suggestion boxes in communities. Additionally, ABC Norte invests in its Socio-Environmental Responsibility Program, promoting alternative income sources to combat deforestation and timber theft. For further details on Conflict Management, refer to Section 6.1.2, Indicator 4.

3 IMPLEMENTATION STATUS

3.1 Implementation Status of the Activity

The VCS PD was validated by the Validation and Verification Body (VVB) RINA Services S.p.A. and this present monitoring report is being verified by Designated Operational Entity EcoLance Private Limited.

ABC Norte has maintained the SFMP and the project activities fully operational in this monitoring period and since the starting date of the crediting period. The project activities include banning of illegal logging, social education and supervision of deforestation by a management team and through satellite images.

In addition, during the monitoring period, ABC Norte maintained its sustainable forest management plan with CERFLOR certification. That is, it is guaranteed that this project has offer

¹⁷ <https://www.instagram.com/p/C7ALVnRJmvQ/?igsh=MWc1MDhhaWlpb2FhMg%3D%3D>

numerous benefits for the sustainable development of the region, contributing to the conservation of local biodiversity, generation of knowledge and income for the local community.

The monitoring data was kept according to the monitoring plan described in the approved VCS PD. This Monitoring Report refers to the second monitoring period of this project and includes data from 01-January-2021 to 31-March-2023.

According to the VCS PD, the main land-uses are: cattle ranching, mainly for producing beef cattle; and timber harvesters, acting both legally and illegally.

Mitigation actions of deforestation events and unauthorized fires in the project area and leakage belt occur from the monitoring of these areas. Reports are issued from the processing of the satellite images and, when detected an opening point or heat focus, the patrol team is asked to check in loco whether the event was undue or natural (e.g., tree fall). The rounds can also be requested when some riverine denounces anonymously. During the rounds, one hardly finds anyone on site, only traces of the activity that took place. If someone is found, the security team conducts a conversation informing them that the property is private and that only legalized timber is allowed. The guards ask the person to leave the site, showing farm delimitations when needed. The security guards in the guardhouses control the entry and exit of the property, with requests for identification documents and prior authorization of the activity to be carried out on the property (work, provision of services, search for service in the health center, etc.). The cleaning of the farm limits represents a security measure to inform that there is an area delimitation, that is, they belong to someone. This visual demarcation is widely understood as a delimitation of area by the riverine people.

When an unauthorized cut/deforestation/fire is confirmed, photographs and coordinates are recorded. Reports are made from this information collected, followed by the registration of police reports. With the police report is made a letter to be filed in SEMAS PA requesting inspection on the spot. SEMAS then informs the period for the inspection operation, requesting support for its execution, such as guidelines on how to get to the property, lodging in accommodation, and directions to walk inside the property and go to the place of improper opening. The SEMAS agents and police will then inspect the place and when they find irregularities, perform the proper seizure and action which usually lasts a week.

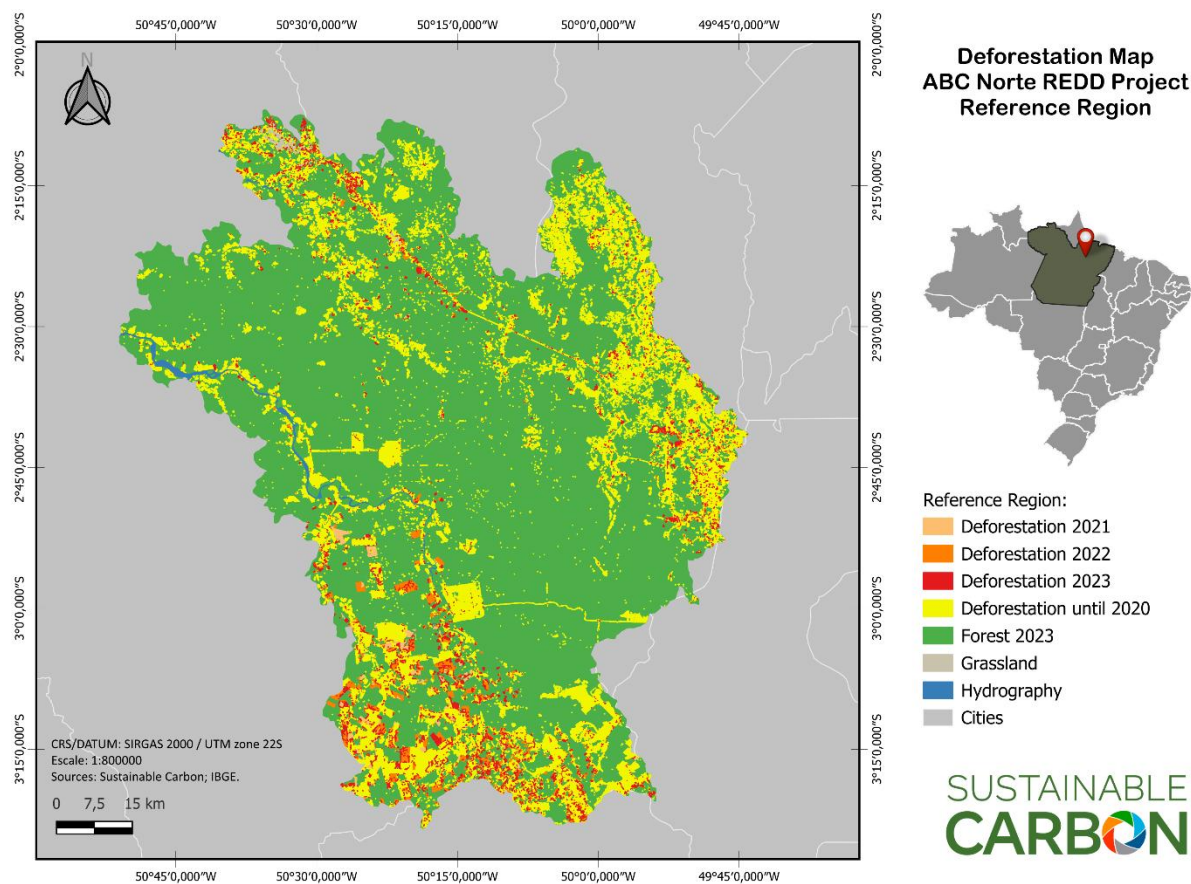
As Fazenda Pacajá is a private property and ABC Norte has no power of policing and environmental inspection, the actions of tracking and mitigation of unauthorized events are limited to monitoring and reporting to the competent agencies, in addition to the socio-environmental program to prevent these events inside and outside the property.

In the Reference Region, the actual classified deforestation during the monitoring period was of 28,894.21 ha, which corresponds to around 0.65% per year. Meanwhile, the predicted area in the baseline scenario that would be deforested within the reference region during this monitoring period from 2021 to march of 2023 would be 25,914.99 ha, meaning an annual average

deforestation rate of 0.89% per year. A fact that also demonstrates the conservatism in relation to the emissions reductions verified in this monitoring period.

Comparing to what occurred during the 2007 – 2016 period (historical reference period), when the annual average deforestation rate within the reference region was of 0.61%, an increased tendency in the deforestation rate in the region could be noted. This figure shows that ABC Norte activities in the region could help reducing the advancement of deforestation towards the project area. In fact, deforestation rate within the ABC Norte project area was 0.13%, a significantly lower value than the occurred in the reference region. The map with the annual areas of deforestation within the reference region during the current monitoring period is showed below.

Figure 4. Deforestation in the Reference Region in 2021-2023



The deforestation analysis in the current Monitoring Period was performed using MapBiomass collection 09.

Social Carbon

This is the SOCIALCARBON Report Point One and, compared to the Point Zero, the project presented a great evolution for Social, Human, Financial and Natural Resources and, for this last one, the project reached the maximum score. For Biodiversity and Carbon Resources the scores remained the same. The project achieved a 4.5 average score resulting in a satisfactory scenario.

ABC Norte has a Socio-environmental Responsibility Program that aims to contribute to local development and quality of life of the communities around Pacajá Farm. There are 13 communities identified in the region, however only 5 of them receive monthly visits from a technical team for training and technical assistance, due to difficulties in transportation and communication with the other communities. Additionally, annually the company realizes the event “Social Action”, that aims to offer health, citizenship and culture services to the communities. In 2021 around 200 residents from 07 communities participated in the activities and in 2022 this number increased to 450 residents from 11 communities.

The Program is divided in three thematic axes to guide the actions: Income generation, Education and Social assistance. The project invested in the development of fish farming, poultry farming, horticulture, agroforestry systems, and handicraft in the communities, according to the resident’s interests.

Education is also a theme to which the project has dedicated efforts. There is a school on Pacajá Farm to encourage youth and adult education. The project also provided materials for the construction of a library in the Divino Espírito Santo Community and the revitalization of the São Sebastião do Cipoal community school in July and August of 2022. For the environmental aspects, the ABC Norte monitors local fauna and flora in the Pacajá Farm’s influence area. ABC Norte also performs specific monitoring concerning the impact on the remaining flora. Encompassing the monitoring period, fauna monitoring was carried out in February 2021 and August 2022. Local flora was evaluated in the monthly monitoring performed with remote sensing throughout the farm area and in the monitoring carried out during the harvest period and off-season in the active APUs. Lectures about the importance of preserving the forest and the 5 R’s (refuse, reduce, reuse, repurpose, and recycle) were carried out on May 28th 2022.

The following is a list of activities conducted in the communities served by the ABC Norte Socio-environmental Responsibility Program during the monitored period. More details on the actions carried out at each resource can be found in section 6 of this report.

Cristo Salvador community

- Natural fiber craft workshop;
- Lecture about Mental and emotional health;
- Technical visit for guidance on poultry farming system;

- Presentation about the importance of preserving the forest and also the carbon credit sales in the national and international market.

Divino Espírito Santo community

- Natural fiber craft workshop;
- Fabric painting workshop;
- Lecture about associativism;
- Lecture about domestic accident prevention;
- Lecture about Mental and emotional health;
- Donation of educational material regarding healthy eating to children;
- Technical visit for guidance on agroforestry systems;
- Lecture about Sustainable Forest Management that take place in Pacajá Farm;
- Donation of painting material and termite insecticide for the construction of a library;
- Donation of 1,000 textbooks and some children's books to the school and library from Divino Espírito Santo Community;
- Donation of 50 scholar kits;
- Donation of martial arts mats;
- Presentation about the importance of preserving the forest and also the carbon credit sales in the national and international market.

Nossa Senhora do Carmo community

- Natural fiber craft workshop
- Fabric painting workshop
- Lecture about Mental and emotional health
- Donation of educational material regarding healthy eating to children
- Technical visit for guidance on poultry farming system;
- Lecture about Sustainable Forest Management that take place in Pacajá Farm;
- Donation of 50 scholar kits
- Palestra sobre preservação e crédito de carbono

São Sebastião do Cipoal community

- Natural fiber craft workshop;
- Fabric painting workshop;

- Lecture about associativism;
- Donation of 50 oral hygiene kits;
- Lecture about Mental and emotional health;
- Donation of educational material regarding healthy eating to children;
- Lecture about 5 R's;
- Revitalization of the São Sebastião do Cipoal community school;
- Donation of 50 scholar kits;
- Presentation about the importance of preserving the forest and also the carbon credit sales in the national and international market.

Santa Teresinha/Monte Sião community

- Natural fiber craft workshop;
- Lecture about Mental and emotional health;
- Donation of educational material regarding healthy eating to children;
- Technical visit for guidance on poultry farming system;
- Presentation about the importance of preserving the forest and also the carbon credit sales in the national and international market.

Although some communities were not served by the ABC Norte Socio-environmental Responsibility Program during the monitored period, they have access to the services provided by ABC Norte and benefit positively from various initiatives promoted by the company and the project. However, to adopt a more conservative and precise approach to impact assessment, the SOCIALCARBON Report indicators were scored exclusively based on activities targeting communities formally consulted and served under the Social and Environmental Responsibility Program.

3.2 Deviations

3.2.1 Methodology Deviations

This project activity does not apply any methodology deviations.

3.2.2 Project Description Deviations

Change in the Project Participants:

Uezu Planejamento Ambiental S/S LTDA was removed as an Other Entity, as mapping responsibilities have now been assumed by the Project Proponent.

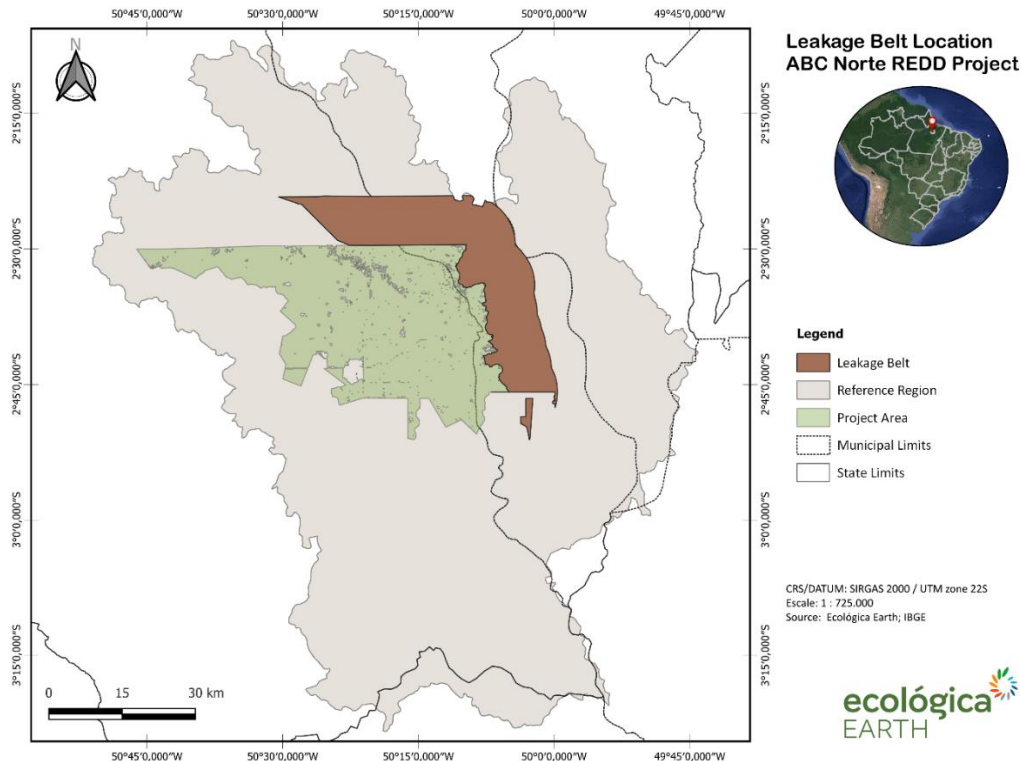
GWP Update:

According to the VCS Standard v4, the six Kyoto Protocol greenhouse gases and ozone-depleting substances shall be converted using 100 year Global Warming Potentials derived from the current and most recent data available. During this second monitoring period, the Global Warming Potential (GWP) for CH₄ and N₂O were updated according to the IPCC Fifth assessment Report (AR5), where GWP for N₂O = 265 and GWP for CH₄ = 28. This requirement was established as a future obligation placed during the validation process for the other monitoring of the ABC Norte REDD Project, including the recalculation of the baseline values, since the previous values of the IPCC Fourth Assessment Report (AR4) were being used, where it was GWP CH₄= 25 and GWP N₂O= 298.

Reduction of the Leakage Belt Area Due to Overlap with Another REDD+ Project:

In addition, during the second monitoring period an overlap was found between the ABC Norte REDD Project leakage belt and the Jutaituba REDD+ Project project area. Following the requirements of the methodology, the opportunity was taken to remove such overlaps reformulating the leakage belt during this monitoring period. The original Area of Leakage Belt was 81.217,32 ha and the overlapping represented a 6,686.81 ha area. Thus, we defined the area of the leakage belt with an area of 74,530.51 ha, as Figure 5 illustrates below:

Figure 5. Leakage belt location



Adjustment in the total forest area of the Project:

Furthermore, during the second period, an adjustment was made to the project area to ensure exclusively comprise forest areas on the Project Start Date. The area previously described was 140,432.27 ha. After reassessment, the area was adjusted to 140,117.088 hectares. With this adjustment, only 315,18 ha were removed, which represents 0.22% of the total project area. This adjustment reflects a minimal impact on the overall credit generation, remaining well under the 5%. The revision ensures the project area is accurately represented, without significant impacts on the project's environmental or financial outcomes.

The Ex-ante Calculations for the Leakage belt and project area was updated:

Table 4 Ex ante Annual areas deforested per forest class icl within the project area in the baseline case (baseline activity data per forest class)

Area deforested per forest class icl within the project area		Total baseline deforestation in the project area	
IDicl	1	annual ABSLPAt (ha)	ABSLPA cumulative (ha)
Name	Forest		
Project year t	ha		
2017	141.87	141.87	141.87
2018	333.20	333.20	475.07
2019	954.42	954.42	1,429.49
2020	933.64	933.64	2,363.13
2021	1,057.13	1,057.13	3,420.25
2022	1,338.99	1,338.99	4,759.25
2023	1,578.84	1,578.84	6,338.09
2024	1,712.21	1,712.21	8,050.29
2025	2,009.38	2,009.38	10,059.68
2026	2,278.70	2,278.70	12,338.37
2027	2,534.01	2,534.01	14,872.38
2028	2,666.88	2,666.88	17,539.25
2029	2,944.23	2,944.23	20,483.48
2030	2,992.23	2,992.23	23,475.71
2031	3,147.96	3,147.96	26,623.67
2032	3,332.59	3,332.59	29,956.25
2033	3,454.75	3,454.75	33,411.00
2034	3,463.71	3,463.71	36,874.71
2035	3,575.52	3,575.52	40,450.23
2036	3,626.22	3,626.22	44,076.45
2037	3,627.35	3,627.35	47,703.80
2038	3,640.82	3,640.82	51,344.62
2039	3,588.58	3,588.58	54,933.20
2040	3,555.99	3,555.99	58,489.19

2041	3,735.73	3,735.73	62,224.91
2042	3,522.97	3,522.97	65,747.88
2043	3,457.32	3,457.32	69,205.20
2044	3,443.70	3,443.70	72,648.91
2045	3,488.36	3,488.36	76,137.27
2046	3,369.09	3,369.09	79,506.36
2047	3,300.59	3,300.59	82,806.94

Table 5. Annual areas deforested compared to PD in percentage in the project area

Area deforested per forest class i/c within the project area		Total baseline deforestation in the project area	
<i>IDi/c</i>	1	annual ABSLPA _t (ha)	ABSLPA cumulative (ha)
Name	Forest		
Project year <i>t</i>	Ha		
2017	2.37%	2.37%	2.37%
2018	30.90%	30.90%	24.29%
2019	-16.24%	-16.24%	1.32%
2020	0.89%	0.89%	1.15%
2021	0.49%	0.49%	0.95%
2022	0.46%	0.46%	0.81%
2023	0.43%	0.43%	0.72%
2024	0.47%	0.47%	0.66%
2025	0.25%	0.25%	0.58%
2026	0.33%	0.33%	0.54%
2027	0.25%	0.25%	0.49%
2028	0.20%	0.20%	0.44%
2029	0.11%	0.11%	0.40%
2030	0.08%	0.08%	0.36%
2031	0.18%	0.18%	0.34%
2032	0.13%	0.13%	0.31%
2033	0.17%	0.17%	0.30%
2034	0.13%	0.13%	0.28%
2035	0.13%	0.13%	0.27%
2036	0.25%	0.25%	0.27%
2037	0.20%	0.20%	0.26%
2038	0.24%	0.24%	0.26%
2039	0.18%	0.18%	0.26%

2040	0.19%	0.19%	0.25%
2041	0.13%	0.13%	0.24%
2042	0.18%	0.18%	0.24%
2043	0.16%	0.16%	0.24%
2044	0.13%	0.13%	0.23%
2045	0.20%	0.20%	0.23%
2046	0.17%	0.17%	0.23%
2047	0.17%	0.17%	0.23%

Table 6. Annual areas deforested per forest class icl within the leakage belt in the baseline case (baseline activity data per forest class)

Leakage Belt			
Area deforested per forest class icl within the leakage belt		Total baseline deforestation in the leakage belt	
IDicl	1	annual ABSLLKt (ha)	ABSLLK cumulative (ha)
Name	Forest		
Project year t	Há		
2017	75.67	75.67	75.67
2018	253.40	253.40	329.08
2019	330.73	330.73	659.74
2020	379.41	379.41	1,039.87
2021	353.23	353.23	1,393.10
2022	432.03	432.03	1,825.13
2023	432.14	432.14	2,257.27
2024	484.48	484.48	2,741.75
2025	514.03	514.03	3,255.77
2026	524.28	524.28	3,780.05
2027	586.51	586.51	4,366.56
2028	628.35	628.35	4,994.91
2029	626.73	626.73	5,621.64
2030	695.03	695.03	6,316.67
2031	801.45	801.45	7,118.12
2032	788.55	788.55	7,906.67
2033	910.52	910.52	8,817.19
2034	938.07	938.07	9,755.26
2035	995.54	995.54	10,750.80
2036	1,038.30	1,038.30	11,789.10
2037	1,115.25	1,115.25	12,904.35
2038	1,140.20	1,140.20	14,044.55
2039	1,184.56	1,184.56	15,229.11
2040	1,286.97	1,286.97	16,516.08

2041	1,270.80	1,270.80	17,786.88
2042	1,264.58	1,264.58	19,051.46
2043	1,323.33	1,323.33	20,374.79
2044	1,359.86	1,359.86	21,734.65
2045	1,368.53	1,368.53	23,103.17
2046	1,355.64	1,355.64	24,458.81
2047	1,370.88	1,370.88	25,829.69

Table 7. Annual areas deforested compared to PD in percentage in the leakage belt

IDicl	1		
Name	Forest	annual	ABSLPA
Project year t	Ha (%)	ABSLPA t (ha) (%)	cumulative (ha) (%)
2017	0.94%	0.94%	0.94%
2018	0.03%	0.03%	0.23%
2019	0.02%	0.02%	0.13%
2020	-0.19%	-0.19%	0.01%
2021	0.04%	0.04%	0.02%
2022	0.04%	0.04%	0.02%
2023	0.03%	0.03%	0.03%
2024	0.02%	0.02%	0.02%
2025	0.17%	0.17%	0.05%
2026	0.02%	0.02%	0.05%
2027	0.00%	0.00%	0.04%
2028	-0.06%	-0.06%	0.03%
2029	0.23%	0.23%	0.05%
2030	0.13%	0.13%	0.06%
2031	0.25%	0.25%	0.08%
2032	0.53%	0.53%	0.13%
2033	0.45%	0.45%	0.16%
2034	1.27%	1.27%	0.27%
2035	1.52%	1.52%	0.38%
2036	1.09%	1.09%	0.45%
2037	1.32%	1.32%	0.52%
2038	2.53%	2.53%	0.69%
2039	1.93%	1.93%	0.79%
2040	1.88%	1.88%	0.87%
2041	2.29%	2.29%	0.97%
2042	2.97%	2.97%	1.11%
2043	2.48%	2.48%	1.20%

2044	2.92%	2.92%	1.31%
2045	2.72%	2.72%	1.39%
2046	3.77%	3.77%	1.53%
2047	3.21%	3.21%	1.62%

The net GHG emission reductions and removals expected by the project activity of ABC Norte REDD project during the crediting period, including the changes to the project area and leakage belt are summarized in the table below:

Table 8. Summary of net GHG Emission Reductions and Removals

Year	Estimated baseline emissions or removals (tCO ₂ e)	Estimated project emissions or removals (tCO ₂ e)	Estimated leakage emissions (tCO ₂ e)	Ex ante buffer credits (tCO ₂ e)	Estimated net GHG emission reductions or removals (tCO ₂ e)
2017	87,608	126,634	13,141	0	0
2018	206,998	478,073	31,050	0	0
2019	593,526	499,220	89,029	7,277	0
2020	589,033	498,974	88,355	6,899	0
2021	673,447	503,593	101,017	14,600	0
2022	856,743	513,621	128,511	31,291	0
2023	1,016,556	522,365	152,483	45,857	171,919
2024	1,112,709	527,625	166,906	54,645	363,532
2025	1,311,182	538,484	196,677	72,736	503,284
2026	1,495,047	548,543	224,257	89,509	632,737
2027	1,670,645	558,151	250,597	105,532	756,365
2028	1,770,937	563,638	265,641	114,712	826,946
2029	1,953,955	573,651	293,093	131,387	955,823
2030	2,001,274	576,240	300,191	135,752	989,091
2031	2,113,711	582,391	317,057	146,029	1,068,233
2032	2,242,072	589,414	336,311	157,746	1,158,600
2033	2,331,593	594,312	349,739	165,933	1,221,609
2034	2,351,663	595,410	352,749	167,810	1,235,693
2035	2,431,879	599,799	364,782	175,140	1,292,157
2036	2,473,126	602,055	370,969	178,925	1,321,176
2037	2,482,043	602,543	372,306	179,765	1,327,427
2038	2,498,068	603,420	374,710	181,250	1,338,687
2039	2,470,461	601,910	370,569	178,758	1,319,224
2040	2,455,299	601,080	368,295	177,398	1,308,525
2041	2,569,050	607,303	385,357	187,745	1,388,643
2042	2,440,233	600,256	366,035	176,049	1,297,893
2043	2,399,661	598,036	359,949	172,362	1,269,314

2044	2,391,147	597,570	358,672	171,587	1,263,317
2045	2,416,994	598,984	362,549	173,930	1,281,530
2046	2,341,875	594,874	351,281	167,098	1,228,621
2047	1,604,970	413,894	240,778	113,905	836,393
Total	55,353,503	17,012,064	8,303,058	3,681,627	26,356,739

Table 9. Comparison between PD projected Emission reductions and post-deviation values

Current Total	55,353,503	17,012,064	8,303,058	3,681,627	26,356,739
Previous Total	55,479,763	17,018,972	8,321,997	3,684,665	26,454,119
%	0.23%	0.04%	0.23%	0.08%	0.37%

In Summary above the difference between the approved version and the updated one was less than 1%, so there was no need to recalculate the credits from the first MR.

The specific summary of GHG reductions and removals in the ABC Norte REDD project is included in the table below, which includes estimates of GHG emissions reduction (REDDt), calculations of buffer and leakage, and the calculation of tradable Verified Carbon Units (VCUt).

Adjustment to Community Names:

In earlier versions of this MR and associated documents, it was reported that the project involved 15 communities instead of the 13 indicated in the VCS PD. Upon thorough review, this information was found to be inaccurate. This deviation is intended to correct the discrepancies identified in previous submissions.

The VCS PD version 5, mentions 13 communities in its text and Figure 19 “Location of the communities around the Project Area”, these communities are:

1. Caminheiro do Bem
2. Deus Proverá
3. Divino Espírito Santo
4. Nossa Senhora de Aparecida
5. Nossa Senhora da Luz
6. Nossa Senhora do Bom Remédio
7. Nossa Senhora do Carmo
8. Nova Jerusalém
9. Santa Rosa
10. São Sebastião

11. Vista Alegre
12. Fonte de Luz
13. Cipoal

It's important to note that two communities cited in "Table 6—Summary of meetings and inputs to the ABC Norte REDD Project" were not included in the map: Cristo Salvador and Monte Sião (Santa Terezinha). Consequently, the number of communities in the VCS PD would be 15.

14. Cristo Salvador
15. Monte Sião

However, from the project's inception, some communities have merged, like São Sebastião and Cipoal known as São Sebastião do Cipoal, and "Santa Rosa" and "Nossa Senhora de Aparecida", others have changed names due to religious beliefs, such as Santa Teresinha now known as Monte Sião, and some have relocated in search of better living conditions.

Considering this, the correct number of communities is still 13. Are those:

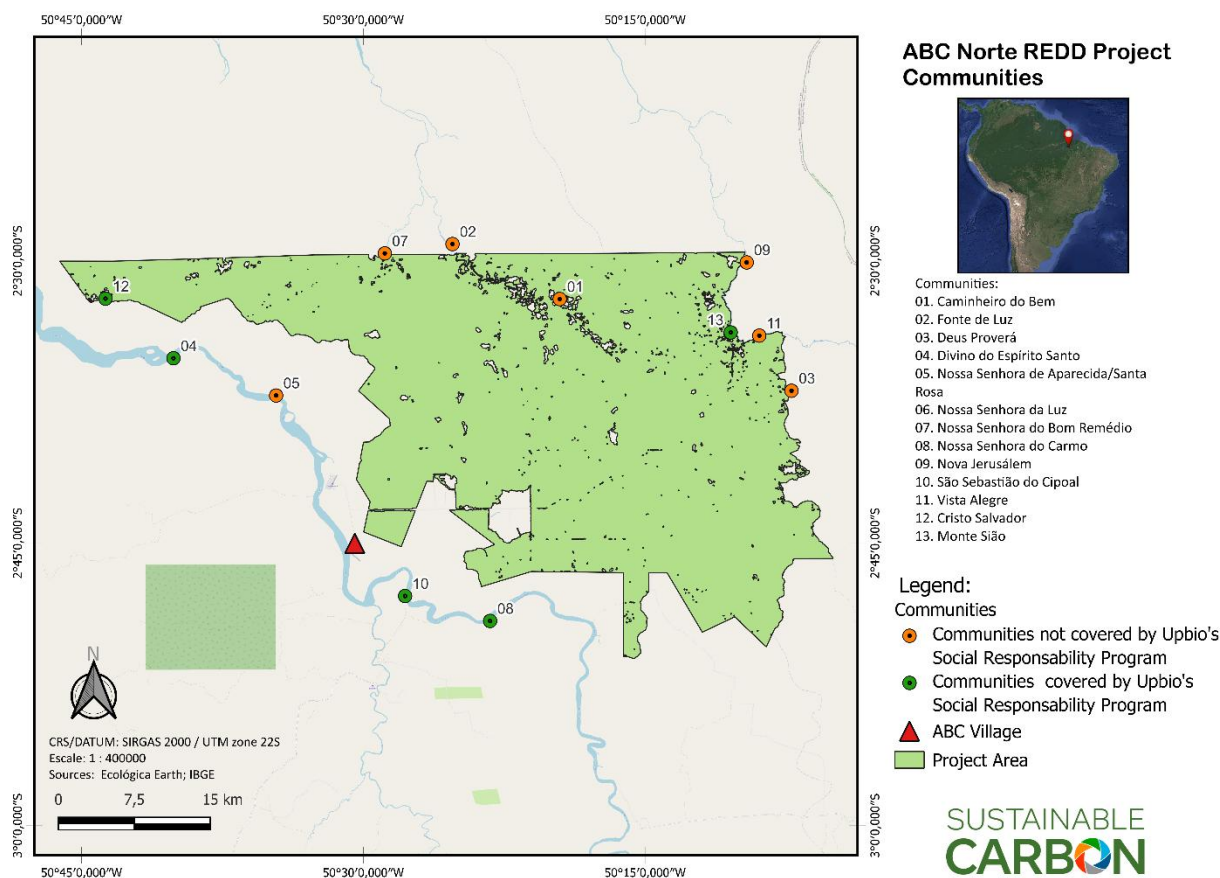
1. Caminheiros do Bem
2. Fonte de Luz
3. Deus Proverá
4. Divino do Espírito Santo
5. Nossa Senhora de Aparecida/Santa Rosa
6. Nossa Senhora da Luz
7. Nossa Senhora do Bom Remédio
8. Nossa Senhora do Carmo
9. Nova Jerusalém
10. São Sebastião do Cipoal (São Sebastião/Cipoal)
11. Vista Alegre
12. Cristo Salvador
13. Monte Sião

This error in the PD resulted in an additional mistake in the current MR, where it was incorrectly stated that 15 communities were identified by the ABC Norte REDD+ Project. This deviation serves to rectify both inaccuracies reported in previous documents.

The riverside communities are recognized as traditional communities with unique forms of social organization. Typically composed of people with kinship ties, these communities start with one or two families and grow over time as they settle in the region¹. However, conflicts between families can disrupt this unity and lead to the formation of separate communities.

In addition to kinship, religiosity plays a significant role in the formation of new communities, the creation of community identity, and the dynamics of social systems. Changes in religious beliefs within a group can lead to the separation of communities. These influences were identified in the diagnosis carried out by Upbio for ABC Norte (2023), as part of the PRS (Social Responsibility Program), which showed that most communities were founded by matriarchs and patriarchs, with names derived from their patron saints.

Therefore, it's important to reinforce that the numbers/names of communities can change over the years, due to the natural dynamics of riverside people. Despite these changes, the ABC REDD Project intends to consult all the communities foreseen in PD, even after changes of names or communities merging. Additionally, the benefits of certain activities implemented by the project extend beyond a single community. For example, environmental education programs and health initiatives have the potential to benefit multiple communities. All these changes were identified by Ecológica Team and reported to VVB.



Additionally, it is worth noting that the previously mentioned Camarapi community is, in fact, composed of three distinct community groups that are part of the Alto Camarapi region, a geographically state-recognized area along the Camarapi River. These communities are: Caminheiros do Bem and Fonte de Luz.

According to Article 3 of Decree 6040-2017, which establishes the National Policy for the Sustainable Development of Traditional Peoples and Communities:

“Traditional Peoples and Communities are culturally differentiated groups who recognize themselves as such, who have their own forms of social organization, who occupy and use territories and natural resources as a condition for their cultural, social, religious, ancestral, and economic reproduction, using knowledge, innovations, and practices generated and transmitted by tradition.”

Thus, the community group of Alto Camarapi identifies itself as two separate communities and will henceforth be addressed as such.

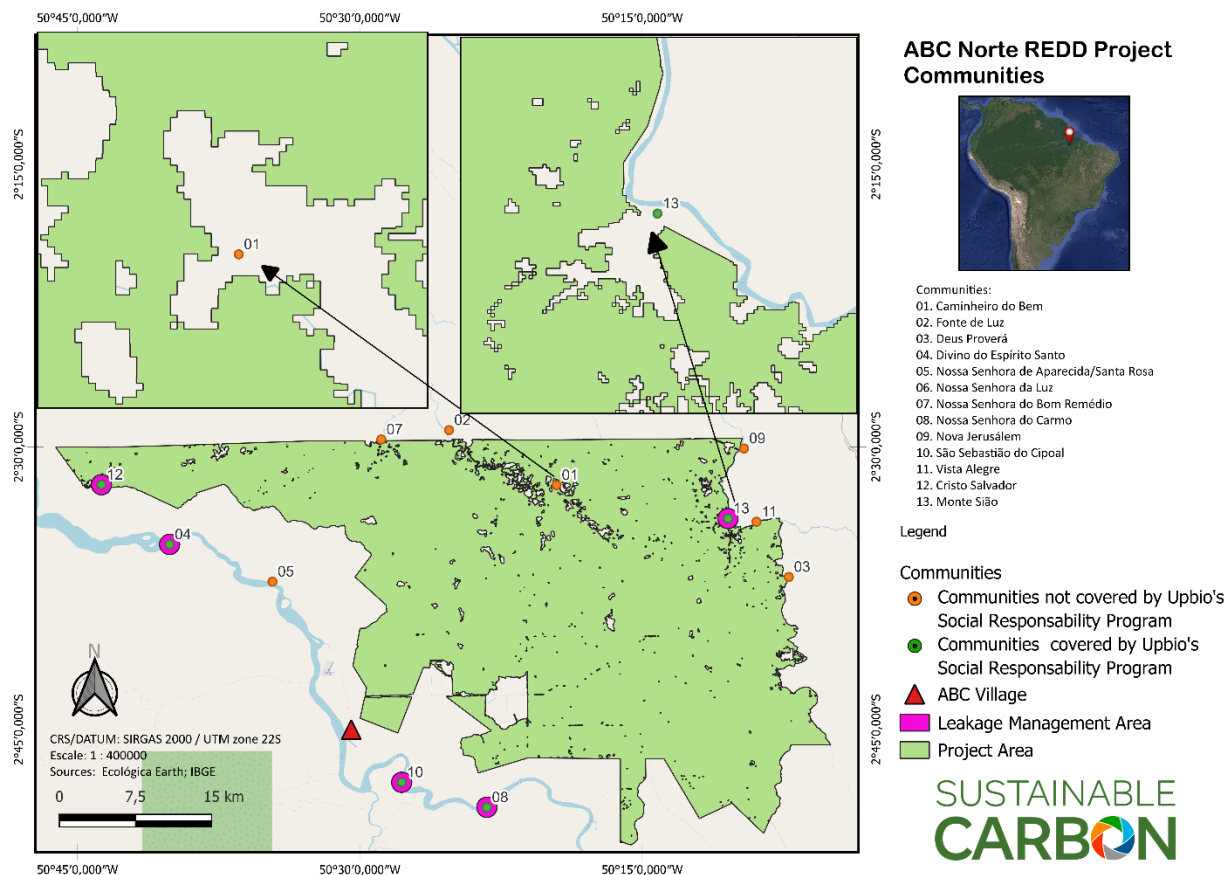
Mechanism for ongoing communication, grievance redress procedure and inclusion of communities in the Social Responsibility Program

In section 2.2, the VCS PD for the ABC Norte REDD Project presents a mapping of local stakeholders who may be affected by the project's activities. The list includes institutional stakeholders, private companies, educational institutions, as well as 13 communities within the project's reference area. During the project validation phase, 05 of these communities participated in the formal stakeholder consultation process. In the first monitoring period, ABC Norte maintained communication with institutional stakeholders and these 05 communities. However, due to the prolonged COVID-19 pandemic, the validation process, which was only finalized in January-2023, the distance of the communities, and other logistical challenges, a formal consultation was not conducted with 10 of the 13 communities identified by the project.

According to Section 3.18.18 of the VCS Standard v4.4, “The Project proponent shall take all appropriate measures to communicate and consult with local stakeholders in an ongoing process throughout the life of the project”. In line with this guideline, a Deviation is being proposed to present the engagement plan that ABC Norte will implement with the communities that were not included in the formal consultation process during the project validation phase. This engagement includes both formal communication about the project and the potential inclusion of these communities in the Social Responsibility Program (or PRS).

The following figure shows the current locations and names of the 13 communities identified as stakeholders in the ABC Norte REDD Project.

Figure 6. Location of the communities around the Project Area



The stakeholder consultation process for the validation of the ABC Norte REDD Project began in 2021 and, due to the COVID-19 pandemic, was conducted in two formats. Consultations with the communities took place in person from 25-June-2021, to 27-June-2021, while consultations with other stakeholders were conducted remotely on 13-July-2021. During this phase, members of the Cristo Salvador, Divino Espírito Santo, Monte Sião, Nossa Senhora do Carmo, and São Sebastião do Cipoal communities were formally consulted about the project's objectives and stages, as well as the risks, costs, and benefits associated with the activities to be developed. The formal communication with these five communities was initiated for various strategic reasons.

The first reason was geographic distribution: the communities were required to be located upstream and downstream of the river, as well as on the opposite side of the property, creating a strategic barrier to contain potential deforestation areas. Additionally, the initially consulted locations were chosen for their proximity to other communities, which would facilitate the implementation of the future expansion plan. Another important factor considered was the presence of community leaders who already had prior contact with ABC Norte, enabling a swift and effective approach.

Moreover, the existing infrastructure at the time of the consultation played a crucial role in engaging with these 05 communities. For the communities accessed by land, priority was given to those closest to the main roads already established within “Fazenda Pacajá”, which helped optimize travel time, reduce resource usage and avoid deforestation for new road construction. Additionally, for communities accessed by river, the proximity of community leaders to ABC Norte was taken into account, facilitating the execution of the formal consultation.

As for the other communities located around “Fazenda Pacajá”, the absence of a formal consultation process regarding the project between 2017-2023 was due to various challenges.

Among the most critical challenges, logistics stand out. The communities are located in remote areas, often with limited or nonexistent infrastructure. The lack of adequate transportation routes necessitates rigorous logistical planning and the allocation of additional resources, complicating direct and continuous communication with these communities.

In addition to logistical challenges, people management becomes a critical factor as the increase in the number of communities leads to higher operational costs, including additional expenses for transportation, vehicle maintenance, hiring new professionals, training and others. In “Figure 11. Location of the communities around the Project Area” of the VCS MR, the number of communities as well as their locations are highlighted.

Another relevant factor, beyond the logistical and management challenges, is the absence of negative impacts on the communities resulting from the activities carried out under the project's scope. Although they were not formally consulted about the project until the conclusion of the second verification, the communities participate in various services and programs promoted by ABC Norte, ensuring a level of engagement and awareness of the organization's activities. Among these services are the ABC Norte's Social Responsibility Program, Social Action event, the Educator of Tomorrow Program, and healthcare services provided by the Basic Health Unit located at the Fazenda Pacajá headquarters, which are regularly offered and directly benefit members of these communities.

These communities include Caminheiros do Bem, Deus Proverá, Fonte de Luz, Nossa Senhora da Aparecida/Santa Rosa, Nossa Senhora da Luz, Nova Jerusalém, Santa Rosa, São Sebastião e Vista Alegre. These records demonstrate that these communities are engaged in the actions and initiatives promoted by ABC Norte, regularly accessing and utilizing the services offered by the company. This participation shows that, even without formal consultation, there is a positive and trusting relationship between ABC Norte and the communities.

In addition to these actions, ABC Norte holds the CERFLOR certification, which assesses five principles of sustainable forest management, one of which is “Principle 5 - Environmental, economic, and social development of the regions where forestry activities are carried out.” Obtaining this certification involved a third-party audit, in which the potential impacts and possible conflicts related to the management activities were analyzed. The conclusion of the audit was that there are no significant adverse impacts or conflicts between ABC Norte's activities

and the neighboring communities, which supports the company's commitment to socio-environmental responsibility.

Recognizing the importance of expanding and strengthening communication with all stakeholders, including communities not yet formally consulted about the project, an Action Plan was developed. The Action Plan consists of four phases, discussed in Section 2.2.

Thus, from this Deviation, it was established that: a) during the baseline revalidation, all local stakeholders will be formally informed about the project, and b) from this revalidation, efforts will be directed towards the inclusion of these communities in the PRS.

It's important to note that since 2023 – after the end of this Monitoring Period, efforts have been made to initiate engagement with these communities, with an initial focus on Fonte de Luz and Caminheiros do Bem. In October-2023, the Program began systematic work in the community, promoting the structured dissemination of information about its areas of action, as well as the ABC Norte REDD Project. As a result, in the Program's strategic planning for 2024, the community was formally incorporated into the scope of monthly visits.

October-2023: on 28-October, an engagement visit was conducted in the community with 14 local residents present. The meeting took place at the home of Mrs. Neca, one of the oldest residents of the community, and was attended by the socio-environmental project manager of UPbio, along with representatives from “Fazenda Pacajá”. During the visit, an open dialogue about the PRS was established, sparking interest among community members, particularly regarding health services and support for productive activities. It was agreed that in a subsequent meeting, the community would be mobilized for an official presentation of the program. Additionally, the residents requested logistical support from the farm to participate in the Social Action at Vila ABC, scheduled for December.

Figure 7. Visit to the Fonte de Luz and Caminheiros do Bem Community on 28-October-2023



Source: PRS Monthly Report (October-2023)

November-2023: on 22-November, a presentation meeting of the PRS was held in the community with the aim of integrating it into the program's initiatives. The meeting brought together 14

residents, including local community leaders. During the meeting, the objectives of the PRS and the actions already implemented in the communities near “Fazenda Pacajá” were discussed, with an emphasis on the educational axis, promotion of productive activities and social and health support. Participants expressed interest in discussing the proposal with other community members to build trust in the PRS actions.

Figure 8. Visit to the Fonte de Luz/Caminheiros do Bem Community on 22-November-2023



Source: PRS Monthly Report (November-2023)

December 2023: on 07-December, Algar Farming - Fazenda Pacajá held the 4th Social Action at Vila ABC, an annual event aimed at providing health services, social assistance, beauty services, recreational activities for children, citizenship, and quality of life improvements for residents of the communities near the farm, including the Fonte de Luz and Caminheiros do Bem Communities. Additionally, the initiative included the promotion of productive activities with the organization of a community product fair, encouraging commercialization and generating income for local producers.

Figure 9. 4th Social Action by Algar Farming - “Fazenda Pacajá” (07-December-2023)



Source: PRS Monthly Report (December-2023)

October 2024: On 23-October-2024, an informational activity was held in the Nossa Senhora Aparecida/Santa Rosa community to strengthen engagement and share relevant information about sustainability and initiatives promoted by ABC Norte. During the meeting, details were presented on wildlife monitoring activities, the ABC Norte REDD+ Project, and training programs focused on income generation for local communities. Additionally, informational materials were distributed to the nine residents in attendance, enhancing understanding of the company's actions and encouraging active participation in socio-environmental development initiatives.

Figure 10. Visit to the Nossa Senhora Aparecida Community on 23-October-2024



Source: PRS Monthly Report (October-2024)

In the case of the Nossa Senhora da Luz and Santa Rosa communities, an initial approach was made in the first half of 2024. Although this visit was not carried out by the PRS, it played a crucial role in the engagement between the communities and the proponent, establishing the connections for future engagements within the stipulated timeframe.

Regarding the other communities, the engagement, communication and implementation of a formal communication channel and a grievance mechanism will occur in the baseline reassessment – which shall occur from 01-April-2023 onwards. This planning aims to ensure that all communities identified in this project are gradually and systematically engaged, allowing for effective integration and the continuous implementation of socio-environmental activities aligned with the objectives of the ABC Norte REDD Project. Furthermore, once all the planned communities are reached, the project will focus on maintaining ongoing communication and activities in these locations, including the grievance redress mechanism, as mentioned earlier, as required by Section 3.18.19 of the VCS Standard v4.4.

In any case, during the revalidation of the baseline, the LSC will be conducted to ensure that the communities are informed about the project's objectives and stages, as well as the benefits arising from the activities to be developed, enabling the improvement of the well-being and quality of life of the community members. Thus, considering that approximately 33% of local stakeholders have been consulted since the beginning of the ABC Norte REDD Project, and

adopting a conservative approach, the risk score in the NPRR was adjusted from “-5” to “0”, according to updates made in the project's second VCS MR.

3.3 Grouped Projects

Not applicable. This is not a grouped project.

3.4 Safeguards

Safeguards were addressed at Section 2 of the present VCS + SOCIALCARBON Monitoring Report.

4 DATA AND PARAMETERS

4.1 Data and Parameters Available at Validation

Data / Parameter	BEF
Data unit	Dimensionless
Description	Biomass expansion factor
Source of data	Brown, S., A. J. R. Gillespie, and A. E. Lugo, 1989. Biomass estimation methods for tropical forests with applications to forest inventory data. <i>Forest Science</i>, 35:881-902. Data available in Table 4, pg. 890 of the referred study. The minimum value was utilized, which was then deducted from lowest limit.: $1.743 - 0.083 = 1.66$.
Value applied	1.66
Justification of choice of data or description of measurement methods and procedures applied	The biomass volume was estimated through a local forest inventory considering only the merchantable or commercial volume, i.e., the main tree trunk. For estimating carbon stocks, all the above-ground biomass including twigs, branches and even leaves needs to be estimated. To convert merchantable tree volume into total biomass, biomass expansion factor (BEF) is used. Furthermore, the allometric equation for estimating the aboveground merchantable volume of trees was obtained from Colpini et al. (2009)¹⁸, according to:

¹⁸ COLPINI, Chirle *et al.* Determinação do volume, do fator de forma e da porcentagem de casca de árvores individuais em uma Floresta Ombrófila Aberta na região noroeste de Mato Grosso. *Acta Amazonica*, [s. /], v. 39, n. 1, p. 97-104, 2009. Available at: <<https://www.scielo.br/j/aa/a/BXPkWdfz4h869TrBzpKRWGh/?format=pdf>>. Visited on June, 2023.

	$\ln(\text{Volume}) = -9.1892 + 1.9693 \times \ln(\text{DBH}) + 0.837 \times \ln(\text{Height})$ Where: DBH: Diameter at Breast Height H: Height The BEF was used to convert the merchantable volume obtained from the local forest inventory to total aboveground tree biomass.
Purpose of Data	This parameter is used to calculate the baseline, project and leakage emissions in the baseline and project scenarios. Provides the conversion of merchantable volume obtained from the local forest inventory to total aboveground tree biomass.
Comments	If new and more accurate data become available, these can be used to estimate the biomass expansion factor of the subsequent fixed baseline period.

Data / Parameter	CF
Data unit	tC/tdm
Description	Default value of carbon fraction in biomass
Source of data	Values from the literature, e.g. IPCC 2003. Good practice guidance for land use, land-use change and forestry. Kanagawa: IGES, 2003. Available at: http://www.ipcc-nggip.iges.or.jp/public/gpglulucf/gpglulucf.html.
Value applied	0.5
Justification of choice of data or description of measurement methods and procedures applied	The default IPCC value was used.
Purpose of Data	This parameter is used to calculate the baseline, project and leakage emissions from deforestation occurred in the baseline and project scenarios. Provides an estimate of the carbon content of the vegetation biomass within the project reference region.
Comments	If new and more accurate carbon fraction data become available, these can be used to estimate the net anthropogenic GHG emission reduction of the subsequent fixed baseline period.

Data / Parameter	Ctot _{fcl}
Data unit	tCO ₂ e/ha
Description	Average carbon stock per hectare in anthropic areas in equilibrium of post-deforestation class fcl in tCO ₂ e/ha
Source of data	The average classification of post-deforestation land-uses within the reference region during the historical reference period was conducted through MapBiomias. Average carbon stocks of pastureland, agriculture and other land uses – National GHG Emissions Communication of Brazil to the UNFCCC (2019) - Available at: https://www.gov.br/mcti/pt-br/acompanhe-o-mcti/sirene/publicacoes/comunicacoes-nacionais-do-brasil-a-unfccc/arquivos/3tcn_volume_3.pdf Secondary Forest average carbon stocks - Pereira, Izaura Cristina Nunes. Estoque de biomassa e carbono florestal em unidades de paisagem na Amazônia: uma análise a partir da abordagem metodológica. Universidade Federal do Pará, , Belém, 2013. Available at: https://ppgdstu.propesp.ufpa.br/ARQUIVOS/teses/TESES/2013/IZAURA%20CRISTINA%20NUNES%20PEREIRA.pdf Belowground biomass – Root to shoot ratio available at VM0015. A weighted average of the post-deforestation carbon stocks was done, considering the % of area for each land use.
Value applied	46.58
Justification of choice of data or description of measurement methods and procedures applied	Almost two-thirds of the post-deforestation land uses within the reference region is composed by pasturelands. In order to estimate the post-deforestation carbon stocks, the average carbon stocks of pasturelands, agriculture and other land uses were taken from the National GHG Emissions Communication of Brazil to the UNFCCC (2019)¹⁹. For secondary forests, a regional study was conducted. Most secondary forests in the Brazilian Amazon are young. In 2017, 65% of secondary forests was ≤10 years old. On average, 35% of annual land abandonment to secondary forests was re-cleared

¹⁹ Available at: <https://www.gov.br/mcti/pt-br/acompanhe-o-mcti/sirene/publicacoes/comunicacoes-nacionais-do-brasil-a-unfccc/arquivos/3tcn_volume_3.pdf>

	within 5 years, and 57% within 10 years²⁰. The half-life of secondary forests is 8 years, on average, which is also the same value found by other study that concludes that more than 50% of the secondary forests in the Amazon biome have less than 8 years old²¹. According to the referenced study, conducted in the State of Pará, that analyzed the carbon stocks of a secondary forest with 14 years old, the average carbon stock in above ground biomass is around 19 tC/ha. Below ground biomass was estimated through the root-to-shoot ratio from the applied methodology. Therefore, the average value for secondary forests is around 22,8 tC/ha. The applied value was obtained with the weighted average of the carbon stock and land use.
Purpose of Data	This parameter is used to calculate the baseline emissions from deforestation occurred in the baseline scenario. Provides an average of the post-deforestation carbon stock per hectare within the reference region.
Comments	If new and more accurate biomass stock data become available, these can be used to estimate the net anthropogenic GHG emission reduction of the subsequent fixed baseline period.

Data / Parameter	DLF
Data unit	%
Description	Displacement Leakage Factor
Source of data	VCS Standard
Value applied	15%
Justification of choice of data or description of measurement methods and procedures applied	DLF was adopted as the default activity-shifting leakage deduction as per VCS Standard.

²⁰ Sâmia Nunes *et al* 2020 *Environ. Res. Lett.* **15** 034057. Available at: <<https://iopscience.iop.org/article/10.1088/1748-9326/ab76db>>

²¹ Silva Junior, C.H.L., Heinrich, V.H.A., Freire, A.T.G. *et al.* Benchmark maps of 33 years of secondary forest age for Brazil. *Sci Data* **7**, 269 (2020). Available at: <<https://doi.org/10.1038/s41597-020-00600-4>>

Purpose of Data	This parameter is used to calculate leakage emissions in the baseline scenario due to activity displacement leakage, providing an <i>ex ante</i> estimation of the decrease in carbon stocks and increase in GHG emissions. This value was calculated based on the percent of deforestation expected to be displaced outside the project boundary due to the implementation of the AUD project activity.
Comments	<i>Ex post</i> monitoring of the leakage belt will be done to determine deforestation rate outside the project area and the leakage emissions and carbon stock decrease. This parameter will be updated at each renewal of fixed baseline period.

Data / Parameter	Dm
Data unit	g/cm ³
Description	Mean wood density
Source of data	NOGUEIRA, E. M. Densidade de Madeira e Alometria de Árvores em Florestas do 'Arco do Desmatamento': Implicações para Biomassa e Emissão de Carbono a partir de Mudanças de Uso da Terra na Amazônia Brasileira (Wood Density and Tree Allometry in 'Arc of Deforestation' Forests: Implications for Biomass and Carbon Emissions from Land Use Change in the Brazilian Amazon). 2008. 151 pages. Doctor Thesis - Tropical Rainforest Science Course, INPA, Manaus, 2008.
Value applied:	0.701
Justification of choice of data or description of measurement methods and procedures applied	The mean wood density presented in Nogueira (2008) was obtained from the Brazilian Amazon, where the project region is located. The value is for the Lowland Dense Tropical Rainforest in the State of Pará (Table 3 of the referred study), vegetation type that is logged through SFMP.
Purpose of Data	This parameter is used to calculate baseline, project and leakage emissions through the conversion from m ³ to tons for estimating above-ground biomass from local forest inventories, specifically for the main forest type within the project area - Dense Lowland Tropical Rainforest – composing 99% of the project area.

Comments	Furthermore, it is also used to calculate project emissions from logging activities occurred in the project scenario due to sustainable forest management. Carbon stock decrease due to planned logging activities were calculated through multiplying the harvested volume by the mean wood density. Carbon stock increase due to natural regeneration after periodical harvest cycle can be calculated through multiplying the mean annual increment by the mean wood density.
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Data / Parameter	ΔCBSLLK_t
Data unit	tCO _{2e}
Description	Annual carbon stock changes in leakage management areas in the baseline case at year t
Source of data	- Planned interventions proposed by the project proponent. - Remote sensing and GIS.
Value applied	0
Justification of choice of data or description of measurement methods and procedures applied	Leakage prevention activities generating a decrease in carbon stocks should be estimated <i>ex ante</i> and accounted. The leakage prevention measures proposed by the present project do not include decrease in carbon stocks due to activities implemented in the leakage management area.
Purpose of Data	This parameter was used to calculate leakage emissions in the baseline scenario due to leakage prevention measures implemented in the leakage management area. It provides an <i>ex ante</i> estimation of the decrease in carbon stocks due to the activities implemented.
Comments	<i>Ex post</i> monitoring of the leakage management area will be done to determine the carbon stock decrease and the leakage emissions. This parameter will be updated at each renewal of fixed baseline period.

Data / Parameter	EBBBSLPA _t
Data unit	tCO _{2e}
Description	Sum of (or total) baseline non-CO ₂ emissions from forest fire at year t in the project area

Source of data	Remote sensing data and GIS, supervisor reports.
Value applied	73,303.39(Annual average actual non-CO ₂ emissions due to biomass burning within the project area during the crediting period)
Justification of choice of data or description of measurement methods and procedures applied	Slash-and-burn deforestation to clear the area is carried out for subsistence agriculture, which is the main cause of deforestation within the project area. Therefore, baseline deforestation in the project area involves fire and all above ground biomass is burnt. Non-CO₂ emissions from biomass burning are calculated according to requirements of methodology VM0015 v1.1. In order to estimate non-CO₂ emissions from forest fires, the average percentage of the area which contemplates the three municipalities within the RR that was cleared by burning for other land uses involving deforestation, such as cattle raising and farming (F_{burnt}), and the average of biomass that has commercial value, and could be removed prior to clear cutting and burning ($P_{burnt,p}$) were estimated, either for the baseline and project case. Baseline deforestation in the project area involves fire and all above ground biomass is burnt to clear the area. Therefore, this parameter is estimated as the multiplication of the annual area of deforestation of initial forest classes in the project area in the baseline scenario ($ABSLPA_{icl,t}$) times the total GHG emission from biomass burning in initial forest classes ($EBB_{toticl,t}$).
Purpose of data	This parameter is used to calculate non-CO ₂ emissions due to forest fires within the project area in the baseline scenario, providing an ex-ante estimation.
Comments	Ex post monitoring of forest fires and non-CO ₂ emissions ($EBBPSP_{at}$) will be done to determine GHG emissions within the project area (when the forest fire was significant).

Data / Parameter	$F_{burnt_{icl}}$
Data unit	%
Description	Proportion of forest area burned during the historical reference period in the forest class.
Source of data	Measured or estimated from literature. <i>F_{burnt} data source:</i>

	- Heat spots: Data from 2014 to 2017 for Portel and Bagre municipalities, all satellites. <https://queimadas.dgi.inpe.br/queimadas/bdqueimadas> - Deforestation: <http://terrabrasilis.dpi.inpe.br/downloads/>
Value applied	89.94
Justification of choice of data or description of measurement methods and procedures applied	The Fburnt analysis was carried out on the municipalities of Portel and Bagre, as it is where the Project Area is fully inserted in, as well as most of the Reference Region. Heat spots were considered during the period from 2014 to 2017 (prior to 2014, the data has no fire risk classification, and therefore, was not taken into account). For the assessed years, the fire risk predicted for the day of detection of the outbreak was considered, contemplating only outbreaks with a fire risk of ≥ 0.5 as, according to INPE's methodology, fire risk higher than 0.4 is considered as medium to critical (=1). By overlapping these fire outbreaks with the deforestation mapping of the same time period, it was possible to verify the tendency of fire outbreaks being directly related to areas with recent and/or consolidated deforestation. This can also be verified by the proximity of deforestation detection dates by satellite and the close or overlapping heat spots. Thus, it is possible to assume that these outbreaks are related to anthropic actions to open pastures/crops. Thereby, there was an overlap of 89.94% of the pixels analysed during the reference period in the municipalities.
Purpose of data	This parameter is the average percentage of the area which contemplates the three municipalities within the RR that was cleared by burning for other land uses involving deforestation, such as cattle raising and farming, and is used to calculate baseline and project non-CO₂ emissions from forest fire at year t in the project area (parameter EBBBSLPAt).
Comments	Monitoring is done only once at project start.

Data / Parameter	Pburnt _{p,icl}
Data unit	%
Description	Average proportion of mass burnt in the carbon pool in the forest class
Source of data	Measured or estimated from literature.

	<i>Pburnt data source:</i> Anderson LO, Aragão LE, Gloor M, et al. Disentangling the contribution of multiple land covers to fire-mediated carbon emissions in Amazonia during the 2010 drought. Global Biogeochem Cycles. 2015; 29 (10):1739-1753. Doi: 10.1002/2014GB005008. Available at <https://agupubs.onlinelibrary.wiley.com/doi/10.1002/2014GB005008>. Last visited on September 2021.
Value applied	78
Justification of choice of data or description of measurement methods and procedures applied	Pburnt was estimated using the average biomass per hectare that has commercial value and could be removed prior to clear cutting and burning. Based on literature, an average value of 61.6 m³/ha was obtained, which would correspond to approximately 11% of the total biomass in 1 ha. In this way, the remaining is burned to clear the area, therefore, its new value is 88.6%. However, due to the lack of literature estimates, a study from the Brazilian Amazon in the Cerrado vegetation was used for the comparison. This study reported that the total biomass consumed by fires varies from 72% to 84% (average 78%) in denser Cerrado types, which is a forest vegetation. The most conservative value between these two estimates were used, i.e., Pburnt was estimated as 78%. It is important to note that slash and burn practices are commonly used in the Amazon region to clear the area for other land uses thus, when burning an area, the main objective is to completely remove all the remaining biomass. Therefore, assuming that 78% of the biomass is combusted, there would still be a 22% remaining biomass that shall be left to decompose, which also emits GHG to the atmosphere in this process.
Purpose of data	This parameter is the average of biomass that has commercial value, and could be removed prior to clear cutting and burning, and is used to calculate baseline and project non-CO ₂ emissions from forest fire at year t in the project area (parameter EBBBSLPAt).
Comments	Monitoring is done only once at project start.

Data / Parameter	EI
Data unit	%
Description	Ex ante estimated effectiveness index

Source of data	Estimate from project proponent based on verified reports of similar REDD projects verified by Ecologica Assessoria Ltda. and by other project proponents in Brazil up to date. Available in VERRA database.
Value applied	94.53%
Justification of choice of data or description of measurement methods and procedures applied	Based on the comparison between <i>ex post</i> and <i>ex ante</i> deforestation of similar REDD projects developed by Ecologica Assessoria Ltda. and by other project proponents in Brazil, available in verified reports in VERRA database up to date.
Purpose of Data	This parameter is used to calculate project emissions in the baseline scenario. Provides an <i>ex ante</i> estimation of the carbon stock changes due to unavoidable unplanned deforestation within the project area, based on the effectiveness of the proposed project activities to reduce the deforestation.
Comments	<i>Ex post</i> monitoring of the project area will be done to determine deforestation rate and the project emissions. This parameter will be updated at each renewal of fixed baseline period.

Data / Parameter	Logging damage factor (LDF)			
Data unit	m ³ /m ³ of harvested timber			
Description	The logging damage factor (LDF) is a representation of the quantity of emissions that will ultimately arise per unit of extracted timber (m ³). These emissions arise from the non-commercial portion of the felled trees (the branched and stump) and trees incidentally killed during felling.			
Source of data	SFMP related documentation, such as forestry inventory, harvesting management plans and post-harvest assessment reports. Feldpausch et al. When big trees fall: Damage and carbon export by reduced impact logging in southern Amazonia. Forest Ecology and Management 219 (2005) 199–215			
Value applied:	Annual Productive Unit (APU)	Year	m ³ /m ³	

	APU 18	2021	2,0174	
	APU 19	2022	2,0174	
Justification of choice of data or description of measurement methods and procedures applied	This parameter is added to the harvested timber volume intensity in order to calculate carbon stock decrease from planned logging activities at each forest class. The emissions resulting directly from logging are calculated by estimating the emissions resulting from dead wood created in each logging gap measured divided by the volume of wood created, adding skidder trails damage. According to Feldpausch et al. (2005), Table 6 pag 209, the mean Coarse woody debris returned to the soil as necromass following logging and damage in: (1) tree felling gap formation (trees killed by tree-fall), (2) residual canopy from the felled tree, (3) road, (4) deck construction (whole trees plowed to the ground) and (5) skid maneuvering during logging, is about 6.9 Mg C/ha. According to section 4.3 (pg 212) from this same study, this represents 2.4 times the carbon taken off site in logs. However, the MR already takes into account as planned deforestation the roads and decks constructions, which represent around 16% of the total damage. Therefore, the LDF is $2.4 * (1-0,159) = 2.0174$.			
Purpose of data	This parameter is used to calculate project emissions from logging activities occurred in the project scenario due to sustainable forest management, specifically for the calculation of the carbon stock decrease due to planned logging activities in the project area.			
Comments	If no monitoring data is available, SFMP data shall be used. If new and more accurate harvest intensity data become available, these can be used to estimate project emissions.			

4.2 Data and Parameters Monitored

Data / Parameter	ab _{icl}
Data unit	Mg/ha
Description	Average biomass stock per hectare in the above-ground biomass pool of initial forest class icl in Mg/ha.

Source of data	Average values for the above-ground biomass were taken from the local forest inventory conducted at Fazenda Pacajá in 2021, for the forest type Lowland Dense Tropical Rainforest.																
Description of measurement methods and procedures to be applied	The following sources will be monitored: - Biomass stock surveys - Periodic reports from area supervisor - Local Forest Inventories																
Frequency of monitoring/recording	At each monitoring report.																
Value applied	<table><tr><th colspan="4">Above-ground biomass</th></tr><tr><th colspan="4">ab_{icl} (Mg/ha)</th></tr><tr><th>Vegetation</th><th>Reference Region</th><th>Project Area</th><th>Leakage Belt</th></tr><tr><td>Forest (Dense Lowland Tropical Rainforest)</td><td>316.35</td><td>316.22</td><td>316.22</td></tr></table>	Above-ground biomass				ab _{icl} (Mg/ha)				Vegetation	Reference Region	Project Area	Leakage Belt	Forest (Dense Lowland Tropical Rainforest)	316.35	316.22	316.22
Above-ground biomass																	
ab _{icl} (Mg/ha)																	
Vegetation	Reference Region	Project Area	Leakage Belt														
Forest (Dense Lowland Tropical Rainforest)	316.35	316.22	316.22														
Monitoring equipment	To obtain local biomass data, the project proponent promoted a forest inventory campaign at Fazenda Pacajá (Portel/PA), involving the measurement of several plots. The allocation of the permanent plots prioritized areas not previously managed for timber products. Each plot had dimensions of 50x50 m (0.25 hectares), randomly distributed. The permanent plots were demarcated at the four corners, with wooden pickets, in order to facilitate their location later on, and their geographical coordinates were recorded through GPS. The Diameter at Breast Height (DBH) was measured using a measuring tape at 1.30 m above ground level, involving trees with DBH>10 cm, and in a sub-plot of 10x10m, DBH>5 cm. The total height of the trees was obtained through an estimated manner (visual), or using a Blume-Leiss device (hypsonometer), when possible.																
QA/QC procedures to be applied	Data shall be in accordance to VM0015 v1.1 requirements																
Purpose of data	This parameter is used to calculate baseline emissions, project emissions and leakage emissions in both baseline and project scenarios.																
Calculation method	Regarding the main forest type within the project area - Dense Lowland Tropical Rainforest – composing more than 95% of the																

	project area, this parameter was estimated through a local forest inventory.																
Comments	The values will be reassessed every 10 years or when data is more than 10 years old, whichever occurs first.																
Data / Parameter	bb _{icl}																
Data unit	Mg/ha																
Description	Average biomass stock per hectare in the below-ground biomass pool of initial forest class icl in Mg/ha.																
Source of data	Average values for the below-ground biomass were taken from the applied methodology VM0015 v1.1, which estimates a root-to-shoot ratio of 0.24 for tropical rainforest having above ground biomass values above 125 tons/ha, and 0.20 for values below 125 tons/ha.																
Description of measurement methods and procedures to be applied	The following sources will be monitored: - Biomass stock surveys - Periodic reports from area supervisor - Local Forest Inventories																
Frequency of monitoring/recording	At each monitoring report.																
Value applied	<table><tr><th colspan="4">Below-ground biomass</th></tr><tr><th colspan="4">bb_{icl} (Mg/ha)</th></tr><tr><th>Vegetation</th><th>Reference Region</th><th>Project Area</th><th>Leakage Belt</th></tr><tr><td>Forest (Dense Lowland Tropical Rainforest)</td><td>75.92</td><td>75.89</td><td>75.89</td></tr></table>	Below-ground biomass				bb _{icl} (Mg/ha)				Vegetation	Reference Region	Project Area	Leakage Belt	Forest (Dense Lowland Tropical Rainforest)	75.92	75.89	75.89
Below-ground biomass																	
bb _{icl} (Mg/ha)																	
Vegetation	Reference Region	Project Area	Leakage Belt														
Forest (Dense Lowland Tropical Rainforest)	75.92	75.89	75.89														
Monitoring equipment	No monitoring equipment is used to determine this parameter.																
QA/QC procedures to be applied	Data shall be in accordance to VM0015 v1.1 requirements																
Purpose of data	This parameter is used to calculate baseline, project and leakage emissions in the baseline and project scenarios.																
Calculation method	Calculation according to the applied methodology VM0015 v1.1, which estimates a root-to-shoot ratio of 0.24 for tropical rainforest having above ground biomass values above 125 tons/ha, and 0.20 for values below 125 tons/ha.																

Comments	The values will be reassessed every 10 years or when data is more than 10 years old, whichever occurs first.
Data / Parameter	ACPA _t
Data unit	Ha
Description	Annual area within the Project Area affected by catastrophic events at year t.
Source of data	- Remote sensing data and GIS, - ABC Norte management team and other field data.
Description of measurement methods and procedures to be applied	In addition to field data from the management team, the following sources will also be monitored: - INMET²² - INPE²³
Frequency of monitoring/recording	At each time a catastrophic event occurs.
Value applied	0 (no significant catastrophic event occurred).
Monitoring equipment	Remote sensing and GIS
QA/QC procedures to be applied	Best practices in remote sensing and GIS. Furthermore, the following sources will be also monitored to confirm the data obtained from remote sensing and GIS: - INMET - INPE - Field data from the management team
Purpose of data	This parameter is used to calculate project emissions in the project scenario. Provides an <i>ex post</i> estimation of the area affected by catastrophic events within the project area.
Calculation method	Remote sensing and GIS
Comments	Decreases in carbon stocks and increases in GHG emissions (e.g. in case of forest fires) due to natural disturbances (such as hurricanes, earthquakes, volcanic eruptions, tsunamis, flooding, drought, fires, tornados or winter storms) or man-made events, including those over which the project proponent has no control (such as acts of terrorism or war), are subject to monitoring and must be accounted under the project scenario, when significant.

²² INMET. Instituto Nacional de Meteorologia. Available at: <<https://portal.inmet.gov.br/>>. Last visited on June, 2023.

²³ INPE. Instituto Nacional de Pesquisas Espaciais. Available at: <<http://www.inpe.br/>>. Last visited on June, 2023.

Data / Parameter	ABSLLK _t																			
Data unit	Ha																			
Description	Annual area of deforestation within the leakage belt at year t.																			
Source of data	Remote sensing and GIS.																			
Description of measurement methods and procedures to be applied	Deforestation in the leakage belt area may be considered activity displacement leakage. Activity data for the leakage belt area will be determined using the same methods applied to monitoring deforestation activity data in the project area.																			
Frequency of monitoring/recording	Annually																			
Value applied	<table> <tr> <th rowspan="2">Year</th> <th colspan="2">ABSLLK_t (ha)</th> </tr> <tr> <th>Forest</th> <th>Cumulative</th> </tr> <tr> <td>2021</td> <td>601.99</td> <td>601.99</td> </tr> <tr> <td>2022</td> <td>103.08705.07</td> <td></td> </tr> <tr> <td>2023</td> <td>47.13</td> <td>752.20</td> </tr> <tr> <td>Total</td> <td>752.20</td> <td>-</td> </tr> </table>			Year	ABSLLK _t (ha)		Forest	Cumulative	2021	601.99	601.99	2022	103.08705.07		2023	47.13	752.20	Total	752.20	-
Year	ABSLLK _t (ha)																			
	Forest	Cumulative																		
2021	601.99	601.99																		
2022	103.08705.07																			
2023	47.13	752.20																		
Total	752.20	-																		
Monitoring equipment	Remote sensing and GIS																			
QA/QC procedures to be applied	Best practices in remote sensing.																			
Purpose of data	This parameter is used to calculate leakage emissions in the project scenario. Provides the <i>ex post</i> value of the deforested area within the leakage belt.																			
Calculation method	Analysis of satellite images and maps.																			
Comments	Where strong evidence can be collected that deforestation in the leakage belt is attributable to deforestation agents that are not linked to the project area, the detected deforestation will not be attributed to the project activity, thus not considered leakage.																			

Data / Parameter	ABSLPA _t
Data unit	Ha

Description	Annual area of deforestation in the project area at year t																			
Source of data	Remote sensing and GIS																			
Description of measurement methods and procedures to be applied	Forest cover change due to deforestation will be monitored through periodic assessment of classified satellite imagery covering the project area.																			
Frequency of monitoring/recording	Annually																			
Value applied	<table><tr><th rowspan="2">Year</th><th colspan="2">ABSLPA_t (ha)</th></tr><tr><th>Forest</th><th>Cumulative</th></tr><tr><td>2021</td><td>165.37</td><td>165,37</td></tr><tr><td>2022</td><td>20.38185,75</td><td></td></tr><tr><td>2023</td><td>11.80</td><td>197,55</td></tr><tr><td>Total</td><td>197,55</td><td>-</td></tr></table>			Year	ABSLPA _t (ha)		Forest	Cumulative	2021	165.37	165,37	2022	20.38185,75		2023	11.80	197,55	Total	197,55	-
Year	ABSLPA _t (ha)																			
	Forest	Cumulative																		
2021	165.37	165,37																		
2022	20.38185,75																			
2023	11.80	197,55																		
Total	197,55	-																		
Monitoring equipment	Remote sensing and GIS																			
QA/QC procedures to be applied	Best practices in remote sensing.																			
Purpose of data	This parameter will be used to calculate baseline emissions and project emissions in both baseline and project scenarios. Provides the <i>ex ante</i> and <i>ex post</i> values of the deforested area per forest class within the project area.																			
Calculation method	Analysis of satellite images and maps.																			
Comments	N/A																			
Data / Parameter	ABSLRR _t																			
Data unit	Ha																			
Description	Annual area of deforestation in the reference region at year t																			
Source of data	Remote sensing and GIS																			

Description of measurement methods and procedures to be applied	Forest cover change due to deforestation will be monitored through periodic assessment of classified satellite imagery covering the reference region.																			
Frequency of monitoring/recording	Annually																			
Value applied	<table><tr><th rowspan="2">Year</th><th colspan="2">ABSLRRt (ha)</th></tr><tr><th>Forest</th><th>Cumulative</th></tr><tr><td>2021</td><td>18,286.69</td><td>18,286.69</td></tr><tr><td>2022</td><td>9,499.30</td><td>27,785.99</td></tr><tr><td>2023</td><td>1,108.22</td><td>28,894,21</td></tr><tr><td>Total</td><td>28,894,21</td><td>-</td></tr></table>			Year	ABSLRRt (ha)		Forest	Cumulative	2021	18,286.69	18,286.69	2022	9,499.30	27,785.99	2023	1,108.22	28,894,21	Total	28,894,21	-
Year	ABSLRRt (ha)																			
	Forest	Cumulative																		
2021	18,286.69	18,286.69																		
2022	9,499.30	27,785.99																		
2023	1,108.22	28,894,21																		
Total	28,894,21	-																		
Monitoring equipment	Remote sensing and GIS																			
QA/QC procedures to be applied	Best practices in remote sensing.																			
Purpose of data	This parameter will be used to calculate baseline emissions and project emissions in both baseline and project scenarios. Provides the <i>ex ante</i> and <i>ex post</i> values of the deforested area per forest class within the reference region.																			
Calculation method	Analysis of satellite images and maps.																			
Comments	N/A																			

Data / Parameter	APDPA _{icl,t}
Data unit	Hectare
Description	Areas of planned deforestation in forest class <i>icl</i> at year <i>t</i> in the project area
Source of data	- Annual operational plan; - Annual post-harvesting report; - Remote sensing and GIS.

Description of measurement methods and procedures applied	The planned deforestation activities in the project area that result in carbon stock decrease will be subject to monitoring. The ABC Norte management team records such information according to procedures established in its sustainable forest management plan.													
Frequency of monitoring/recording	Annually													
Value applied:	<table><tr><th rowspan="2">Year</th><th>APDPA_{icl,t} (ha)</th></tr><tr><th>Forest</th></tr><tr><td>2021</td><td>52.60</td></tr><tr><td>2022</td><td>16.33</td></tr><tr><td>2023</td><td>0.00*</td></tr><tr><td>Total</td><td>68.93</td></tr></table>	Year	APDPA _{icl,t} (ha)	Forest	2021	52.60	2022	16.33	2023	0.00*	Total	68.93		
Year	APDPA _{icl,t} (ha)													
	Forest													
2021	52.60													
2022	16.33													
2023	0.00*													
Total	68.93													
	* During 2023 (January 1 st to March 31st), ABC Norte didn't conducted harvesting activity.													
Monitoring equipment	- Remote sensing and GIS - ABC Norte Management team, based on the Sustainable Forest Management Plan for Fazenda Pacajá													
QA/QC procedures applied	- Best practices in remote sensing. - Internal audit of the SFMP. - Internal procedures required by the SFMP and forest certification													
Purpose of data	This parameter will be used to calculate project emissions in the project scenario. Provides the <i>ex post</i> value of the decrease in carbon stocks due to planned deforestation in the project area.													
Calculation method	Emissions from deforestation at each forest class are quantified by multiplying the detected area of forest loss by the average forest carbon stock per unit area. For an <i>ex ante</i> estimation, it was considered that 2.5% of each annual production unit will be deforested for the implementation of SFMP infrastructure.													
Comments	Planned deforestation mainly includes implementation of the forest management infrastructure, such as opening of main and													

	secondary roads, skidding trails, and timber yards in each annual production unit within the project area.											
Data / Parameter	APLPA _{icl,t}											
Data unit	Hectare											
Description	Areas of planned logging activities in forest class icl at year t in the project area											
Source of data	- Annual operational plan; - Annual post-harvesting report; - Remote sensing and GIS.											
Description of measurement methods and procedures applied	The planned logging activities in the project area that resulted in carbon stock increase or decrease shall be subjected to monitoring, when significant.											
Frequency of monitoring/recording	Annually											
Value applied:	<table><tr><th rowspan="2">Year</th><th>APLPA_{icl,t} (ha)</th></tr><tr><th>Forest</th></tr><tr><td>2021</td><td>4,045.70</td></tr><tr><td>2022</td><td>4,229.14</td></tr><tr><td>2023</td><td>0.00*</td></tr><tr><td>Total</td><td>8,274.84</td></tr></table> * During 2023 (January 1st to March 31st), ABC Norte didn't conduct harvesting activity.	Year	APLPA _{icl,t} (ha)	Forest	2021	4,045.70	2022	4,229.14	2023	0.00*	Total	8,274.84
Year	APLPA _{icl,t} (ha)											
	Forest											
2021	4,045.70											
2022	4,229.14											
2023	0.00*											
Total	8,274.84											
Monitoring equipment	- Remote sensing and GIS - ABC Norte Management team, based on the Sustainable Forest Management Plan for Fazenda Pacajá											
QA/QC procedures applied	- Best practices in remote sensing. - Internal audit of the SFMP. - Internal procedures required by the SFMP and forest certification.											

Purpose of data	This parameter will be used to calculate project emissions in the project scenario. Provides the <i>ex post</i> value of the increase or decrease in carbon stocks due to planned logging activities in the project area.
Calculation method	Carbon stock decrease from planned logging activities at each forest class are quantified by multiplying the detected area subject to logging by the harvested timber volume intensity, and then by the mean wood density. Carbon stock increase from planned logging activities at each forest class are quantified by multiplying the detected area subject to logging by the mean annual increment due to natural regeneration of managed forests, and then by the mean wood density.
Comments	According to the sustainable forest management plan, 121,632.37 ha are subject to sustainable forest management plan (SFMP). The adopted rotation cycle is 35 years, thus each annual productive unit (APU) has around 3,475.21 hectares. The SFMP provides guidance to the management team in order to harvest forest products/by-products in a consistent manner with the conservation of the local ecosystem.

Data / Parameter	AUDPA _{icl,t}		
Data unit	Hectare		
Description	Areas of unplanned deforestation in forest class icl at year t in the project area		
Source of data	- Remote sensing and GIS. - Field reports		
Description of measurement methods and procedures applied	The unplanned deforestation within the project area that results in carbon stock decrease will be subject to monitoring.		
Frequency of monitoring/recording	Annually		
Value applied:	<table> <tr> <th>Year</th><th>AUDPA_{icl,t} (ha)</th></tr> </table>	Year	AUDPA _{icl,t} (ha)
Year	AUDPA _{icl,t} (ha)		

		Forest	
	2021	112,77	
	2022		
	2023	11.80	
	Total	128.62	
Monitoring equipment	- Remote sensing and GIS - Field report prepared by ABC Norte Management team Pacajá		
QA/QC procedures applied	Best practices in remote sensing.		
Purpose of data	This parameter will be used to calculate project emissions in the project scenario. Provides the ex post value of the decrease in carbon stocks due to unplanned deforestation in the project area.		
Calculation method	Emissions from deforestation at each forest class are quantified by multiplying the detected area of forest loss by the average forest carbon stock per unit area.		
Comments	N/A		

Data / Parameter	APFPAicl,t
Data unit	Hectare
Description	Areas of planned fuel-wood collection and charcoal production activities in forest class icl at year t in the project area
Source of data	- Authorization for the Use of Forest Raw Material document
Description of measurement methods and procedures applied	No production of fuel wood or charcoal is expected to occur within the project area during the crediting period.
Frequency of monitoring/recording	Annually
Value applied:	0 (no production of fuel wood or charcoal is expected to occur)
Monitoring equipment	- Remote sensing and GIS - Planned interventions proposed by the project proponent

QA/QC procedures applied	Best practices in remote sensing. Internal audit of the SFMP.
Purpose of data	This parameter was used to calculate project emissions in the project scenario. Provides the ex post value of the increase or decrease in carbon stocks due to planned fuel-wood collection and charcoal production activities in the project area.
Calculation method	Emissions at each forest class are quantified by multiplying the detected area subject to fuel wood collection or charcoal production by the harvested volume intensity, and then by the mean wood density.
Comments	N/A

Data / Parameter	ΔCADLK_t											
Data unit	tCO ₂ e											
Description	Total decrease in carbon stocks due to displaced deforestation at year t											
Source of data	Remote sensing and GIS.											
Description of measurement methods and procedures to be applied	Deforestation in the leakage belt area may be considered activity displacement leakage. Activity data for the leakage belt area will be determined using the same methods applied to monitoring deforestation activity data in the project area.											
Frequency of monitoring/recording	Annually											
Value applied	<table> <tr> <th rowspan="2">Year</th><th>ΔCADLK_t</th></tr> <tr> <th>tCO₂e</th></tr> <tr> <td>2021</td><td>146,682.91</td></tr> <tr> <td>2022</td><td></td></tr> <tr> <td>2023</td><td>0.00</td></tr> <tr> <td>Total</td><td>146,682.91</td></tr> </table>	Year	ΔCADLK_t	tCO ₂ e	2021	146,682.91	2022		2023	0.00	Total	146,682.91
Year	ΔCADLK_t											
	tCO ₂ e											
2021	146,682.91											
2022												
2023	0.00											
Total	146,682.91											
Monitoring equipment	Remote sensing and GIS.											

QA/QC procedures to be applied	Best practices in remote sensing.
Purpose of data	This parameter will be used to calculate leakage emissions in the project scenario. Provides the <i>ex post</i> value of the decrease in carbon stocks due to displaced deforestation in the leakage belt.
Calculation method	Emissions from deforestation at each forest class are estimated by multiplying the detected area of forest loss by the average forest carbon stock per unit area.
Comments	Where evidence can be collected that deforestation in the leakage belt is attributable to deforestation agents that are not linked to the project area, the detected deforestation may not be attributed to the project activity and therefore, not considered leakage.

Data / Parameter	ΔCPAdPA_t											
Data unit	tCO ₂ e											
Description	Total decrease in carbon stock due to all planned activities at year <i>t</i> in the project area											
Source of data	Documents, remote sensing and GIS.											
Description of measurement methods and procedures to be applied	The planned activities in the project area that result in carbon stock decrease will be subject to monitoring, when significant.											
Frequency of monitoring/recording	Annually											
Value applied	<table> <tr> <th rowspan="2">Year</th><th>ΔCPAdPA_t</th></tr> <tr> <th>tCO₂e</th></tr> <tr> <td>2021</td><td>560.481,98</td></tr> <tr> <td>2022</td><td>188.601,70</td></tr> <tr> <td>2023</td><td>0.00</td></tr> <tr> <td>Total</td><td>749.083,68</td></tr> </table>	Year	ΔCPAdPA_t	tCO ₂ e	2021	560.481,98	2022	188.601,70	2023	0.00	Total	749.083,68
Year	ΔCPAdPA_t											
	tCO ₂ e											
2021	560.481,98											
2022	188.601,70											
2023	0.00											
Total	749.083,68											

Monitoring equipment	Remote sensing and GIS SFMP reports, including the post-harvesting annual report.
QA/QC procedures to be applied	- Best practices in remote sensing. - Internal audit of the SFMP. - Internal procedures required by the SFMP and forest certification
Purpose of data	This parameter is used to calculate project emissions in the project scenario. Provides the <i>ex post</i> value of the decrease in carbon stocks due to planned activities in the project area.
Calculation method	This parameter is the sum of: carbon stock decrease due to planned deforestation, carbon stock decrease due to planned logging activities, and carbon stock decrease due to planned fuel-wood and charcoal activities.
Comments	N/A

Data / Parameter	ΔCPSLK_t			
Data unit	tCO ₂ e			
Description	Total annual carbon stock change in leakage management areas in the project case at year t			
Source of data	- Activities report related to leakage prevention measures - SOCIALCARBON report - Field assessment - Remote sensing and GIS			
Description of measurement methods and procedures to be applied	The planned activities in leakage management areas that result in carbon stock decrease will be subject to monitoring, when significant.			
Frequency of monitoring/recording	Annually			
Value applied	<table> <tr> <td rowspan="2">Year</td><td>ΔCPSLK_t</td></tr> <tr> <td>tCO₂e</td></tr> </table>	Year	ΔCPSLK_t	tCO ₂ e
Year	ΔCPSLK_t			
	tCO ₂ e			

	2021	294.11	
	2022	2,969.29	
	2023	4,281.97	
	Total	7,545.37	
Monitoring equipment	Remote sensing and GIS		
QA/QC procedures to be applied	Best practices in remote sensing.		
Purpose of data	This parameter will be used to calculate leakage emissions in the project scenario. Provides the <i>ex post</i> value of the change in carbon stocks due to leakage prevention measures in the leakage management area.		
Calculation method	Emissions from deforestation are estimated by multiplying the detected area of forest loss by the average forest carbon stock per unit area.		
Comments	The leakage prevention measures proposed by the present project do not include decrease in carbon stocks due to activities implemented in the leakage management area.		

Data / Parameter	ΔCUDdPA_t			
Data unit	tCO _{2e}			
Description	Total actual carbon stock change due to unavoided unplanned deforestation at year t in the project area			
Source of data	- Remote sensing and GIS - Field reports.			
Description of measurement methods and procedures to be applied	Forest cover change due to unplanned deforestation will be monitored through periodic assessment of classified satellite imagery covering the project area.			
Frequency of monitoring/recording	Annually			
Value applied	<table><tr><td>Year</td><td>ΔCUDdPA_t</td></tr></table>		Year	ΔCUDdPA_t
Year	ΔCUDdPA_t			

		tCO ₂ e
	2021	81,067.52
	2022	2,911.44
	2023	8,479.13
	Total	92,458.10
Monitoring equipment	Remote sensing and GIS	
QA/QC procedures to be applied	Best practices in remote sensing.	
Purpose of data	This parameter will be used to calculate project emissions in the project scenario. Provides the <i>ex post</i> value of the change in carbon stocks due to unavoided unplanned deforestation within the project area.	
Calculation method	Emissions from deforestation at each forest class are estimated by multiplying the detected area of forest loss by the average forest carbon stock per unit area.	
Comments	N/A	

Data / Parameter	EADLK _t
Data unit	tCO ₂ e
Description	Total <i>ex post</i> increase in GHG emissions due to displaced forest fires at year t.
Source of data	Remote sensing data and GIS.
Description of measurement methods and procedures to be applied	Forest fires in the leakage belt area may be considered activity displacement leakage. GHG emissions due displaced forest fires will be subjected to monitoring, when significant.
Frequency of monitoring/recording	Annually
Value applied	

	Year	EADLK _t	
		tCO ₂ e	
	2021	15,842.46	
	2022	0.00	
	2023	0.00	
	Total	15,842.46	
Monitoring equipment	Remote sensing and GIS		
QA/QC procedures to be applied	Best practices in remote sensing and GIS.		
Purpose of data	This parameter will be used to calculate leakage emissions in the baseline and project scenario. Provides the <i>ex post</i> value of the increase in GHG emissions due to displaced forest fires in the leakage belt.		
Calculation method	GHG emissions from deforestation are estimated by multiplying the detected area of forest loss in the leakage belt times the average forest carbon stock per unit area.		
Comments	Where strong evidence can be collected that deforestation in the leakage belt is attributable to deforestation agents that are not linked to the project area, the detected deforestation will not be attributed to the project activity, thus not considered leakage.		

Data / Parameter	EBBPSPA _t
Data unit	tCO ₂ e
Description	Sum of (or total) of actual non-CO ₂ emissions from forest fire at year t in the project area
Source of data	- Remote sensing data and GIS, - ABC Norte management team and field data.
Description of measurement methods and procedures to be applied	If forest fires occur, these non-CO₂ emissions will be subject to monitoring and accounting, when significant. In addition to remote sensing data and GIS, which can identify the area affected by forest fire, the ABC Norte management team could also confirm the obtained data. No forest fire will be used by ABC Norte for conducting planned deforestation or timber harvesting activities. However, it is

	expected that some unplanned deforestation within the project area will occur during the crediting period, which conversion of forest to non-forest may involve fire. The effect of fire on carbon emissions is counted in the estimation of carbon stock changes in the parameter $\Delta CUDdPA_t$; therefore CO₂ emissions from forest fires were ignored to avoid double counting. However, non-CO₂ emissions (CH₄ and N₂O) from forest fires must be counted in the project scenario, when they are significant. In order to be conservative, it will be assumed that all unplanned deforestation within the project area will involve fire. Therefore, non-CO₂ emissions from forest fires will be quantified and deducted from emission reductions.											
Frequency of monitoring/recording	Annually											
Value applied	<table> <tr> <th rowspan="2">Year</th><th>EBBPSPA_t</th></tr> <tr> <th>tCO₂e</th></tr> <tr> <td>2021</td><td>2,987.75</td></tr> <tr> <td>2022</td><td>106.58</td></tr> <tr> <td>2023</td><td>310.41</td></tr> <tr> <td>Total</td><td>3,384.74</td></tr> </table>	Year	EBBPSPA _t	tCO ₂ e	2021	2,987.75	2022	106.58	2023	310.41	Total	3,384.74
Year	EBBPSPA _t											
	tCO ₂ e											
2021	2,987.75											
2022	106.58											
2023	310.41											
Total	3,384.74											
Monitoring equipment	Remote sensing and GIS											
QA/QC procedures to be applied	Best practices in remote sensing and GIS.											
Purpose of data	This parameter will be used to calculate <i>non</i> -CO ₂ emissions due to forest fires within the project area in the project scenario, providing an estimate of the <i>ex post</i> value for each vegetation type.											
Calculation method	If forest fires occur, <i>non</i> -CO ₂ emissions from biomass burning will be calculated according to requirements of methodology VM0015 v1.1. Therefore, this parameter will be calculated as the multiplication of the annual area of deforestation of initial forest classes in the project area in the project scenario times the total GHG emission from biomass burning in initial forest classes ($EBBtot_{icl,t}$), when significant.											

Comments	N/A															
Data / Parameter	EBBtot _{icl,t}															
Data unit	tCO2e/ha															
Description	Total GHG emission from biomass burning in forest class icl at year t															
Source of data	Calculated according to methodology VM0015 v1.1.															
Description of measurement methods and procedures to be applied	This parameter was calculated according to requirements and default values established by the VM0015 v1.1 methodology. In order to estimate non-CO ₂ emissions from forest fires, the average percentage of the area which contemplates the three municipalities within the RR that was cleared by burning for other land uses involving deforestation, such as cattle raising and farming (Fburnt), and the average of biomass that has commercial value, and could be removed prior to clear cutting and burning (Pburnt,p) were estimated, either for the baseline and project case. These average percentage values are assumed to remain the same in the future, according to the applied methodology															
Frequency of monitoring/recording	Annually															
Value applied	<table><tr><th colspan="2">Initial Forest Class</th><th colspan="2">EBBtot_{icl} tCO₂e/ha</th></tr><tr><th>IDcl</th><th>Name</th><th>Baseline Case</th><th>Project Case</th></tr><tr><td>1</td><td>Forest (Dense Lowland Tropical Rainforest)</td><td>23.87</td><td>26.32</td></tr></table>				Initial Forest Class		EBBtot _{icl} tCO ₂ e/ha		IDcl	Name	Baseline Case	Project Case	1	Forest (Dense Lowland Tropical Rainforest)	23.87	26.32
Initial Forest Class		EBBtot _{icl} tCO ₂ e/ha														
IDcl	Name	Baseline Case	Project Case													
1	Forest (Dense Lowland Tropical Rainforest)	23.87	26.32													
Monitoring equipment	Remote sensing and GIS															
QA/QC procedures to be applied	Best practices in remote sensing and GIS.															
Purpose of data	This parameter is used to calculate the baseline, project and leakage non-CO ₂ emissions from biomass burning occurred in the baseline and project scenarios															

Calculation method	This parameter was calculated according to requirements and default values established by the VM0015 v1.1 methodology.
Comments	GWP for CH ₄ and N ₂ O were obtained according to the most recent version of the VCS Standard.

Data / Parameter	EgLK _t											
Data unit	tCO ₂ e											
Description	Emissions from grazing animals in leakage management areas at year t.											
Source of data	- Activities report related to leakage prevention measures - Field assessment - Remote sensing data and GIS.											
Description of measurement methods and procedures to be applied	GHG emissions from grazing animals in the leakage management area (i.e. enteric fermentation or manure management) will be subjected to monitoring, when significant.											
Frequency of monitoring/recording	Annually											
Value applied	<table> <tr> <th rowspan="2">Year</th><th>EgLK_t</th></tr> <tr> <th>tCO₂e</th></tr> <tr> <td>2021</td><td>0</td></tr> <tr> <td>2022</td><td>0</td></tr> <tr> <td>2023</td><td>0</td></tr> <tr> <td>Total</td><td>0</td></tr> </table>	Year	EgLK _t	tCO ₂ e	2021	0	2022	0	2023	0	Total	0
Year	EgLK _t											
	tCO ₂ e											
2021	0											
2022	0											
2023	0											
Total	0											
Monitoring equipment	Remote sensing and GIS Field assessment data											
QA/QC procedures to be applied	Best practices in remote sensing and GIS.											

Purpose of data	This parameter will be used to calculate GHG emissions from activities implemented in the leakage management area in the project scenario, providing an ex post value.
Calculation method	Described in the methodology VM0015 v1.1, section 8.1.2: <i>Ex ante</i> estimation of CH ₄ and N ₂ O emissions from grazing animals.
Comments	The community living within the leakage management area does not practice any grazing activities. However, this shall be monitored during the crediting period. GWP for CH₄ and N₂O were obtained according to the most recent version of the VCS Standard.

Data / Parameter	Hlicl,t						
Data unit	m ³ /ha						
Description	Harvesting intensity of timber in forest class icl at year t in the project area due to planned logging activities (i.e., sustainable forest management plan).						
Source of data	Sustainable forest management activity reports, such as the annual operational plan and the annual post-harvesting report.						
Description of measurement methods and procedures to be applied	Forest inventory and measurements of wood logs by ABC Norte management team. ABC Norte controls all the harvested timber from the forest management area. Harvesting intensity followed procedures described in the Sustainable Forest Management Plan for Fazenda Pacajá.						
Frequency of monitoring/recording	Annually						
Value applied	<table> <tr> <th>Annual Productive Unit (APU)</th><th>Harvesting intensity (m³/ha)</th></tr> <tr> <td>APU 18</td><td>25,86</td></tr> <tr> <td>APU 19</td><td>10,78</td></tr> </table>	Annual Productive Unit (APU)	Harvesting intensity (m ³ /ha)	APU 18	25,86	APU 19	10,78
Annual Productive Unit (APU)	Harvesting intensity (m ³ /ha)						
APU 18	25,86						
APU 19	10,78						
Monitoring equipment	The same equipment applied in the forest inventory. Each harvested timber log is measured by ABC Norte management team and stored in a collector, which is linked to the SFMP data control.						
QA/QC procedures to be applied	Control procedures applied to forest inventory. Forest management Certification.						

	SFMP internal audit. Logging authorization from the Brazilian Environmental Agency ²⁴ .
Purpose of data	This parameter is used to calculate project emissions in the project scenario. Provides the ex post value of the harvested timber volume due to planned logging activities in the project area.
Calculation method	This parameter was calculated through the annual timber inventory, which is carried out before harvesting and contains the timber volume from each Annual Productive Unit (APU). After harvesting operations, each harvested timber log is measured (diameter and height) by ABC Norte employees and stored in a collector, which automatically calculate the timber volume through the following equation: $V (m^3) = 0.00008912 \times (DBH^2 \times H)^{0.948}$ Where, DBH = Diameter at Breast Height H = Height Carbon stock decrease from planned logging activities at each forest class are quantified by multiplying the detected area subject to logging by the harvested timber volume intensity (added to logging damage factor), and then by the mean wood density.
Comments	N/A

Data / Parameter	RF _t
Data unit	%
Description	Risk factor used to calculate VCS buffer credits
Source of data	- VCS Non-Permanence Risk Report – ABC Norte REDD Project; - Remote sensing data and GIS; - SFMP data; - Literature data.
Description of measurement methods and procedures to be applied	All sources of data from the VCS Non-Permanence Risk Report will be used to measure the various risk factors.
Frequency of monitoring/recording	Annually

²⁴ The responsible environmental agency in this case is the Environmental Agency of the State of Pará (SEMA - Pará).

Value applied	14
Monitoring equipment	Remote sensing and GIS.
QA/QC procedures to be applied	Best practices in remote sensing and GIS. The VCS Non-Permanence Risk Report will be verified together with the monitoring report at each verification event.
Purpose of data	This parameter represents the non-permanence risk rating of the project, which was used to determine the number of buffer credits that shall be deposited into the AFOLU pooled buffer account.
Calculation method	This parameter was calculated using the last available version of the AFOLU Non-Permanence Risk Tool. All the risk factors described in the VCS Non-Permanence Risk Report will be assessed.
Comments	N/A

4.3 Data Monitored and SOCIALCARBON

Indicator	Women Inclusion
Data unit	Not applicable
Description	Evaluates initiatives implemented by the company to promote women inclusion in the community activities.
Source of data	Questionnaire, interviews with communities, reports, among others.
Description of methods to collect information and procedures to be applied	The Ecológica Assessoria team conducts an interview with the ABC Norte personnel and applies a questionnaire, aimed to indirectly obtain information regarding the six SOCIALCARBON Standard resources. Moreover, the Ecológica Assessoria team collects the evidence provided by ABC Norte. Then, a cross-check is made to guarantee that all documentation was sent and complies with the information provided during the interview.

Purpose of the data	This parameter was used to check if there are campaigns aiming to promote women inclusion in the community activities.
Comments	N/A

Indicator	Expansion of community activities
Data unit	Number of communities
Description	Evaluates whether the community activities implemented by the company extend to all affected communities.
Source of data	Questionnaire, interviews with communities, reports, among others
Description of methods to collect information and procedures to be applied	The Ecológica Assessoria team conducts an interview with the ABC Norte personnel and applies a questionnaire, aimed to indirectly obtain information regarding the six SOCIALCARBON Standard resources. Moreover, the Ecológica Assessoria team collects the evidence provided by ABC Norte. Then, a cross-check is made to guarantee that all documentation was sent and complies with the information provided during the interview.
Purpose of the data	This parameter was used to check if there are activities that reach the communities affected by the project.
Comments	N/A

Indicator	Associations and Cooperatives
Data unit	Not applicable
Description	Evaluates whether communities residing in/around the project area are involved in associations or cooperatives.

Source of data	Questionnaires; interviews with communities; meeting minutes; attendance lists; association records.
Description of methods to collect information and procedures to be applied	The Ecológica Assessoria team conducts an interview with the ABC Norte personnel and applies a questionnaire, aimed to indirectly obtain information regarding the six SOCIALCARBON Standard resources. Moreover, the Ecológica Assessoria team collects the evidence provided by ABC Norte. Then, a cross-check is made to guarantee that all documentation was sent and complies with the information provided during the interview.
Purpose of the data	This parameter was used to check if the communities residing in/around the project area are involved in associations or cooperatives.
Comments	N/A

Indicator	Conflict management
Data unit	Not applicable
Description	Evaluates the company's procedures to identify and deal with conflicts in the surrounding communities, as well as the actions that are being taken so that they do not recur.
Source of data	Questionnaire, procedures, interviews with communities, reports, among others
Description of methods to collect information and procedures to be applied	The Ecológica Assessoria team conducts an interview with the ABC Norte personnel and applies a questionnaire, aimed to indirectly obtain information regarding the six SOCIALCARBON Standard resources. Moreover, the Ecológica Assessoria team collects the evidence provided by ABC Norte. Then, a cross-check is made to guarantee that all documentation was sent and complies with the information provided during the interview.

Purpose of the data	This parameter was used to check if conflicts were identified, treated, and monitored.
Comments	N/A

Indicator	Public health
Data unit	Not applicable
Description	Evaluates the company's actions to mitigate the impacts of its activities related to the public health of surrounding communities.
Source of data	Questionnaire, interviews with communities, reports, among others.
Description of methods to collect information and procedures to be applied	The Ecológica Assessoria team conducts an interview with the ABC Norte personnel and applies a questionnaire, aimed to indirectly obtain information regarding the six SOCIALCARBON Standard resources. Moreover, the Ecológica Assessoria team collects the evidence provided by ABC Norte. Then, a cross-check is made to guarantee that all documentation was sent and complies with the information provided during the interview.
Purpose of the data	This parameter was used to check if the company promotes any action to mitigate the impacts of its activities related to the public health of surrounding communities.
Comments	N/A

Indicator	Community education and training
Data unit	Not applicable
Description	Evaluates the relevant education and training programs implemented as a project activity, including additional programs to the stakeholders and broader community.

Source of data	Questionnaire, interviews with communities, reports, among others.
Description of methods to collect information and procedures to be applied	The Ecológica Assessoria team conducts an interview with the ABC Norte personnel and applies a questionnaire, aimed to indirectly obtain information regarding the six SOCIALCARBON Standard resources. Moreover, the Ecológica Assessoria team collects the evidence provided by ABC Norte. Then, a cross-check is made to guarantee that all documentation was sent and complies with the information provided during the interview.
Purpose of the data	This parameter was used to check if the company offers an education/training activity for the communities and/or employees.
Comments	N/A

Indicator	Alternative income sources
Data unit	Number of alternative income sources
Description	Evaluates whether the project created alternative sources of income generation for the communities living within/surrounding the project area.
Source of data	Questionnaire, interviews with communities and project proponent, reports, among others.
Description of methods to collect information and procedures to be applied	The Ecológica Assessoria team conducts an interview with the ABC Norte personnel and applies a questionnaire, aimed to indirectly obtain information regarding the six SOCIALCARBON Standard resources. Moreover, the Ecológica Assessoria team collects the evidence provided by ABC Norte. Then, a cross-check is made to guarantee that all documentation was sent and complies with the information provided during the interview.

Purpose of the data	This parameter was used to check if the project generates any alternative income sources for the local communities.
Comments	N/A

Indicator	Carbon credit benefits
Data unit	Percentage of the income generated by carbon credit sales distributed to the carbon project/community development
Description	Evaluates whether proceeds from the sale of carbon credits was distributed to carbon project improvements or activities that benefit the local community.
Source of data	Reports, documents, and registries from project proponent.
Description of methods to collect information and procedures to be applied	The Ecológica Assessoria team conducts an interview with the ABC Norte personnel and applies a questionnaire, aimed to indirectly obtain information regarding the six SOCIALCARBON Standard resources. Moreover, the Ecológica Assessoria team collects the evidence provided by ABC Norte. Then, a cross-check is made to guarantee that all documentation was sent and complies with the information provided during the interview.
Purpose of the data	This parameter was used to check if the sale of carbon credits was distributed to carbon project improvements or activities that benefit the local community.
Comments	N/A

Indicator	Securing of funds
Data unit	Not applicable

Description	Evaluates the project proponent's participation in requests for proposals/ programs to secure funds. Also monitors whether project participants were successful, and whether the funds raised are creating activities for communities resident in/around the project area.
Source of data	Reports, documents, and registries from project proponent.
Description of methods to collect information and procedures to be applied	The Ecológica Assessoria team conducts an interview with the ABC Norte personnel and applies a questionnaire, aimed to indirectly obtain information regarding the six SOCIALCARBON Standard resources. Moreover, the Ecológica Assessoria team collects the evidence provided by ABC Norte. Then, a cross-check is made to guarantee that all documentation was sent and complies with the information provided during the interview.
Purpose of the data	This parameter was used to check if the project owner search for proposals and/or programs to secure funds.
Comments	N/A

Indicator	Land Tenure
Data unit	Not applicable
Description	Evaluates the existence of conflicts due to land tenure, as well as whether actions are being taken to manage the issue.
Source of data	Reports, documents, and registries from project proponent.
Description of methods to collect information and procedures to be applied	The Ecológica Assessoria team conducts an interview with the ABC Norte personnel and applies a questionnaire, aimed to indirectly obtain information regarding the six SOCIALCARBON Standard resources. Moreover, the Ecológica Assessoria team collects the evidence provided by ABC Norte. Then, a cross-check is made to guarantee that all documentation was sent and

	complies with the information provided during the interview.
Purpose of the data	This parameter was used to check if there was any conflict due to land tenure inside the project area as well as the actions that are being taken to manage these possible conflicts.
Comments	N/A

Indicator	Social and environmental investments
Data unit	Number of areas with socio-environmental investments
Description	Evaluates the socio-environmental investments in the different areas: education; alternative income generation; environment; sport and infrastructure.
Source of data	Interviews with communities and project proponent, reports, among others.
Description of methods to collect information and procedures to be applied	The Ecológica Assessoria team conducts an interview with the ABC Norte personnel and applies a questionnaire, aimed to indirectly obtain information regarding the six SOCIALCARBON Standard resources. Moreover, the Ecológica Assessoria team collects the evidence provided by ABC Norte. Then, a cross-check is made to guarantee that all documentation was sent and complies with the information provided during the interview.
Purpose of the data	This parameter was used to check if the company promotes any socio-environmental investments in different areas, such as: education, alternative income generation, environment, sport and infrastructure.
Comments	N/A

Indicator	Quality control
Data unit	Not applicable

Description	Evaluates the quality control of the management plan operation.
Source of data	Reports, documents, and registries from project proponent.
Description of methods to collect information and procedures to be applied	The Ecológica Assessoria team conducts an interview with the ABC Norte personnel and applies a questionnaire, aimed to indirectly obtain information regarding the six SOCIALCARBON Standard resources. Moreover, the Ecológica Assessoria team collects the evidence provided by ABC Norte. Then, a cross-check is made to guarantee that all documentation was sent and complies with the information provided during the interview.
Purpose of the data	This parameter was used to check if there is a quality control management plan operation.
Comments	N/A

Indicator	Non-timber forest products (NTFPs)
Data unit	Not applicable
Description	Evaluates the sustainable use of natural resources by communities in/around the project area for income generation.
Source of data	Interviews with communities and project proponent, reports, among others.
Description of methods to collect information and procedures to be applied	The Ecológica Assessoria team conducts an interview with the ABC Norte personnel and applies a questionnaire, aimed to indirectly obtain information regarding the six SOCIALCARBON Standard resources. Moreover, the Ecológica Assessoria team collects the evidence provided by ABC Norte. Then, a cross-check is made to guarantee that all documentation was sent and complies with the information provided during the interview.

Purpose of the data	Non-timber forest products are traded in/around the project area, with sustainable practices in use.
Comments	N/A

Indicator	Biodiversity monitoring
Data unit	Not applicable
Description	Evaluates whether the company has actions to identify and monitor the local fauna and flora.
Source of data	Reports, documents, and registries from project proponent.
Description of methods to collect information and procedures to be applied	The Ecológica Assessoria team conducts an interview with the ABC Norte personnel and applies a questionnaire, aimed to indirectly obtain information regarding the six SOCIALCARBON Standard resources. Moreover, the Ecológica Assessoria team collects the evidence provided by ABC Norte. Then, a cross-check is made to guarantee that all documentation was sent and complies with the information provided during the interview.
Purpose of the data	This parameter was used to check if the company has actions to identify and monitor the local fauna and flora.
Comments	N/A

Indicator	Impact on remaining flora
Data unit	Not applicable
Description	Evaluates the company actions to monitor the impact on the remaining flora.
Source of data	Reports, documents, and registries from project proponent.

Description of methods to collect information and procedures to be applied	The Ecológica Assessoria team conducts an interview with the ABC Norte personnel and applies a questionnaire, aimed to indirectly obtain information regarding the six SOCIALCARBON Standard resources. Moreover, the Ecológica Assessoria team collects the evidence provided by ABC Norte. Then, a cross-check is made to guarantee that all documentation was sent and complies with the information provided during the interview.
Purpose of the data	This parameter was used to check if the company has actions to monitor the impact on the remaining flora.
Comments	N/A

Indicator	Buffer reduction
Data unit	Buffer variance percentage compared to previous monitoring period or PD
Description	Measures the progression of the buffer in the current monitoring period compared to VCS PD and Monitoring Report.
Source of data	VCS PD and Monitoring Report
Description of methods to collect information and procedures to be applied	The Ecológica Assessoria team conducts an interview with the ABC Norte personnel and applies a questionnaire, aimed to indirectly obtain information regarding the six SOCIALCARBON Standard resources. Moreover, the Ecológica Assessoria team collects the evidence provided by ABC Norte. Then, a cross-check is made to guarantee that all documentation was sent and complies with the information provided during the interview.
Purpose of the data	This parameter was used to check the progression of the buffer in the current monitoring period.
Comments	N/A

Indicator	Stakeholder consultation
Data unit	Not applicable
Description	Evaluates the methodology used for the stakeholder consultation regarding the carbon project.
Source of data	Interviews with communities and project proponent, reports, among others.
Description of methods to collect information and procedures to be applied	The Ecológica Assessoria team conducts an interview with the ABC Norte personnel and applies a questionnaire, aimed to indirectly obtain information regarding the six SOCIALCARBON Standard resources. Moreover, the Ecológica Assessoria team collects the evidence provided by ABC Norte. Then, a cross-check is made to guarantee that all documentation was sent and complies with the information provided during the interview.
Purpose of the data	This parameter was used to check the methodology used for the stakeholder consultation regarding the carbon project.
Comments	N/A

Indicator	Project performance
Data unit	Percentage of carbon credits generated compared to the estimated values
Description	Evaluates project performance in relation to verified emissions reductions.
Source of data	VCS PD and Monitoring Report
Description of methods to collect information and procedures to be applied	The Ecológica Assessoria team conducts an interview with the ABC Norte personnel and applies a questionnaire, aimed to indirectly obtain information regarding the six SOCIALCARBON Standard resources. Moreover, the Ecológica Assessoria team collects the evidence provided by ABC Norte. Then, a cross-check is made to guarantee that all documentation was sent and

	complies with the information provided during the interview.
Purpose of the data	This parameter was used to evaluate the project performance in relation to verified emission reductions.
Comments	N/A

4.4 Monitoring Plan

This monitoring plan has been developed according to the VCS Methodology VM0015 version 1.1 and in this monitoring period was performed as planned on the VCS PD.

Organizational structure

According to the contract stipulated between Ecológica Assessoria and ABC Norte, ABC was responsible for the costing and implementation and/or maintenance of the project's forest management and activities to reduce deforestation and degradation, surveillance, fire prevention, illegal extraction of wood, prevention of invasions, among others, implementation and maintenance of social and environmental activities to reduce leakage, decrease the risks of non-permanence of carbon and improve the results of SOCIALCARBON, or other Standard for the assessment of social and environmental co-benefits.

In addition, was responsible for keeping all documentation required by the project in order, as well as project maintenance expenses; Execute, monitor and maintain in full operation the structure that authorizes and serves as the basis for the development of the Project, ensuring the reduction of deforestation and degradation, the implementation and maintenance of social and environmental activities (or designating and hiring third parties responsible for the activities).

Ecológica Assessoria was responsible for the development of the project documents, assessment of the mapping files for application of the methodology, and internal auditing.

Quality control and quality assurance procedures

QA/QC were done according to best practices in remote sensing and as stated by VM0015 methodology.

Data archiving

All data sources and processing, classification and change detection procedures was documented and stored in a dedicated long-term electronic archive maintained by ABC Norte. Ecológica Assessoria LTDA. Is also keeping a digital copy of all documents generated during the monitoring period.

Given the extended time frame and the pace of production of updated versions of software and new hardware for storing data, electronic files will be updated periodically or converted to a format accessible to future software applications, as needed.

All maps and records generated during project implementation will be stored and made available to VVBs at verification for inspection. In addition, any data collected from ground-truth points (including GPS coordinates, identified land-use class, and supporting photographic evidence) will be recorded and archived.

Organization and responsibilities of the parties involved in all the above

Ecológica Assessoria was responsible for the development of the Monitoring Report. Therefore, it was responsible for the organization and calculation of items related to the methodology.

ABC Norte was responsible for the development of the project activity, monitoring of the required parameters in section 4.2 above. In addition, ABC Norte was also responsible for forest surveillance and generation of socioenvironmental activities to local communities.

Uezu Planejamento Ambiental is responsible for all GIS related information.

- **Monitoring of actual carbon stock changes and GHG emissions within the project area**

- **Monitoring of project implementation**

ABC Norte was responsible for the implementation of the project activity. The monitoring of the sustainable management plan is carried out by the municipal and state secretariats. In addition, as it is a CEFLOR certification holder, Fazenda Pacajá has its management plan and activities audited internally by the certifier annually.

To keep track of the impact of project activities, ABC Norte produces reports on:

- Fauna and Flora
- Environmental monitoring
- Post Exploratory
- Socioenvironmental diagnosis
- Permanent plots

This information was verified during the validation and this verification of the carbon project. Information from the sustainable forest management plan and post-exploratory reports was used to update parameters related to planned deforestation.

Updating Forest Carbon Stocks Estimates

If new and more accurate carbon stock data become available, these can be used to estimate the net anthropogenic GHG emission reduction, provided that these data are in accordance to the requirements established by the applied methodology VM0015. New data on carbon stocks will only be used if they are validated by an accredited VVB.

Sampling approaches for forest inventory

Sampling and carbon stocks estimate shall be conducted according to Appendix II – Methods to estimate carbon stocks. The sampling and execution of the forest inventory is the responsibility of ABC Norte. Future monitoring and collections must follow the procedure conducted during the PD, as informed in section 4 of the respective:

The forest inventory campaign involved the measurement of 21 plots. The allocation of the permanent plots shall prioritize areas not previously managed for timber products.

Each plot has dimensions of 50 x 50 m (0.25 hectares), randomly distributed. The permanent plots were demarcated at the four corners, with wooden pickets, in order to facilitate their location later on, and their geographical coordinates were recorded. DBH was measured at 1.30 m above ground level, involving trees with DBH > 10 cm (measuring tape).

The total height of the trees was obtained in an estimated manner (visual) or using a Blume-Leiss device (hypsonometer), when possible. Data was collected from a total sample area of 5.25 ha.

The estimation of tree volumes must involve the application of allometric equation from adequate literature.

The forest inventory data must be summarized into a table, including aboveground biomass, belowground biomass, total biomass, and total carbon stock. A spreadsheet including target precision levels, sample sizes, sample site locations and stratification must be presented to Ecológica and the VVB. If new and more accurate carbon stock data become available, these can be used to estimate the net anthropogenic GHG emission reduction, provided that these data are in accordance with the requirements established by the applied methodology VM0015. Data shall be updated every baseline reassessment.

Complementary GIS Analysis

In the present monitoring period 31/12/2021 – 31/03/2023, the project uses the available collection of MapBiomass 9.1²⁵,

For all monitoring period, here is a summary of the methodology for generation of accumulated deforestation using MapBiomass in QGIS²⁶:

1. Downloading Land Use Classification Data
2. Reprojecting the Raster to UTM Coordinates
3. Reclassification of the Land Use Raster into 4 Classes (Table 01)
4. Pre-processing to correct classification gaps: Apply pre-processing to correct small pixel classification voids using the Nibble tool.

²⁵ [mapbiomas-user-toolkit-lulc.js - Earth Engine Code Editor](#)

²⁶ [Spatial without Compromise · QGIS Web Site](#)

5. Specific Feature Extraction and Reclassification:
6. Extract hydrography (class 2) and non-forest vegetation (class 3) features.
7. Convert the mask layer to a raster and reclassify the attributes to class 1 (forest), incorporating the information from classes 2 (hydrography) and 3 (non-forest vegetation), respectively. It is important that this is done in this order.
8. Generating a Combined Mask and Adding Deforestation Features.
9. Create a mask containing the three classes mentioned above.
10. Add the deforestation features to the mask to generate an accumulated deforestation raster.
11. Generating Accumulated Deforestation for 2021: After creating the mask containing the three classes, add the deforestation features and generate the accumulated deforestation. This procedure will be carried out using ArcGIS Pro's Raster Calculator tool, with the following equation:

```
Con(IsNull("_4_algar_v71_2021_Rec_RR.tif"), "DesmatAcum_2020.tif",
Con("DesmatAcum_2020.tif" > 1, "DesmatAcum_2020.tif",
Con("_4_algar_v71_2021_Rec_RR.tif" == 4, 4, "DesmatAcum_2020.tif"))
```

Table 10. Classes MapBiomass used in reclassification process for 2021, 2022 and 2023.

Code ID	COLLECTION 9 - CLASSES	Reclassification	4 classes
1	1. Forest	1	Forest
3	1.1. Forest Formation	1	Forest
6	1.4 Floodable Forest	1	Forest
26	5. Water	2	Hydrography
33	5.1. River, Lake and Ocean	2	Hydrography
31	5.2. Aquaculture	2	Hydrography
4	1.2. Savanna Formation	3	Non forest vegetation
5	1.3. Mangrove	3	Non forest vegetation
49	1.5. Wooded Sandbank Vegetation	3	Non forest vegetation
10	2. Herbaceous and Shrubby Vegetation	3	Non forest vegetation
11	2.1. Wetland	3	Non forest vegetation
12	2.2. Grassland	3	Non forest vegetation
32	2.3. Hypersaline Tidal Flat	3	Non forest vegetation
29	2.4. Rocky Outcrop	3	Non forest vegetation
50	2.5. Herbaceous Sandbank Vegetation	3	Non forest vegetation
14	3. Farming	4	Deforestation

15	3.1. Pasture	4	Deforestation
18	3.2. Agriculture	4	Deforestation
19	3.2.1. Temporary Crop	4	Deforestation
39	3.2.1.1. Soybean	4	Deforestation
20	3.2.1.2. Sugar cane	4	Deforestation
40	3.2.1.3. Rice	4	Deforestation
62	3.2.1.4. Cotton (beta)	4	Deforestation
41	3.2.1.5. Other Temporary Crops	4	Deforestation
36	3.2.2. Perennial Crop	4	Deforestation
46	3.2.2.1. Coffee	4	Deforestation
47	3.2.2.2. Citrus	4	Deforestation
35	3.2.2.3. Palm Oil	4	Deforestation
48	3.2.2.4. Other Perennial Crops	4	Deforestation
9	3.3. Forest Plantation	4	Deforestation
21	3.4. Mosaic of Uses	4	Deforestation
22	4. Non vegetated area	4	Deforestation
23	4.1. Beach, Dune and Sand Spot	4	Deforestation
24	4.2. Urban Area	4	Deforestation
30	4.3. Mining	4	Deforestation
25	4.4. Other non Vegetated Areas	4	Deforestation

Methods for generating, recording, aggregating, collating and reporting data on monitored parameters

All data sources and processing, classification and change detection procedures will be documented and stored in a dedicated long-term electronic archive maintained by Ecológica Assessoria Ltda.

Ecológica Assessoria Ltda. Will also keep a digital copy of all documents generated during the development of the monitoring reports.

Given the extended time frame and the pace of production of updated versions of software and new hardware for storing data, electronic files will be updated periodically or converted to a format accessible to future software applications, as needed.

All maps and records generated during project implementation were stored and made available to VCS verifiers at verification for inspection. In addition, any data collected from ground-truth

points (including GPS coordinates, identified land-use class, and supporting photographic evidence) were recorded and archived.

Monitored data will be kept for two years after the end of the crediting period or the last issuance of carbon credits for this project activity, whichever occurs later. For this purpose, the authority for the registration, monitoring, measurement and reporting will be Ecológica Assessoria Ltda. Monitored parameters are described in Section 4.2 and was monitored with the frequency described further below.

Quality Assurance/Quality Control

According to the applied methodology, the minimum overall accuracy of the Forest Cover Benchmark Map should be 90%²⁷; and the minimum classification accuracy of each class or category in the Land-Use and Land-Cover Map and Land-Use and Land-Cover Change Map, respectively, should be 80%.

Furthermore, according to the applied methodology, usually the same source of remotely sensed data and data analysis techniques must be used within a period for which the baseline is fixed (fixed baseline period). However, if remotely sensed data have become available from new and higher resolution sources (e.g., from a different sensor system) during this period, these can only be used if the images based on interpretation of the new data overlap the images based on interpretation of the old data by at least 1 year and they cross calibrate to acceptable levels based on commonly used methods in the remote sensing community.

In the current monitoring period, a complementary visual analysis was conducted to enhance MapBiomass data quality. The Sentinel sensor²⁸, with its 10x10-meter resolution, was employed to identify deforestation areas not detected by MapBiomass. Once the areas are detected, their classification is updated, usually from forest to deforestation.

To ensure consistency and quality of results, spatial analysts carrying out the image processing, interpretation, and change detection procedures were strictly adhere to the steps detailed in the Methodology.

All of this reliable data, which were collected and documented, were used as a technical support tool for decision-making in order to improve project outcomes, and to adapt the project according to the current needs and realities. Project activities implemented within the project area are consistent with the management plan of the PD.

The implementation of the project activity was monitored by continuous monitoring activities using remote sensing techniques. The land-use monitoring was carried out with remote sensing methods, using images generated by Mapbiomas, and LANDSAT satellite images (or other

²⁷ [ATBD Collection 9 v2.docx](#) Table5 in the page 29

²⁸ [Copernicus Browser](#)

available source accepted by the methodology), which was subject to digital processing to perform the interpretation and classification of the land cover classes studied.

The management structure was also rely on the local community to help monitor the area. All the monitored parameters was checked with the frequency detailed in the Section 4.2 above, as requested in the VCS Methodology VM0015, version 1.1.

With the carbon credits income, in order to complement the monitoring of the project area and its surroundings, the project proponent intends to improve the remote sensing methods and data used, which meet the accuracy assessment requirements laid out in the methodology.

The present REDD project was also implementing the sustainability report following the SOCIALCARBON methodology, which was developed by *Instituto Ecológica* and focus on implementing environmental and social activities within the project area. This methodology follows the SOCIALCARBON Guidelines available at: <http://www.socialcarbon.org/documents/>.

In addition, the SOCIALCARBON Reports will be available on the VCS Registry once the project is verified.

Procedures for handling internal auditing and non-conformities

The procedures for handling internal auditing and non-conformities are going to be established by both project developer and project proponent. All the necessary taskforce and procedures was in place to meet the highest levels of control.

A project information quality management system was implemented, the main purpose of which is to minimize the risk of error, obtaining reliable data on which to base the monitoring results, and thus, minimizing non-conformities. It includes the training of general staff in the different roles to play within the framework of the ABC Norte Project; In-field verification, which basically consists of monitoring the procedures set out in the methodological guidelines and; review of the monitoring reports prior to its delivery to the VVB, in order to confirm that the calculations, analysis and the conclusions are accurate and measured. This work is in charge of Ecológica Assessoria Ltda.

If non-conformities exist during the internal or external auditing processes, the data should be reviewed, and the non-conformities addressed.

- **Monitoring of land-use and land-cover change within the project area**

Forest cover change due to unplanned deforestation was monitored through periodic assessment of classified satellite imagery covering the project area. Emissions from deforestation are estimated by multiplying the detected area of forest loss by the average forest carbon stock per unit area.

The project boundary, as set out in the PD, serves as the initial “forest cover benchmark map” against which changes in forest cover were assessed over the interval of the monitoring period.

The entire project area has been demonstrated to meet the forest definition at the beginning of the crediting period. For this monitoring period, change in forest cover was assessed against the preceding classified forest cover map marking the beginning of the monitoring interval. The resulting classified image is compared with the preceding classified image (forest cover benchmark map marking the start of the monitoring interval) to detect forest cover change over the monitoring interval and subsequently becomes the updated forest cover benchmark map for the next monitoring interval. Thus, the forest benchmark map is updated at each monitoring event.

The increase or decrease in carbon stocks due to planned activities in the project area was also monitored through documents and periodic assessment of classified satellite imagery covering the project area. In case of planned deforestation, emissions are estimated by multiplying the area of forest loss by the average forest carbon stock per unit area.

The results of monitoring were reported by creating *ex post* tables of activity data per stratum; per initial forest class *ic*; and per post-deforestation zone *z*, for the reference region, project area and leakage belt.

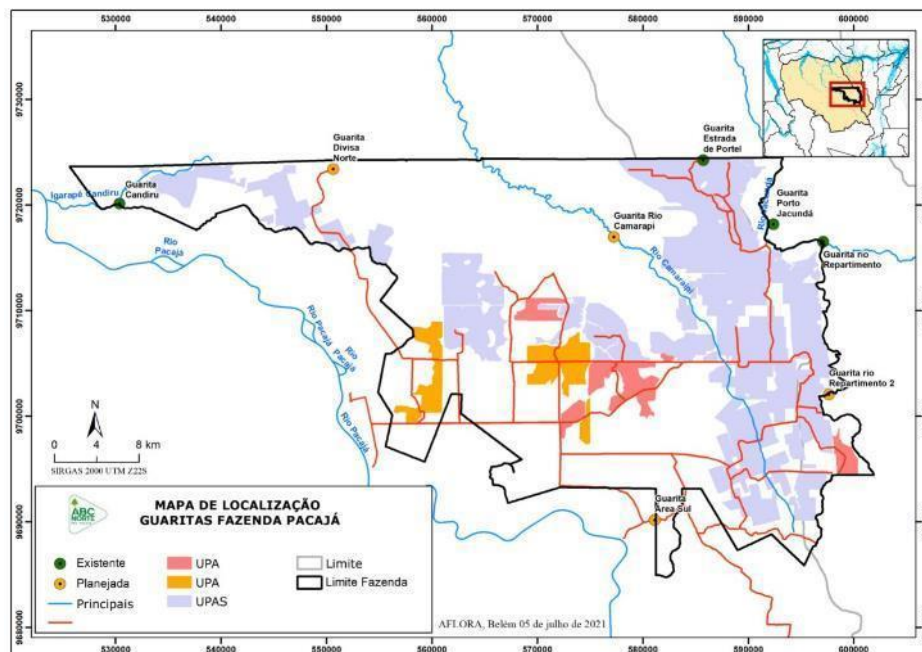
In addition, a map showing Cumulative Areas Credited within the project area were updated and presented to VCS verifiers. The cumulative area cannot generate additional VCUs in future periods.

Other applied methodologies for monitoring of deforestation are listed below:

Monitoring bases

The bases are positioned in strategic points within the Fazenda Pacajá. Figure below presents the current and planned monitoring bases:

Figure 11. Current and planned monitoring bases at Fazenda Pacajá



According to Figure above, the green dots represent the bases already established by the project owner as monitoring bases. Yellow dots are the planned points that will be constructed with the carbon credits revenues. All the bases have radio communication and are equipped with vehicles to move to other areas if necessary.

Satellite images and remote sensing monitoring

The land use and land use cover change was analyzed through remote sensing methods, using data from INPE (Queimadas – fire monitoring; , satellite images (LANDSAT, Sentinel, CBERS) .

All reliable data collected and documented were used as a technical support tool for decision making in order to improve project outcomes, and to adapt the project according to the current needs and reality. These decisions will be made during periodic meetings to review the Action Plan – that will be developed as part of the SocialCarbon Methodology. On these occasions, the design of the Monitoring Plan will be analyzed according to its efficiency in generating reliable feedback and all the necessary information. If any changes in the Monitoring Plan or management actions are identified, a corrective action will be designed and implemented.

The collected data is compiled in an annual environmental report, that gathers information on deforestation, heat spots and anthropism occupation.

Security procedures

- In order to ensure the internal and patrimonial security of Fazenda Pacajá and its natural heritage, the employees follow formalized guidance when there is any internal change in the Forest area of the property.
- It is noteworthy that the first step is to try to communicate and increase the scope of the Socio-Environmental Program, as a way of approaching the extremes of the area and the communities, in order to guide and have an active voice with those who act irregularly within Fazenda Pacajá.
- A satellite image report may be issued monthly, containing the information of deforestation and forest degradation within the project area. In addition, from now on, all ABC Norte employees shall observe any irregularity in the project area.
- Upon verification of any irregularity, the person must inform the office in Vila ABC. With this, the responsible team will go to the field and try to contact the deforestation agents.
- Upon confirmation, the area should be photographed, and the local coordinates recorded, in order to facilitate the registration of the occurrence at the Portel Forest Police. In possession of the registration, the environmental secretariats are called to request action. These actions are planned to avoid unplanned deforestation and carbon stock changes in the area.

SOCIALCARBON Report are also monitoring the relationship between the company and the communities, and its evolution on mitigating unplanned deforestation caused by these agents.

- **Monitoring of carbon stock changes and non-CO2 emissions from fires**

In addition to the mentioned above, ABC Norte is responsible for training monitoring, management, safety and health personnel. This includes periodic fire brigade training, including first aid, fire procedures, training of new monitoring personnel and those responsible for management during harvests.

If forest fires occur, these non-CO2 emissions was subject to monitoring and accounting, when significant.

- **Monitoring of impacts of natural disturbances and other catastrophic events**

The monitoring of natural impacts and other catastrophic events was responsibility of ABC Norte. The company must notify Ecológica Assessoria so that it can include the related impacts in the carbon project reports, updating the related parameters, including the buffer report. Where an event occurs that is likely to qualify as a loss event, the project proponent shall notify Verra within 30 days of discovering the likely loss event.

Decreases in carbon stocks and increases in GHG emissions (e.g. in case of forest fires) due to natural disturbances (such as hurricanes, earthquakes, flooding, drought, fires or storms) or man-made events, including those over which the project proponent has no control (such as acts of terrorism or war), are subject to monitoring, when significant. If the area (or a sub-set of it) affected by natural disturbances or man-made events generated VCUs in past verifications, the total net change in carbon stocks and GHG emissions in the area(s) that generated VCUs will be

estimated, and an equivalent amount of VCU will be cancelled from the VCS buffer. No VCUs can be issued for the project until all carbon stock losses and increases in GHG emissions have been offset.

- **Monitoring of Leakage**

Monitoring of the leakage belt and leakage management area was carried out as in the project area and reference region.

The most recent VCS guidelines on this subject matter was applied. Furthermore, as the leakage belt was determined using Option 1 (Opportunity cost analysis), the boundary of the leakage belt will have to be reassessed at the end of each fixed baseline period using the same methodological approaches used in the previous period. The calculation procedure for estimating leakage emissions in the project scenario will be done by monitoring the following sources of leakage:

- **Carbon stock changes and GHG emissions associated with leakage prevention activities.**

The carbon stock decrease or increase in GHG emissions due to leakage prevention measures, which will probably take place inside the leakage management area, was monitored through documents and field assessment. In areas undergoing carbon stock enhancement, the project conservatively assumes stable stocks and no biomass monitoring is conducted.

- **Carbon stock decrease and increases in GHG emissions due to activity displacement leakage**

Deforestation in the leakage belt area above the baseline may be considered activity displacement leakage. Activity data for the leakage belt area was determined using the same methods applied to monitoring deforestation activity data in the project area. Leakage was calculated by comparing the *ex-ante* and the *ex post* assessment. However, where strong evidence can be collected that deforestation in the leakage belt is attributable to deforestation agents that are not linked to the project area, the detected deforestation will not be attributed to the project activity, thus not considered leakage.

- **Organizational structure, responsibilities and competencies**

Monitoring was done by the project proponent and outsourced to a third party having sufficient capacities to perform the monitoring tasks. To ensure the operation of the monitoring activities, the operational and managerial structure will be established according to the table below.

For all aspects of project monitoring, the project proponent will ensure that data collection, processing, analysis, management and archiving are conducted in accordance with the monitoring plan. The authority for the registration, monitoring, measurement and reporting will be Ecológica Assessoria Ltda.

Oversight and accountability of monitoring activities

ABC Norte and Ecológica shall mutually account for the monitoring and execution of activities under their responsibility. The development of the project will be linked to the quality and veracity

of the data sent, which will be audited by a third party during the verification. The frequency of monitoring and accountability will be, at most, at each verification, and may vary according to each activity.

Table 11. Type of Monitoring and Party Responsible for Monitoring

Variables to be monitored	Responsible	Frequency
Reassessment of the baseline	Ecologica Assessoria and external institutions qualified for the GIS analysis and monitoring	Every 10 years
Monitoring Deforestation and Project Emissions	Project proponent together with Ecologica Assessoria and external institutions qualified for the GIS analysis and monitoring	Prior to each verification
Monitoring of non-CO ₂ emissions from forest fires	Project proponent together with Ecologica Assessoria and external institutions qualified for the GIS analysis and monitoring	Prior to each verification
Monitoring Leakage emissions	Project proponent together with Sustainable Carbon and external institutions qualified for the GIS analysis and monitoring	Prior to each verification
Monitoring of Natural Disturbance and catastrophic events	Project proponent	When a natural event occurs
Updating Forest Carbon Stocks Estimates	Project proponent	At least, every 10 years, only if necessary.

5 QUANTIFICATION OF GHG EMISSION REDUCTIONS AND REMOVALS

5.1 Baseline Emissions

The total average biomass stock per hectare (Mg ha⁻¹) was converted to tCO₂e using the following equations:

$$Cab_{icl} = ab \times CF \times 44 / 12$$

Where,

Cab_{icl}	Average carbon stock per hectare in the above-ground biomass carbon pool of initial forest class icl ; tCO ₂ e ha ⁻¹
ab	Average biomass stock per hectare in the above-ground biomass pool of initial forest class icl ; Mg ha ⁻¹

<i>CF</i>	Default value of carbon fraction in biomass
44/12	Ratio converting C to CO ₂ e

$$Cbb_{icl} = bb \times CF \times 44 / 12$$

Where,

<i>Cbb_{icl}</i>	Average carbon stock per hectare in the below-ground biomass carbon pool of initial forest class <i>icl</i> ; tCO ₂ e ha ⁻¹
<i>bb</i>	Average biomass stock per hectare in the below-ground biomass pool of initial forest class <i>icl</i> ; Mg ha ⁻¹
<i>CF</i>	Default value of carbon fraction in biomass
44/12	Ratio converting C to CO ₂ e

The total baseline carbon stock change in the project area at year *t* is calculated as follows:

$$\Delta CBSLPA_t = \Delta CabBSLPA_{icl,t} + \Delta CbbBSLPA_{icl,t}$$

Where,

$\Delta CBSLPA_t$	Total baseline carbon stock changes in the project area at year <i>t</i> ; tCO ₂ e
$\Delta CabBSLPA_{icl,t}$	Total baseline carbon stock change for the above-ground biomass pool in the project area for initial forest class at year <i>t</i> ; tCO ₂ e
$\Delta CbbBSLPA_{icl,t}$	Total baseline carbon stock change for the below-ground biomass pool in the project area for initial forest class at year <i>t</i> ; tCO ₂ e

$$\Delta CabBSLPA_{icl,t} = ABSLPA_{icl,t} \times \Delta Cab_{icl}$$

Where,

$\Delta CabBSLPA_{icl,t}$	Total baseline carbon stock change for the above-ground biomass pool in the project area for initial forest class at year <i>t</i> ; tCO ₂ e
$ABSLPA_{icl,t}$	Area of initial forest class <i>icl</i> deforested at time <i>t</i> within the project area in the baseline case; ha
ΔCab_{icl}	Average carbon stock change factor per hectare in the above-ground biomass carbon pool of initial forest class <i>icl</i> ; tCO ₂ e ha ⁻¹

$$\Delta CbbBSLPA_{icl,t} = ABSLPA_{icl,t} \times \Delta Cbb_{icl}$$

Where,

$\Delta CbbBSLPA_{icl,t}$	Total baseline carbon stock change for the below-ground biomass pool in the project area for initial forest class at year t ; tCO ₂ e
$ABSLPA_{icl,t}$	Area of initial forest class icl deforested at time t within the project area in the baseline case; ha
ΔCbb_{icl}	Average carbon stock change factor per hectare in the below-ground biomass carbon pool of category icl ; tCO ₂ e ha ⁻¹

Project carbon stocks were calculated as presented in section 4.1 of the respective VCS Validation PD Version 05.

Average carbon stocks of post-deforestation classes

The average classification of post-deforestation land-uses within the reference region during the historical reference period was conducted through MapBiomass, which is detailed below:

Table 12. Average classification of land-uses in the reference region

Land Use	Area (%)
Pasturelands	66.18%
Secondary forests	33.66%
Agriculture	0.09%
Rivers, lakes and reservatory	0.06%
Urban area	0.01%

Therefore, almost two-thirds of the post-deforestation land uses within the reference region is composed by pasturelands.

In order to estimate the post-deforestation carbon stocks, the average carbon stocks of pasturelands, agriculture and other land uses were taken from the National GHG Emissions Communication of Brazil to the UNFCCC (2019)²⁹.

For secondary forests, a regional study was conducted. Most secondary forests in the Brazilian Amazon are young. In 2017, 65% of secondary forests was ≤ 10 years old. On average, 35% of annual land abandonment to secondary forests was re-cleared within 5 years, and 57% within 10 years³⁰. The half-life of secondary forests is 8 years, on average, which is also the same value

²⁹ Available at: <https://www.gov.br/mcti/pt-br/acompanhe-o-mcti/sirene/publicacoes/comunicacoes-nacionais-do-brasil-a-unfccc/arquivos/3tcn_volume_3.pdf>

³⁰ Sâmia Nunes *et al* 2020 *Environ. Res. Lett.* **15** 034057. Available at: <<https://iopscience.iop.org/article/10.1088/1748-9326/ab76db>>

found by other study that concludes that more than 50% of the secondary forests in the Amazon biome have less than 8 years old³¹.

According to a study conducted in the State of Pará that analyzed the carbon stocks of a secondary forest with 14 years old, the average carbon stock in above ground biomass is around 19 tC/ha³². Below ground biomass was estimated through the root-to-shoot ratio from the applied methodology. Therefore, the average value for secondary forests is around 22,8 tC/ha.

Therefore, the weighted average carbon stocks was calculated through the data below.

Table 13. Weighted average of post-deforestation carbon stocks

Land Use	Area (%)	Carbon stocks (tC/ha)
Pasturelands	66,18%	7.57
Secondary forests	33,66%	22.8
Agriculture	0,09%	21
Rivers, lakes and reservatory	0,06%	0
Urban area	0,01%	0
Weighted average of post-deforestation carbon stocks		12.70

Table 14. Long-term (20 years) average carbon stocks per hectare of post-deforestation LU/LC classes present in the reference region

Post deforestation class <i>fcl</i>	
Name	Non forest
ID _{fcl}	1
Average carbon stock per hectare ±90% CI	
C _{totfcl}	
tCO _{2e} /ha	
46.58	

Calculation of baseline carbon stock changes

The resulting changes in carbon stock for initial forest classes for the reference region, project area and leakage belt are shown in tables below.

³¹ Silva Junior, C.H.L., Heinrich, V.H.A., Freire, A.T.G. *et al.* Benchmark maps of 33 years of secondary forest age for Brazil. *Sci Data* **7**, 269 (2020). Available at: <<https://doi.org/10.1038/s41597-020-00600-4>>

³² Pereira, Izaura Cristina Nunes. Estoque de biomassa e carbono florestal em unidades de paisagem na Amazônia: uma análise a partir da abordagem metodológica. Universidade Federal do Pará, Belém, 2013. Available at: <<https://ppgdstu.propesp.ufpa.br/ARQUIVOS/teses/TESES/2013/IZAURA%20CRISTINA%20NUNES%20PEREIRA.pdf>>

Table 15. Baseline carbon stock change in the reference region

Carbon stock change in the above-ground biomass per initial forest class <i>icl</i>		Total carbon stock change in the above-ground biomass of initial forest class in the reference region		Carbon stock change in the below-ground biomass per initial forest class <i>icl</i>		Total carbon stock change in the below-ground biomass of initial forest class in the reference region	
ID _{cl}	1	$\Delta\text{CabBSLRR}_{icl,t}$	$\Delta\text{CabBSLRR}_{icl}$	ID _{cl}	1	$\Delta\text{CbbBSLRR}_{icl,t}$	$\Delta\text{CbbBSLRR}_{icl}$
Name	Forest	annual	cumulative	Name	Forest	annual	cumulative
Project year	tCO _{2e}	tCO _{2e}	tCO _{2e}	Project year	tCO _{2e}	tCO _{2e}	tCO _{2e}
2021	6,492,356	6,492,356	6,492,356	2021	576,665	576,665	576,665
2022	6,792,493	6,792,493	13,284,849	2022	739,685	739,685	739,685
2023	1,745,200	1,745,200	15,030,049	2023	781,570	781,570	781,570

Carbon stock change in the above-ground biomass per initial forest class <i>icl</i>		Total carbon stock change in the above-ground biomass of initial forest class in the reference region		Carbon stock change in the below-ground biomass per initial forest class <i>icl</i>		Total carbon stock change in the below-ground biomass of initial forest class in the reference region		Carbon stock changes in above-ground biomass per post-deforestation zone <i>z</i>		Total carbon stock change of post deforestation zones in the reference region	
ID _{cl}	1	$\Delta\text{CabBSLRR}_{icl,t}$	$\Delta\text{CabBSLRR}_{icl}$	ID _{cl}	1	$\Delta\text{CbbBSLRR}_{icl,t}$	$\Delta\text{CbbBSLRR}_{icl}$	ID _z	1	$\Delta\text{CBSLRR}_{z,t}$	ΔCBSLRR_z
Name	Forest	annual	cumulative	Name	Forest	annual	cumulative	Name	Non-forest	annual	cumulative
Project year	tCO _{2e}	tCO _{2e}	tCO _{2e}	Project year	tCO _{2e}	tCO _{2e}	tCO _{2e}	Project year	tCO _{2e}	tCO _{2e}	tCO _{2e}
2021	6,492,356	6,492,356	6,492,356	2021	576,665	576,665	576,665	2021	156,476	156,476	318,358
2022	6,792,493	6,792,493	13,284,849	2022	739,685	739,685	1,316,350	2022	214,410	214,410	532,769
2023	1,745,200	1,745,200	15,030,049	2023	781,570	781,570	2,097,920	2023	275,023	275,023	807,791

Table 16. Baseline carbon stock change in the project area

Carbon stock change in the above-ground biomass per initial forest class <i>icl</i>		Total carbon stock change in the above-ground biomass of initial forest class in the project area		Carbon stock change in the below-ground biomass per initial forest class <i>icl</i>		Total carbon stock change in the below-ground biomass of initial forest class in the project area		Carbon stock changes in above-ground biomass per post-deforestation zone <i>z</i>		Total carbon stock change of post deforestation zones in the project area		Total net carbon stock change in the project area	
ID _{cl}	1	$\Delta C_{abBSLPA_{icl,t}}$	$\Delta C_{abBSLPA_{icl}}$	ID _{cl}	1	$\Delta C_{bbBSLPA_{icl,t}}$	$\Delta C_{bbBSLPA_{icl}}$	ID _z	1	$\Delta C_{BSLPA_{z,t}}$	ΔC_{BSLPA_z}	ΔC_{BSLPA_t}	ΔC_{BSLPA}
Name	Forest	annual	cumulative	Name	Forest	annual	cumulative	Name	Non-forest	annual	cumulative	annual	cumulative
Project year	tCO _{2e}	tCO _{2e}	tCO _{2e}	Project year	tCO _{2e}	tCO _{2e}	tCO _{2e}	Project year	tCO _{2e}	tCO _{2e}	tCO _{2e}	tCO _{2e}	tCO _{2e}
2021	612,855	612,855	612,855	2021	47,588	47,588	47,588	2021	12,230	12,230	12,230	648,214	648,214
2022	776,264	776,264	1,389,120	2022	66,219	66,219	113,807	2022	17,701	17,701	29,931	824,782	1,472,996
2023	225,694	225,694	1,614,814	2023	71,635	71,635	185,443	2023	24,631	24,631	54,562	272,698	1,745,694

Table 17 Baseline carbon stock change in the leakage belt

Carbon stock change in the above-ground biomass per initial forest class <i>icl</i>		Total carbon stock change in the above-ground biomass of initial forest class in the leakage belt		Carbon stock change in the below-ground biomass per initial forest class <i>icl</i>		Total carbon stock change in the below-ground biomass of initial forest class in the leakage belt		Carbon stock changes in above-ground biomass per post-deforestation zone <i>z</i>		Total carbon stock change of post deforestation zones in the leakage belt		Total net carbon stock change in the leakage belt	
ID _{cl}	1	$\Delta C_{abBSLLK_{icl,t}}$	$\Delta C_{abBSLLK_{icl}}$	ID _{cl}	1	$\Delta C_{bbBSLLK_{icl,t}}$	$\Delta C_{bbBSLLK_{icl}}$	ID _z	1	$\Delta C_{totBSLLK_{z,t}}$	$\Delta C_{totBSLLK_z}$	$\Delta C_{totBSLLK_t}$	$\Delta C_{totBSLLK}$
Name	Forest	annual	cumulative	Name	Forest	annual	cumulative	Name	Non-forest	annual	cumulative	annual	cumulative
Project year	tCO _{2e}	tCO _{2e}	tCO _{2e}	Project year	tCO _{2e}	tCO _{2e}	tCO _{2e}	Project year	tCO _{2e}	tCO _{2e}	tCO _{2e}	tCO _{2e}	tCO _{2e}
2021	204,781	204,781	204,781	2021	19,383	19,383	19,383	2021	4,990	4,990	4,990	219,174	219,174
2022	250,465	250,465	455,247	2022	25,394	25,394	44,778	2022	6,818	6,818	11,808	269,041	488,216
2023	61,773	61,773	517,020	2023	26,877	26,877	71,654	2023	9,054	9,054	20,862	79,596	567,812

5.2 Project Emissions

As aforementioned in this Report, the actual classified deforestation during the monitoring period in the Reference Region was 28,894.21 ha, which corresponds to around 0.65% per year. Meanwhile, the predicted area in the baseline scenario that would be deforested within the reference region during this monitoring period from 2021 to march of 2023 would be 25,914.99 ha, meaning an annual average deforestation rate of 0.89% per year. A fact that also demonstrates conservatism in relation to the emissions reductions verified in this monitoring period.

Comparing to what occurred during the 2007 – 2016 period (historical reference period), the annual average deforestation rate within the reference region was of 0.61%. The figures below shows that ABC Norte REDD Project activities in the region actually help reducing the advancement of deforestation towards the project area as the deforestation rate within the ABC Norte project area was 0.01%, a significantly lower value than the occurred in the reference region. The maps with the annual areas of deforestation within the Reference Region, Project Area and Leakage Belt during the current monitoring period are presented below.

Figure 12. Deforestation in the Reference Region in 2021 -2023

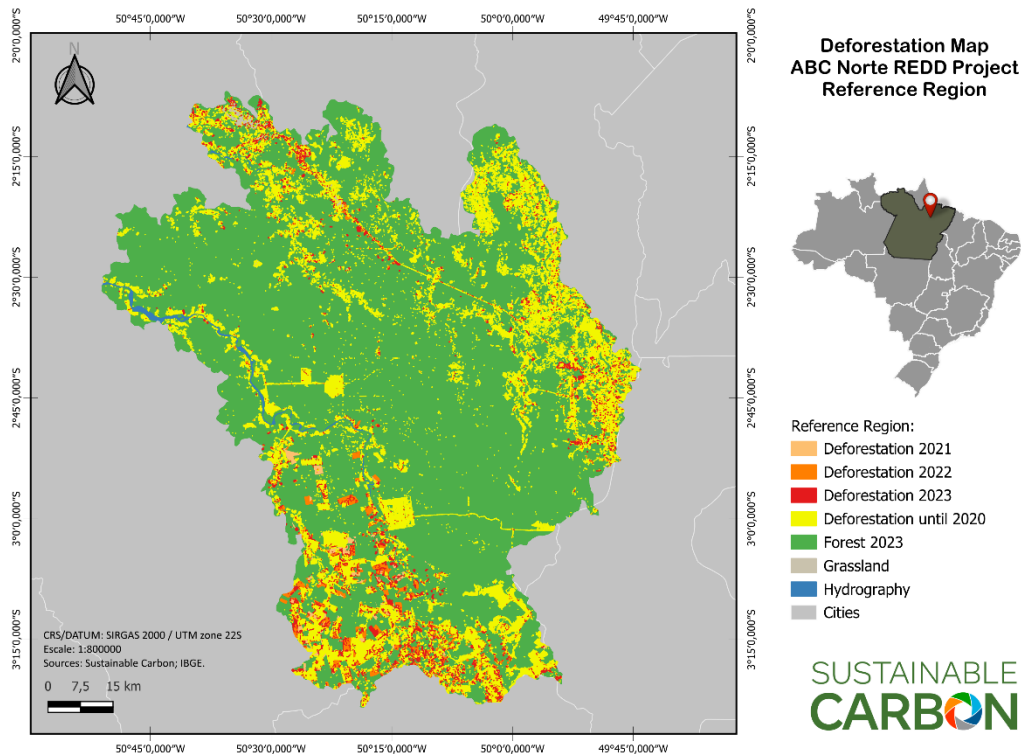


Figure 13. Deforestation in the Project Area 2021 -2023

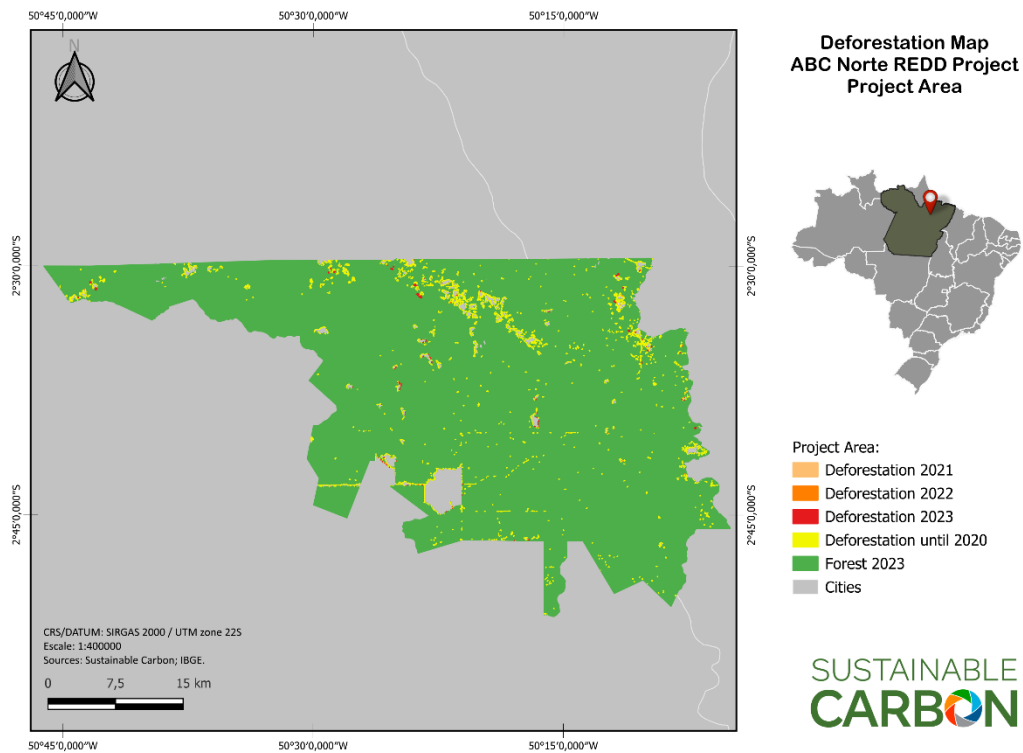
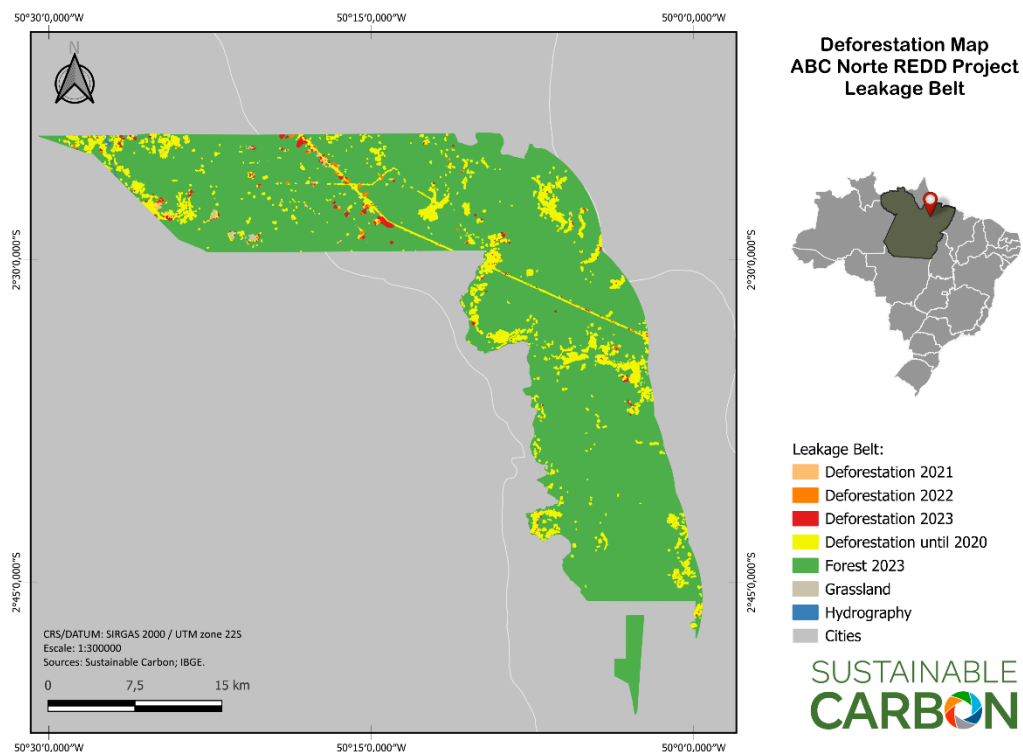


Figure 14. Deforestation in the Leakage Belt in 2021 - 2023



Comparison between Projection and Classification

Utilizing the ArcGIS Union tool, the integration of the land use dataset derived from the baseline deforestation projection and the classification data obtained from MapBiomass were conducted. The original MapBiomass classes were reclassified into 4 classes: 1. Forest; 2. Hydrography; 3. Grassland/Non-forest natural formation and 4. Deforestation. The union process resulted in the creation of a "projection x classification" matrix, which delineates the cumulative deforestation dynamics spanning from December 31, 2020, to March 31, 2023. This matrix serves to contrast the observed changes during this period against the anticipated scenario outlined in the PDD between September 13, 2022, and September 13, 2023. Subsequently, the derived matrix is employed to analyze and identify the dynamic shifts within the landscape during the specified timeframe.

Projection	Classes	Results	Nomenclature
No forest	Forest	Deforestation foreseen in the PDD was not carried out	Avoided deforestation
Forest	Forest	The forest remained intact as anticipated.	Forest
No forest	No forest	Deforestation where it had been predicted	Projected deforestation
Forest	No forest	Deforestation where it was not foreseen	Unexpected deforestation

From this matrix, the tables below provide the area values for each dynamic in the project regions.

Table 16. "Projection x Classification" matrix for the dynamics occurring between December 31, 2020, and March 31, 2023, in the project boundaries

Project Area (ha)				
	2020	2021	2022	2023
The forest was maintained as predicted	139,730.84	136,268.51	134,940.25	133,338.96
Deforestation foreseen in the PDD was not carried out	-	3,349.56	4,673.78	6,227.89
Deforestation where it was not foreseen	-	93.00	2.89	40.69
Deforestation where it had been predicted	-	19.77	1.16	6.50
Deforestation until previous year		386.25	499.02	503.06
Unplanned deforestation identified in visual analysis	-	-	-	-
Accumulated Deforestation (total)	386.25	499.02	503.06	550.24
Annual deforestation	-	112.77	4.05	47.18
Total Area	140,117.09	140,117.09	140,117.09	140,117.09

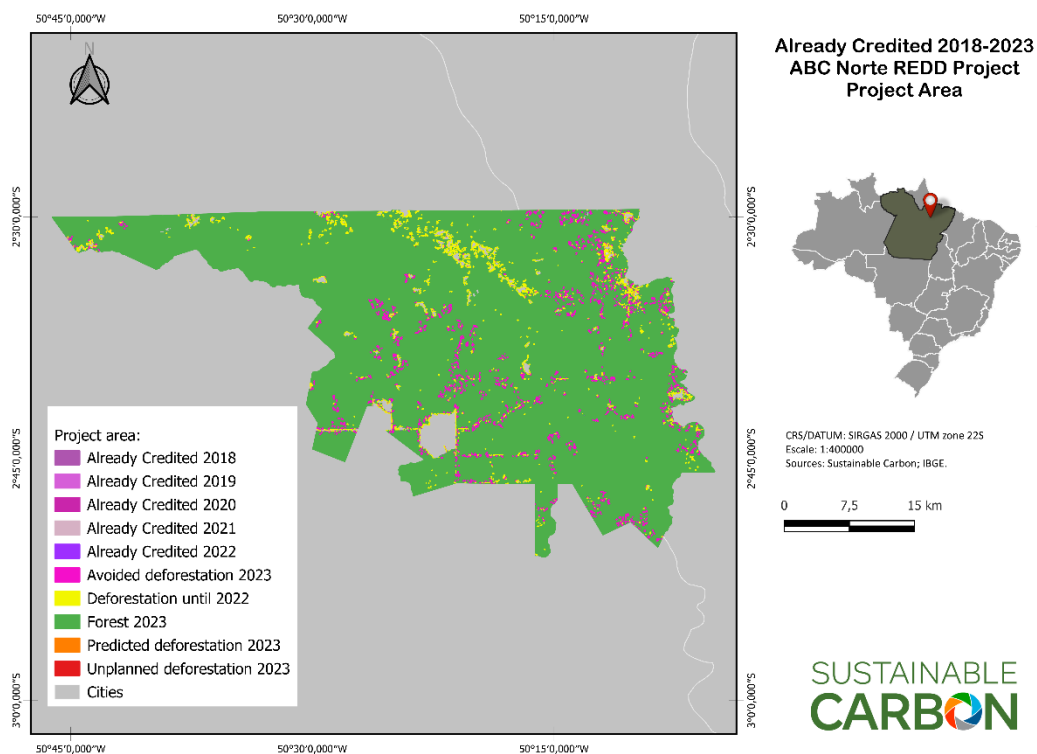
Leakage Belt (ha)				
	2020	2021	2022	2023
The forest was maintained as predicted	69,509.21	67,677.25	67,200.17	66,633.25
Deforestation foreseen in the PDD was not carried out	-	1,229.97	1,603.97	1,982.37
Hydrography	279.21	279.21	279.21	279.21
Grassland	224.02	224.02	224.02	224.02
Deforestation where it was not foreseen	-	524.40	88.08	165.60
Deforestation where it had been predicted	-	77.59	15.00	22.93
Deforestation until previous year		4,518.07	5,120.05	5,223.13
Unplanned deforestation identified in visual analysis	-	-	-	-
Accumulated Deforestation (total)	4,518.07	5,120.05	5,223.13	5,411.65
Annual deforestation	-	601.99	103.08	188.52
Total Area	74,530.51	74,530.51	74,530.51	74,530.51

Reference Region (ha)				
	2020	2021	2022	2023
The forest was maintained as predicted	840,192.21	789,811.05	771,752.88	758,265.33
Deforestation foreseen in the PDD was not carried out	-	32,094.47	40,653.34	49,708.02
Hydrography	11,094.66	11,094.66	11,094.66	11,094.66
Grassland	5,520.51	5,520.51	5,520.51	5,520.51
Deforestation where it was not foreseen	-	15,452.52	8,460.32	3,501.67
Deforestation where it had been predicted	-	2,834.17	1,038.98	931.20
Deforestation until previous year		120,042.72	138,329.41	147,828.71

Unplanned deforestation identified in visual analysis	-	-	-	-
Accumulated Deforestation (total)	120,042.72	138,329.41	147,828.71	152,261.58
Annual deforestation	-	18,286.69	9,499.30	4,432.87
Total Area	976,850.10	976,850.10	976,850.10	976,850.10

The figures below indicate the location of these areas in the project area.

Figure 15. Accumulates deforestation in the Project Area (PA) in 2021 -2023 indicating projected deforestation and deforestation occurred



- **Map accuracy assessment**

The accuracy analysis was based on Stehman et al. (2014) and Stehman & Fody (2019) using the population error matrix and the global, user, and producer accuracies.

The global accuracy for each level of LCLU classes in the Collection 9 legend was calculated for each year, class, and biome (more details can be explored in the MapBiomass web platform (brasil.mapbiomas.org/en/analise-de-accuracia/)). In Level 1 classes, the LCLU mapping product in the Collection 9 presented 93.1% mean global accuracy and 6.1 % allocation disagreement with 0.8% area disagreement. At Level 2, the global accuracy was 89.8%, with 7.2% allocation disagreement and 2.9% area disagreement. Finally, at Level 3, the global accuracy was 89.8%,

with 7.1% allocation disagreement and 3.0% area disagreement. The global accuracy was stable over the mapped period, varying across biomes from 84.6% to 97.7% in Level 1.

In summary, the MapBiomass collection demonstrates an accuracy rate of 90% or higher across all its datasets, confirming its high reliability and precision. More details available at: < <https://brasil.mapbiomas.org/en/analise-de-acuracia/>>

As detailed in sections above, the CERFLOR-certified sustainable forest management plan implemented by ABC Norte in 2017 within the project area aims to harvest forest products/by-products in a manner consistent with the conservation of the local ecosystem. This type of economic activity enables the harvesting of an economically feasible volume of forest products, however allowing the regeneration of the natural stock in accordance with the growth and recovery rates of the biome.

As previously described, almost all deforestation occurred within the project area resulted from planned deforestation activities. During the current monitoring period, two APUs were harvested (UPA 18 and 19). The APUs from the first MR (14, 15, 16, 17) were included here to account for the volume that was not considered in the first MR, as the full post-exploratory reports were not available at the time of verification.

Table 19. Harvesting Intensity in the SPFM

Harvesting intensity						Logging Damage Factor	Average carbon stock change due to logging activities
Monitoring Report	Annual Productive Unit (APU)	Year	m ³	ha	m ³ /ha	m ³ /m ³	tCO ₂ e/ha
MR1	UPA 14	2017/2018	0.00	3,494.44	0.00	2.0174	0.0
	UPA 15	2019	14,043.75	3,491.46	4.02	2.0174	15.6
	UPA 16	2019	9,190.59	3,622.64	2.54	2.0174	9.8
	UPA 17	2020	6,929.22	3,556.27	1.95	2.0174	7.6
MR2	APU 18	2021	104,619.04	4,045.70	25.86	2.0174	100.28
	APU 19	2022	45,608.39	4,229.14	10.78	2.0174	41.82

The *ex post* carbon stock decrease due to planned deforestation in the project area was calculated using the following equation:

$$\Delta CPDdPA_t = \sum_{icl=1}^{icl} (APDPA_{icl,t} \times \Delta Ct_{tot\ icl})$$

Where,

$\Delta CPDdPA_t$ Total decrease in carbon stock due to planned deforestation at year *t* in the project area; tCO₂e

$APDPA_{icl,t}$	Areas of planned deforestation in forest class <i>icl</i> at year <i>t</i> in the project area; ha
$\Delta Ct_{tot_{icl}}$	Average carbon stock change of all accounted carbon pools in forest class <i>icl</i> at time <i>t</i> ; tCO ₂ e/ha

In addition, some unplanned deforestation occurred in the southern border of the project area, corresponding to a total of 128.62 ha during the monitoring period. The *ex post* carbon stock decrease due to unplanned deforestation in the project area was calculated using the following equation:

$$\Delta CUDdPA_t = \sum_{icl=1}^{icl} (AUDPA_{icl,t} \times \Delta Ct_{tot_{icl}})$$

Where,

$\Delta CPUdPA_t$	Total <i>ex post</i> actual carbon stock change due to unavoidable unplanned deforestation at year <i>t</i> in the project area; tCO ₂ e
$AUDPA_{icl,t}$	Areas of unplanned deforestation in forest class <i>icl</i> at year <i>t</i> in the project area; ha
$\Delta Ct_{tot_{icl}}$	Average carbon stock change of all accounted carbon pools in forest class <i>icl</i> at time <i>t</i> ; tCO ₂ e/ha

Therefore, the total carbon stock decreases due to planned and unplanned deforestation in the project area could be calculated, as depicted in Table below.

Table 20. Ex post carbon stock decrease due to planned and unplanned deforestation in the project area

Project year t	Total carbon stock decrease due to planned deforestation				Areas of unplanned deforestation x Carbon stock change (decrease) in the project area		Total carbon stock decrease due to unplanned deforestation		Total carbon stock decrease due to planned and unplanned deforestation in the project area	
	ID _{cl} = 1 Forest		annual	cumulative	ID _{cl} = 1 Forest		annual	cumulative	annual	cumulative
	APDPA _{cl,t}	C _{tot} _{cl,t}	ΔCPDdPA _t	ΔCPDdPA	AUDPA _{cl,t}	C _{tot} _{cl,t}	ΔCUDdPA _t	ΔCUDdPA		
	ha	tCO _{2e} /ha	tCO _{2e}	tCO _{2e}	ha	tCO _{2e} /ha	tCO _{2e}	tCO _{2e}	tCO _{2e}	tCO _{2e}
2021	52.60	718.87	37,813.68	37,813.68	112.77	718.87	81,067.52	81,067.52	118,881.21	118,881.21
2022	16.33	718.87	11,738.65	49,552.34	4.05	718.87	2,911.44	83,978.97	14,650.10	133,531.30
2023	0.00	718.87	0.00	49,552.34	11.80	718.87	8,479.13	92,458.10	8,479.13	142,010.43

Planned logging operations are carried out following a Reduced Impact Logging (RIL) system combined with other improved forest management techniques, including: planning of management activities, selection of best locations for infrastructure construction, directional felling, utilization of advanced technologies, tracking record of wood logs, reforestation activities, among others; which are essential practices to minimize the damage caused to the forest.

In the project scenario, emissions due to planned logging activities results from timber harvesting and also from damages to vegetation during the directional tree felling, which generate forest residues (branches, remains of logs and other damaged trees during the tree felling). According to Feldpausch et al (2005), the mean Coarse woody debris returned to the soil as necromass following logging and damage in: (1) tree felling gap formation (trees killed by tree-fall), (2) residual canopy from the felled tree, (3) road, (4) deck construction (whole trees plowed to the ground) and (5) skid maneuvering during logging, is about 6.9 Mg C/ha. According to section 4.3 (pg 212) from this same study, this represents 2.4 times the carbon taken off site in logs. However, the MR already takes into account as planned deforestation the roads and decks constructions, which represent around 16% of the total damage. Therefore, the LDF is $2.4 \times (1 - 0,159) = 2.0174$.

Thus, GHG emissions from logging activities include the volume of harvested timber plus the logging damage factor, as follows.

$$\Delta CLd_{icl,t} = (HI_{icl,t} + LDF) \times D_m \times CF \times 44 / 12$$

Where,

$\Delta CLd_{icl,t}$	Average carbon stock decrease due to logging activities in forest class <i>icl</i> at time <i>t</i> ; tCO ₂ e/ha
$HI_{icl,t}$	Harvesting intensity of timber in forest class <i>icl</i> at year <i>t</i> in the project area due to planned logging activities (i.e., sustainable forest management plan); m ³ /ha
LDF	Logging damage factor; m ³ /ha
D_m	Mean wood density; g/cm ³
CF	Default value of carbon fraction in biomass; tC t-1 d.m.
44/12	Ratio of molecular weight of CO ₂ to carbon; dimensionless

Harvested wood products were not accounted as carbon pool. Therefore, the *ex post* carbon stock decrease due to planned logging activities in the project area was calculated using the following equation:

$$\Delta CPLdPA_t = \sum_{icl=1}^{icl} (APLPA_{icl,t} \times \Delta CLd_{icl,t}) - \left(\sum_{icl=1}^{icl} APLPA_{icl,t} \right) \times \Delta Cwpt$$

Where,

$\Delta CPLdPA_t$	Total decrease in carbon stock due to planned logging activities at year t in the project area; tCO ₂ e
$APLPA_{icl,t}$	Areas of planned logging activities in forest class icl at year t in the project area; ha
$\Delta CLd_{icl,t}$	Average carbon stock decrease due to logging activities in forest class icl at time t ; tCO ₂ e/ha
ΔCwp_t	Average carbon stock per hectare in the harvested wood products carbon pool at time t ; tCO ₂ e/ha

Thus, Table below presents the *ex post* carbon stock decrease due to planned logging activities in the project area.

Table 21. Ex post actual carbon stock decrease due to planned logging activities in the project area

Project year t	Areas of planned logging activities x Carbon stock change (decrease) in the project area		Total carbon stock decrease due to planned logging activities	
	ID _{cl} = 1 Forest		annual	cumulative
	$APLPA_{icl,t}$	$\Delta CLd_{icl,t}$	$\Delta CPLdPA_t$	$\Delta CPLdPA$
	ha	tCO ₂ e/ha	tCO ₂ e	tCO ₂ e
2021	4,045.70	100.28	522,668.29	522,668.29
2022	4,229.14	41.82	176,863.05	699,531.34
2023	0.00	0.00	0.00	699,531.34

Fossil fuel emissions from sustainable forest management activities are likely to be less than 5% of the total GHG emissions reductions benefits generated by the present project. Considering that emissions from deforestation and forest degradation would be much higher than those associated with timber harvesting, the emissions from fossil fuel during transport and machinery use can be considered *de-minimis*. In addition, according to VCS AFOLU Requirements, fossil fuel emissions from transport and machinery use in REDD project activities can be considered *de minimis*.

No production of fuel wood or charcoal occurred within the project area during the monitoring period.

Thus, Table below presents the total *ex post* carbon stock decrease due to planned activities in the project area.

Table 22. Total ex post carbon stock decrease due to planned activities in the project area

Project year <i>t</i>	Total carbon stock decrease due to planned deforestation		Total carbon stock decrease due to planned logging activities		Total carbon stock decrease due to planned fuel-wood and charcoal activities		Total carbon stock decrease due to planned activities	
	annual	cumulative	annual	cumulative	annual	cumulative	annual	cumulative
	ΔCPDdPA_t	ΔCPDdPA	ΔCPLdPA_t	ΔCPLdPA	ΔCPFdPA_t	ΔCPFdPA	ΔCPAdPA_t	ΔCPAdPA
	tCO _{2e}	tCO _{2e}	tCO _{2e}	tCO _{2e}	tCO _{2e}	tCO _{2e}	tCO _{2e}	tCO _{2e}
2021	37,813.68	37,813.68	522,668.29	522,668.29	0.00	0.00	560,481.98	560,481.98
2022	11,738.65	49,552.34	176,863.05	699,531.34	0.00	0.00	188,601.70	749,083.68
2023	0.00	49,552.34	0.00	699,531.34	0.00	0.00	0.00	749,083.68

Neither planned protection of secondary/degraded forests without harvest nor production of fuel-wood and charcoal are expected to occur within the project area under the project scenario. Thus, carbon stock increase due to growth without harvest or due to planned fuel-wood and charcoal activities were not monitored. However, if any of these activities is implemented in the future, a measurement of the carbon stock changes will be carried out. According to the applied methodology, if the project activity generates a significant change in carbon stocks due to these activities, the carbon stock change shall be measured *ex post*. However, if the decrease is not significant, it shall not be accounted, and *ex post* monitoring is not required.

The calculation of the *ex post* net carbon stock change in the project area under the project scenario (ΔCPSPA_t) is described as follows.

$$\Delta\text{CPSPA}_t = \Delta\text{CPAdPA}_t + \Delta\text{CUDdPA}_t - \Delta\text{CPAiPA}_t$$

Where,

ΔCPSPA_t	Sum of ex post actual carbon stock changes in the project area at year <i>t</i> ; tCO _{2e}
ΔCPAdPA_t	Total decrease in carbon stock due to all planned activities at year <i>t</i> in the project area; tCO _{2e}
ΔCUDdPA_t	Total ex post actual carbon stock change due to unavoidable unplanned deforestation at year <i>t</i> in the project area; tCO _{2e}
ΔCPAiPA_t	Total increase in carbon stock due to all planned activities at year <i>t</i> in the project area; tCO _{2e}

Ex post carbon stock change in the project area under the project scenario is shown below.

Table 23: Ex post net carbon stock change in the project area under the project scenario

Project year t	Total carbon stock decrease due to planned activities		Total carbon stock increase due to planned activities		Total carbon stock decrease due to unavoided unplanned deforestation		Total carbon stock change in the project case	
	annual	cumulative	annual	cumulative	annual	cumulative	annual	cumulative
	$\Delta CPA_{dPA,t}$	ΔCPA_{dPA}	$\Delta CPA_{iPA,t}$	ΔCPA_{iPA}	$\Delta CUD_{dPA,t}$	ΔCUD_{dPA}	$\Delta CPSPA_t$	$\Delta CPSPA$
	tCO _{2e}	tCO _{2e}	tCO _{2e}	tCO _{2e}	tCO _{2e}	tCO _{2e}	tCO _{2e}	tCO _{2e}
2021	560,481.98	560,481.98	0.00	0.00	81,067.52	81,067.52	641,549.50	641,549.50
2022	188,601.70	749,083.68	0.00	0.00	2,911.44	83,978.97	191,513.14	833,062.64
2023	0.00	749,083.68	0.00	0.00	8,479.13	92,458.10	8,479.13	841,541.77

No forest fire was used by ABC Norte for carrying out planned deforestation or timber harvesting activities. However, there were around 128.62 ha of unplanned deforestation within the project area during the monitored period, which conversion of forest to non-forest could have involved fires.

The effect of fire on carbon emissions is counted in the estimation of carbon stock changes in the parameter $\Delta CUD_{dPA,t}$; therefore CO₂ emissions from forest fires were ignored to avoid double counting. However, non-CO₂ emissions (CH₄ and N₂O) from forest fires must be counted in the project scenario, when they are significant.

It was conservatively assumed that all unplanned deforestation within the project area involved fire and all above ground biomass was burnt. Therefore, non-CO₂ emissions from forest fires were quantified and deducted from emission reductions, as follows:

$$EBB_{tot_{icl,t}} = EBB_{N_2O_{icl,t}} + EBB_{CH_{4icl,t}}$$

Where,

$EBB_{tot_{icl,t}}$	Total GHG emission from biomass burning in forest class <i>icl</i> at year <i>t</i> ; tCO _{2e} /ha
$EBB_{N_2O_{icl,t}}$	N ₂ O emission from biomass burning in forest class <i>icl</i> at year <i>t</i> ; tCO _{2e} /ha
$EBB_{CH_{4icl,t}}$	CH ₄ emission from biomass burning in forest class <i>icl</i> at year <i>t</i> ; tCO _{2e} /ha

$$EBB_{N_2O_{icl,t}} = EBB_{CO_{2icl,t}} * 12/44 * NCR * ER_{N2O} * 44/28 * GWP_{N2O}$$

Where,

$EBBCO_{2icl,t}$	Per hectare CO ₂ emission from biomass burning in slash and burn in forest class <i>icl</i> at year <i>t</i> ; tCO ₂ e/ha
NCR	Nitrogen to Carbon Ratio (IPCC default value = 0.01); dimensionless
ER_{N2O}	Emission ratio for N ₂ O (IPCC default value = 0.007)
GWP_{N2O}	Global Warming Potential for N ₂ O ³³

$$EBBCH_{4icl,t} = EBBCO_{2icl,t} * 12/44 * ER_{CH4} * 16/12 * GWP_{CH4}$$

Where,

$EBBCO_{2icl,t}$	Per hectare CO ₂ emission from biomass burning in slash and burn in forest class <i>icl</i> at year <i>t</i> ; tCO ₂ e/ha
ER_{CH4}	Emission ratio for CH ₄ (IPCC default value = 0.012)
GWP_{CH4}	Global Warming Potential for CH ₄ ³⁴

$$EBBCO_{2icl,t} = F_{burnt_{icl}} * \sum_{p=1}^P (C_{p_{icl,t}} * P_{burnt_{p,icl}} * CE_{p,icl})$$

Where,

$EBBCO_{2icl,t}$	Per hectare CO ₂ emission from biomass burning in the forest class <i>icl</i> at year <i>t</i> ; tCO ₂ e/ha
$F_{burnt_{icl}}$	Proportion of forest area burned during the historical reference period in the forest class <i>icl</i> ; %
$C_{p_{icl,t}}$	Average carbon stock per hectare in the carbon pool <i>p</i> burnt in the forest class <i>icl</i> at year <i>t</i> ; tCO ₂ e/ha
$P_{burnt_{p,icl}}$	Average proportion of mass burnt in the carbon pool <i>p</i> in the forest class <i>icl</i> ; % (conservatively assumed as 100%)
$CE_{p,icl}$	Average combustion efficiency of the carbon pool <i>p</i> in the forest class <i>icl</i> ; dimensionless (IPCC default of 0.5 was used)
<i>p</i>	Carbon pool that could burn, in the project case, above-ground biomass

³³ According to the VCS Standard v4, the six Kyoto Protocol greenhouse gases and ozone-depleting substances shall be converted using 100 year global warming potentials derived from the IPCC's Fifth Assessment Report. GWP for N₂O = 265. Available at: <https://www.ipcc.ch/publications_and_data/ar4/wg1/en/ch2s2-10-2.html>. Last visited on: June, 2023.

³⁴ According to the VCS Standard v4, the six Kyoto Protocol greenhouse gases and ozone-depleting substances shall be converted using 100 year global warming potentials derived from the IPCC's Fifth Assessment Report. GWP for CH₄ = 28. Available at: <https://www.ipcc.ch/publications_and_data/ar4/wg1/en/ch2s2-10-2.html>. Last visited on: June, 2023.

Thus, the total actual non-CO₂ emissions from forest fire at year t in the project area (EBBPSPA _{t}) are were calculated as follows.

$$EBBPSPA_t = ABSLPA_{icl,t} * EBBtot_{icl,t}$$

Where,

EBBPSPA _{t}	Total actual non-CO ₂ emissions from forest fire at year t in the project area; tCO ₂ e/ha
ABSLPA _{icl,t}	Annual area of deforestation of initial forest classes icl in the project area at year t ; ha
EBBtot _{icl,t}	Total GHG emission from biomass burning in forest class icl at year t ; tCO ₂ e/ha

Table 24. Total ex post emissions of GHG due to forest fires in the project area

Project year t	Emissions of non-CO ₂ gases from forest fires in the project area		Total ex post emissions of GHG due to forest fires in the project area	
	ID _{cl} = 1 Forest		annual	cumulative
	AUDPA _{icl,t}	EBBPSPA _{icl,t}	EBBPSPA _{t}	EBBPSPA
	ha	tCO ₂ e/ha	tCO ₂ e	tCO ₂ e
2021	112.77	26.32	2,967.75	2,967.75
2022	4.05	26.32	106.58	3,074.33
2023	11.80	26.32	310.41	3,384.74

Total ex post project emissions for the project area

The ex post carbon stock changes and non-CO₂ emissions in the Project area during the monitoring period is summarized in Table below.

Table 25. Total ex post estimated actual net changes in carbon stocks and emissions of GHG gases in the project area

Project year t	Total ex post carbon stock decrease due to planned activities		Total ex post carbon stock increase due to planned activities		Total ex post carbon stock decrease due to unavoided unplanned deforestation		Total ex post carbon stock change		Total ex post estimated actual non-CO ₂ emissions from forest fires in the project area	
	annual	cumulative	annual	cumulative	annual	cumulative	annual	cumulative	annual	cumulative
	ΔCPA_{dPA_t}	ΔCPA_{dPA}	ΔCPA_{iPA_t}	ΔCPA_{iPA}	ΔCUD_{dPA_t}	ΔCUD_{dPA}	ΔCPS_{PA_t}	ΔCPS_{PA}	EBB_{PSPA_t}	EBB_{PSPA}
	tCO _{2e}	tCO _{2e}	tCO _{2e}	tCO _{2e}	tCO _{2e}	tCO _{2e}	tCO _{2e}	tCO _{2e}	tCO _{2e}	tCO _{2e}
2021	560,481.98	560,481.98	0.00	0.00	81,067.52	81,067.52	641,549.50	641,549.50	2,967.75	2,967.75
2022	188,601.70	749,083.68	0.00	0.00	2,911.44	83,978.97	191,513.14	833,062.64	106.58	3,074.33
2023	0.00	749,083.68	0.00	0.00	8,479.13	92,458.10	8,479.13	841,541.77	310.41	3,384.74

5.3 Leakage

According to the applied methodology, two sources of leakage are considered: a) decrease in carbon stocks and increase in GHG emissions associated with leakage prevention measures; and b) decrease in carbon stocks and increase in GHG emissions associated with activity displacement leakage.

Ex post estimation of decrease in carbon stocks and increase in GHG emissions due to leakage prevention measures

To reduce the risk of activity displacement leakage, baseline deforestation agents could participate in activities within the project area and leakage management area that together will replace baseline income, product generation and livelihood of the agents as much as possible, so that deforestation will be reduced, and the risk of displacement minimized. As such, a reduction in carbon stocks and/or an increase in GHG emissions may occur compared to the baseline case. If this decrease in carbon stock or increase in GHG emission is significant, it must be accounted, and ex post monitoring will be required.

In order to calculate the net carbon stock changes that the planned leakage prevention measures are expected to occasion during the monitoring period, the projected carbon stocks shall be estimated in the leakage management area under the baseline case and project scenario.

$$\Delta CLPMLK_t = \Delta CPSLK_t - \Delta CBSLLK_t$$

Where,

$\Delta CLPMLK_t$ Carbon stock decrease due to leakage prevention measures at year t;
tCO_{2e}

$\Delta CBSLLK_t$ Annual carbon stock changes in leakage management areas in the baseline case at year t ; tCO_{2e}

$\Delta CPSLK_t$ Annual carbon stock change in leakage management areas in the project case; tCO_{2e}

If the net sum of carbon stock changes within a monitoring period is more than zero, leakage prevention measures are not causing any carbon stock decrease. The net increase shall conservatively be ignored in the calculation of net GHG emission reductions of the project activity. Nevertheless, if the net sum is negative, it must be accounted if significant.

According to the planned interventions carried out by ABC Norte REDD Project in the baseline case, no decrease in carbon stocks due to activities implemented in the leakage management area were identified, thus $\Delta CBSLLK = 0$. However, during the current monitoring period, there were carbon stock changes within the leakage management area due to deforestation of regenerated forests. Therefore, the *ex post* carbon stock change in leakage management areas in the project case ($\Delta CPSLK_t$) was calculated as follows. The annual values are detailed in the Table below.

$$\Delta CPSLK_t = APSLK_{fcl,t} * \Delta Ct_{icl}$$

Where,

$\Delta CPSLK_t$ Annual carbon stock change in leakage management areas in the project case; tCO_{2e}

$APSLK_{fcl,t}$ Annual area of class fcl with decreasing carbon stock in leakage management areas in the project case at year t ; ha³⁵

ΔCt_{icl} Average carbon stock change of all accounted carbon pools in forest class icl at time t ; tCO_{2e}/ha

³⁵ To delimit the Annual area of class fcl with decreasing carbon stock in leakage management areas in the project case at each year value, MapBiomass land cover mapping was used from the year 2007 to ensure that the forested areas in 2017 had at least 10 years, as defined by the methodology. Thus, areas with 10 years of forest history and deforestation in the year were classified as deforestation ($APSLK_{fcl,t}$), areas with the 9 most recent years classified as forest and forest in the year were classified as regeneration, areas with more than 10 consecutive years of forest history were classified as forest and areas with less than 10 consecutive years of forest history were classified as non-forest.

Table 26. Ex post carbon stock change in leakage management areas in the project case

Project year	Carbon stock changes in leakage management area in the project case			
	ID _{fcl}	1	annual	cumulative
	APSLK _{fcl,t}	C _{totfcl,t}	ΔCPSLK _t	ΔCPSLK
	ha	tCO _{2e} /ha	tCO _{2e}	tCO _{2e}
2021	3.94	74.65	294.11	294.11
2022	32.28	91.99	2,969.29	3,263.40
2023	44.48	96.27	4,281.97	7,545.37

The Table below shows the net sum of carbon stock changes within the leakage management area during the current monitoring period, i.e., leakage prevention measures are causing carbon stock decrease and therefore, are included as leakage emissions.

Table 27. Ex post estimated net carbon stock change in leakage management areas

Project year	Total carbon stock change in the baseline case		Total carbon stock change in the project case		Net carbon stock change due to leakage prevention measures	
	annual	cumulative	annual	cumulative	annual	cumulative
	ΔCBSLLK _t	ΔCBSLLK	ΔCPSLK _t	ΔCPSLK	ΔCLPMLK _t	ΔCLPMLK
	tCO _{2e}	tCO _{2e}	tCO _{2e}	tCO _{2e}	tCO _{2e}	tCO _{2e}
2021	0.00	0.00	294.11	294.11	294.11	294.11
2022	0.00	0.00	2,969.29	3,263.40	2,969.29	3,263.40
2023	0.00	0.00	4,281.97	7,545.37	4,281.97	7,545.37

Furthermore, leakage prevention measures carried out by the present project during the current monitoring period did not include agricultural intensification, fertilization, fodder production and/or other measures to enhance cropland and grazing land areas. As the project will not involve grazing animals or crop plantations in the leakage management area, actions to avoid leakage involves containing the displacement leakage risk. Thus, the main plan for mitigating leakage is to involve the community in monitoring and inspecting deforestation, training, alternative income generation and other actions described in the Social Carbon and Conservation Plan. Therefore, emissions from grazing animals in leakage management areas (EgLK_t), which calculation is detailed below, equals to zero.

$$EgLK_t = ECH_{4ferm_t} + ECH_{4man_t} + EN_{2Oman_t}$$

Where,

EgLK_t Emissions from grazing animals in leakage management areas at year t; tCO_{2e}/year

ECH_{4ferm_t}	CH ₄ emissions from enteric fermentation in leakage management areas at year t; tCO ₂ e/year
ECH_{4man_t}	CH ₄ emissions from manure management in leakage management areas year t; tCO ₂ e/year
$EN_2O_{man_t}$	N ₂ O emissions from manure management in leakage management areas at year t; tCO ₂ e/year
t	1, 2, 3, ... T years of the project crediting period; dimensionless

Therefore, the total *ex post* estimated carbon stock changes and increases in GHG emissions due to leakage prevention measures during this monitoring period is calculated as follows:

$$ELPMLK_t = EgLK_t + \Delta CLPMLK_t$$

Where,

$ELPMLK_t$	Annual total increase in GHG emissions due to leakage prevention measures at year t; tCO ₂ e
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Table 28. Ex post estimated total emissions above the baseline from leakage prevention activities

Project year	Carbon stock decrease due to leakage prevention measures		Total ex post GHG emissions from increased grazing activities		Total ex post increase in GHG emissions due to leakage prevention measures	
	annual	cumulative	annual	cumulative	annual	cumulative
	$\Delta CLPMLK_t$	$\Delta CLPMLK$	$EgLK_t$	$EgLK$	$ELPMLK_t$	$ELPMLK$
	tCO ₂ e	tCO ₂ e	tCO ₂ e	tCO ₂ e	tCO ₂ e	tCO ₂ e
2021	294.11	294.11	0.00	0.00	294.11	294.11
2022	2,969.29	3,263.40	0.00	0.00	2,969.29	3,263.40
2023	4,281.97	7,545.37	0.00	0.00	4,281.97	7,545.37

Ex post decrease in carbon stocks and increase in GHG emissions due to activity displacement leakage

Activities that cause deforestation within the project area in the baseline case could be displaced outside the project boundary due to the implementation of the AUD project activity. A greater decrease in carbon stocks within the leakage belt during the project scenario than those predicted *ex ante* would indicate displacement of deforestation activities due to the project.

It is important to note that activity data for the leakage belt area was determined using the same methods applied to monitoring deforestation activity data in the project area. Leakage due to displacement activity was monitored by mapping forest cover change in the leakage belt.

As defined in the VCS Methodology VM0015 v1.1, if carbon stocks in the leakage belt area decrease more during project implementation than projected in the baseline case, this will be an indication that leakage due to displacement of baseline activities has occurred. Where strong evidence can be collected that deforestation in the leakage belt is attributable to deforestation agents that are not linked to the project area, the detected deforestation may not be attributed to the project activity and considered leakage.

Thus, leakage emissions due to activity displacement is calculated as the difference between the ex ante and the ex post assessments, as detailed in the Table below.

Table 29. Total net carbon stock change in the leakage belt

Project year	Total ex ante net baseline carbon stock change		Total ex post net actual carbon stock change		Total ex post leakage	
	ΔCBSLLK_t	ΔCBSLLK	ΔCBSLLK_t	ΔCBSLLK	ΔCBSLLK_t	ΔCBSLLK
	annual	cumulative	annual	cumulative	annual	cumulative
	tCO ₂ e	tCO ₂ e	tCO ₂ e	tCO ₂ e	tCO ₂ e	tCO ₂ e
2021	219,174	219,174	365,857	365,857	146,683	146,683
2022	269,041	488,216	74,939	440,796	0	146,683
2023	79,596	567,812	42,625	483,421	0	146,683

Furthermore, the monitoring of increases in GHG emissions within leakage belt (EADLK_t) was also carried out, as could be observed in the table above.

Ex post estimation of total leakage

The result of all sources of leakage is calculated as follows:

$$\Delta\text{CLK}_t = \Delta\text{CLPMLK}_t + \Delta\text{CADLK}_t$$

Where:

ΔCLK_t	Total decrease in carbon stocks within the leakage belt at year t; tCO ₂ e
ΔCLPMLK_t	Carbon stock decrease due to leakage prevention measures at year t; tCO ₂ e
ΔCADLK_t	Total decrease in carbon stocks due to displaced deforestation at year t; tCO ₂ e

$$\text{ELK}_t = \text{EgLK}_t + \text{EADLK}_t$$

Where:

ELK_t	Sum of ex post leakage emissions at year t; tCO ₂ e
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$EgLK_t$ Emissions from grazing animals in leakage management areas at year t ; tCO_2e

$EADLK_t$ Total ex post increase in GHG emissions due to displaced forest fires at year t ; tCO_2e

The results of all ex post estimations of leakage are summarized in the table below.

Table 30. Ex post estimated total leakage

Project year	Total ex post GHG emissions from increased grazing activities		Total ex post increase in GHG emissions due to displaced forest fires		Total ex post decrease in carbon stocks due to displaced deforestation	
	annual	cumulative	annual	cumulative	annual	cumulative
	$EgLK_t$	$EgLK$	$EADLK_t$	$EADLK$	$\Delta CADLK_t$	$\Delta CADLK$
	tCO_2e	tCO_2e	tCO_2e	tCO_2e	tCO_2e	tCO_2e
2021	0.00	0.00	15,842.46	15,842.46	146,682.91	146,682.91
2022	0.00	0.00	0.00	15,842.46	0.00	146,682.91
2023	0.00	0.00	0.00	15,842.46	0.00	146,682.91

Carbon stock decrease due to leakage prevention measures		Total net carbon stock change due to leakage		Total net increase in emissions due to leakage	
annual	cumulative	annual	cumulative	annual	cumulative
$\Delta CLPMLK_t$	$\Delta CLPMLK$	ΔCLK_t	ΔCLK	ELK_t	ELK
tCO_2e	tCO_2e	tCO_2e	tCO_2e	tCO_2e	tCO_2e
294.11	294.11	146,977.02	146,977.02	15,842.46	15,842.46
2,969.29	3,263.40	2,969.29	149,946.31	0.00	15,842.46
4,281.97	7,545.37	4,281.97	154,228.28	0.00	15,842.46

5.4 Net GHG emission reductions and removals

The net anthropogenic GHG emission reduction of the proposed AUD project activity is calculated as follows:

$$\Delta REDD_t = (\Delta CBSLPA_t + EBBBSLPA_t) - (\Delta CPSPA_t + EBBPSPA_t) - (\Delta CLK_t + ELK_t)$$

Where:

$\Delta REDD_t$ Ex post net anthropogenic greenhouse gas emission reduction attributable to the AUD project activity at year t ; tCO_2e

$\Delta CBSLPA_t$ Sum of baseline carbon stock changes in the project area at year t ; tCO₂e

$EBBBSLPA_t$ Sum of baseline emissions from biomass burning in the project area at year t ; tCO₂e

$\Delta CPSPA_t$ Sum of *ex post* estimated actual carbon stock changes in the project area at year t ; tCO₂e

Note: If $\Delta CPSPA_t$ represents a net increase in carbon stocks, a negative sign before the absolute value of $\Delta CPSPA_t$ shall be used. If $\Delta CPSPA_t$ represents a net decrease, the positive sign shall be used.

$EBBPSPA_t$ Sum of actual emissions from biomass burning in the project area at year t ; tCO₂e

ΔCLK_t Sum of *ex post* estimated leakage net carbon stock changes at year t ; tCO₂e

Note: If the cumulative sum of ΔCLK_t within a fixed baseline period is > 0 , ΔCLK_t shall be set to zero.

ELK_t Sum of *ex post* estimated leakage emissions at year t ; tCO₂e

t 1, 2, 3 ... T , a year of the proposed project crediting period; dimensionless.

The number of Verified Carbon Units (VCUs) to be generated through the proposed AUD project activity at year t is calculated as follows:

$$VCU_t = \Delta REDD_t - VBC_t$$

$$VBC_t = (\Delta CBSLPA_t - \Delta CPSPA_t) \times RF_t$$

Where:

VCU_t Number of Verified Carbon Units that can be traded at time t ; tCO₂e

Note: If $VCU_t < 0$ no credits (VCUs) will be awarded to the proponents of the AUD project activity.

$\Delta REDD_t$ *Ex post* estimated net anthropogenic greenhouse gas emission reduction attributable to the AUD project activity at year t ; tCO₂e

VBC_t Number of Buffer Credits deposited in the VCS Buffer at time t ; tCO₂e

$\Delta CBSLPA_t$ Sum of baseline carbon stock changes in the project area at year t ; tCO₂e

$\Delta CPSPA_t$	Sum of ex post carbon stock changes in the project area at year t ; tCO _{2e} ha ⁻¹
RF_t	Risk factor used to calculate VCS buffer credits; %
t	1, 2, 3 ... T , a year of the proposed project crediting period; dimensionless.

The RF_t was estimated using the most recent version of the *VCS-approved AFOLU Non-Permanence Risk Tool* and the resulting value of RF_t for the present REDD project during the current monitoring period was 14%.

The specific summary of GHG reductions and removals in the ABC Norte REDD project during the current monitoring period is included in Table below. The latter table includes estimates of GHG emissions reduction ($REDD_t$), calculations of buffer and leakage, and the resulting calculation of tradable Verified Carbon Units (VCU_t).

Table 31. Ex post estimated net anthropogenic GHG emissions reductions and VCUs

Project year	Baseline carbon stock changes		Baseline GHG emissions from biomass burning		Ex post project carbon stock changes		Ex post project GHG emissions from biomass burning		Ex post leakage carbon stock changes	
	annual	cumulative	annual	cumulative	annual	cumulative	annual	cumulative	annual	cumulative
	ΔCBSLPA_t	ΔCBSLPA	EBBBSLPA_t	EBBBSLPA	ΔCPSPA_t	ΔCPSPA	EBBPSPA_t	EBBPSPA	ΔCLK_t	ΔCLK
	tCO _{2e}	tCO _{2e}	tCO _{2e}	tCO _{2e}	tCO _{2e}	tCO _{2e}	tCO _{2e}	tCO _{2e}	tCO _{2e}	tCO _{2e}
2021	648,214	648,214	27,820	27,820	641,550	641,550	2,968	2,968	146,977	146,977
2022	824,782	1,472,996	35,238	63,058	191,513	833,063	107	3,074	2,969	149,946
2023 (01/01/2023 to 31/03/2023)	272,698	1,745,694	10,245	73,303	8,479	841,542	310	3,385	4,282	154,228

Ex post leakage GHG emissions		Ex post net anthropogenic GHG emission reductions		Ex post VCUs tradable		Ex post buffer credits	
annual	cumulative	annual	cumulative	annual	cumulative	annual	cumulative
ELK_t	ELK	ΔREDD_t	ΔREDD	VCU_t	VCU	VBC_t	VBC
tCO _{2e}	tCO _{2e}	tCO _{2e}	tCO _{2e}	tCO _{2e}	tCO _{2e}	tCO _{2e}	tCO _{2e}
15,842	15,842	-131,303	-131,303	0	0	0	0
0	15,842	665,431	534,128	445,886	445,886	88,242	88,242
0	15,842	269,872	804,000	233,480	679,366	36,391	124,633

In addition, the net GHG emission reductions and removals in the ABC Norte REDD Project are summarized in the Table below.

Table 32. Ex post estimated net anthropogenic GHG emissions reductions and VCUs

Year	Baseline emissions or removals (tCO ₂ e)	Project emissions or removals (tCO ₂ e)	Leakage emissions (tCO ₂ e)	Net GHG emission reductions or removals (tCO ₂ e)	Buffer pool allocation	VCUs eligible for issuance
2021	676,034	644,517	162,819	-131,303	0	0
2022	860,020	191,620	2,969	665,431	88,242	445,886
2023	282,943	8,790	4,282	269,872	36,391	233,480
TOTAL	1,818,997	844,927	170,071	804,000	124,633	679,366
Total number of monitoring years	2.2	2.2	2.2	2.2	2.2	2.2
Average annual ERs	809,676	376,095	75,702	357,878	55,477	302,401

Table 33 below summarizes the emission reductions and removals estimated (ex-ante) and the achieved (ex-post).

Table 33. Comparison between Emission Reductions or Removals estimated (ex-ante) and achieved (ex-post)

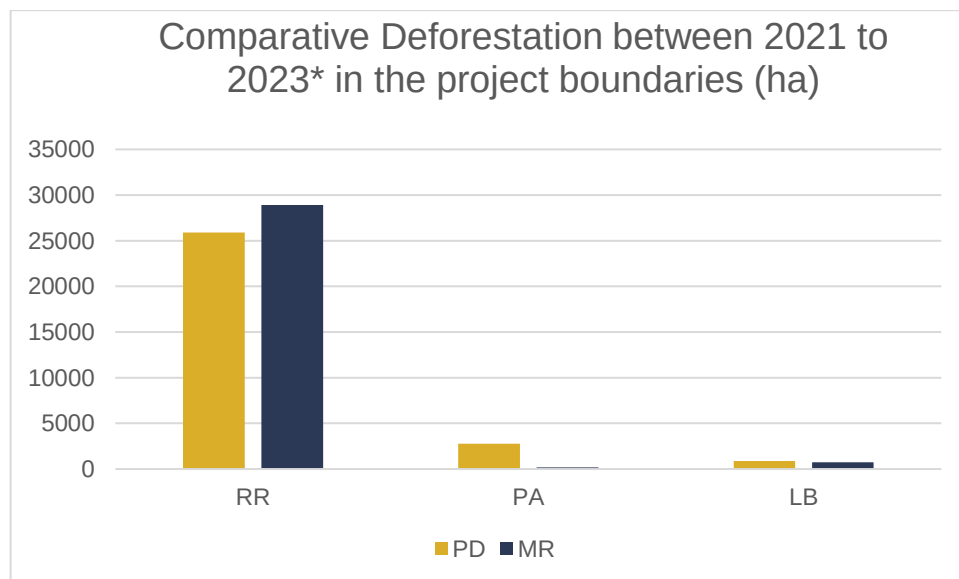
Year	Estimated net GHG emission reductions or removals (tCO ₂ e)	Net GHG emission reductions or removals (tCO ₂ e)	Percentage difference
01-Jan-2021 to 31-Dec-2021	68,837	-131,303	-290.74%
01-Jan-2022 to 31-Dec-2022	214,611	665,431	210.06%
01-Jan-2023 to - 31-Mar-2023	84,257	269,872	220.30%
Total	367,704	804,000	118.65%

According to the table above, the ex-ante values are considerably smaller than the ex-post Net GHG emission reductions or removals achieved. This variation is already expected mainly due to the values reached on project and leakage emissions.

The significant difference between the estimated values in the PDD and those achieved in this MR is primarily due to the reduction in deforestation that occurred in the Project Area and Leakage Belt. The deforestation that occurred in the PA during this monitoring was, on average, 92.90% lower than estimated in the PD, while in the Leakage Belt and Reference Region these values decreased by 15.60% and increased 28.33%, respectively.

Table 34. Average between Predicted Deforestation (PD) and Actual Deforestation (MR)³⁶

	RR (ha)	PA (ha)	LB (ha)
PD	8,638.33	928.47	297.27
MR	9,631.40	65.85	250.73
%	28.33%	-92.90%	-15.60%



*between January and March

The increase in deforestation in Pará, in the Reference Region, in 2021 and 2022 can be attributed to a few main factors:

- Economic activity and resource exploitation: The region near Reference Region is rich in timber and minerals, attracting investors and deforesters. The increase in economic activity has stimulated the expansion of the agricultural frontier and the exploitation of natural resources, contributing to deforestation.³⁷
- Lack of supervision and control: The region has been the target of little supervision and control by the environmental authorities, allowing deforesters to operate with greater freedom.³⁸

³⁶ Values calculated based on the data provided for the same period in the PD and this MR.

³⁷ Portel, Altamira, Pacajá, S. Félix do Xingu e Uruará desmatam o Pará - Uruá-Tapera (uruatapera.com)

³⁸ Portel, Altamira, Pacajá, S. Félix do Xingu e Uruará desmatam o Pará - Uruá-Tapera (uruatapera.com)

- Deforestation strategies: Deforesters have invested in more advanced technologies and equipment, allowing them to deforest at a greater speed and scale. In 2022, the highest average maximum speed of deforestation in the Amazon was observed in Novo Aripuanã, in Amazonas.³⁹
- Climate impacts: Extreme climate events, such as fires and floods, may have created opportunities for deforesters, displacing populations and making it easier for them to occupy previously inaccessible areas.⁴⁰

Although state of Pará showed a 21% reduction in deforestation between 2022 and 2023⁴¹, the factors mentioned contributed significantly to the increase in deforestation in the Reference Region in 2021 and 2022.

The decrease in deforestation in the PA during this period demonstrates the success of the activities carried out by the current project in the region. Although the government of Pará is also working to contain illegal deforestation in the state, its effectiveness is still relatively low compared to the Emission Reduction activities and forest conservation efforts executed by this project during the same period⁴². This can be observed, in practice, in the parameter 'Total ex post decrease in carbon stocks due to displaced deforestation,' which decreased by 50% compared to the estimate in the PD.

Regarding total Leakage Emissions, the monitoring period reported an average increase of 40% compared to the ex-ante estimates. This increase in emissions due to leakage is attributed to two primary factors: "Total Net Carbon Stock Change Due to Leakage" and "Total Net Increase in Emissions Due to Leakage."

The change in carbon stock due to leakage is directly associated with deforestation. As previously discussed, deforestation within the leakage belt during the monitoring period exceeded the estimates provided in the Project Description (PD). Additionally, the "Total Net Increase in Emissions Due to Leakage" also showed a significant increase, primarily due to the occurrence of forest fires within the leakage belt. It is well established that fire is often employed as a method to clear deforested areas. Therefore, as deforestation rates increased, the incidence of forest fires in the region also escalated. This increase was further exacerbated by a combination of factors including lack of oversight, prolonged drought conditions, and intensified deforestation activities.⁴⁰

Moreover, it is important to consider the difference in Harvesting Intensity (parameter Hlicl,t), for which the project emissions estimated in the PD consider exploration under SFMP of the total volume authorized by law (30 m³/ha), while during the monitoring period the actual exploration value was lower. While the PDD considered a value of 30 m³/ha, in this MR, the Project Proponent's exploration intensity

³⁹ [MapBiomass Brasil](#)

⁴⁰ [Como Portel virou campeão em queimadas durante seca na Amazônia \(reporterbrasil.org.br\)](#)

⁴¹ [Desmatamento tem queda de 21% no Pará entre 2022 e 2023, diz Inpe | CNN Brasil](#)

⁴² Available at: <https://www.semas.pa.gov.br/2023/08/10/desmatamento-no-para-segure-em-queda-e-registra-reducao-de-50-em-julho-segundo-o-inpe/>

was only 22.92 m³/ha, resulting in a 61.89% reduction in the average carbon stock change due to logging activities. This decrease resulted in a 55% reduction in the 'Total ex post carbon stock change' (ΔCPSPAT) compared to the estimate in the PD.

The volume authorized for UPA 18 was 24.7652 m³/ha and 18.5391 m³/ha for UPA 19, according to the AUTEF documents, to be explored in this monitoring period, in concordance with the Brazilian law. It is important to note that the exploitation of each UPA takes an average of 2 years, which meant that the final post-exploratory report was completed after the development of this MR. The final report for UPA 18 shows a total exploited value of 104,619.04 m³. According to the volume per area, the project harvested 25.86 m³/ha, as reported in the final UPA 18 document. It's important to note that the authorized volume refers to the commercial aspect—the volume of timber that can be sold. In calculating the intensity of exploitation, trees that were harvested but not sold were included, as they were felled. These trees are used for improvements and repairs on the farm or are hollow trees with no commercial value. Finally, the final report of UPA 18 was submitted to the Environmental and Sustainability Secretary of Pará (SEMAS).

All authorizations for sustainable forest management include conditions, such as the appropriate timeframe for harvesting, dragging, and transporting logs. If any of these activities do not occur during the first year of the license's validity, the post-harvest report is partial, indicating how much of the authorized activities were completed during that period.

As a result, it is very common for UPAs to have both partial and final/full reports for the entire area authorized for management. For the 2nd MR period, UPA 19 was not fully managed. Therefore, for the carbon stock change calculation, a partial report was used. In the next monitoring period, UPA 19 will have completed management activities, and the volume difference between the monitored periods should be accounted for in the calculations.

Regarding UPAs of 1st MR (UPA 14; UPA 15; UPA 16 and UPA 17), some of them were initially verified using partial data. To ensure consistency and accuracy, the full reports for these UPAs were reviewed and the volume unaccounted for was incorporated and accounted for in the current MR.

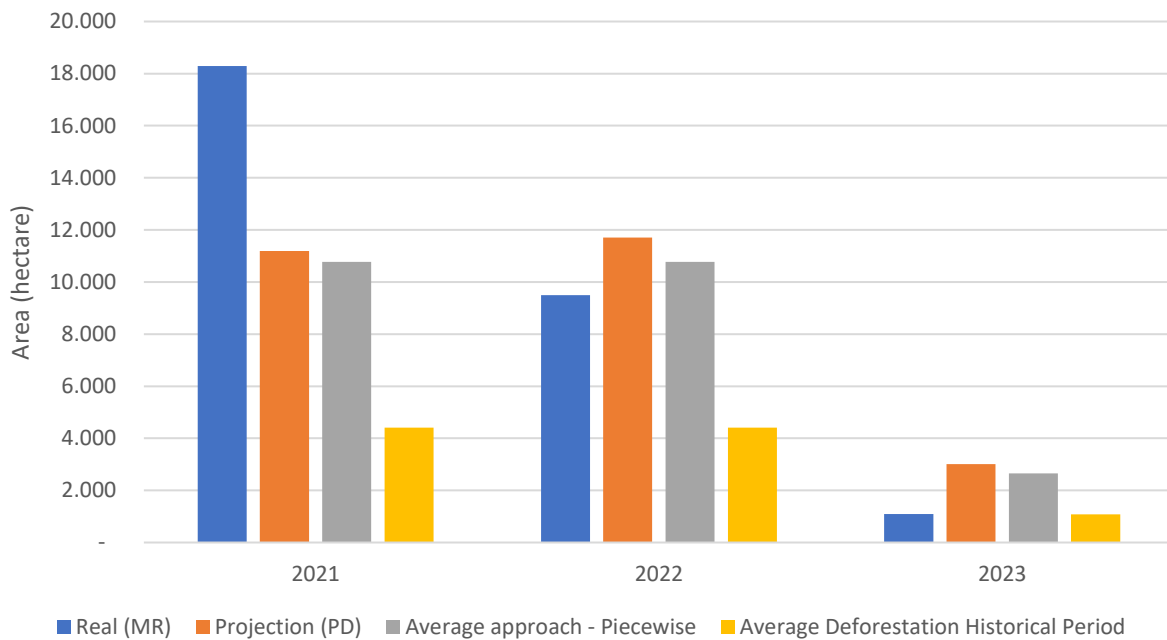
To align with the methodology used in MR2, the calculation of explored volume for UPAs from 1st MR now includes not only commercially harvested trees but also trees that were felled but not sold, as they still contribute to project emissions. Following these updates, the previously unconsidered volume from the 1st MR (30,163.56 m³) was accounted for by adding each unaccounted volume for MR1 APUs, in MR2 spreadsheet. This adjustment ensures consistency between the two MRs and that all emissions resulting from Sustainable Forest Management (SFM) are accurately reflected across the project's monitoring reports. Forest management in the project area is conducted by a partner company of ABC Norte. The payments made to the Project Proponent are fixed adjusted for inflation as stipulated in the contract, and do not vary based on the volume of timber harvested. This arrangement ensures that financial expectations are consistently met, regardless of timber yield. The contract between the management company and ABC Norte outlines these terms. Consequently, the risk of permanence and financial viability remains unaltered, as established in the Project Design (PD). Furthermore, there was no

significant reduction in the financial aspect since the exploitation of the UPAs follows a scheduled plan, and the revenues generated during this monitoring period aligned with the company's projections.

Additionally, despite the identification of fire hotspots in the PA during this period, the monitoring team is prepared to mitigate the impacts as soon as possible. Consequently, the impact of these events is less than previously established, directly affecting the parameter 'Emissions of non-CO2 gases from forest fires in the project area (AUDPA_{icl,t})', reducing by an average of 95% when compared to the estimate in the PD. This similarly impacted the parameter 'Total ex post increase in GHG emissions due to displaced forest fires,' which was on average only 10% higher than projected in the VCS PD v.5. Therefore, as a result of these combined factors that demonstrate the effectiveness of the forest conservation activities developed by the ABC Norte REDD project, the Emission Reduction was 118.65% higher compared to the projection outlined in the VCS PD.

A comparative analysis was conducted between the piecewise model – explained in Round 1, the historical average, and the actual deforestation data from 2021 to 2023. The piecewise regression was 16% below the total actual deforestation for the monitored period, while the historical average resulted in 66% lower. This pattern was also observed in analyses using annual deforestation data, indicating that the historical average approach is significantly inadequate for accurately representing the real scenario. In 2022, there was a data fluctuation influenced by the increased deforestation rate in the Amazon, recording the highest rate since 2008, with Pará responsible for 37% of the affected area. Despite this, the piecewise regression model proved to be more appropriate than the historical average in accurately representing the scenario for that year. The Piecewise model, which is currently used by the project activity, has shown a very close relationship to reality and therefore is the most appropriate and conservative model to project the baseline scenario.

Graphic 1. Deforestation area in the reference region



6 SOCIALCARBON RESULTS

6.1 Results

6.1.1 Social Resource

Indicator	1. Women inclusion
Description	Evaluates initiatives implemented by the company to promote women inclusion in the community activities. Campaigns: Punctual actions that do not have continuity, such as lectures, women's inclusion week, among others. Program: Set of continuous actions to promote women inclusion in the community activities, offering equal opportunities of access to goods and services for all.
Situation	During the monitored period the company carried out the following initiatives regarding women inclusion:

	• Natural fiber craft workshop: The aim of this initiative was to rescue the traditional knowledge from riverside communities to produce decorative and utilitarian objects, using natural raw material available in the region and reused textiles materials. Different techniques for processing fibers, basketry, braiding, weaving and macramé were taught. The workshop was performed in September 2022 in 5 communities (Divino Espírito Santo, Cristo Salvador, São Sebastião do Cipoal, Nossa Senhora do Carmo and Monte Sião) and 32 women participated of the initiative. • Fabric painting workshop: The goal of the workshop was to promote the women empowerment and social interaction through art and creativity. The initiative was first carried out in December -2022 during the 3rd Social Action conducted by Pacajá Farm and Portel City Hall. The Social Action aims to offer health, citizenship and culture services to the communities. It was held at the Walter Garcia School and reached residents of 11 communities around the Pacajá Farm. 90 women, between children, adults and elderly people participated of this workshop. The second workshop was carried out in February – 2023 in 3 communities (Divino Espírito Santo, São Sebastião do Cipoal and Nossa Senhora do Carmo). Of the 25 people who participated, 20 were women. • Carpentry workshop: This workshop aimed to identify the participant’s interests and abilities to carpentry, to promote the creation of a women association in the future. The purpose is to create furniture and decorative items sustainable, using as raw material residues of forest management area, in addition, generates income for the community. The first edition was carried out in Pacajá Farm in July 2022 and the target audience were wives of the farm’s employees. Afterward, the workshop will be conducted in the communities. These initiatives were carried out within the scope of the ABC Norte Socio-environmental Responsibility Program, which is monthly monitored.					
There are no initiatives related to women inclusion.	There are plans to implement actions to promote women inclusion in the community activities.	There are campaigns aiming to promote women inclusion in the community activities.	There are monitored programs to promote women inclusion in the community activities.	In addition to the previous scenario, there are positive results related to women inclusion in	There is no barrier and women are fully integrated into the community.	

				the communities.	
Score	4 (four)				
Prospects	To realize a carpentry workshop in the communities attended by the project				

Indicator	2. Expansion of community activities				
Description	Evaluates whether the community activities implemented by the company extend to all affected communities.				
Situation	ABC Norte has a Socio-environmental Responsibility Program that aims to contribute to local development and quality of life of the communities around Pacajá farm. The Program is divided in three thematic axis: Income generation, education and social assistance. A specialized team visits monthly the communities to carry out the planned activities. There are 13 communities identified in the region, however only 5 communities are regularly served, due to logistics limitations and consequently limited contact with the rest of the 8 communities, since they are located far from the boundaries of Pacajá Farm. Despite the challenges presented, ABC Norte seeks to expand the Program's reach through the execution of the "Social Action" event, an activity that is part of the Socio-Environmental Responsibility Program. This event is held once a year in partnership with the health department of the Portel municipality, and it aims to offer health, citizenship and culture services to the communities. In 2021 around 200 residents from 07 communities participated in the activities and in 2022 this number increased to 450 residents from 11 communities. During the event, medical staff is available to carry out consultations, document issuance services are provided, workshops and cultural activities such as photography exhibitions and dance shows are also carried out. Considering that the monthly visits conducted by the Socioenvironmental Responsibility Program occur in 5 communities, scenario number 4 was selected.				
There are no social activities to the surrounding community.	There are social activities that reach at least one community.	There are social activities that reach up to three communities.	There are activities that reach up to five communities.	There are activities that reach up to eight communities.	Social activities reach 100% of the communities

					affected by the project.
Score	4 (four)				
Prospects	There are currently no foreseen improvements.				

Indicator	3. Associations and Cooperatives				
Description	Evaluates whether communities residing in/around the project area are involved in associations or cooperatives. Association: Group of two or more people who organize themselves to defend their common interests, without financial ends and existing as a legal entity. Cooperative: Organization consisting of at least twenty private individuals acting cooperatively and mutually assisting each other, with democratic, participatory management, with common economic and social goals, of which the legal and doctrinal aspects are independent of those of other organizations and societies.				
Situation	In the communities served by the project, it was identified the following associations: • Association of Remains of Cipoal Quilombolas • Association of Rural Producers of Divino Espírito Santo and • Association of Agroextractivist Farmers of the Middle Pacajá In 2021, there was a lecture on associativism, which helped the communities to organize internally. Participants learned about the importance of an association, the goal, the benefits, and about legislation. The lecture was carried out in São Sebastião do Cipoal and Divino Espírito Santo communities and a total of 14 people participated.				
Absence of associations and cooperatives; individual action predominates.	Attempts to form associations or cooperatives have been made, meetings are informal.	An association or cooperative is regularly attended and formally registered; however, there are no	An association or cooperative is regularly attended and formally registered, and there are	In addition to the previous scenario, there is a formally registered, regularly attended association or	In addition to the previous scenario, the association/cooperative is independent (not in need

		recognized leaders within the community.	recognized leaders from the community.	cooperative that is generating positive results for the community (e.g. objectives have been achieved).	of external support).
Score	4 (four)				
Prospects	There are currently no foreseen improvements.				

6.1.2 Human Resource

Indicator	4. Conflict management
Description	Evaluates the company's procedures to identify and deal with conflicts in the surrounding communities, as well as the actions that are being taken so that they do not recur.
Situation	Since 2017, episodes of burning within the boundaries of the Pacajá Farm have been recorded for the purpose of planting cassava (a common crop in the Amazon) and for timber theft. These episodes were carried out by one of the residents of the Monte Sião/Santa Terezinha community. To resolve the conflict generated, ABC Norte adopts Standard Operating Procedures 11 - Conflict Mediation as a guideline. According to the document, the first step is to establish formal contact with the community leader. Through dialogue, representatives of ABC Norte repeatedly try to educate the community residents about the farm's boundaries, forestry management activities carried out in the project area and the prohibition of activities like burning, and timber appropriation. After contacting the community to clarify the facts, the company takes the necessary steps by reporting incidents to the competent authorities through the filing of police reports and sending official letters to regulatory agencies to request support for area monitoring. To maintain closer dialogue with the communities and prevent similar conflicts from occurring in the future, ABC Norte is committed to improving its existing communication channels to establish closer dialogue with communities.

Currently the communication channels available are messaging app number, social media, direct contact with UPbio representatives during monthly technical visits to the communities, and direct contact with the manager of Pacajá Farm. ABC Norte plans to install suggestion boxes in the communities, which will be collected monthly by the UPbio team and delivered to ABC Norte. Furthermore, ABC Norte will continue to invest in the development of the Socio-Environmental Responsibility Program. Since 2020, a specialized team has been visiting the communities surrounding the Pacajá Farm, including Monte Sião/Santa Terezinha, on a monthly basis with the goal of promoting alternative income and food sources, so that residents do not rely on income from illegal activities to survive. This is the company's primary tool for combating actions involving deforestation and timber theft.					
There are no actions related to conflict management .	There are actions related to conflict management however they are informal.	There are procedures to identify AND deal with conflicts.	In addition to the previous scenario, all conflicts identified are being treated and monitored. Efforts are carried out to ensure that they will not be repeated.	In addition to the previous scenario, the company has preventive actions to prevent the emergence of new conflicts, e.g. the company provides a team to gather opinions and solve conflicts.	In addition to the previous scenario, the local community is satisfied with community activities.
Score	5 (five)				
Prospects	There are currently no foreseen improvements.				

Indicator	5. Public health
Description	Evaluates the company's actions to mitigate the impacts of its activities related to the public health of surrounding communities.
Situation	ABC Norte company has a Socio-environmental Responsibility Program that aims to contribute to local development and quality of life of the communities

around Pacajá farm. The Program is divided in three thematic axis to guide the actions and one of them, the Social Assistance, aims to realize health, citizenship and life quality campaigns. All the initiatives are monitored by a specialized team that register the data, such as number of health consultations and demands from the communities, in reports.

During the monitored period the company carried out the following initiatives regarding public health:

- **Health Center:** There is in Pacajá Farm a health center to care for employees and the community, as well as transport to the nearest city center in case of emergency. The construction and maintenance of the building is responsibility of ABC Norte company, and the health team is responsibility of Portel City Hall. Beyond that, the nursing technician who works at the health center visits the communities to carry out health consultations and medicine donation.
- **Social Action:** Once in a year the company realizes the event “Social Action”, in partnership with Portel City Hall. The initiative aims to offer health, citizenship and culture services to the communities around the Pacajá Farm. In 2021, 180 health consultations were carried out, 159 medications and 200 face masks were distributed so families can treat and prevent diseases. Moreover, activities regarding sustainable attitudes and healthy eating were carried out to children.

In 2022, this number increased to 612 health consultations and more than a 100 health items such as medications, preservatives and hypochlorite for water treatment were distributed. During the event, 50 oral hygiene kits with toothbrush and toothpaste were distributed to São Sebastião do Cipoal representatives.

The fourth edition of the event will be realized in December - 2023.

- **Domestic accident prevention:** In April 2022 it was held for 78 people from Divino Espírito Santo community a lecture about domestic accident prevention. The lecture addressed scalping in boats in a playful and interactive way for children, young people and adults of the school community, ranging from early childhood education to Youth and Adult Education.
- **Mental and emotional health:** This initiative aimed to promote the awareness of the participants emotions and the ability to manage and express those feelings in an age-appropriate manner. The lectures were realized in February 2022 in 5 communities (Monte Sião, São Sebastião do Cipoal, Nossa Senhora do Carmo, Cristo Salvador and Divino Espírito Santo) and a total of 42 people participated.

• Healthy eating: Delivery of 105 educational material regarding healthy eating to children in Monte São, São Sebastião do Cipoal, Nossa Senhora do Carmo and Divino Espírito Santo communities. • Health and safety at work: Lectures regarding health and safety topics are carried out to ACB Norte employees. The company periodically performs the "Weekly Dialogue on Safety, Health and Environment" to promote awareness about occupational diseases, protection of hands and fingers, inspection of machinery and equipment, the importance of communication and teamwork, among others. In November 2022, the workers participated of the "Internal Week for the Prevention of Accidents at Rural Work", an event that prioritized awareness of self-care as a preventive and healthy practice, which, combined with good safety and accident prevention, promote quality of life inside and outside of the work environment.					
There are no actions related to public health.	There are isolated initiatives, which have little impact, in the public health area, for example: distribution of information pamphlets.	There are lectures OR campaigns to create awareness in the communities and prevent themes related to public health (e.g. prostitution, violence against women, alcohol abuse, drug use, among others).	There are lectures AND campaigns to create awareness in the communities and prevent themes related to public health (e.g. prostitution, violence against women, alcohol abuse, drug use, among others).	In addition to the previous scenario, the company monitors public health problems in the communities affected by the project.	In addition to the previous scenario, there are actions to solve the public health problems.
Score	5 (five)				
Prospects	There are currently no foreseen improvements.				
Indicator	6. Community education and training				

Description	Evaluates the relevant education and training programs implemented as a project activity, including additional programs to the stakeholders and broader community.
Situation	ABC Norte company has a Socio-environmental Responsibility Program that aims to contribute to local development and quality of life of the communities around Pacajá farm. The Program is divided in three thematic axis to guide the actions and two of them, Income Generation and Educational Interventions, aim to promote sustainable productive activities and environmental education through, for example, trainings. Visits are monthly carried out in communities to monitor the activities, to provide technical assistance and to donate supporting material. • Agroforestry systems: In May 2021, in partnership with Technical Assistance and Rural Extension Company from Portel (EMATER in portuguese) the residents from Divino Espírito Santo Community were instructed on planting cocoa and açaí and on the use of herbicides. In September 2021 it was carried out a training about agroforestry system to 8 people from Divino Espírito Santo community. Among the points covered, the following stand out: elaboration and reading of sketches, spacing, preparation of pits, organic fertilization, pruning, production of seedlings of forest and fruit species. • Craftwork: The project realized several workshops about fabric painting, natural fiber craft and carpentry. For more details, please check the indicator 1. <i>Women Inclusion</i> description. • Poultry farming: During this training, participants learned how to build proper areas to raise poultries, alternative ways to feed them and how to control the main pests and diseases. The training was realized in September 2021 and 08 people from Monte Sião community participated, 20 from Nossa Senhora do Carmo and 10 from Cristo Salvador. • Sustainable Forest Management: The purpose of this initiative was to explain all processes and activities involving the sustainable forest management that take place in Pacajá Farm. The lecture was carried out in Nossa Senhora do Carmo community for 8 people and Divino Espírito Santo community for 7 people. • 5 R's: In May 2022 it was carried out a lecture to 12 people from São Sebastião do Cipoal community about the 5 R's (refuse, reduce, reuse, repurpose, and recycle). The aim was to promote awareness about the impacts of the improper waste disposal on the environment, and mainly in the rivers. • Educational Infrastructure: The project supported with painting material and termite insecticide the construction of a library in Divino

		Espírito Santo Community and the revitalization of the São Sebastião do Cipoal community school. • Books donation: The project donated 1,000 textbooks and some children's books to the school and library from Divino Espírito Santo community. Also a 150 scholar kits were donated to Divino Espírito Santo, São Sebastião do Cipoal and Nossa Senhora do Carmo. • Literacy: There is a school on Pacajá Farm to encourage youth and adult education. ABC Norte company also pays half of the employee's membership for the classes as well as the teacher's transport. The classes are made up of employees and people from communities. Besides, every Saturday tutoring classes are conducted.			
There are no education and training activities.	There are no education and training activities, however the company promotes lectures on different themes.	The company offers an education / training activity in ONE of the following areas: - alternative income sources (e.g. collecting Brazil nuts) - education (e.g. literacy) - sustainable forest management	The company offers an education / training activity in TWO of the following areas: - alternative income sources (e.g. collecting Brazil nuts) - education (e.g. literacy) - sustainable forest management	The company offers an education / training activity in the following areas: - alternative income sources (e.g. collecting Brazil nuts) - education (e.g. literacy) - sustainable forest management	In addition to the previous scenario, the company simulates entrepreneurship (e.g. support, lectures, microloans among others).
Score	6 (six)				
Prospects	The project aims to increase the number of employees enrolled in literacy classes				

6.1.3 Financial Resource

Indicator	7. Alternative income sources
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Description	Evaluates whether the project created alternative sources of income generation for the communities living within/surrounding the project area.				
Situation	ABC Norte company has a Socio-environmental Responsibility Program that aims to contribute to local development and quality of life of the communities around Pacajá farm. The Program is divided in three thematic axis to guide the actions and one of them, the Income Generation, aims to promote productive activities through fish farming, poultry farming, horticulture and agroforestry systems, as well as handicraft. Visits are monthly carried out in communities to monitor the activities, to provide technical assistance and to donate supporting material.				
	Initially, production was aimed at own consumption. With the progress of the project, the community members have already started to sell the products. For example, in June 2022 it was celebrated the “Festa Junina” (June Festival in English) at Pacajá Farm and residents from the communities supported by the project were invited to sell their products during the event. R\$ 1,345.00 were generated from the sale of products from Nossa Senhora do Carmo and Divino Espírito Santo communities.				
The project does not generate any alternative income sources for the local communities.	The project generates one alternative income source for the local communities.	The project generates two alternative income sources for the local communities.	The project generates three alternative income sources for the local communities.	The project generates four alternative income sources for the local communities.	The project generates more than five alternative income sources for the local communities.
Score	5 (five)				
Prospects	There are currently no foreseen improvements.				

Indicator	8. Carbon credit benefits
Description	Evaluates whether proceeds from the sale of carbon credits was distributed to carbon project improvements or activities that benefit the local community.
Situation	Approximately 68% of the credits issued for the past monitoring period were sold and the entire amount was invested in the project.

The income generated by carbon credit sales was not distributed to the carbon project or in the community, or there are no organized controls of the allocation of proceeds.	Less than 20% of the income generated by carbon credit sales was distributed to the carbon project or in the community development .	Between 20 and 40% of the income generated by carbon credit sales was distributed to the carbon project or in the community development .	Between 40 and 60% of the income generated by carbon credit sales was distributed to the carbon project or in the community development .	Between 60 and 80% of the income generated by carbon credit sales was distributed to the carbon project or in the community development .	Between 80 and 100% of the income generated by carbon credit sales was distributed to the carbon project or in the community development .
Score	6 (six)				
Prospects	There are currently no foreseen improvements.				

Indicator	9. Securing of funds				
Description	Evaluates the project proponent's participation in requests for proposals/ programs to secure funds. Also monitors whether project participants were successful, and whether the funds raised are creating activities for communities resident in/around the project area.				
Situation	ABC Norte is the forestry company of Algar, a Brazilian family group with over 90 years of experience, and operations in the telecommunications, tourism and agribusiness sectors. Algar Group has an Institute, responsible for coordinating and giving guidelines for all educational, environmental and cultural actions of the Group. Due to this institutional structure, all project expenses are managed with own funds.				
The project proponent does not take any action to secure funds.	The project proponent participates in programs/ requests for proposal; however, no funding has	The project proponent participates in programs/ requests for proposal, and has secured	The project proponent participates in programs/ requests for proposal, and has secured	The project proponent participates in programs/ requests for proposal, and has secured	As well as the previous scenario, at least one of the initiatives undertaken is financially self-

	been secured so far.	funding, and initiatives have been put into practice. However, the latter were inactive or nonexistent in the period analyzed.	funding, and initiatives have been put into practice. In the period analyzed at least one initiative is operating.	funding, and initiatives have been put into practice. In the period analyzed, more than one initiative is operating, however the latter are not self-sustaining (they require funding to continue).	sufficient, not requiring any further funding to continue.
Score	1 (one)				
Prospects	There are currently no foreseen improvements.				

6.1.4 Natural Resource

Indicator	10. Land tenure				
Description	Evaluates the existence of conflicts due to land tenure, as well as whether actions are being taken to manage the issue.				
Situation	The area is 100% regularized, being 100% titled and the issuance of titles is constantly updated at the notary's office.				
There are protests in the project area due to problems with land tenure.	The company has conflicts related to land tenure, and has no actions addressed to solve them.	The company has conflicts related to land tenure and started a dialogue to solve them.	The company has conflicts due to land tenure and is in the process of solving them.	Part of land tenure proceedings has been concluded and the owners already have the terms of concession	All land tenure proceedings are concluded, and the owners already have the terms of concession

				and the legal land title as well as right to use those localities.	and the legal land title as well as right to use those localities. Beyond that, the company monitors the management plan area to avoid new land occupation.
Score	6 (six)				
Prospects	There are currently no foreseen improvements.				

Indicator	11. Social and environmental investments
Description	Evaluates the socio-environmental investments in the different areas: education; alternative income generation; environment; sport and infrastructure.
Situation	During the monitored period the following socio-environmental investments were made: • Alternative income generation: ABC Norte company invested in the development of productive activities in communities through fish farming, poultry farming, horticulture and agroforestry systems, as well as handicraft. Visits are monthly carried out in communities to monitor the activities, to provide technical assistance, trainings and to donate supporting material. • Education: There is a school on Pacajá Farm to encourage youth and adult education. ABC Norte company also pays half of the employee's membership for the classes as well as the teacher's transport. The classes are made up of employees and people from communities. Besides, every Saturday tutoring classes are conducted. The project donated 1,000 textbooks and some children's books to the school and library from Divino Espírito Santo community. Also a 150 scholar kits were donated to Divino Espírito Santo, São Sebastião do Cipoal and Nossa Senhora do Carmo.

	• Environment: In May 2022 it was carried out a lecture to 12 people from São Sebastião do Cipoal community about the 5 R's (refuse, reduce, reuse, repurpose, and recycle). In July 2021, 20 educational booklets were donated to Monte Sião and Divino Espírito Santo communities regarding environmental education. Coloring book were also donated to 185 children from the five communities served by the project during the Children's Day event in October 2021. • Infrastructure: The project donated painting material and termite insecticide for the construction of a library in Divino Espírito Santo Community and the revitalization of the São Sebastião do Cipoal community school. ABC Norte company enrolled in Federal program "Mais luz para a Amazônia", which provides electric power from renewable resources to remote regions in the amazon biome, and solar panels were donated to Nossa Senhora do Carmo and São Sebastião do Cipoal communities. • Sport: Donation of martial arts mats to Divino Espírito Santo community. Besides, to celebrate the Children's Day in October 2021, ABC Norte company invested in cultural and sports activities, which stimulated the development of motor coordination, auditory and visual perception of the child.					
There are no actions related to socio-environmental investments.	The company has social-environmental actions for at least one of the following topics: - education; - alternative income generation; - environment; - sport; - infrastructure.	The company has social-environmental actions for two of the following topics: - education; - alternative income generation; - environment; - sport; - infrastructure.	The company has social-environmental actions for three of the following topics: - education; - alternative income generation; - environment; - sport; - infrastructure.	The company has social-environmental actions for four of the following topics: - education; - alternative income generation; - environment; - sport; - infrastructure.	The company has social-environmental actions for all of the following topics: - education; - alternative income generation; - environment; - sport; - infrastructure.	
Score	6 (six)					

Prospects	There are currently no foreseen improvements.				
Indicator	12. Quality control				
Description	Evaluates the quality control of the management plan operation.				
Situation	ABC Norte company has the CERFLOR certification, which promotes the sustainable forestry management in Brazil. There is a specialized team responsible for carrying out activities related to the Forest Management Plan of Pacajá Farm, and the activities are monthly monitored. The company also has the “Onça-Pintada” certification attesting that the activities carried out on the farm help to preserve the survival and conservation of the jaguar, it’s habitat and its natural prey.				
There are no actions to ensure quality control of the management plan operations.	There are plans to implement quality control actions of the management plan operation.	There are quality control actions of the management plan operation in place, however failures exist (e.g. the team can only identify problems of low difficulty).	There are quality control actions of the management plan operation in place, however failures exist (e.g. the team can identify problems of low and moderate difficulty).	There are quality control actions of the management plan operation in place, however failures exist (e.g. the team can identify problems of low, moderate and high difficulty).	There is a quality control team, and the problems are identified and solved.
Score	6 (six)				
Prospects	ABC Norte company plans to obtain the FSC certification.				

6.1.5 Biodiversity/Technology Resource

Indicator	13. Non-timber forest products (NTFPs)				
Description	Evaluates the sustainable use of natural resources by communities in/around the project area for income generation. “NTFPs are biological resources or products from flora– which are not wood – obtained from forests for subsistence or for trade. They can come from native, primary or secondary forest, planted forest or agro-forestry systems. NTFPs include a wide range of products including medicinal plants, fibres, resins, latex varieties, oils, rubbers, fruits, nuts, seasonings, dyes, rattan, bamboo, etc.” (Brazilian Forest Service, 2013). Sustainable practices are taken to include the following: - Low-impact practices; - Exploitation/ collection practices of each NTFP that are compatible with their productivity levels and without affecting their regeneration and/or conservation of each utilized species.				
Situation	The economic activities developed in the municipality of Portel are mainly focused on logging. The exploration of non-timber forest products is under development. There is no extraction of NTFPs in the project area, but ABC Norte encourage the sustainable use of natural resources. The company carried out a workshop about natural fiber craft in September 2022 in 5 communities (Divino Espírito Santo, Cristo Salvador, São Sebastião do Cipoal, Nossa Senhora do Carmo and Monte Sião) and 32 women participated of the initiative.				
Non-timber forest products are used exclusively for subsistence purposes.	Non-timber forest products are traded in/around the project area, however without sustainable practices.	Non-timber forest products are traded in/around the project area, with sustainable practices in use.	As well as the previous scenario, there are studies and plans with the community in order to determine the available volumes, use, distribution, regeneration and conservation of non-timber	As well as the previous scenario, there are partnerships to exploit the business potential of non-timber forest products in/around the project area.	As well as the previous scenario: There is equitable distribution of the benefits of non-timber forest products.

			forest products.		
Score	2 (two)				
Prospects	ABC Norte company plans to establish a partnership with EMATER to carry out trainings about copaiba oil extraction				

Indicator	14. Biodiversity monitoring				
Description	Evaluates whether the company has actions to identify and monitor the local fauna and flora.				
Situation	The company ABC Norte monitors the herpetofauna and medium and large mammals in the area of influence of Pacajá Farm. The monitoring is realized twice a year, once in summer and once in winter. During the last monitoring campaign, 23 mammals specimens were registered, distributed in 5 species; 4 species of bats; 8 specimens of insect vectors distributed in 4 genera; 108 reptiles and amphibians specimens and 7 bird species.				
There is no process of identification and monitoring of fauna and flora, nor cataloguing of timber.	There are plans to implement identification and monitoring of fauna and flora.	There is monitoring and identification of fauna AND flora.	There is monitoring and identification of fauna AND flora annually.	In addition to the previous scenario, there is botanical collection of flora and herbarium.	In addition to the previous scenario, there is a catalogue of identified woods (xiloteca).
Score	4 (four)				
Prospects	There are currently no foreseen improvements.				

Indicator	15. Impact on remaining flora				
Description	Evaluates the company actions to monitor the impact on the remaining flora.				
Situation	ABC Norte company in partnership with the Federal Rural University of Amazônia monitors the dynamics of vegetation before and after the wood harvesting. Data are collected from sampling units (permanent installments)				

	and serves to validate the botanical identification of the species forestry, evaluate the spatial distribution of commercial species, initiate studies on clearings after harvesting trees, carry out studies on phytosociology and the relationship between forest height and diameter and soil conditions. Students participating in the project use the collected data to develop their monographs.				
There are no actions related to monitoring the impacts on the remaining flora.	There are plans to implement impact monitoring on the remaining flora.	The company is monitoring the impact on the remaining flora by one of the following operations: . Court . Drag . Road	The company is monitoring the impact on the remaining flora by two of the following operations: . Court . Drag . Road	The company is monitoring the impact on the remaining flora by all the following operations: . Court . Drag . Road	In addition to the previous scenario, the company has measures / initiatives to reduce its impact on the remaining flora.
Score	5 (five)				
Prospects	There are currently no foreseen improvements.				

6.1.6 Carbon Resource

Indicator	16. Buffer reduction				
Description	Measures the progression of the buffer in the current monitoring period compared to VCS PD and Monitoring Report.				
Situation	The buffer increased by 4% from the previous monitoring report to a total of 14%.				
The buffer is higher in the current monitoring than in any other monitoring	The buffer reduced by 0 to 5% compared to the previous monitoring period (or	The buffer reduced by up to 10% compared to the previous monitoring period (or	The buffer reduced by up to 15% compared to the previous monitoring period (or	The buffer reduced by up to 20% compared to the previous monitoring period (or	The buffer reduced by more than 20% compared to the previous monitoring

period (or compared to the PD).	compared to the PD).	compared to the PD).	compared to the PD).	compared to the PD).	period (or compared to the PD). Or The buffer is currently at the minimum V-C-S requirement.
Score	1 (one)				
Prospects	There are currently no foreseen improvements.				

Indicator	17. Stakeholder consultation				
Description	Evaluates the methodology used for the stakeholder consultation regarding the carbon project.				
Situation	In January 2021, ABC Norte company carried out reunions with the City Council of Portel Municipality and the Municipal Secretariats of Health, Education, Economic Development and Social Assistance, to discuss about the Socio-environmental Responsibility Program and the Sustainable Forest Management from Pacajá Farm. The representatives were satisfied with the work that the company has been developing in the communities. Regarding the communities, there is a direct and constant dialogue with the surrounding residents. Monthly a specialized team hired by ABC Norte company visits the 5 communities to strengthen the good relationship and give continuity to the Program's activities. In addition, residents can contact the team via instant messaging application and the Ombudsman service. In June 2021, a team from Ecológica and ABC Norte visited São Sebastião do Cipoal, Nossa Senhora do Carmo, Divino Espírito Santo, Cristo Salvador and Monte Sião communities for a presentation about the importance of preserving the forest and also the carbon credit sales in the national and international market. 43 people participated and were able to ask questions about the project. They were very satisfied with the lecture. As a way of providing access to information on activities carried out by Pacajá Farm, informative booklets were distributed during the Children's Day celebration event at São Sebastião do Cipoal, Nossa Senhora do Carmo and Cristo Salvador communities.				
During the period	During the period	During the period	During the period	In addition to scenario 4,	In addition to scenario 5,

analyzed, the company did not conduct a stakeholder consultation regarding the carbon project.	analyzed, the company conducted an informal stakeholder consultation regarding the carbon project.	analyzed, the company conducted a formal stakeholder consultation regarding the carbon project and all comments were registered.	analyzed, the company conducted a formal stakeholder consultation regarding the carbon project and all comments were registered. At least one of the suggestions was addressed.	the company conducted systematic stakeholder consultation surveys.	the company has organized planning to implement stakeholder suggestions.
Score	3 (three)				
Prospects	There are currently no foreseen improvements.				

Indicator	18. Project performance				
Description	Evaluates project performance in relation to verified emissions reductions. Project performance = Units verified in the Monitoring Report corresponding to the SCR period/ Estimate of emissions reductions in the VCS PD.				
Situation	The project had an excellent performance achieving 679,366 tCO ₂ e from 01/01/ 2021 to 31/03/2023. This is 185% higher than the 367,704 tCO ₂ e estimated in the Project Description.				
Not successful: 0% of carbon credits predicted for the period were generated.	Very Low: 1% to 25% of carbon credits predicted for the period were generated.	Low: 26% to 50% of carbon credits predicted for the period were generated.	Reasonable: 51% to 75% of carbon credits predicted for the period were generated.	Good: 76% to 95% of carbon credits predicted for the period were generated.	Excellent: More than 95% of carbon credits predicted for the period were generated.

Score	(six)
Prospects	There are currently no foreseen improvements.

6.2 Analysis of Results

6.2.1 Current Performance

Resource	Critical	Satisfactory	Sustainable	Average Score	Performance
Social	0,0%	100,0%	0,0%	4,0	Satisfactory
Human	0,0%	0,0%	100,0%	5,3	Sustainable
Financial	33,3%	0,0%	66,7%	4,0	Satisfactory
Natural	0,0%	0,0%	100,0%	6,0	Sustainable
Biodiversity	33,3%	33,3%	33,3%	3,7	Satisfactory
Carbon	33,3%	33,3%	33,3%	3,3	Satisfactory

6.2.2 Historical Performance

Social	Point Zero	Point One
	3.3	4.0
The Social Resource performance improved compared to the previous monitored period. During Point Zero, no specific activities on women's empowerment and independence were carried out. However, between 2021 and 2023 workshops promoting alternative sources of income generation were realized (natural fiber craft, fabric painting and carpentry). A specialized team visits monthly 5 communities to carry out social and educational activities. The project also expanded its activities with the communities by performing the event "Social Action", that aims to offer health, citizenship and culture services to the communities. In 2021 around 200 residents from 07 communities participated in the activities and in 2022 this number increased to 450 residents from 11 communities.		
Human	Point Zero	Point One
	4.3	5.3

Regarding Human Resource the Public Health and Community education and Training indicators stood out. For the first one, the company carried out several lectures, delivered educational material, brought health professionals into the communities so they could conduct medical consultations and distribute medication, in addition to providing within the property of the Pacajá Farm a health center that serves both employees and people from the surrounding communities. Concerning the second indicator, the project carried out trainings in all evaluated areas, stimulating entrepreneurship, literacy of children, young people and adults, and environmental awareness.

Financial	Point Zero	Point One
	1.3	4.0

The Financial Resource had the best performance in this monitoring period. The project invests in the development of fish farming, poultry farming, horticulture, agroforestry systems, and handicraft in the communities, according to the resident's interests. Part of the project's carbon credits were sold, and the entire income was distributed to the project activities and in the community development.

Natural	Point Zero	Point One
	5.7	6.0

The Natural Resource score increased compared to the previous monitored period and the Social and environmental investments indicator was the main reason for that. The project invested in all evaluated areas, carrying out fish farming, poultry farming, horticulture and agroforestry systems trainings, handicraft workshops, donated materials for the construction of a community library and for the revitalization of a community school, donated books, martial arts mats, carried out lectures about residues and provided structure and a specialized team to encourage youth and adult education among the employees and residents of communities around the project area.

Biodiversity	Point Zero	Point One
	3.7	3.7

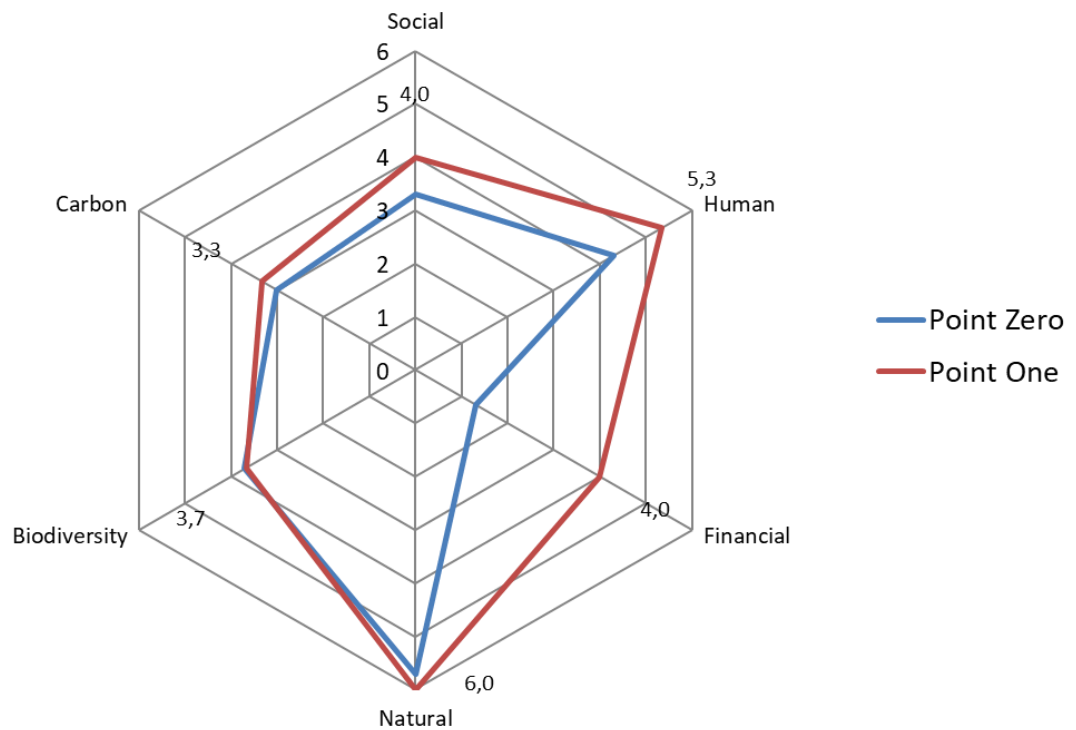
The Biodiversity Resource score remained the same. It was not possible to expand the performance of the Socio-environmental Responsibility Program to include more activities related to non-timber forest products. Twice a year ABC Norte monitors the local fauna and flora and there is also a specific monitoring concerning the impact on the remaining flora

Carbon	Point Zero	Point One
	3.0	3.3

In 2021, ABC Norte company carried out reunions with representatives of public institutions and lectures with the residents of the communities to discuss about the Socio-environmental Responsibility Program, the Sustainable Forest Management from Pacajá Farm and the carbon credit project. Due to this initiative, the Carbon Resource score increased compared to the previous report. The project performance remains excellent, since more than 95% of carbon credits predicted for the period were generated.

6.2.3 Performance Hexagon

The hexagon bellow shows the evolution of the project's environmental and social contribution over time.



6.3 Prospect Status

6.3.1 Achieved Prospects

Social Resource	
Indicator	Women Inclusion

Prospect	Develop a cycle of lectures and training aimed at the female audience, with themes on gender inequality, domestic violence, and encouraging actions that develop professional activities to generate income.
Details	Between 2021 and 2023 workshops promoting alternative sources of income generation were realized (natural fiber craft, fabric painting and carpentry). At total, 142 women participated of the initiatives.

Human Resource	
Indicator	Public Health
Prospect	Implementation of an Occurrence Registration Form, to monitor and inform the Vila ABC's health center about the facts reported by the riverside communities.
Details	Periodically, there is a nursery technician that visits the communities, and all the population demands regarding health issues are registered on the form. ABC Norte uses this information to request support from the City Hall and thus meet the demands.

Human Resource	
Indicator	Community education and training
Prospect	Construction of a library at Vila ABC, and classes for adults.
Details	The library was constructed and is already available for the employees and communities resident's use.

Carbon Resource	
Indicator	Stakeholder consultation
Prospect	Conduct a local stakeholder consultation and maintain regular contact with the communities regarding the carbon project.
Details	The company carried out reunions with the City Council of Portel Municipality and the Municipal Secretariats to discuss about the Socio-environmental Responsibility Program and the Sustainable Forest Management from Pacajá Farm. Regarding the communities, monthly a specialized team hired by ABC Norte

company visits the 5 communities to strengthen the good relationship and give continuity to the Program's activities. The residents can contact the team via instant messaging application and the Ombudsman service. In June 2021, a team from Ecológica and ABC Norte visited 5 communities for a presentation about the importance of preserving the forest and also the carbon credit sales in the national and international market.

6.3.2 Not Achieved Prospects

Financial Resource	
Indicator	Alternative income sources
Prospect	Develop more than one income-generating activity (production system) with at least the 5 communities included in the Social Program
Details	The Socio-environmental Responsibility Program activities are developed according to the communities' interests and demands, which limits the achievement of this goal. During the monitored period the production systems activities were carried out in the 5 communities, however some of them choose only one type of system.
Natural Resource	
Indicator	Social and environmental investments
Prospect	Offer sports-oriented activities, especially for children in the communities
Details	During the monitored period ABC Norte had initiatives related to sports, such as donation of martial arts materials and carrying out sports activities during the Children's Day event. However, the company did not implemented a continuous sports-oriented program in the communities.
Biodiversity Resource	
Indicator	Non-timber forest products (NTFPs)
Prospect	Expand training related to the management of non-timber forest products
Details	The company carried out a workshop about natural fiber craft in September 2022 in 5 communities (Divino Espírito Santo, Cristo Salvador, São Sebastião do Cipoal,

Nossa Senhora do Carmo and Monte Sião) and 32 women participated of the initiative. However, it was not possible to expand the performance of the Socio-environmental Responsibility Program to include more activities related to non-timber forest products.

6.3.3 Identified Prospects

Social Resource	
Indicator	Women inclusion: To realize a carpentry workshop in the communities attended by the project
Responsible	Luciana Di Paula
Timescale	3 years

Human Resource	
Indicator	Community education and training: The project aims to increase the number of employees enrolled in literacy classes
Responsible	Luciana Di Paula
Timescale	3 years

Natural Resource	
Indicator	Quality control: ABC Norte company plans to obtain the FSC certification.
Responsible	Luciana Di Paula
Timescale	3 years

APPENDIX I: PROJECT AREA CONTOUR COORDINATES

Project Area Contour Coordinates														
UTM 22S, Datum SIRGAS 2000														
Point	X	Y	Point	X	Y	Point	X	Y	Point	X	Y	Point	X	Y
1	593249.3	9724502	26	593160.3	9723495	51	592540.7	9723495	76	592720.7	9723105	101	592360.7	9722115
2	593230.7	9724436	27	593110.7	9723495	52	592540.7	9723465	77	592660.7	9723105	102	592360.7	9722055
3	593230.7	9724455	28	593050.7	9723495	53	592600.7	9723465	78	592660.7	9723075	103	592330.7	9722055
4	593200.7	9724455	29	593050.7	9723405	54	592600.7	9723435	79	592630.7	9723075	104	592330.7	9722006
5	593200.7	9724335	30	593050.7	9723375	55	592690.7	9723435	80	592630.7	9723045	105	592322.3	9721995
6	593202.5	9724335	31	593020.7	9723375	56	592690.7	9723405	81	592600.7	9723045	106	592300.7	9721995
7	593195.3	9724309	32	593020.7	9723345	57	592720.7	9723405	82	592600.7	9723015	107	592300.7	9721968
8	593143.7	9724125	33	592990.7	9723345	58	592720.7	9723375	83	592570.7	9723015	108	592298.7	9721965
9	593140.7	9724125	34	592990.7	9723375	59	592840.7	9723375	84	592570.7	9722955	109	592270.7	9721965
10	593140.7	9724115	35	592870.7	9723375	60	592840.7	9723345	85	592540.7	9722955	110	592270.7	9721935
11	593135.3	9724095	36	592870.7	9723405	61	592900.7	9723345	86	592540.7	9722865	111	592240.7	9721935
12	593110.7	9724095	37	592810.7	9723405	62	592900.7	9723315	87	592510.7	9722865	112	592240.7	9721891
13	593110.7	9724035	38	592810.7	9723435	63	592960.7	9723315	88	592510.7	9722805	113	592228.1	9721875
14	593080.7	9724035	39	592750.7	9723435	64	592960.7	9723285	89	592480.7	9722805	114	592210.7	9721875
15	593080.7	9723855	40	592750.7	9723465	65	592930.7	9723285	90	592480.7	9722745	115	592210.7	9721855
16	593110.7	9723855	41	592690.7	9723465	66	592930.7	9723255	91	592450.7	9722745	116	592198.3	9721845
17	593110.7	9723735	42	592690.7	9723495	67	592870.7	9723255	92	592450.7	9722655	117	592180.7	9721845
18	593140.7	9723735	43	592660.7	9723495	68	592870.7	9723225	93	592420.7	9722655	118	592180.7	9721831
19	593140.7	9723705	44	592660.7	9723525	69	592840.7	9723225	94	592420.7	9722475	119	592160	9721815
20	593170.7	9723705	45	592630.7	9723525	70	592840.7	9723195	95	592450.7	9722475	120	592150.7	9721815
21	593170.7	9723675	46	592630.7	9723495	71	592780.7	9723195	96	592450.7	9722325	121	592150.7	9721808
22	593200.7	9723675	47	592600.7	9723495	72	592780.7	9723165	97	592420.7	9722325	122	592121.8	9721785
23	593200.7	9723555	48	592600.7	9723525	73	592750.7	9723165	98	592420.7	9722205	123	592120.7	9721785
24	593170.7	9723555	49	592480.7	9723525	74	592750.7	9723135	99	592390.7	9722205	124	592120.7	9721784
25	593170.7	9723508	50	592480.7	9723495	75	592720.7	9723135	100	592390.7	9722115	125	592007	9721695

Project Area Contour Coordinates														
UTM 22S, Datum SIRGAS 2000														
Point	X	Y	Point	X	Y	Point	X	Y	Point	X	Y	Point	X	Y
126	592000.7	9721695	151	591610.7	9720885	176	591100.7	9720585	201	591010.7	9720255	226	591250.7	9719745
127	592000.7	9721690	152	591670.7	9720885	177	591100.7	9720525	202	591010.7	9720195	227	591279.5	9719745
128	591968.7	9721665	153	591670.7	9720826	178	591130.7	9720525	203	590980.7	9720195	228	591280.7	9719740
129	591940.7	9721665	154	591661.1	9720795	179	591130.7	9720465	204	590980.7	9720105	229	591280.7	9719565
130	591940.7	9721643	155	591640.7	9720795	180	591160.7	9720465	205	590950.7	9720105	230	591310.7	9719565
131	591930.5	9721635	156	591640.7	9720765	181	591160.7	9720435	206	590950.7	9720135	231	591310.7	9719535
132	591880.7	9721635	157	591610.7	9720765	182	591190.7	9720435	207	590920.7	9720135	232	591327.7	9719535
133	591880.7	9721575	158	591610.7	9720745	183	591190.7	9720405	208	590920.7	9720105	233	591332.5	9719514
134	591850.7	9721575	159	591591.8	9720735	184	591245.5	9720405	209	590950.7	9720105	234	591340.7	9719513
135	591850.7	9721515	160	591550.7	9720735	185	591250.7	9720398	210	590950.7	9720045	235	591340.7	9719505
136	591820.7	9721515	161	591550.7	9720715	186	591250.7	9720375	211	591010.7	9720045	236	591387.4	9719505
137	591820.7	9721425	162	591531.8	9720705	187	591268.5	9720375	212	591010.7	9720075	237	591430.7	9719498
138	591790.7	9721425	163	591490.7	9720705	188	591280.7	9720359	213	591040.7	9720075	238	591430.7	9719475
139	591790.7	9721275	164	591490.7	9720685	189	591280.7	9720315	214	591040.7	9720015	239	591400.7	9719475
140	591760.7	9721275	165	591472.6	9720676	190	591310.7	9720315	215	591070.7	9720015	240	591400.7	9719445
141	591760.7	9721185	166	591291.8	9720585	191	591310.7	9720285	216	591070.7	9719925	241	591340.7	9719445
142	591730.7	9721185	167	591250.7	9720585	192	591337.3	9720285	217	591100.7	9719925	242	591340.7	9719385
143	591730.7	9721125	168	591250.7	9720615	193	591340.7	9720281	218	591100.7	9719895	243	591310.7	9719385
144	591700.7	9721125	169	591220.7	9720615	194	591340.7	9720260	219	591130.7	9719895	244	591310.7	9719295
145	591700.7	9721035	170	591220.7	9720585	195	591319.2	9720255	220	591130.7	9719865	245	591340.7	9719295
146	591670.7	9721035	171	591160.7	9720585	196	591310.7	9720255	221	591160.7	9719865	246	591340.7	9719290
147	591670.7	9720945	172	591100.7	9720585	197	591310.7	9720253	222	591160.7	9719835	247	591339.8	9719289
148	591640.7	9720945	173	591100.7	9720615	198	591191.3	9720225	223	591220.7	9719835	248	591340.7	9719288
149	591640.7	9720975	174	591070.7	9720615	199	591130.7	9720225	224	591220.7	9719805	249	591340.7	9719265
150	591610.7	9720975	175	591070.7	9720585	200	591130.7	9720255	225	591250.7	9719805	250	591362.9	9719265

Project Area Contour Coordinates														
UTM 22S, Datum SIRGAS 2000														
Point	X	Y	Point	X	Y	Point	X	Y	Point	X	Y	Point	X	Y
251	591370.7	9719257	276	591760.7	9718755	301	591700.7	9717285	326	591610.7	9716625	351	591400.7	9716145
252	591370.7	9719235	277	591760.7	9718725	302	591700.7	9717255	327	591610.7	9716685	352	591250.7	9716145
253	591392.4	9719235	278	591811.5	9718725	303	591670.7	9717255	328	591550.7	9716685	353	591250.7	9716175
254	591480.1	9719146	279	591820.7	9718710	304	591670.7	9717225	329	591550.7	9716655	354	591190.7	9716175
255	591520.7	9719105	280	591820.7	9718695	305	591640.7	9717225	330	591520.7	9716655	355	591190.7	9716145
256	591520.7	9719085	281	591829.9	9718695	306	591640.7	9717195	331	591520.7	9716595	356	591160.7	9716145
257	591540.1	9719085	282	591880.7	9718613	307	591610.7	9717195	332	591490.7	9716595	357	591160.7	9716235
258	591550.7	9719074	283	591880.7	9718515	308	591610.7	9717165	333	591490.7	9716565	358	591100.7	9716235
259	591550.7	9719055	284	591850.7	9718515	309	591580.7	9717165	334	591400.7	9716565	359	591100.7	9716205
260	591569.6	9719055	285	591850.7	9717915	310	591580.7	9717105	335	591400.7	9716535	360	591040.7	9716205
261	591580.7	9719044	286	591880.7	9717915	311	591550.7	9717105	336	591310.7	9716535	361	591040.7	9716235
262	591580.7	9719025	287	591880.7	9717859	312	591550.7	9716865	337	591310.7	9716505	362	590980.7	9716235
263	591599.1	9719025	288	591860.4	9717795	313	591520.7	9716865	338	591280.7	9716505	363	590980.7	9716175
264	591610.7	9719013	289	591850.7	9717795	314	591520.7	9716805	339	591280.7	9716475	364	590860.7	9716175
265	591610.7	9718995	290	591850.7	9717765	315	591550.7	9716805	340	591310.7	9716475	365	590860.7	9716115
266	591628.7	9718995	291	591838.4	9717726	316	591550.7	9716745	341	591310.7	9716445	366	591040.7	9716115
267	591640.7	9718983	292	591765.5	9717495	317	591580.7	9716745	342	591340.7	9716445	367	591040.7	9716085
268	591640.7	9718965	293	591760.7	9717495	318	591580.7	9716715	343	591340.7	9716415	368	591010.7	9716085
269	591658.2	9718965	294	591760.7	9717480	319	591626.1	9716715	344	591370.7	9716415	369	591010.7	9716055
270	591670.7	9718952	295	591736.3	9717403	320	591640.7	9716701	345	591370.7	9716355	370	591100.7	9716055
271	591670.7	9718815	296	591736.4	9717402	321	591640.7	9716685	346	591430.7	9716355	371	591100.7	9716085
272	591700.7	9718815	297	591742.6	9717375	322	591657.3	9716685	347	591430.7	9716295	372	591130.7	9716085
273	591700.7	9718785	298	591730.7	9717375	323	591688.6	9716655	348	591370.7	9716295	373	591130.7	9716025
274	591730.7	9718785	299	591730.7	9717292	324	591670.7	9716655	349	591370.7	9716235	374	591070.7	9716025
275	591730.7	9718755	300	591725	9717285	325	591670.7	9716625	350	591400.7	9716235	375	591070.7	9715995

Project Area Contour Coordinates														
UTM 22S, Datum SIRGAS 2000														
Point	X	Y	Point	X	Y	Point	X	Y	Point	X	Y	Point	X	Y
376	591010.7	9715995	401	591190.7	9715965	426	591580.7	9715935	451	592000.7	9715785	476	591790.7	9716265
377	591010.7	9715965	402	591160.7	9715965	427	591580.7	9715905	452	591970.7	9715785	477	591790.7	9716295
378	590980.7	9715965	403	591160.7	9715935	428	591640.7	9715905	453	591970.7	9715815	478	591820.7	9716295
379	590980.7	9715935	404	591130.7	9715935	429	591640.7	9715935	454	592000.7	9715815	479	591820.7	9716325
380	590920.7	9715935	405	591130.7	9715995	430	591610.7	9715935	455	592000.7	9715875	480	591790.7	9716325
381	590920.7	9715905	406	591190.7	9715995	431	591610.7	9715965	456	592060.7	9715875	481	591790.7	9716385
382	590890.7	9715905	407	591190.7	9716025	432	591640.7	9715965	457	592060.7	9715905	482	591760.7	9716385
383	590890.7	9715845	408	591220.7	9716025	433	591640.7	9716025	458	592030.7	9715905	483	591760.7	9716415
384	590860.7	9715845	409	591220.7	9716055	434	591670.7	9716025	459	592030.7	9715935	484	591820.7	9716415
385	590860.7	9715815	410	591280.7	9716055	435	591670.7	9715965	460	592000.7	9715935	485	591820.7	9716475
386	590830.7	9715815	411	591280.7	9716025	436	591700.7	9715965	461	592000.7	9715965	486	591850.7	9716475
387	590830.7	9715785	412	591310.7	9716025	437	591700.7	9715905	462	591970.7	9715965	487	591850.7	9716505
388	590860.7	9715785	413	591310.7	9715995	438	591670.7	9715905	463	591970.7	9715995	488	591880.7	9716505
389	590860.7	9715815	414	591340.7	9715995	439	591670.7	9715845	464	591940.7	9715995	489	591880.7	9716541
390	590920.7	9715815	415	591340.7	9716025	440	591610.7	9715845	465	591940.7	9716025	490	591897.7	9716532
391	590920.7	9715875	416	591310.7	9716025	441	591610.7	9715755	466	591910.7	9716025	491	591899	9716531
392	590980.7	9715875	417	591310.7	9716085	442	591700.7	9715755	467	591910.7	9716055	492	592074.9	9716439
393	590980.7	9715905	418	591460.7	9716085	443	591700.7	9715875	468	591880.7	9716055	493	592076.3	9716439
394	591040.7	9715905	419	591460.7	9716055	444	591790.7	9715875	469	591880.7	9716085	494	592252.2	9716347
395	591040.7	9715935	420	591490.7	9716055	445	591790.7	9715815	470	591910.7	9716085	495	592253.5	9716346
396	591130.7	9715935	421	591490.7	9716085	446	591820.7	9715815	471	591910.7	9716145	496	592450.7	9716243
397	591130.7	9715905	422	591520.7	9716085	447	591820.7	9715755	472	591880.7	9716145	497	592450.7	9716235
398	591220.7	9715905	423	591520.7	9716055	448	591880.7	9715755	473	591880.7	9716175	498	592465.4	9716235
399	591220.7	9715935	424	591550.7	9716055	449	591880.7	9715725	474	591850.7	9716175	499	592480.7	9716227
400	591190.7	9715935	425	591550.7	9715935	450	592000.7	9715725	475	591850.7	9716265	500	592480.7	9716205

Project Area Contour Coordinates														
UTM 22S, Datum SIRGAS 2000														
Point	X	Y	Point	X	Y	Point	X	Y	Point	X	Y	Point	X	Y
501	592510.7	9716205	526	592660.7	9715785	551	593080.7	9715545	576	593230.7	9715635	601	593711.4	9715875
502	592510.7	9716055	527	592660.7	9715815	552	593080.7	9715515	577	593290.7	9715635	602	593890.7	9715875
503	592480.7	9716055	528	592690.7	9715815	553	593050.7	9715515	578	593290.7	9715665	603	593890.7	9715905
504	592480.7	9715995	529	592690.7	9715845	554	593050.7	9715545	579	593350.7	9715665	604	593950.7	9715905
505	592510.7	9715995	530	592720.7	9715845	555	592990.7	9715545	580	593350.7	9715695	605	593950.7	9715920
506	592510.7	9715935	531	592750.7	9715845	556	592990.7	9715575	581	593380.7	9715695	606	594214.9	9715965
507	592595.8	9715935	532	592750.7	9715815	557	592900.7	9715575	582	593380.7	9715725	607	594220.7	9715965
508	592600.7	9715933	533	592930.7	9715815	558	592900.7	9715515	583	593410.7	9715725	608	594220.7	9715935
509	592600.7	9715905	534	592930.7	9715845	559	592870.7	9715515	584	593410.7	9715755	609	594250.7	9715935
510	592570.7	9715905	535	592960.7	9715845	560	592870.7	9715455	585	593470.7	9715755	610	594250.7	9715965
511	592570.7	9715875	536	592960.7	9715875	561	592900.7	9715455	586	593470.7	9715779	611	594280.7	9715965
512	592540.7	9715875	537	592990.7	9715875	562	592900.7	9715425	587	593485.6	9715785	612	594280.7	9715994
513	592540.7	9715845	538	592990.7	9715882	563	592930.7	9715425	588	593530.7	9715785	613	594283.1	9715995
514	592510.7	9715845	539	593050.7	9715891	564	592930.7	9715395	589	593560.7	9715785	614	594340.7	9715995
515	592510.7	9715875	540	593050.7	9715695	565	593050.7	9715395	590	593560.7	9715725	615	594340.7	9716025
516	592450.7	9715875	541	593080.7	9715695	566	593050.7	9715455	591	593590.7	9715725	616	594370.7	9716025
517	592450.7	9715755	542	593080.7	9715665	567	593080.7	9715455	592	593590.7	9715755	617	594370.7	9716053
518	592480.7	9715755	543	593110.7	9715665	568	593080.7	9715485	593	593620.7	9715755	618	594374	9716055
519	592480.7	9715725	544	593110.7	9715635	569	593140.7	9715485	594	593620.7	9715785	619	594430.7	9716055
520	592510.7	9715725	545	593050.7	9715635	570	593140.7	9715515	595	593590.7	9715785	620	594430.7	9716085
521	592510.7	9715695	546	593050.7	9715605	571	593110.7	9715515	596	593590.7	9715815	621	594460.7	9716085
522	592570.7	9715695	547	593080.7	9715605	572	593110.7	9715545	597	593560.9	9715815	622	594460.7	9716112
523	592570.7	9715725	548	593080.7	9715575	573	593170.7	9715545	598	593636.1	9715845	623	594465	9716115
524	592600.7	9715725	549	593110.7	9715575	574	593170.7	9715605	599	593650.7	9715845	624	594490.7	9716115
525	592600.7	9715785	550	593110.7	9715545	575	593230.7	9715605	600	593650.7	9715851	625	594490.7	9716132

Project Area Contour Coordinates														
UTM 22S, Datum SIRGAS 2000														
Point	X	Y	Point	X	Y	Point	X	Y	Point	X	Y	Point	X	Y
626	594510.4	9716145	651	596050.7	9716595	676	596800.7	9716663	701	597179.4	9712842	726	597177.5	9709756
627	594520.7	9716145	652	596050.7	9716625	677	596849.4	9716685	702	597117.8	9712728	727	597280.5	9709555
628	594520.7	9716152	653	596110.7	9716625	678	596874.2	9716685	703	596920	9712698	728	597364.8	9709374
629	594601.4	9716205	654	596110.7	9716653	679	596890.7	9716612	704	596624.4	9712653	729	597449.3	9709192
630	594610.7	9716205	655	596118	9716655	680	596890.7	9716475	705	596432.6	9712532	730	597457.7	9708992
631	594610.7	9716211	656	596170.7	9716655	681	596890.7	9716445	706	596532.9	9712359	731	597466.2	9708792
632	594647.4	9716236	657	596170.7	9716673	682	596897.4	9716445	707	596638.2	9712177	732	597475.1	9708582
633	594829.2	9716319	658	596207.8	9716685	683	596876.2	9716344	708	596751.3	9712068	733	597371.5	9708411
634	595011	9716402	659	596260.7	9716685	684	597239.3	9716216	709	597121.8	9712045	734	597201.9	9708131
635	595170.4	9716475	660	596260.7	9716703	685	597019.6	9716049	710	597250.7	9711810	735	597151.5	9707937
636	595180.7	9716475	661	596277.5	9716709	686	597107.5	9715939	711	597250.7	9711765	736	597069.3	9707622
637	595180.7	9716480	662	596501.4	9716715	687	596962.2	9715912	712	597259.8	9711765	737	597158.1	9707399
638	595218.6	9716497	663	596560.7	9716715	688	596994.1	9715751	713	597245.7	9711623	738	597207.7	9707205
639	595390.7	9716503	664	596560.7	9716685	689	596905.7	9715572	714	597150.9	9711253	739	597269.3	9706965
640	595390.7	9716475	665	596590.7	9716685	690	596803	9715364	715	597180.1	9711049	740	597460.7	9706782
641	595420.7	9716475	666	596590.7	9716655	691	596812	9715072	716	597375.6	9711007	741	597460.7	9706755
642	595420.7	9716504	667	596620.7	9716655	692	596934.5	9714817	717	597640.7	9710950	742	597475.3	9706755
643	595446.8	9716505	668	596620.7	9716625	693	597061.1	9714619	718	597640.7	9710925	743	597490.7	9706710
644	595750.7	9716505	669	596690.2	9716625	694	597052.8	9714419	719	597654.7	9710925	744	597490.7	9706695
645	595750.7	9716532	670	596700.8	9716617	695	597042.2	9714162	720	597714	9710634	745	597495.6	9706695
646	595759.1	9716535	671	596718.9	9716625	696	597018.1	9713997	721	597616.3	9710390	746	597533	9706585
647	595870.7	9716535	672	596770.7	9716625	697	597073.9	9713805	722	597501.8	9710255	747	597602.2	9706381
648	595870.7	9716565	673	596770.7	9716649	698	597132.2	9713605	723	597448.2	9709953	748	597780.5	9706290
649	595990.7	9716565	674	596784.2	9716655	699	597153.6	9713454	724	597412.6	9709932	749	598047.9	9706155
650	595990.7	9716595	675	596800.7	9716655	700	597229.2	9713229	725	597086.3	9709934	750	598247.4	9706169

Project Area Contour Coordinates														
UTM 22S, Datum SIRGAS 2000														
Point	X	Y	Point	X	Y	Point	X	Y	Point	X	Y	Point	X	Y
751	598469.7	9706185	776	598936.1	9703479	801	596990.3	9701406	826	597820.7	9699915	851	598098.6	9699615
752	598648	9705969	777	599243.3	9703277	802	596910.7	9701048	827	597840.8	9699915	852	598120.7	9699596
753	598743.5	9705866	778	599343.6	9703153	803	597036.8	9700717	828	597850.7	9699900	853	598120.7	9699585
754	598643.4	9705814	779	599440	9703102	804	597100.7	9700485	829	597850.7	9699885	854	598133.9	9699585
755	598450.7	9705846	780	599564.1	9703089	805	597100.7	9700455	830	597860.8	9699885	855	598144.7	9699576
756	598450.7	9705855	781	599549.8	9702893	806	597070.7	9700455	831	597880.7	9699855	856	598240.7	9699607
757	598420.7	9705855	782	599412	9702722	807	597070.7	9700365	832	597880.7	9699855	857	598240.7	9699585
758	598420.7	9705851	783	599155.9	9702662	808	597040.7	9700365	833	597880.9	9699855	858	598270.7	9699585
759	598301.6	9705871	784	599075.5	9702558	809	597040.7	9700275	834	597965.5	9699728	859	598270.7	9699555
760	598364.2	9705658	785	598906.7	9702563	810	597070.7	9700275	835	598030.7	9699673	860	598210.7	9699555
761	598623	9705518	786	598696.7	9702453	811	597070.7	9700245	836	598030.7	9699645	861	598210.7	9699525
762	598530.2	9705341	787	598469.8	9702504	812	597100.7	9700245	837	598000.7	9699645	862	598240.7	9699525
763	598416.1	9705123	788	598307.5	9702161	813	597100.7	9700275	838	598000.7	9699585	863	598240.7	9699495
764	598231.8	9705045	789	598159.3	9702235	814	597144	9700275	839	597970.7	9699585	864	598300.7	9699495
765	598047.6	9704967	790	598066.4	9702191	815	597169.4	9700119	840	597970.7	9699555	865	598300.7	9699525
766	597863.4	9704889	791	597955.5	9702319	816	597414.9	9700139	841	597940.7	9699555	866	598360.7	9699525
767	597642.9	9704796	792	597915.8	9702326	817	597700.7	9700048	842	597940.7	9699525	867	598360.7	9699555
768	597815.4	9704694	793	597668.3	9702247	818	597700.7	9700035	843	598030.7	9699525	868	598450.7	9699555
769	597987.9	9704593	794	597561.1	9702166	819	597730.7	9700035	844	598030.7	9699555	869	598450.7	9699615
770	598306	9704407	795	597448.4	9702052	820	597730.7	9700005	845	598090.7	9699555	870	598420.7	9699615
771	598266.6	9704285	796	597287.6	9701926	821	597760.7	9700005	846	598090.7	9699585	871	598420.7	9699645
772	598444.1	9704193	797	597087.9	9701916	822	597760.7	9699975	847	598060.7	9699585	872	598390.7	9699645
773	598694.5	9704063	798	596707.9	9701896	823	597790.7	9699975	848	598060.7	9699647	873	598390.7	9699656
774	598563.6	9703687	799	596770.9	9701668	824	597790.7	9699945	849	598090.7	9699622	874	598543	9699784
775	598738.3	9703589	800	596784.7	9701618	825	597820.7	9699945	850	598090.7	9699615	875	598630.7	9699858

Project Area Contour Coordinates														
UTM 22S, Datum SIRGAS 2000														
Point	X	Y	Point	X	Y	Point	X	Y	Point	X	Y	Point	X	Y
876	598630.7	9699855	901	600552.8	9698583	926	601240.1	9695677	951	600669.5	9694422	976	597636.2	9693823
877	598660.7	9699855	902	600414.9	9698405	927	601294.4	9695638	952	600469.5	9694422	977	597565.3	9693785
878	598660.7	9699884	903	600258.6	9698325	928	601327.3	9695614	953	600269.5	9694422	978	597505.1	9693773
879	598662.4	9699885	904	600226.1	9698308	929	601397	9695551	954	600069.5	9694422	979	597414.3	9693684
880	598690.7	9699885	905	600022.9	9698065	930	601456.3	9695437	955	599869.5	9694422	980	597360.2	9693673
881	598690.7	9699909	906	599865.7	9697978	931	601456.3	9695339	956	599669.5	9694421	981	597322.5	9693624
882	598698	9699915	907	599968.3	9697699	932	601428.4	9695242	957	599363	9694421	982	597298.1	9693533
883	598780.7	9699915	908	599904.3	9697592	933	601424.9	9695148	958	599163	9694421	983	597248.8	9693454
884	598780.7	9699945	909	599834.7	9697517	934	601480.7	9695075	959	598963	9694421	984	597192.2	9693451
885	598810.7	9699945	910	599884.2	9697317	935	601550.4	9695051	960	598763	9694421	985	597120	9693325
886	598810.7	9699991	911	599961.8	9697043	936	601592.2	9694992	961	598563	9694420	986	597113.6	9693317
887	598965.7	9700040	912	600080.4	9696882	937	601609.6	9694932	962	598363	9694420	987	597030.5	9693221
888	599156.5	9700100	913	600246	9696657	938	601679.3	9694846	963	598163	9694420	988	597037.5	9693143
889	599365.4	9700166	914	600401.5	9696482	939	601724.6	9694790	964	597935.8	9694420	989	597017	9693088
890	599564.1	9700143	915	600486.1	9696387	940	601766.5	9694755	965	597928.5	9694389	990	596970	9693079
891	599797.7	9700117	916	600530.2	9696236	941	601801.3	9694703	966	597966.7	9694363	991	596941.2	9693043
892	599957.1	9699996	917	600708.8	9696149	942	601850.1	9694637	967	597977.2	9694334	992	596933.3	9693033
893	600182.5	9699825	918	600872.3	9696078	943	601871	9694574	968	597908.4	9694223	993	596960.8	9692988
894	600339	9699705	919	600880.9	9695966	944	601874.5	9694484	969	597914.8	9694089	994	596947.3	9692973
895	600441.2	9699626	920	600940.2	9695955	945	601869.5	9694424	970	597918.4	9694053	995	596914	9692920
896	600524.3	9699445	921	600967.9	9695921	946	601669.5	9694423	971	597867.9	9694001	996	596908.3	9692899
897	600646.9	9699176	922	600985.6	9695899	947	601469.5	9694423	972	597806.1	9693941	997	596944.2	9692879
898	600573.1	9698946	923	601062.3	9695847	948	601269.5	9694423	973	597807.5	9693879	998	596940.7	9692869
899	600584.2	9698907	924	601107.6	9695788	949	601069.5	9694423	974	597740.2	9693848	999	596919.1	9692841
900	600622	9698778	925	601166.9	9695725	950	600869.5	9694423	975	597668.2	9693850	1000	596896.2	9692801

Project Area Contour Coordinates														
UTM 22S, Datum SIRGAS 2000														
Point	X	Y	Point	X	Y	Point	X	Y	Point	X	Y	Point	X	Y
1001	596892.1	9692787	1026	597003.3	9691860	1051	596406.5	9690439	1076	596872.1	9689394	1101	596783.7	9688439
1002	596888.3	9692774	1027	597020.8	9691773	1052	596403.5	9690364	1077	596878	9689385	1102	596653.7	9688312
1003	596903.1	9692763	1028	597037	9691724	1053	596407	9690339	1078	596941.6	9689354	1103	596635.9	9688300
1004	596910.4	9692753	1029	597045.4	9691665	1054	596480.8	9690272	1079	596950.5	9689339	1104	596595	9688250
1005	596897.1	9692735	1030	597041.1	9691638	1055	596490.7	9690267	1080	596974.4	9689259	1105	596581	9688225
1006	596905.7	9692725	1031	596996.8	9691496	1056	596521.1	9690187	1081	596960.8	9689236	1106	596536.6	9688076
1007	596904.7	9692684	1032	597024.4	9691386	1057	596539.6	9690155	1082	596923.6	9689177	1107	596530.8	9688061
1008	596901.4	9692665	1033	597041.3	9691359	1058	596568.6	9690125	1083	596916.4	9689167	1108	596517.5	9687999
1009	596907.5	9692640	1034	597068.1	9691228	1059	596566.9	9690086	1084	596902.9	9689086	1109	596517.9	9687988
1010	596904.9	9692610	1035	597074.7	9691210	1060	596582.3	9690030	1085	596909.8	9689050	1110	596456.7	9687913
1011	596921.9	9692571	1036	597063.1	9691152	1061	596581.6	9689983	1086	596920	9689034	1111	596446.9	9687894
1012	596938	9692543	1037	597063.5	9691140	1062	596604.2	9689875	1087	596921.9	9689003	1112	596441.1	9687857
1013	597031.4	9692479	1038	597038.7	9690934	1063	596615	9689860	1088	596912.9	9688909	1113	596439.3	9687847
1014	597055.9	9692470	1039	597033.3	9690929	1064	596609.4	9689730	1089	596907.7	9688893	1114	596428.6	9687811
1015	597064	9692420	1040	596934.5	9690764	1065	596605	9689695	1090	596932.1	9688819	1115	596421.8	9687784
1016	597074.4	9692400	1041	596931.2	9690758	1066	596617.7	9689670	1091	596937.4	9688793	1116	596403.7	9687736
1017	597100.4	9692349	1042	596838.8	9690738	1067	596614.3	9689647	1092	596934.5	9688761	1117	596386.8	9687721
1018	597108.6	9692311	1043	596824.5	9690741	1068	596593.1	9689612	1093	596937.3	9688733	1118	596369.4	9687718
1019	597129.6	9692241	1044	596788.4	9690718	1069	596596.8	9689604	1094	596904.1	9688619	1119	596338.6	9687719
1020	597120.4	9692207	1045	596775.4	9690715	1070	596662	9689601	1095	596900.1	9688602	1120	596267.4	9687714
1021	597107.4	9692159	1046	596737.1	9690718	1071	596674.1	9689600	1096	596902.3	9688594	1121	596254.5	9687709
1022	597096.4	9692142	1047	596724.7	9690716	1072	596694.7	9689540	1097	596895.1	9688581	1122	596189.9	9687679
1023	597013.5	9691978	1048	596531.8	9690608	1073	596696.2	9689532	1098	596865.8	9688540	1123	596178.5	9687668
1024	597003.1	9691954	1049	596519.6	9690600	1074	596789.4	9689438	1099	596837.3	9688513	1124	596117.1	9687594
1025	596999	9691897	1050	596410.7	9690472	1075	596799.4	9689434	1100	596800.8	9688465	1125	596032.3	9687413

Project Area Contour Coordinates														
UTM 22S, Datum SIRGAS 2000														
Point	X	Y	Point	X	Y	Point	X	Y	Point	X	Y	Point	X	Y
1126	595947.6	9687232	1151	594436.1	9686689	1176	591835	9688637	1201	588283.5	9688506	1226	586134.1	9692114
1127	595870.7	9687068	1152	594290.8	9686827	1177	591796.5	9688619	1202	588181.2	9688678	1227	586031.7	9692286
1128	595870.7	9687105	1153	594145.5	9686964	1178	591654	9688552	1203	588078.8	9688850	1228	585929.3	9692458
1129	595840.7	9687105	1154	594000.2	9687102	1179	591615.5	9688534	1204	587976.5	9689022	1229	585827	9692630
1130	595840.7	9687135	1155	593854.9	9687239	1180	591579.3	9688517	1205	587874.1	9689193	1230	585724.6	9692802
1131	595810.7	9687135	1156	593709.6	9687377	1181	591473.1	9688467	1206	587771.7	9689365	1231	585524.5	9693138
1132	595810.7	9687105	1157	593647.8	9687435	1182	591292.1	9688382	1207	587669.4	9689537	1232	585472.5	9693138
1133	595750.7	9687105	1158	593564.3	9687514	1183	591111.1	9688296	1208	587567	9689709	1233	585472.5	9693138
1134	595750.7	9687015	1159	593419	9687651	1184	590930.1	9688211	1209	587491.8	9689835	1234	585470.2	9693138
1135	595810.7	9687015	1160	593273.7	9687789	1185	590749.1	9688126	1210	587500.7	9689835	1235	585324.5	9693138
1136	595810.7	9687075	1161	593128.4	9687926	1186	590568.2	9688041	1211	587500.7	9689895	1236	585270.2	9693138
1137	595840.7	9687075	1162	592983.1	9688064	1187	590387.2	9687956	1212	587456	9689895	1237	585124.5	9693138
1138	595840.7	9687045	1163	592837.8	9688201	1188	590206.2	9687871	1213	587362.3	9690052	1238	585070.2	9693138
1139	595860.2	9687045	1164	592692.5	9688339	1189	590025.2	9687786	1214	587260	9690224	1239	584924.5	9693138
1140	595778	9686870	1165	592690.7	9688340	1190	589844.3	9687700	1215	587157.6	9690396	1240	584870.2	9693138
1141	595693.3	9686688	1166	592690.7	9688365	1191	589663.3	9687615	1216	587055.3	9690568	1241	584724.5	9693138
1142	595608.5	9686507	1167	592720.7	9688365	1192	589482.3	9687530	1217	586952.9	9690740	1242	584670.2	9693138
1143	595523.8	9686326	1168	592720.7	9688395	1193	589301.3	9687445	1218	586850.5	9690912	1243	584524.5	9693138
1144	595439	9686145	1169	592632.6	9688395	1194	589000	9687303	1219	586748.2	9691083	1244	584470.2	9693138
1145	595308	9685865	1170	592547.2	9688476	1195	588897.7	9687475	1220	586645.8	9691255	1245	584324.5	9693139
1146	595162.7	9686002	1171	592401.9	9688613	1196	588795.3	9687647	1221	586607.3	9691320	1246	584270.2	9693139
1147	595017.4	9686140	1172	592197	9688807	1197	588692.9	9687819	1222	586543.5	9691427	1247	584124.5	9693139
1148	594872.1	9686277	1173	592158.4	9688789	1198	588590.6	9687991	1223	586441.1	9691599	1248	584070.2	9693139
1149	594726.8	9686415	1174	592016	9688722	1199	588488.2	9688162	1224	586338.8	9691771	1249	583924.5	9693139
1150	594581.4	9686552	1175	591977.5	9688704	1200	588385.9	9688334	1225	586236.4	9691943	1250	583705.6	9693139

Project Area Contour Coordinates														
UTM 22S, Datum SIRGAS 2000														
Point	X	Y	Point	X	Y	Point	X	Y	Point	X	Y	Point	X	Y
1251	583706	9693088	1276	583067.5	9690573	1301	583499.8	9688438	1326	582679.2	9686304	1351	582269.6	9684746
1252	583707.2	9692939	1277	583023.1	9690484	1302	583510.9	9688306	1327	582745.8	9686270	1352	582211.8	9684749
1253	583707.7	9692888	1278	582956.5	9690363	1303	583510.9	9688184	1328	582790.1	9686193	1353	582151.1	9684761
1254	583708.9	9692739	1279	582889.9	9690274	1304	583533.1	9688029	1329	582801.2	9686093	1354	582104.9	9684772
1255	583709.3	9692688	1280	582878.8	9690186	1305	583533.1	9687896	1330	582856.7	9686005	1355	582041.3	9684789
1256	583710.5	9692539	1281	582956.5	9690119	1306	583488.7	9687830	1331	582867.8	9685917	1356	581974.8	9684804
1257	583710.9	9692488	1282	582967.5	9690031	1307	583444.3	9687719	1332	582867.8	9685760	1357	581919.9	9684827
1258	583712.2	9692339	1283	582967.5	9689909	1308	583444.3	9687620	1333	582878.9	9685693	1358	581859.2	9684841
1259	583712.6	9692288	1284	582956.4	9689821	1309	583388.9	9687553	1334	582912.2	9685538	1359	581778.3	9684876
1260	583713.3	9692193	1285	582923.1	9689710	1310	583344.5	9687487	1335	582914.2	9685458	1360	581691.6	9684922
1261	583713.8	9692139	1286	582931.8	9689603	1311	583244.7	9687443	1336	582917.2	9685372	1361	581610.6	9684934
1262	583715.4	9691939	1287	582923	9689478	1312	583200.4	9687388	1337	582930.3	9685274	1362	581590.7	9684938
1263	583717.1	9691739	1288	583000.7	9689401	1313	583133.8	9687343	1338	582896.7	9685242	1363	581590.7	9684945
1264	583718.7	9691539	1289	583067.2	9689345	1314	583022.9	9687288	1339	582830.3	9685213	1364	581560.7	9684945
1265	583720.5	9691314	1290	583112.7	9689271	1315	582945.3	9687266	1340	582789.8	9685176	1365	581560.7	9684944
1266	583688.7	9691247	1291	583167	9689246	1316	582878.8	9687233	1341	582755.1	9685112	1366	581538.4	9684948
1267	583633.2	9691203	1292	583233.6	9689179	1317	582812.3	9687166	1342	582729.1	9685063	1367	581470.7	9684948
1268	583577.7	9691148	1293	583300.1	9689091	1318	582774	9687083	1343	582708.9	9685032	1368	581470.7	9685065
1269	583533.4	9691059	1294	583355.6	9689013	1319	582712.5	9687023	1344	582677.1	9684991	1369	581440.7	9685065
1270	583477.9	9690982	1295	583433.2	9688936	1320	582657	9686934	1345	582558.6	9684887	1370	581440.7	9685035
1271	583422.4	9690916	1296	583477.6	9688836	1321	582612.7	9686812	1346	582500.8	9684885	1371	581410.7	9685035
1272	583333.7	9690849	1297	583533.1	9688737	1322	582612.7	9686702	1347	582451.7	9684861	1372	581410.7	9685065
1273	583222.8	9690783	1298	583588.5	9688682	1323	582618.7	9686606	1348	582422.8	9684821	1373	581350.7	9685065
1274	583123	9690717	1299	583566.3	9688604	1324	582623.8	9686492	1349	582379.5	9684784	1374	581350.7	9685035
1275	583100.8	9690650	1300	583544.2	9688538	1325	582634.8	9686403	1350	582315.9	9684752	1375	581320.7	9685035

Project Area Contour Coordinates														
UTM 22S, Datum SIRGAS 2000														
Point	X	Y	Point	X	Y	Point	X	Y	Point	X	Y	Point	X	Y
1376	581320.7	9685005	1401	581225.9	9685745	1426	581225.1	9690745	1451	578824.9	9693171	1476	575380.7	9693255
1377	581350.7	9685005	1402	581225.9	9685945	1427	581225.1	9690945	1452	578624.9	9693174	1477	575380.7	9693225
1378	581350.7	9684975	1403	581225.8	9686145	1428	581225	9691145	1453	578424.9	9693176	1478	575440.7	9693225
1379	581380.7	9684975	1404	581225.8	9686345	1429	581225	9691345	1454	578225	9693179	1479	575440.7	9693214
1380	581380.7	9685005	1405	581225.8	9686545	1430	581225	9691545	1455	578025	9693182	1480	575425.2	9693215
1381	581410.7	9685005	1406	581225.7	9686745	1431	581224.9	9691745	1456	577825	9693184	1481	575225.2	9693217
1382	581410.7	9684947	1407	581225.7	9686945	1432	581224.9	9691900	1457	577625	9693187	1482	575025.2	9693220
1383	581356.3	9684942	1408	581225.7	9687145	1433	581224.9	9691945	1458	577425	9693189	1483	574825.2	9693222
1384	581298.5	9684942	1409	581225.6	9687345	1434	581224.9	9692145	1459	577225	9693192	1484	574625.2	9693225
1385	581226	9684945	1410	581225.6	9687545	1435	581224.8	9692345	1460	577025	9693194	1485	574425.3	9693227
1386	581226	9685005	1411	581225.6	9687745	1436	581224.8	9692545	1461	576825.1	9693197	1486	574225.3	9693230
1387	581230.7	9685005	1412	581225.5	9687945	1437	581224.8	9692745	1462	576820.7	9693197	1487	574025.3	9693232
1388	581230.7	9685035	1413	581225.5	9688145	1438	581224.7	9693140	1463	576820.7	9693225	1488	573825.3	9693235
1389	581226	9685035	1414	581225.5	9688345	1439	581224.7	9693141	1464	576790.7	9693225	1489	573625.3	9693238
1390	581226	9685065	1415	581225.4	9688545	1440	581024.7	9693143	1465	576790.7	9693197	1490	573425.3	9693240
1391	581230.7	9685065	1416	581225.4	9688745	1441	580824.7	9693146	1466	576625.1	9693199	1491	573225.4	9693243
1392	581230.7	9685095	1417	581225.4	9688945	1442	580624.8	9693148	1467	576425.1	9693202	1492	573025.4	9693245
1393	581290.7	9685095	1418	581225.4	9689145	1443	580424.8	9693151	1468	576225.1	9693204	1493	572825.4	9693248
1394	581290.7	9685125	1419	581225.3	9689345	1444	580224.8	9693153	1469	576025.1	9693207	1494	572625.4	9693250
1395	581230.7	9685125	1420	581225.3	9689545	1445	580024.8	9693156	1470	575825.1	9693210	1495	572425.4	9693253
1396	581230.7	9685095	1421	581225.3	9689745	1446	579824.8	9693159	1471	575625.2	9693212	1496	572148	9693256
1397	581226	9685095	1422	581225.2	9689945	1447	579624.8	9693161	1472	575470.7	9693214	1497	571956.4	9693199
1398	581226	9685145	1423	581225.2	9690145	1448	579424.9	9693164	1473	575470.7	9693225	1498	571764.9	9693141
1399	581226	9685345	1424	581225.2	9690345	1449	579224.9	9693166	1474	575560.7	9693225	1499	571573.3	9693084
1400	581225.9	9685545	1425	581225.1	9690545	1450	579024.9	9693169	1475	575560.7	9693255	1500	571381.8	9693026

Project Area Contour Coordinates														
UTM 22S, Datum SIRGAS 2000														
Point	X	Y	Point	X	Y	Point	X	Y	Point	X	Y	Point	X	Y
1501	571190.2	9692969	1526	566944.3	9692742	1551	567681	9695083	1576	567082.2	9696985	1601	564160.7	9699285
1502	570998.6	9692911	1527	566921	9693036	1552	567720.1	9694916	1577	566922.4	9697106	1602	564280.7	9699285
1503	570807.1	9692854	1528	566755.6	9693302	1553	567745.8	9694806	1578	566762.6	9697226	1603	564280.7	9699255
1504	570615.5	9692796	1529	566568.5	9693373	1554	567770.6	9694700	1579	566602.8	9697346	1604	564370.7	9699255
1505	570424	9692739	1530	566321.1	9693466	1555	567767.5	9694806	1580	566442.9	9697466	1605	564370.7	9699285
1506	570232.4	9692682	1531	566121.4	9693477	1556	567734.6	9694919	1581	566283.1	9697586	1606	564460.7	9699285
1507	570040.9	9692624	1532	565882.6	9693490	1557	567695.1	9695087	1582	566123.3	9697707	1607	564460.7	9699255
1508	569849.3	9692567	1533	565769.1	9693536	1558	567592.1	9695269	1583	565963.5	9697827	1608	564610.7	9699255
1509	569657.7	9692509	1534	565761.6	9693759	1559	567465	9695414	1584	565803.7	9697947	1609	564610.7	9699285
1510	569466.2	9692452	1535	565743.9	9694028	1560	567479.8	9695485	1585	565643.8	9698067	1610	564640.7	9699285
1511	569274.6	9692394	1536	565498.7	9694238	1561	567772.4	9695609	1586	565484	9698188	1611	564640.7	9699315
1512	569083.1	9692337	1537	565583.4	9694447	1562	567872	9695638	1587	565324.2	9698308	1612	564760.7	9699315
1513	568891.5	9692279	1538	565485.6	9694792	1563	568095.9	9695706	1588	565164.4	9698428	1613	564760.7	9699345
1514	568699.9	9692222	1539	565579.2	9694916	1564	568221.4	9695815	1589	565004.6	9698548	1614	565600.7	9699345
1515	568508.4	9692164	1540	565641.6	9695210	1565	568352.1	9695815	1590	564844.7	9698669	1615	565600.7	9699315
1516	568413.5	9692136	1541	565840.6	9695230	1566	568520.6	9695903	1591	564684.9	9698789	1616	565630.7	9699315
1517	568316.8	9692107	1542	566123.2	9695259	1567	568360.8	9696023	1592	564525.1	9698909	1617	565630.7	9699285
1518	568125.3	9692049	1543	566318.3	9695303	1568	568201	9696144	1593	564365.3	9699029	1618	565660.7	9699285
1519	567933.7	9691992	1544	566654.9	9695379	1569	568041.2	9696264	1594	564205.5	9699150	1619	565660.7	9699255
1520	567742.1	9691934	1545	566806.5	9695535	1570	567881.3	9696384	1595	564065.1	9699255	1620	565720.7	9699255
1521	567550.6	9691877	1546	567006.1	9695522	1571	567721.5	9696504	1596	564070.7	9699255	1621	565720.7	9699225
1522	567216	9691776	1547	567239.3	9695507	1572	567561.7	9696625	1597	564070.7	9699285	1622	565900.7	9699225
1523	567134.3	9692140	1548	567279.2	9695504	1573	567466.2	9696696	1598	564100.7	9699285	1623	565900.7	9699255
1524	567054.8	9692324	1549	567455.9	9695407	1574	567401.9	9696745	1599	564100.7	9699255	1624	565930.7	9699255
1525	566960	9692542	1550	567576.3	9695271	1575	567242	9696865	1600	564160.7	9699255	1625	565930.7	9699285

Project Area Contour Coordinates														
UTM 22S, Datum SIRGAS 2000														
Point	X	Y	Point	X	Y	Point	X	Y	Point	X	Y	Point	X	Y
1626	565990.7	9699285	1651	567220.7	9699375	1676	566410.7	9699435	1701	565540.7	9699615	1726	565420.7	9699495
1627	565990.7	9699315	1652	567250.7	9699375	1677	566410.7	9699465	1702	565480.7	9699615	1727	565420.7	9699465
1628	566020.7	9699315	1653	567250.7	9699405	1678	566380.7	9699465	1703	565480.7	9699585	1728	565540.7	9699465
1629	566020.7	9699345	1654	567220.7	9699405	1679	566380.7	9699525	1704	565450.7	9699585	1729	565540.7	9699435
1630	566260.7	9699345	1655	567220.7	9699465	1680	566260.7	9699525	1705	565450.7	9699555	1730	565510.7	9699435
1631	566260.7	9699315	1656	567190.7	9699465	1681	566260.7	9699555	1706	565390.7	9699555	1731	565510.7	9699405
1632	566290.7	9699315	1657	567190.7	9699435	1682	566200.7	9699555	1707	565390.7	9699525	1732	565360.7	9699405
1633	566290.7	9699285	1658	567100.7	9699435	1683	566200.7	9699585	1708	565330.7	9699525	1733	565360.7	9699435
1634	566320.7	9699285	1659	567100.7	9699405	1684	566110.7	9699585	1709	565330.7	9699555	1734	565270.7	9699435
1635	566320.7	9699255	1660	566950.7	9699405	1685	566110.7	9699555	1710	565300.7	9699555	1735	565270.7	9699405
1636	566380.7	9699255	1661	566950.7	9699435	1686	565960.7	9699555	1711	565300.7	9699615	1736	565150.7	9699405
1637	566380.7	9699285	1662	566740.7	9699435	1687	565960.7	9699675	1712	565270.7	9699615	1737	565150.7	9699435
1638	566410.7	9699285	1663	566740.7	9699465	1688	565930.7	9699675	1713	565270.7	9699645	1738	565060.7	9699435
1639	566410.7	9699315	1664	566680.7	9699465	1689	565930.7	9699705	1714	565240.7	9699645	1739	565060.7	9699405
1640	566440.7	9699315	1665	566680.7	9699495	1690	565840.7	9699705	1715	565240.7	9699675	1740	564820.7	9699405
1641	566440.7	9699345	1666	566650.7	9699495	1691	565840.7	9699735	1716	565090.7	9699675	1741	564820.7	9699435
1642	566500.7	9699345	1667	566650.7	9699525	1692	565720.7	9699735	1717	565090.7	9699615	1742	564760.7	9699435
1643	566500.7	9699315	1668	566620.7	9699525	1693	565720.7	9699765	1718	565060.7	9699615	1743	564760.7	9699465
1644	566680.7	9699315	1669	566620.7	9699555	1694	565690.7	9699765	1719	565060.7	9699525	1744	564730.7	9699465
1645	566680.7	9699345	1670	566590.7	9699555	1695	565690.7	9699705	1720	565150.7	9699525	1745	564730.7	9699495
1646	566950.7	9699345	1671	566590.7	9699525	1696	565660.7	9699705	1721	565150.7	9699495	1746	564700.7	9699495
1647	566950.7	9699375	1672	566560.7	9699525	1697	565660.7	9699675	1722	565330.7	9699495	1747	564700.7	9700455
1648	566980.7	9699375	1673	566560.7	9699465	1698	565600.7	9699675	1723	565330.7	9699465	1748	564670.7	9700455
1649	566980.7	9699345	1674	566500.7	9699465	1699	565600.7	9699645	1724	565360.7	9699465	1749	564670.7	9700485
1650	567220.7	9699345	1675	566500.7	9699435	1700	565540.7	9699645	1725	565360.7	9699495	1750	564700.7	9700485

Project Area Contour Coordinates														
UTM 22S, Datum SIRGAS 2000														
Point	X	Y	Point	X	Y	Point	X	Y	Point	X	Y	Point	X	Y
1751	564700.7	9700575	1776	563860.7	9701445	1801	563200.7	9702015	1826	562630.7	9702465	1851	561179.9	9700421
1752	564670.7	9700575	1777	563860.7	9701475	1802	563170.7	9702015	1827	562630.7	9702495	1852	561106.6	9700234
1753	564670.7	9700635	1778	563830.7	9701475	1803	563170.7	9702045	1828	562600.7	9702495	1853	561033.2	9700048
1754	564700.7	9700635	1779	563830.7	9701505	1804	563140.7	9702045	1829	562600.7	9702525	1854	560959.9	9699862
1755	564700.7	9700695	1780	563800.7	9701505	1805	563140.7	9702075	1830	562570.7	9702525	1855	560886.6	9699676
1756	564670.7	9700695	1781	563800.7	9701535	1806	563080.7	9702075	1831	562570.7	9702585	1856	560815.2	9699495
1757	564670.7	9701025	1782	563710.7	9701535	1807	563080.7	9702105	1832	562510.7	9702585	1857	560740.7	9699495
1758	564640.7	9701025	1783	563710.7	9701565	1808	563050.7	9702105	1833	562510.7	9702225	1858	560740.7	9699465
1759	564640.7	9701205	1784	563680.7	9701565	1809	563050.7	9702135	1834	562480.7	9702225	1859	560560.7	9699465
1760	564610.7	9701205	1785	563680.7	9701685	1810	563020.7	9702135	1835	562480.7	9702075	1860	560560.7	9699435
1761	564610.7	9701235	1786	563650.7	9701685	1811	563020.7	9702225	1836	562510.7	9702075	1861	560500.7	9699435
1762	564280.7	9701235	1787	563650.7	9701715	1812	562990.7	9702225	1837	562510.7	9702074	1862	560500.7	9699465
1763	564280.7	9701265	1788	563590.7	9701715	1813	562990.7	9702285	1838	562422.6	9702077	1863	560440.7	9699465
1764	564250.7	9701265	1789	563590.7	9701745	1814	562960.7	9702285	1839	562420.7	9702077	1864	560440.7	9699435
1765	564250.7	9701295	1790	563440.7	9701745	1815	562960.7	9702315	1840	562222.7	9702083	1865	560380.7	9699435
1766	563980.7	9701295	1791	563440.7	9701835	1816	562900.7	9702315	1841	562220.8	9702083	1866	560380.7	9699405
1767	563980.7	9701325	1792	563410.7	9701835	1817	562900.7	9702345	1842	561839.9	9702095	1867	560350.7	9699405
1768	564010.7	9701325	1793	563410.7	9701865	1818	562840.7	9702345	1843	561766.5	9701909	1868	560350.7	9699375
1769	564010.7	9701355	1794	563350.7	9701865	1819	562840.7	9702375	1844	561693.2	9701723	1869	560140.7	9699375
1770	563980.7	9701355	1795	563350.7	9701895	1820	562750.7	9702375	1845	561619.9	9701537	1870	560140.7	9699345
1771	563980.7	9701385	1796	563260.7	9701895	1821	562750.7	9702405	1846	561546.6	9701351	1871	559990.7	9699345
1772	563950.7	9701385	1797	563260.7	9701925	1822	562690.7	9702405	1847	561473.2	9701165	1872	559990.7	9699375
1773	563950.7	9701415	1798	563230.7	9701925	1823	562690.7	9702435	1848	561399.9	9700979	1873	559720.7	9699375
1774	563920.7	9701415	1799	563230.7	9701955	1824	562660.7	9702435	1849	561326.6	9700793	1874	559720.7	9699345
1775	563920.7	9701445	1800	563200.7	9701955	1825	562660.7	9702465	1850	561253.2	9700607	1875	559630.7	9699345

Project Area Contour Coordinates														
UTM 22S, Datum SIRGAS 2000														
Point	X	Y	Point	X	Y	Point	X	Y	Point	X	Y	Point	X	Y
1876	559630.7	9699375	1901	556600.7	9699315	1926	556540.7	9699225	1951	559420.7	9699255	1976	560680.7	9699225
1877	559360.7	9699375	1902	556600.7	9699345	1927	556570.7	9699225	1952	559420.7	9699225	1977	560708.8	9699225
1878	559360.7	9699405	1903	556570.7	9699345	1928	556570.7	9699195	1953	559540.7	9699225	1978	560666.6	9699118
1879	558850.7	9699405	1904	556570.7	9699315	1929	556690.7	9699195	1954	559540.7	9699195	1979	560593.3	9698932
1880	558850.7	9699375	1905	556510.7	9699315	1930	556690.7	9699165	1955	559570.7	9699195	1980	560519.9	9698746
1881	558760.7	9699375	1906	556510.7	9699285	1931	557350.7	9699165	1956	559570.7	9699225	1981	560446.6	9698560
1882	558760.7	9699405	1907	556480.7	9699285	1932	557350.7	9699135	1957	559630.7	9699225	1982	560373.3	9698374
1883	558670.7	9699405	1908	556480.7	9699315	1933	557380.7	9699135	1958	559630.7	9699255	1983	560299.9	9698188
1884	558670.7	9699375	1909	556330.7	9699315	1934	557380.7	9699105	1959	559780.7	9699255	1984	560226.6	9698002
1885	558610.7	9699375	1910	556330.7	9699255	1935	557440.7	9699105	1960	559780.7	9699225	1985	560153.3	9697816
1886	558610.7	9699345	1911	556360.7	9699255	1936	557440.7	9699135	1961	560020.7	9699225	1986	560079.9	9697629
1887	557740.7	9699345	1912	556360.7	9699195	1937	557470.7	9699135	1962	560020.7	9699255	1987	560006.6	9697443
1888	557740.7	9699375	1913	556330.7	9699195	1938	557470.7	9699165	1963	560110.7	9699255	1988	559933.3	9697257
1889	557650.7	9699375	1914	556330.7	9699165	1939	557650.7	9699165	1964	560110.7	9699225	1989	559859.9	9697071
1890	557650.7	9699345	1915	556360.7	9699165	1940	557650.7	9699225	1965	560200.7	9699225	1990	559786.6	9696885
1891	557530.7	9699345	1916	556360.7	9699195	1941	557620.7	9699225	1966	560200.7	9699195	1991	559713.3	9696699
1892	557530.7	9699315	1917	556450.7	9699195	1942	557620.7	9699255	1967	560260.7	9699195	1992	559640	9696513
1893	557440.7	9699315	1918	556450.7	9699165	1943	557680.7	9699255	1968	560260.7	9699225	1993	559566.6	9696327
1894	557440.7	9699285	1919	556480.7	9699165	1944	557680.7	9699225	1969	560470.7	9699225	1994	559493.3	9696141
1895	557290.7	9699285	1920	556480.7	9699195	1945	558580.7	9699225	1970	560470.7	9699195	1995	559420	9695955
1896	557290.7	9699315	1921	556450.7	9699195	1946	558580.7	9699255	1971	560530.7	9699195	1996	559314.5	9695687
1897	557020.7	9699315	1922	556450.7	9699255	1947	558610.7	9699255	1972	560530.7	9699225	1997	559128.3	9695760
1898	557020.7	9699345	1923	556510.7	9699255	1948	558610.7	9699225	1973	560650.7	9699225	1998	558942	9695833
1899	556660.7	9699345	1924	556510.7	9699285	1949	559390.7	9699225	1974	560650.7	9699195	1999	558755.8	9695906
1900	556660.7	9699315	1925	556540.7	9699285	1950	559390.7	9699255	1975	560680.7	9699195	2000	558569.5	9695979

Project Area Contour Coordinates														
UTM 22S, Datum SIRGAS 2000														
Point	X	Y	Point	X	Y	Point	X	Y	Point	X	Y	Point	X	Y
2001	558383.2	9696052	2026	556055.3	9699195	2051	554905.6	9702266	2076	555284.9	9704265	2101	557110.8	9706571
2002	558197	9696124	2027	556240.7	9699195	2052	554905.6	9702266	2077	555315.7	9704427	2102	557166.8	9706594
2003	558010.7	9696197	2028	556240.7	9699255	2053	554942.8	9702462	2078	555352.9	9704624	2103	557237.5	9706648
2004	557824.4	9696270	2029	556270.7	9699255	2054	554980.1	9702659	2079	555390.2	9704820	2104	557311	9706730
2005	557638.2	9696343	2030	556270.7	9699315	2055	555017.4	9702855	2080	555427.5	9705017	2105	557373.1	9706812
2006	557451.9	9696416	2031	556240.7	9699315	2056	555054.7	9703052	2081	555464.8	9705213	2106	557413.7	9706874
2007	557265.6	9696489	2032	556240.7	9699345	2057	555092	9703248	2082	555502.1	9705410	2107	557502.2	9706923
2008	557079.4	9696561	2033	556210.7	9699345	2058	555129.3	9703445	2083	555539.4	9705606	2108	557556.7	9707021
2009	556893.1	9696634	2034	556210.7	9699375	2059	555166.5	9703641	2084	555598.8	9705920	2109	557584.7	9707094
2010	556706.8	9696707	2035	556094.1	9699375	2060	555203.8	9703838	2085	555798.6	9705929	2110	557642.6	9707158
2011	556520.6	9696780	2036	556117	9699482	2061	555222.3	9703935	2086	555998.4	9705938	2111	557772.8	9707257
2012	556334.3	9696853	2037	556159.2	9699677	2062	555250.7	9703935	2087	556030.2	9705939	2112	557872.3	9707314
2013	556148.1	9696926	2038	556201.3	9699873	2063	555250.7	9703965	2088	556213.3	9705948	2113	557971.8	9707370
2014	555961.8	9696998	2039	556249.4	9700096	2064	555310.7	9703965	2089	556233	9706012	2114	558054	9707424
2015	555611.4	9697135	2040	556144.1	9700266	2065	555310.7	9703995	2090	556270.1	9706048	2115	558152.3	9707492
2016	555653.5	9697331	2041	556038.8	9700436	2066	555340.7	9703995	2091	556310.1	9706078	2116	558236.2	9707529
2017	555695.7	9697527	2042	555933.5	9700606	2067	555340.7	9704085	2092	556442.1	9706116	2117	558290.6	9707569
2018	555737.8	9697722	2043	555828.2	9700776	2068	555370.7	9704085	2093	556501.8	9706164	2118	558244.1	9707616
2019	555779.9	9697918	2044	555722.9	9700946	2069	555370.7	9704145	2094	556534.4	9706212	2119	558226.5	9707641
2020	555822.1	9698113	2045	555617.6	9701116	2070	555400.7	9704145	2095	556590.2	9706269	2120	558209	9707698
2021	555864.2	9698309	2046	555512.3	9701286	2071	555400.7	9704205	2096	556668.4	9706319	2121	558209	9707756
2022	555906.4	9698504	2047	555407.1	9701456	2072	555370.7	9704205	2097	556761.2	9706411	2122	558220.5	9707843
2023	555948.5	9698700	2048	555301.8	9701626	2073	555370.7	9704235	2098	556854	9706452	2123	558197.9	9707898
2024	555990.6	9698895	2049	555196.5	9701796	2074	555310.7	9704235	2099	556935.3	9706481	2124	558182.3	9707969
2025	556032.8	9699091	2050	555091.2	9701966	2075	555310.7	9704265	2100	557016.5	9706521	2125	558188.7	9708024

Project Area Contour Coordinates														
UTM 22S, Datum SIRGAS 2000														
Point	X	Y	Point	X	Y	Point	X	Y	Point	X	Y	Point	X	Y
2126	558191.1	9708092	2151	555479.8	9711430	2176	555868.6	9714099	2201	554291.8	9714862	2226	552540.1	9715807
2127	558176.5	9708159	2152	555600.9	9711590	2177	555808.1	9714143	2202	554300	9714930	2227	552356	9715771
2128	558127.4	9708248	2153	555721.9	9711749	2178	555773.6	9714203	2203	554298.6	9714934	2228	552105.4	9715812
2129	557978.6	9708382	2154	555843	9711908	2179	555743.4	9714268	2204	554268.2	9715026	2229	551890.7	9715858
2130	557829.8	9708516	2155	555964	9712067	2180	555665.7	9714302	2205	554215.9	9715098	2230	551716.8	9715925
2131	557681	9708649	2156	556085.1	9712226	2181	555631.1	9714350	2206	554189.7	9715130	2231	551497	9715899
2132	557532.2	9708783	2157	556206.1	9712386	2182	555600.9	9714384	2207	554175.2	9715188	2232	551389.6	9715761
2133	557383.4	9708917	2158	556327.2	9712545	2183	555536.1	9714384	2208	554165.6	9715281	2233	551281	9715664
2134	557234.6	9709050	2159	556448.3	9712704	2184	555451.1	9714375	2209	554183.7	9715380	2234	551112.3	9715649
2135	557085.8	9709184	2160	556665	9712989	2185	555364.8	9714362	2210	554157.7	9715473	2235	550795.3	9715828
2136	556937.1	9709318	2161	556695.1	9713051	2186	555252.5	9714388	2211	554154.8	9715577	2236	550645.1	9716026
2137	556788.3	9709451	2162	556714.6	9713124	2187	555218	9714418	2212	554128.7	9715665	2237	550329.7	9716229
2138	556639.5	9709585	2163	556675.8	9713219	2188	555131.7	9714457	2213	554141.3	9715785	2238	550142.2	9716298
2139	556490.7	9709719	2164	556619.7	9713305	2189	555032.4	9714461	2214	554151.9	9715847	2239	549900.1	9716388
2140	556341.9	9709852	2165	556563.6	9713370	2190	554935.1	9714461	2215	554090.9	9715917	2240	549528	9716406
2141	556193.1	9709986	2166	556438.4	9713456	2191	554853	9714448	2216	554061.8	9715990	2241	549232.6	9716489
2142	556044.3	9710120	2167	556343.4	9713525	2192	554796.9	9714461	2217	554052.3	9716039	2242	548915.4	9716479
2143	555895.5	9710253	2168	556257.1	9713568	2193	554727.8	9714491	2218	553930.9	9715940	2243	548790.5	9716419
2144	555746.7	9710387	2169	556170.8	9713641	2194	554676	9714539	2219	553853.2	9715949	2244	548680.7	9716317
2145	555598	9710521	2170	556110.3	9713728	2195	554611.3	9714560	2220	553721.2	9715965	2245	548515.8	9716317
2146	555449.2	9710654	2171	556062.9	9713771	2196	554555.1	9714578	2221	553562.7	9715863	2246	548282.9	9716499
2147	555300.4	9710788	2172	556058.5	9713849	2197	554499	9714621	2222	553348	9715858	2247	548166.4	9716700
2148	555116.6	9710953	2173	556041.3	9713940	2198	554425.6	9714690	2223	553169	9715960	2248	548027.4	9716860
2149	555237.7	9711112	2174	555976.5	9714000	2199	554369.5	9714759	2224	552990	9715991	2249	547890.2	9717057
2150	555358.7	9711271	2175	555929	9714069	2200	554322	9714802	2225	552662.8	9715925	2250	547778.8	9717223

Project Area Contour Coordinates														
UTM 22S, Datum SIRGAS 2000														
Point	X	Y	Point	X	Y	Point	X	Y	Point	X	Y	Point	X	Y
2051	554905.6	9702266	2076	555284.9	9704265	2101	557110.8	9706571	2126	558191.1	9708092	2151	555479.8	9711430
2052	554905.6	9702266	2077	555315.7	9704427	2102	557166.8	9706594	2127	558176.5	9708159	2152	555600.9	9711590
2053	554942.8	9702462	2078	555352.9	9704624	2103	557237.5	9706648	2128	558127.4	9708248	2153	555721.9	9711749
2054	554980.1	9702659	2079	555390.2	9704820	2104	557311	9706730	2129	557978.6	9708382	2154	555843	9711908
2055	555017.4	9702855	2080	555427.5	9705017	2105	557373.1	9706812	2130	557829.8	9708516	2155	555964	9712067
2056	555054.7	9703052	2081	555464.8	9705213	2106	557413.7	9706874	2131	557681	9708649	2156	556085.1	9712226
2057	555092	9703248	2082	555502.1	9705410	2107	557502.2	9706923	2132	557532.2	9708783	2157	556206.1	9712386
2058	555129.3	9703445	2083	555539.4	9705606	2108	557556.7	9707021	2133	557383.4	9708917	2158	556327.2	9712545
2059	555166.5	9703641	2084	555598.8	9705920	2109	557584.7	9707094	2134	557234.6	9709050	2159	556448.3	9712704
2060	555203.8	9703838	2085	555798.6	9705929	2110	557642.6	9707158	2135	557085.8	9709184	2160	556665	9712989
2061	555222.3	9703935	2086	555998.4	9705938	2111	557772.8	9707257	2136	556937.1	9709318	2161	556695.1	9713051
2062	555250.7	9703935	2087	556030.2	9705939	2112	557872.3	9707314	2137	556788.3	9709451	2162	556714.6	9713124
2063	555250.7	9703965	2088	556213.3	9705948	2113	557971.8	9707370	2138	556639.5	9709585	2163	556675.8	9713219
2064	555310.7	9703965	2089	556233	9706012	2114	558054	9707424	2139	556490.7	9709719	2164	556619.7	9713305
2065	555310.7	9703995	2090	556270.1	9706048	2115	558152.3	9707492	2140	556341.9	9709852	2165	556563.6	9713370
2066	555340.7	9703995	2091	556310.1	9706078	2116	558236.2	9707529	2141	556193.1	9709986	2166	556438.4	9713456
2067	555340.7	9704085	2092	556442.1	9706116	2117	558290.6	9707569	2142	556044.3	9710120	2167	556343.4	9713525
2068	555370.7	9704085	2093	556501.8	9706164	2118	558244.1	9707616	2143	555895.5	9710253	2168	556257.1	9713568
2069	555370.7	9704145	2094	556534.4	9706212	2119	558226.5	9707641	2144	555746.7	9710387	2169	556170.8	9713641
2070	555400.7	9704145	2095	556590.2	9706269	2120	558209	9707698	2145	555598	9710521	2170	556110.3	9713728
2071	555400.7	9704205	2096	556668.4	9706319	2121	558209	9707756	2146	555449.2	9710654	2171	556062.9	9713771
2072	555370.7	9704205	2097	556761.2	9706411	2122	558220.5	9707843	2147	555300.4	9710788	2172	556058.5	9713849
2073	555370.7	9704235	2098	556854	9706452	2123	558197.9	9707898	2148	555116.6	9710953	2173	556041.3	9713940
2074	555310.7	9704235	2099	556935.3	9706481	2124	558182.3	9707969	2149	555237.7	9711112	2174	555976.5	9714000
2075	555310.7	9704265	2100	557016.5	9706521	2125	558188.7	9708024	2150	555358.7	9711271	2175	555929	9714069

Project Area Contour Coordinates														
UTM 22S, Datum SIRGAS 2000														
Point	X	Y	Point	X	Y	Point	X	Y	Point	X	Y	Point	X	Y
2176	555868.6	9714099	2201	554291.8	9714862	2226	552540.1	9715807	2251	547653.8	9717409	2276	542670.8	9719659
2177	555808.1	9714143	2202	554300	9714930	2227	552356	9715771	2252	547463.3	9717561	2277	542522.7	9719793
2178	555773.6	9714203	2203	554298.6	9714934	2228	552105.4	9715812	2253	547225.9	9717781	2278	542352.8	9719948
2179	555743.4	9714268	2204	554268.2	9715026	2229	551890.7	9715858	2254	547042.3	9717894	2279	542144.4	9720017
2180	555665.7	9714302	2205	554215.9	9715098	2230	551716.8	9715925	2255	546795.1	9717869	2280	542092.5	9720001
2181	555631.1	9714350	2206	554189.7	9715130	2231	551497	9715899	2256	546660.9	9717739	2281	541953.9	9719956
2182	555600.9	9714384	2207	554175.2	9715188	2232	551389.6	9715761	2257	546526.7	9717732	2282	541763.5	9719895
2183	555536.1	9714384	2208	554165.6	9715281	2233	551281	9715664	2258	546419.2	9717842	2283	541573	9719834
2184	555451.1	9714375	2209	554183.7	9715380	2234	551112.3	9715649	2259	546369.2	9717806	2284	541382.5	9719773
2185	555364.8	9714362	2210	554157.7	9715473	2235	550795.3	9715828	2260	546205.7	9717690	2285	541192	9719712
2186	555252.5	9714388	2211	554154.8	9715577	2236	550645.1	9716026	2261	545951.7	9717707	2286	541001.6	9719651
2187	555218	9714418	2212	554128.7	9715665	2237	550329.7	9716229	2262	545584.9	9717577	2287	540811.1	9719590
2188	555131.7	9714457	2213	554141.3	9715785	2238	550142.2	9716298	2263	545234.9	9717465	2288	540620.6	9719529
2189	555032.4	9714461	2214	554151.9	9715847	2239	549900.1	9716388	2264	545009.1	9717493	2289	540430.1	9719468
2190	554935.1	9714461	2215	554090.9	9715917	2240	549528	9716406	2265	544858.2	9717624	2290	540239.7	9719407
2191	554853	9714448	2216	554061.8	9715990	2241	549232.6	9716489	2266	544704.3	9717758	2291	540049.2	9719347
2192	554796.9	9714461	2217	554052.3	9716039	2242	548915.4	9716479	2267	544446.8	9717738	2292	539858.7	9719286
2193	554727.8	9714491	2218	553930.9	9715940	2243	548790.5	9716419	2268	544188.9	9717800	2293	539502.3	9719171
2194	554676	9714539	2219	553853.2	9715949	2244	548680.7	9716317	2269	543962.1	9718071	2294	539541.5	9719049
2195	554611.3	9714560	2220	553721.2	9715965	2245	548515.8	9716317	2270	543801.7	9718191	2295	539497.6	9718918
2196	554555.1	9714578	2221	553562.7	9715863	2246	548282.9	9716499	2271	543628.5	9718320	2296	539363.1	9718841
2197	554499	9714621	2222	553348	9715858	2247	548166.4	9716700	2272	543499.5	9718653	2297	539187.7	9718784
2198	554425.6	9714690	2223	553169	9715960	2248	548027.4	9716860	2273	543308.5	9718828	2298	539074.4	9718666
2199	554369.5	9714759	2224	552990	9715991	2249	547890.2	9717057	2274	543048.9	9719072	2299	538971	9718518
2200	554322	9714802	2225	552662.8	9715925	2250	547778.8	9717223	2275	542863.5	9719349	2300	538836	9718489

Project Area Contour Coordinates														
UTM 22S, Datum SIRGAS 2000														
Point	X	Y	Point	X	Y	Point	X	Y	Point	X	Y	Point	X	Y
2301	538687.9	9718496	2326	535152.3	9718829	2351	531960.3	9719764	2376	530419.1	9719993	2401	528970.7	9719715
2302	538588.4	9718402	2327	534971.1	9718913	2352	531823	9719795	2377	530234.8	9720042	2402	528970.7	9719685
2303	538551.6	9718301	2328	534789.9	9718998	2353	531748.2	9719792	2378	530052.6	9720072	2403	528940.7	9719685
2304	538456.9	9718236	2329	534608.7	9719083	2354	531626.5	9719761	2379	529881.2	9720044	2404	528940.7	9719655
2305	538299.2	9718221	2330	534427.5	9719168	2355	531532.9	9719727	2380	529718.3	9719946	2405	528820.7	9719655
2306	538253.1	9718066	2331	534246.3	9719252	2356	531333.2	9719711	2381	529460.2	9719811	2406	528820.7	9719625
2307	538080.7	9718006	2332	533994.2	9719370	2357	531220.9	9719749	2382	529450.7	9719807	2407	528810.2	9719625
2308	538037	9717889	2333	533829.9	9719395	2358	531033.7	9719736	2383	529450.7	9719835	2408	528658.7	9719640
2309	537991.2	9717799	2334	533719	9719429	2359	530943.2	9719689	2384	529480.7	9719835	2409	528530.1	9719751
2310	537804.7	9717765	2335	533641.8	9719482	2360	530867.9	9719690	2385	529480.7	9719865	2410	528430.7	9719846
2311	537688.9	9717643	2336	533586.3	9719534	2361	530830.7	9719711	2386	529450.7	9719865	2411	528430.7	9719895
2312	537636.8	9717667	2337	533521	9719585	2362	530830.7	9719715	2387	529450.7	9719835	2412	528370.7	9719895
2313	537507.7	9717728	2338	533447.7	9719629	2363	530823	9719715	2388	529420.7	9719835	2413	528370.7	9719891
2314	537326.5	9717813	2339	533353.4	9719667	2364	530817.9	9719718	2389	529360.7	9719835	2414	528280.8	9719952
2315	537145.3	9717897	2340	533231.1	9719692	2365	530800.7	9719727	2390	529360.7	9719805	2415	528261.9	9720064
2316	536964.1	9717982	2341	533118.9	9719690	2366	530800.7	9719745	2391	529300.7	9719805	2416	528190.7	9720162
2317	536782.9	9718067	2342	532994.1	9719710	2367	530770.7	9719745	2392	529300.7	9719775	2417	528190.7	9720165
2318	536601.7	9718151	2343	532839.4	9719750	2368	530770.7	9719775	2393	529270.7	9719775	2418	528220.7	9720165
2319	536420.6	9718236	2344	532722.1	9719799	2369	530714	9719775	2394	529270.7	9719767	2419	528220.7	9720195
2320	536239.4	9718321	2345	532632.3	9719834	2370	530710.7	9719777	2395	529210.7	9719770	2420	528190.7	9720195
2321	536058.2	9718405	2346	532550	9719859	2371	530710.7	9719805	2396	529210.7	9719775	2421	528190.7	9720255
2322	535877	9718490	2347	532470.1	9719859	2372	530680.7	9719805	2397	529060.7	9719775	2422	528220.7	9720255
2323	535695.8	9718575	2348	532360.4	9719814	2373	530680.7	9719793	2398	529060.7	9719745	2423	528220.7	9720315
2324	535514.6	9718659	2349	532242.6	9719767	2374	530616.3	9719828	2399	529000.7	9719745	2424	528250.7	9720315
2325	535333.4	9718744	2350	532110.3	9719752	2375	530532.7	9719905	2400	529000.7	9719715	2425	528250.7	9720345

Project Area Contour Coordinates														
UTM 22S, Datum SIRGAS 2000														
Point	X	Y	Point	X	Y	Point	X	Y	Point	X	Y	Point	X	Y
2426	528220.7	9720345	2451	527084.3	9721681	2476	528247	9723649	2501	533071.1	9723706	2526	537986.7	9723843
2427	528220.7	9720405	2452	526966.6	9721842	2477	528447	9723649	2502	533271.1	9723711	2527	538186.6	9723849
2428	528160.7	9720405	2453	526848.8	9722004	2478	528647	9723649	2503	533471	9723717	2528	538386.5	9723856
2429	528160.7	9720375	2454	526731.1	9722165	2479	528847	9723648	2504	533670.9	9723722	2529	538586.4	9723862
2430	528130.7	9720375	2455	526613.3	9722327	2480	529047	9723648	2505	533870.8	9723728	2530	538786.3	9723868
2431	528130.7	9720345	2456	526495.5	9722489	2481	529247	9723648	2506	534070.8	9723733	2531	538986.2	9723875
2432	528100.7	9720345	2457	526377.8	9722650	2482	529447	9723647	2507	534270.7	9723739	2532	539186.1	9723881
2433	528100.7	9720315	2458	526260	9722812	2483	529647	9723647	2508	534470.6	9723744	2533	539386	9723887
2434	528078.9	9720315	2459	526142.3	9722974	2484	529847	9723647	2509	534670.5	9723750	2534	539585.9	9723894
2435	528026.4	9720387	2460	526024.5	9723135	2485	530047	9723646	2510	534870.5	9723755	2535	539785.8	9723900
2436	527908.7	9720549	2461	525906.7	9723297	2486	530247	9723646	2511	535070.4	9723761	2536	539985.7	9723907
2437	527790.9	9720711	2462	525789	9723459	2487	530447	9723646	2512	535270.3	9723766	2537	540130.7	9723911
2438	527673.1	9720872	2463	525647	9723654	2488	530647	9723645	2513	535470.2	9723772	2538	540130.7	9723885
2439	527555.4	9721034	2464	525847	9723653	2489	530819.5	9723645	2514	535670.1	9723778	2539	540190.7	9723885
2440	527500.7	9721109	2465	526047	9723653	2490	530872	9723645	2515	535870.1	9723783	2540	540190.7	9723913
2441	527500.7	9721425	2466	526247	9723653	2491	531071.9	9723651	2516	536070	9723789	2541	540220.7	9723914
2442	527470.7	9721425	2467	526447	9723652	2492	531271.8	9723656	2517	536269.9	9723794	2542	540220.7	9723885
2443	527470.7	9721455	2468	526647	9723652	2493	531471.7	9723662	2518	536469.8	9723800	2543	540250.7	9723885
2444	527500.7	9721455	2469	526847	9723652	2494	531671.7	9723667	2519	536669.8	9723805	2544	540250.7	9723855
2445	527500.7	9721485	2470	527047	9723651	2495	531871.6	9723673	2520	536869.7	9723811	2545	540220.7	9723855
2446	527440.7	9721485	2471	527247	9723651	2496	532071.5	9723678	2521	537069.6	9723816	2546	540220.7	9723825
2447	527440.7	9721191	2472	527447	9723651	2497	532271.4	9723684	2522	537269.5	9723822	2547	540250.7	9723825
2448	527437.6	9721196	2473	527647	9723650	2498	532471.4	9723689	2523	537537.5	9723829	2548	540250.7	9723795
2449	527319.9	9721357	2474	527847	9723650	2499	532671.3	9723695	2524	537586.9	9723830	2549	540280.7	9723795
2450	527202.1	9721519	2475	528047	9723650	2500	532871.2	9723700	2525	537786.8	9723837	2550	540280.7	9723825

Project Area Contour Coordinates														
UTM 22S, Datum SIRGAS 2000														
Point	X	Y	Point	X	Y	Point	X	Y	Point	X	Y	Point	X	Y
2551	540250.7	9723825	2576	541840.7	9723585	2601	541990.7	9723255	2626	541570.7	9723225	2651	541240.7	9723225
2552	540250.7	9723855	2577	541840.7	9723555	2602	541930.7	9723255	2627	541600.7	9723225	2652	541240.7	9723195
2553	540280.7	9723855	2578	541900.7	9723555	2603	541930.7	9723285	2628	541600.7	9723255	2653	541270.7	9723195
2554	540280.7	9723885	2579	541900.7	9723525	2604	541900.7	9723285	2629	541540.7	9723255	2654	541270.7	9723165
2555	540250.7	9723885	2580	541870.7	9723525	2605	541900.7	9723315	2630	541540.7	9723285	2655	541270.7	9723135
2556	540250.7	9723915	2581	541870.7	9723495	2606	541870.7	9723315	2631	541450.7	9723285	2656	541300.7	9723135
2557	540385.5	9723919	2582	541840.7	9723495	2607	541870.7	9723255	2632	541450.7	9723315	2657	541300.7	9723015
2558	540585.4	9723926	2583	541840.7	9723525	2608	541840.7	9723255	2633	541420.7	9723315	2658	541330.7	9723015
2559	540785.3	9723932	2584	541780.7	9723525	2609	541840.7	9723165	2634	541420.7	9723345	2659	541330.7	9722925
2560	540985.2	9723938	2585	541780.7	9723555	2610	541810.7	9723165	2635	541390.7	9723345	2660	541300.7	9722925
2561	541185.1	9723945	2586	541750.7	9723555	2611	541810.7	9723135	2636	541390.7	9723375	2661	541300.7	9722865
2562	541385	9723951	2587	541750.7	9723495	2612	541810.7	9723045	2637	541360.7	9723375	2662	541360.7	9722865
2563	541584.9	9723957	2588	541780.7	9723495	2613	541780.7	9723045	2638	541360.7	9723405	2663	541360.7	9722745
2564	541750.7	9723963	2589	541780.7	9723465	2614	541780.7	9723015	2639	541330.7	9723405	2664	541330.7	9722745
2565	541750.7	9723945	2590	541810.7	9723465	2615	541630.7	9723015	2640	541330.7	9723435	2665	541330.7	9722775
2566	541720.7	9723945	2591	541810.7	9723435	2616	541630.7	9723075	2641	541150.7	9723435	2666	541210.7	9722775
2567	541720.7	9723825	2592	541840.7	9723435	2617	541570.7	9723075	2642	541150.7	9723375	2667	541210.7	9722805
2568	541690.7	9723825	2593	541840.7	9723405	2618	541570.7	9723105	2643	541120.7	9723375	2668	541180.7	9722805
2569	541690.7	9723765	2594	541870.7	9723405	2619	541510.7	9723105	2644	541120.7	9723345	2669	541180.7	9722775
2570	541720.7	9723765	2595	541870.7	9723375	2620	541510.7	9723135	2645	541180.7	9723345	2670	541210.7	9722775
2571	541720.7	9723675	2596	541930.7	9723375	2621	541480.7	9723135	2646	541180.7	9723285	2671	541210.7	9722745
2572	541750.7	9723675	2597	541930.7	9723345	2622	541480.7	9723165	2647	541210.7	9723285	2672	541240.7	9722745
2573	541750.7	9723615	2598	542050.7	9723345	2623	541510.7	9723165	2648	541210.7	9723255	2673	541240.7	9722715
2574	541780.7	9723615	2599	542050.7	9723285	2624	541510.7	9723195	2649	541180.7	9723255	2674	541450.7	9722715
2575	541780.7	9723585	2600	541990.7	9723285	2625	541570.7	9723195	2650	541180.7	9723225	2675	541450.7	9722745

Project Area Contour Coordinates														
UTM 22S, Datum SIRGAS 2000														
Point	X	Y	Point	X	Y	Point	X	Y	Point	X	Y	Point	X	Y
2676	541480.7	9722745	2701	541810.7	9722715	2726	542050.7	9722625	2751	542410.7	9722955	2776	542680.7	9723435
2677	541480.7	9722685	2702	541870.7	9722715	2727	542050.7	9722685	2752	542380.7	9722955	2777	542680.7	9723495
2678	541450.7	9722685	2703	541870.7	9722775	2728	542140.7	9722685	2753	542380.7	9722925	2778	542650.7	9723495
2679	541450.7	9722535	2704	541900.7	9722775	2729	542140.7	9722715	2754	542410.7	9722925	2779	542650.7	9723615
2680	541480.7	9722535	2705	541900.7	9722805	2730	542080.7	9722715	2755	542410.7	9722895	2780	542620.7	9723615
2681	541480.7	9722385	2706	541930.7	9722805	2731	542080.7	9722745	2756	542530.7	9722895	2781	542620.7	9723705
2682	541510.7	9722385	2707	541930.7	9722835	2732	542110.7	9722745	2757	542530.7	9722925	2782	542590.7	9723705
2683	541510.7	9722355	2708	541960.7	9722835	2733	542110.7	9722775	2758	542500.7	9722925	2783	542590.7	9723735
2684	541480.7	9722355	2709	541960.7	9722865	2734	542170.7	9722775	2759	542500.7	9722955	2784	542560.7	9723735
2685	541480.7	9722325	2710	542020.7	9722865	2735	542170.7	9722745	2760	542470.7	9722955	2785	542560.7	9723705
2686	541510.7	9722325	2711	542020.7	9722835	2736	542290.7	9722745	2761	542470.7	9722985	2786	542530.7	9723705
2687	541510.7	9722295	2712	542050.7	9722835	2737	542290.7	9722805	2762	542500.7	9722985	2787	542530.7	9723675
2688	541540.7	9722295	2713	542050.7	9722805	2738	542170.7	9722805	2763	542500.7	9723015	2788	542500.7	9723675
2689	541540.7	9722325	2714	542020.7	9722805	2739	542170.7	9722835	2764	542530.7	9723015	2789	542500.7	9723645
2690	541570.7	9722325	2715	542020.7	9722775	2740	542140.7	9722835	2765	542530.7	9723075	2790	542410.7	9723645
2691	541570.7	9722445	2716	542020.7	9722745	2741	542140.7	9722925	2766	542470.7	9723075	2791	542410.7	9723705
2692	541630.7	9722445	2717	541990.7	9722745	2742	542170.7	9722925	2767	542470.7	9723135	2792	542350.7	9723705
2693	541630.7	9722505	2718	541990.7	9722715	2743	542170.7	9722955	2768	542500.7	9723135	2793	542350.7	9723645
2694	541660.7	9722505	2719	541990.7	9722685	2744	542200.7	9722955	2769	542500.7	9723285	2794	542380.7	9723645
2695	541660.7	9722535	2720	541960.7	9722685	2745	542200.7	9722985	2770	542560.7	9723285	2795	542380.7	9723615
2696	541720.7	9722535	2721	541960.7	9722625	2746	542230.7	9722985	2771	542560.7	9723345	2796	542350.7	9723615
2697	541720.7	9722565	2722	541990.7	9722625	2747	542230.7	9723015	2772	542620.7	9723345	2797	542350.7	9723585
2698	541750.7	9722565	2723	541990.7	9722655	2748	542290.7	9723015	2773	542620.7	9723405	2798	542320.7	9723585
2699	541750.7	9722625	2724	542020.7	9722655	2749	542290.7	9722985	2774	542650.7	9723405	2799	542320.7	9723555
2700	541810.7	9722625	2725	542020.7	9722625	2750	542410.7	9722985	2775	542650.7	9723435	2800	542290.7	9723555

Project Area Contour Coordinates														
UTM 22S, Datum SIRGAS 2000														
Point	X	Y	Point	X	Y	Point	X	Y	Point	X	Y	Point	X	Y
2801	542290.7	9723465	2826	541990.7	9723825	2851	546155.6	9724109	2876	551365.5	9724262	2901	555164.5	9724274
2802	542260.7	9723465	2827	541990.7	9723915	2852	546455.6	9724119	2877	551565.5	9724263	2902	555354.4	9724275
2803	542260.7	9723435	2828	542020.7	9723915	2853	546655.5	9724126	2878	551765.5	9724263	2903	555364.5	9724275
2804	542290.7	9723435	2829	542020.7	9723971	2854	546855.4	9724132	2879	551965.5	9724264	2904	555554.4	9724276
2805	542290.7	9723345	2830	542107.4	9723974	2855	547055.3	9724139	2880	552165.4	9724264	2905	555564.5	9724276
2806	542260.7	9723345	2831	542157.9	9723975	2856	547255.1	9724145	2881	552365.4	9724265	2906	555754.4	9724277
2807	542260.7	9723405	2832	542357.8	9723982	2857	547455	9724152	2882	552565.4	9724266	2907	555764.5	9724277
2808	542230.7	9723405	2833	542557.7	9723989	2858	547654.9	9724158	2883	552765.4	9724266	2908	555954.4	9724277
2809	542230.7	9723465	2834	542757.5	9723995	2859	547854.8	9724165	2884	552965.4	9724267	2909	555964.5	9724277
2810	542200.7	9723465	2835	542957.4	9724002	2860	548054.7	9724171	2885	553165.4	9724267	2910	556120.7	9724278
2811	542200.7	9723525	2836	543157.3	9724009	2861	548254.6	9724178	2886	553365.4	9724268	2911	556120.7	9724185
2812	542170.7	9723525	2837	543357.2	9724016	2862	548454.5	9724185	2887	553565.4	9724269	2912	556090.7	9724185
2813	542170.7	9723555	2838	543557.1	9724022	2863	548654.4	9724191	2888	553765.4	9724269	2913	556090.7	9724095
2814	542140.7	9723555	2839	543757	9724029	2864	548854.3	9724198	2889	554154.4	9724270	2914	556120.7	9724095
2815	542140.7	9723585	2840	543956.9	9724036	2865	549054.2	9724204	2890	554154.4	9724270	2915	556120.7	9724065
2816	542050.7	9723585	2841	544156.8	9724042	2866	549254.1	9724211	2891	554164.5	9724270	2916	556090.7	9724065
2817	542050.7	9723615	2842	544356.7	9724049	2867	549454	9724217	2892	554354.4	9724271	2917	556090.7	9724035
2818	542020.7	9723615	2843	544556.5	9724056	2868	549653.9	9724224	2893	554364.5	9724271	2918	556120.7	9724035
2819	542020.7	9723645	2844	544756.4	9724062	2869	549853.8	9724230	2894	554554.4	9724272	2919	556120.7	9723975
2820	541960.7	9723645	2845	544956.3	9724069	2870	550053.6	9724237	2895	554564.5	9724272	2920	556150.7	9723975
2821	541960.7	9723705	2846	545156.2	9724076	2871	550253.5	9724243	2896	554754.4	9724273	2921	556150.7	9723945
2822	541930.7	9723705	2847	545356.1	9724082	2872	550453.4	9724250	2897	554764.5	9724273	2922	556180.7	9723945
2823	541930.7	9723795	2848	545556	9724089	2873	550765.5	9724260	2898	554954.4	9724274	2923	556180.7	9723915
2824	541960.7	9723795	2849	545755.9	9724096	2874	550965.5	9724261	2899	554964.5	9724274	2924	556210.7	9723915
2825	541960.7	9723825	2850	545955.8	9724102	2875	551165.5	9724261	2900	555154.4	9724274	2925	556210.7	9723885

Project Area Contour Coordinates														
UTM 22S, Datum SIRGAS 2000														
Point	X	Y	Point	X	Y	Point	X	Y	Point	X	Y	Point	X	Y
2926	556300.7	9723885	2951	556630.7	9723765	2976	556720.7	9723945	3001	557050.7	9724035	3026	557500.7	9724245
2927	556300.7	9723795	2952	556600.7	9723765	2977	556720.7	9723975	3002	557080.7	9724035	3027	557500.7	9724275
2928	556330.7	9723795	2953	556600.7	9723735	2978	556690.7	9723975	3003	557080.7	9724065	3028	557528.7	9724275
2929	556330.7	9723825	2954	556570.7	9723735	2979	556690.7	9724005	3004	557140.7	9724065	3029	557542	9724245
2930	556420.7	9723825	2955	556570.7	9723765	2980	556720.7	9724005	3005	557140.7	9724125	3030	557530.7	9724245
2931	556420.7	9723795	2956	556510.7	9723765	2981	556720.7	9724065	3006	557170.7	9724125	3031	557530.7	9724215
2932	556450.7	9723795	2957	556510.7	9723795	2982	556660.7	9724065	3007	557170.7	9724155	3032	557500.7	9724215
2933	556450.7	9723765	2958	556480.7	9723795	2983	556660.7	9724095	3008	557200.7	9724155	3033	557500.7	9724185
2934	556480.7	9723765	2959	556480.7	9723855	2984	556600.7	9724095	3009	557200.7	9724065	3034	557470.7	9724185
2935	556480.7	9723735	2960	556510.7	9723855	2985	556600.7	9724185	3010	557230.7	9724065	3035	557470.7	9724155
2936	556510.7	9723735	2961	556510.7	9723885	2986	556720.7	9724185	3011	557230.7	9724035	3036	557410.7	9724155
2937	556510.7	9723705	2962	556540.7	9723885	2987	556720.7	9724215	3012	557350.7	9724035	3037	557410.7	9724035
2938	556630.7	9723705	2963	556540.7	9723915	2988	556810.7	9724215	3013	557350.7	9724155	3038	557440.7	9724035
2939	556630.7	9723735	2964	556510.7	9723915	2989	556810.7	9724185	3014	557260.7	9724155	3039	557440.7	9724005
2940	556690.7	9723735	2965	556510.7	9723975	2990	556840.7	9724185	3015	557260.7	9724185	3040	557410.7	9724005
2941	556690.7	9723765	2966	556480.7	9723975	2991	556840.7	9724125	3016	557230.7	9724185	3041	557410.7	9723945
2942	556720.7	9723765	2967	556480.7	9724005	2992	556900.7	9724125	3017	557230.7	9724275	3042	557440.7	9723945
2943	556720.7	9723795	2968	556510.7	9724005	2993	556900.7	9724095	3018	557200.7	9724275	3043	557440.7	9723915
2944	556750.7	9723795	2969	556510.7	9724035	2994	556930.7	9724095	3019	557200.7	9724282	3044	557530.7	9723915
2945	556750.7	9723855	2970	556600.7	9724035	2995	556930.7	9724065	3020	557410.7	9724283	3045	557530.7	9723945
2946	556690.7	9723855	2971	556600.7	9724005	2996	556960.7	9724065	3021	557410.7	9724245	3046	557560.7	9723945
2947	556690.7	9723825	2972	556630.7	9724005	2997	556960.7	9724035	3022	557440.7	9724245	3047	557560.7	9723975
2948	556660.7	9723825	2973	556630.7	9723975	2998	556990.7	9724035	3023	557440.7	9724215	3048	557590.7	9723975
2949	556660.7	9723795	2974	556660.7	9723975	2999	556990.7	9724005	3024	557470.7	9724215	3049	557590.7	9724035
2950	556630.7	9723795	2975	556660.7	9723945	3000	557050.7	9724005	3025	557470.7	9724245	3050	557560.7	9724035

Project Area Contour Coordinates														
UTM 22S, Datum SIRGAS 2000														
Point	X	Y	Point	X	Y	Point	X	Y	Point	X	Y	Point	X	Y
3051	557560.7	9724125	3076	560499.9	9724296	3101	563590.7	9724215	3126	564609.4	9724266	3151	565000.7	9724395
3052	557590.7	9724125	3077	560699.9	9724297	3102	563620.7	9724215	3127	564699.4	9724416	3152	564970.7	9724395
3053	557590.7	9724155	3078	560899.9	9724298	3103	563620.7	9724185	3128	564707.8	9724422	3153	564970.7	9724406
3054	557530.7	9724155	3079	561099.9	9724299	3104	563830.7	9724185	3129	564712.1	9724425	3154	565061.7	9724405
3055	557530.7	9724215	3080	561299.9	9724300	3105	563830.7	9724215	3130	564730.7	9724425	3155	565261.7	9724403
3056	557560.7	9724215	3081	561499.9	9724301	3106	563860.7	9724215	3131	564730.7	9724395	3156	565461.7	9724402
3057	557560.7	9724222	3082	561699.9	9724302	3107	563860.7	9724275	3132	564760.7	9724395	3157	565661.7	9724401
3058	557700	9724282	3083	561899.9	9724303	3108	563830.7	9724275	3133	564760.7	9724305	3158	565750.7	9724400
3059	557710.7	9724282	3084	562099.9	9724304	3109	563830.7	9724303	3134	564790.7	9724305	3159	565750.7	9724395
3060	557710.7	9724245	3085	562299.9	9724305	3110	563942.3	9724302	3135	564790.7	9724215	3160	565720.7	9724395
3061	557770.7	9724245	3086	562499.9	9724306	3111	563946.9	9724302	3136	564820.7	9724215	3161	565720.7	9724365
3062	557770.7	9724282	3087	562699.9	9724307	3112	564040.7	9724302	3137	564820.7	9724305	3162	565690.7	9724365
3063	557900	9724283	3088	562942.3	9724309	3113	564040.7	9724275	3138	564820.7	9724335	3163	565690.7	9724335
3064	558100	9724284	3089	562946.9	9724308	3114	564070.7	9724275	3139	564790.7	9724335	3164	565660.7	9724335
3065	558300	9724285	3090	563142.3	9724307	3115	564070.7	9724245	3140	564790.7	9724452	3165	565660.7	9724245
3066	558500	9724286	3091	563146.9	9724307	3116	564130.7	9724245	3141	564815.2	9724447	3166	565630.7	9724245
3067	558700	9724287	3092	563342.3	9724306	3117	564130.7	9724215	3142	564850.7	9724416	3167	565630.7	9724275
3068	558900	9724288	3093	563346.9	9724306	3118	564160.7	9724215	3143	564850.7	9724395	3168	565570.7	9724275
3069	559100	9724289	3094	563542.3	9724305	3119	564160.7	9724185	3144	564880.7	9724395	3169	565570.7	9724245
3070	559300	9724290	3095	563546.9	9724305	3120	564250.7	9724185	3145	564880.7	9724275	3170	565510.7	9724245
3071	559500	9724291	3096	563680.7	9724304	3121	564250.7	9724245	3146	564940.7	9724275	3171	565510.7	9724185
3072	559700	9724292	3097	563680.7	9724275	3122	564220.7	9724245	3147	564940.7	9724335	3172	565450.7	9724185
3073	559900	9724293	3098	563620.7	9724275	3123	564220.7	9724269	3148	564970.7	9724335	3173	565450.7	9724155
3074	560100	9724294	3099	563620.7	9724245	3124	564298.9	9724214	3149	564970.7	9724365	3174	565330.7	9724155
3075	560299.9	9724295	3100	563590.7	9724245	3125	564438.6	9724205	3150	565000.7	9724365	3175	565330.7	9724095

Project Area Contour Coordinates														
UTM 22S, Datum SIRGAS 2000														
Point	X	Y	Point	X	Y	Point	X	Y	Point	X	Y	Point	X	Y
3176	565360.7	9724095	3201	566110.7	9723975	3226	566110.7	9723795	3251	566620.7	9724005	3276	567700.7	9724275
3177	565360.7	9724065	3202	566080.7	9723975	3227	566110.7	9723765	3252	566590.7	9724005	3277	567700.7	9724305
3178	565390.7	9724065	3203	566080.7	9724005	3228	566140.7	9723765	3253	566590.7	9724065	3278	567730.7	9724305
3179	565390.7	9724095	3204	566050.7	9724005	3229	566140.7	9723675	3254	566620.7	9724065	3279	567730.7	9724386
3180	565540.7	9724095	3205	566050.7	9723975	3230	566290.7	9723675	3255	566620.7	9724185	3280	567861.7	9724385
3181	565540.7	9724125	3206	566020.7	9723975	3231	566290.7	9723705	3256	566650.7	9724185	3281	568061.6	9724384
3182	565570.7	9724125	3207	566020.7	9723915	3232	566320.7	9723705	3257	566650.7	9724275	3282	568261.6	9724383
3183	565570.7	9724095	3208	566050.7	9723915	3233	566320.7	9723735	3258	566590.7	9724275	3283	568461.6	9724381
3184	565660.7	9724095	3209	566050.7	9723855	3234	566350.7	9723735	3259	566590.7	9724305	3284	568661.6	9724380
3185	565660.7	9724125	3210	566020.7	9723855	3235	566350.7	9723765	3260	566560.7	9724305	3285	568861.6	9724378
3186	565690.7	9724125	3211	566020.7	9723825	3236	566470.7	9723765	3261	566560.7	9724335	3286	569061.6	9724377
3187	565690.7	9724215	3212	566050.7	9723825	3237	566470.7	9723735	3262	566590.7	9724335	3287	569261.6	9724376
3188	565720.7	9724215	3213	566050.7	9723795	3238	566500.7	9723735	3263	566590.7	9724365	3288	569461.6	9724374
3189	565720.7	9724185	3214	566020.7	9723795	3239	566500.7	9723765	3264	566650.7	9724365	3289	569661.6	9724373
3190	565870.7	9724185	3215	566020.7	9723735	3240	566530.7	9723765	3265	566650.7	9724394	3290	569861.6	9724371
3191	565870.7	9724155	3216	565990.7	9723735	3241	566530.7	9723795	3266	566661.7	9724394	3291	570061.6	9724370
3192	565960.7	9724155	3217	565990.7	9723765	3242	566500.7	9723795	3267	566861.7	9724392	3292	570261.6	9724369
3193	565960.7	9724125	3218	565930.7	9723765	3243	566500.7	9723825	3268	567061.7	9724391	3293	570461.6	9724367
3194	566020.7	9724125	3219	565930.7	9723735	3244	566530.7	9723825	3269	567261.7	9724390	3294	570661.6	9724366
3195	566020.7	9724095	3220	565960.7	9723735	3245	566530.7	9723855	3270	567461.7	9724388	3295	570861.6	9724364
3196	566050.7	9724095	3221	565960.7	9723705	3246	566560.7	9723855	3271	567661.7	9724387	3296	571061.6	9724363
3197	566050.7	9724065	3222	566110.7	9723705	3247	566560.7	9723885	3272	567700.7	9724386	3297	571261.6	9724362
3198	566080.7	9724065	3223	566110.7	9723735	3248	566590.7	9723885	3273	567700.7	9724305	3298	571461.6	9724360
3199	566080.7	9724035	3224	566050.7	9723735	3249	566590.7	9723975	3274	567670.7	9724305	3299	571661.6	9724359
3200	566110.7	9724035	3225	566050.7	9723795	3250	566620.7	9723975	3275	567670.7	9724275	3300	571861.6	9724357

Project Area Contour Coordinates														
UTM 22S, Datum SIRGAS 2000														
Point	X	Y	Point	X	Y	Point	X	Y	Point	X	Y	Point	X	Y
3301	572061.6	9724356	3326	577028.7	9724374	3351	580939.1	9724405	3376	585514.9	9724436	3401	588975.6	9724465
3302	572261.5	9724355	3327	577228.7	9724375	3352	581139.1	9724406	3377	585714.9	9724438	3402	589175.6	9724467
3303	572461.5	9724353	3328	577300.7	9724376	3353	581339.1	9724408	3378	585914.9	9724439	3403	589375.6	9724468
3304	572661.5	9724352	3329	577300.7	9724365	3354	581650.7	9724411	3379	586090.7	9724440	3404	589575.6	9724470
3305	572861.5	9724351	3330	577360.7	9724365	3355	581650.7	9724395	3380	586090.7	9724425	3405	589775.6	9724472
3306	573224.8	9724348	3331	577360.7	9724376	3356	581740.7	9724395	3381	586210.7	9724425	3406	589975.6	9724474
3307	573228.8	9724348	3332	577428.7	9724377	3357	581740.7	9724411	3382	586210.7	9724441	3407	590175.6	9724475
3308	573428.8	9724349	3333	577628.7	9724378	3358	581915	9724412	3383	586375.7	9724442	3408	590260.7	9724476
3309	573628.8	9724351	3334	577828.7	9724379	3359	582115	9724414	3384	586575.7	9724444	3409	590260.7	9724455
3310	573828.8	9724352	3335	578028.7	9724381	3360	582315	9724415	3385	586775.7	9724446	3410	590350.7	9724455
3311	574028.8	9724353	3336	578336.8	9724383	3361	582515	9724416	3386	586975.7	9724448	3411	590350.7	9724425
3312	574228.8	9724355	3337	578338.5	9724383	3362	582715	9724418	3387	587170.7	9724449	3412	590410.7	9724425
3313	574428.8	9724356	3338	578339.2	9724383	3363	582915	9724419	3388	587170.7	9724395	3413	590410.7	9724395
3314	574628.8	9724357	3339	578539.2	9724384	3364	583115	9724420	3389	587290.7	9724395	3414	590440.7	9724395
3315	574828.7	9724359	3340	578739.2	9724386	3365	583315	9724422	3390	587290.7	9724425	3415	590440.7	9724365
3316	575028.7	9724360	3341	578939.1	9724388	3366	583515	9724423	3391	587230.7	9724425	3416	590470.7	9724365
3317	575228.7	9724362	3342	579139.1	9724389	3367	583715	9724424	3392	587230.7	9724450	3417	590470.7	9724335
3318	575428.7	9724363	3343	579339.1	9724391	3368	583915	9724426	3393	587375.7	9724451	3418	590560.7	9724335
3319	575628.7	9724364	3344	579539.1	9724393	3369	584115	9724427	3394	587575.7	9724453	3419	590560.7	9724305
3320	575828.7	9724366	3345	579739.1	9724394	3370	584315	9724428	3395	587775.7	9724455	3420	590620.7	9724305
3321	576028.7	9724367	3346	579939.1	9724396	3371	584515	9724430	3396	587975.6	9724456	3421	590620.7	9724275
3322	576228.7	9724368	3347	580139.1	9724398	3372	584715	9724431	3397	588175.6	9724458	3422	590710.7	9724275
3323	576428.7	9724370	3348	580339.1	9724400	3373	584915	9724432	3398	588375.6	9724460	3423	590710.7	9724245
3324	576628.7	9724371	3349	580539.1	9724401	3374	585115	9724434	3399	588575.6	9724461	3424	590770.7	9724245
3325	576828.7	9724372	3350	580739.1	9724403	3375	585315	9724435	3400	588775.6	9724463	3425	590770.7	9724215

Project Area Contour Coordinates														
UTM 22S, Datum SIRGAS 2000														
Point	X	Y	Point	X	Y	Point	X	Y	Point	X	Y	Point	X	Y
3426	590830.7	9724215	3451	591550.7	9723645	3476	591610.7	9723195	3501	591910.7	9723285	3526	592360.7	9723675
3427	590830.7	9724185	3452	591610.7	9723645	3477	591610.7	9723135	3502	591940.7	9723285	3527	592360.7	9723705
3428	590890.7	9724185	3453	591610.7	9723675	3478	591640.7	9723135	3503	591940.7	9723345	3528	592390.7	9723705
3429	590890.7	9724155	3454	591640.7	9723675	3479	591640.7	9723105	3504	591910.7	9723345	3529	592390.7	9723735
3430	590950.7	9724155	3455	591640.7	9723645	3480	591610.7	9723105	3505	591910.7	9723435	3530	592420.7	9723735
3431	590950.7	9724125	3456	591670.7	9723645	3481	591610.7	9723075	3506	591940.7	9723435	3531	592420.7	9723765
3432	591070.7	9724125	3457	591670.7	9723585	3482	591640.7	9723075	3507	591940.7	9723465	3532	592450.7	9723765
3433	591070.7	9724095	3458	591640.7	9723585	3483	591640.7	9723045	3508	592000.7	9723465	3533	592450.7	9723795
3434	591160.7	9724095	3459	591640.7	9723555	3484	591670.7	9723045	3509	592000.7	9723495	3534	592480.7	9723795
3435	591160.7	9724065	3460	591580.7	9723555	3485	591670.7	9723015	3510	591970.7	9723495	3535	592480.7	9723915
3436	591190.7	9724065	3461	591580.7	9723525	3486	591760.7	9723015	3511	591970.7	9723525	3536	592450.7	9723915
3437	591190.7	9724035	3462	591550.7	9723525	3487	591760.7	9723045	3512	592000.7	9723525	3537	592450.7	9723975
3438	591280.7	9724035	3463	591550.7	9723495	3488	591790.7	9723045	3513	592000.7	9723585	3538	592390.7	9723975
3439	591280.7	9724005	3464	591520.7	9723495	3489	591790.7	9723075	3514	592030.7	9723585	3539	592390.7	9724005
3440	591370.7	9724005	3465	591520.7	9723465	3490	591820.7	9723075	3515	592030.7	9723615	3540	592300.7	9724005
3441	591370.7	9723975	3466	591460.7	9723465	3491	591820.7	9723135	3516	592060.7	9723615	3541	592300.7	9723975
3442	591430.7	9723975	3467	591460.7	9723405	3492	591850.7	9723135	3517	592060.7	9723645	3542	592240.7	9723975
3443	591430.7	9723945	3468	591490.7	9723405	3493	591850.7	9723165	3518	592180.7	9723645	3543	592240.7	9724005
3444	591460.7	9723945	3469	591490.7	9723375	3494	591820.7	9723165	3519	592180.7	9723615	3544	592120.7	9724005
3445	591460.7	9723795	3470	591520.7	9723375	3495	591820.7	9723195	3520	592300.7	9723615	3545	592120.7	9724095
3446	591490.7	9723795	3471	591520.7	9723315	3496	591850.7	9723195	3521	592300.7	9723585	3546	592000.7	9724095
3447	591490.7	9723765	3472	591550.7	9723315	3497	591850.7	9723225	3522	592330.7	9723585	3547	592000.7	9724065
3448	591520.7	9723765	3473	591550.7	9723255	3498	591880.7	9723225	3523	592330.7	9723645	3548	591910.7	9724065
3449	591520.7	9723705	3474	591580.7	9723255	3499	591880.7	9723255	3524	592300.7	9723645	3549	591910.7	9724095
3450	591550.7	9723705	3475	591580.7	9723195	3500	591910.7	9723255	3525	592300.7	9723675	3550	591880.7	9724095

Project Area Contour Coordinates					
UTM 22S, Datum SIRGAS 2000					
Point	X	Y	Point	X	Y
3551	591880.7	9724065	3578	590830.7	9724275
3552	591820.7	9724065	3579	590830.7	9724305
3553	591820.7	9724095	3580	590770.7	9724305
3554	591790.7	9724095	3581	590770.7	9724335
3555	591790.7	9724125	3582	590710.7	9724335
3556	591760.7	9724125	3583	590710.7	9724365
3557	591760.7	9724155	3584	590620.7	9724365
3558	591670.7	9724155	3585	590620.7	9724395
3559	591670.7	9724065	3586	590560.7	9724395
3560	591520.7	9724065	3587	590560.7	9724425
3561	591520.7	9724035	3588	590500.7	9724425
3562	591430.7	9724035	3589	590500.7	9724455
3563	591430.7	9724065	3590	590440.7	9724455
3564	591340.7	9724065	3591	590440.7	9724478
3565	591340.7	9724095	3592	590575.5	9724479
3566	591220.7	9724095	3593	590775.5	9724480
3567	591220.7	9724125	3594	590975.5	9724482
3568	591130.7	9724125	3595	591175.5	9724484
3569	591130.7	9724155	3596	591375.5	9724486
3570	591100.7	9724155	3597	591575.5	9724487
3571	591100.7	9724185	3598	591775.5	9724489
3572	590980.7	9724185	3599	591975.5	9724491
3573	590980.7	9724215	3600	592175.5	9724493
3574	590920.7	9724215	3601	592375.5	9724494
3575	590920.7	9724245	3602	592575.5	9724496
3576	590890.7	9724245	3603	592775.5	9724498
3577	590890.7	9724275	3604	592975.5	9724499

APPENDIX II: METHODS TO ESTIMATE CARBON STOCKS

Sampling framework

The sampling framework, including sample size, plot size, plot shape and plot location should be specified in the PD. Areas to be sampled in forest classes should be at locations expected to be deforested according to the baseline projections. The sampling areas for non-forest classes should be selected within the reference region at locations that represent a chrono-sequence of 10 to 30 years since the deforestation date.

Temporary or permanent plots

Plots can be temporary or permanent depending on the specific project circumstances, interests and needs, but in general temporary plots should be sufficient. Where changes in carbon stocks are to be monitored, permanent sampling plots are recommended. Permanent sample plots are generally regarded as statistically efficient in estimating changes in forest carbon stocks because typically there is high covariance between observations at successive sampling events. However, it should be ensured that the plots are treated in the same way as other lands within the project boundary, e.g., during logging operations, and should not be destroyed over the monitoring interval. Ideally, staff involved in forest management activities should not be aware of the location of monitoring plots. Where local markers are used, these should not be visible. If trees markers are required (e.g. if plots are also used for ecological or structural monitoring), these should be as unobtrusive as possible and no bias in the treatment of plots compared to the surrounding forest must be granted.

Permanent plots may also be considered to reduce the uncertainty of the average carbon density of a forest class undergoing carbon stock changes due to management and to detect changes in carbon stocks induced by climate change or large-scale natural disturbances.

Definition of the sample size and allocation among LU/LC-classes

The number of sample plots is estimated as dependent on accuracy, variability of the parameter to estimate in each class and costs. The sample size calculation also corresponds to the method of samples drawn without replacement. Where at the beginning of a REDD project activity accurate data for sample size estimation and allocation are not available, the sampling size can initially be estimated by using a desired level of accuracy (10% of sampling error at 90% confidence level), and by allocating the estimated sample size proportionally to the area of each class, using respectively equations 1, and 2. Then, once data on carbon stock variability within each class become available, the sample size and allocation is recalculated using the methodology described by Wenger (1984), which also accounts for the cost of sampling (see equations 3 and 4).

Equation 1 was chosen because it works with percentages rather than absolute units (biomass, carbon, or CO₂), and coefficient variation data could be easier to find in the literature at the beginning of a project activity. The initial allocation of the sample plots shall be proportional to the area of the LU/LC- classes, but with minimum of 5 plots per class. The t-student for a 95% confidence level is approximately equal to 2 when the number of sample plot is over 30. As the first step, use 2 as the t -student value, and if the resulting “n” is less than 30, use the new “n” to get a new t-student value and conduct the new estimation of the sample size. This process can be repeated until the calculated n is stabilized.

$$n = \frac{t_{st}^2 \cdot (CV\%)^2}{(E\%)^2 + \frac{t_{st}^2 \cdot (CV\%)^2}{N}}$$

Where:

cl = 1, 2, 3, ... CI LU/LC classes

CI = Total number of LU/LC classes

tst = t-student value for a 90% confidence level (initial value t = 2)

n = total number of sample units to be measured (in all LU/LC classes)

E% = allowable sample error in percentage (±10%)

CV% = the highest coefficient of variation (%) reported in the literature from different volume or biomass forest inventories in forest plantations, natural forests, agroforestry and/or silvo-pastoral systems.

ni = number of samples units to be measured in LU/LC class cl that is allocated proportional to the size of the class. If estimated ncl < 3, set ncl = 3.

Ni = maximum number of possible sample units for LU/LC class cl, calculated by dividing the area of class cl by the measurement plot area.

N = population size or maximum number of possible sample units (all LU/LC classes)

APPENDIX III: SOCIALCARBON INDICATOR RESULTS

Social Resource			Score	Analysis	Human Resource			Score	Analysis	Financial Resource			Score	Analysis
1°	Women inclusion	📉	4	SA	4°	Conflict management	✅	5	SU	7°	Alternative income sources	✅	5	SU
2°	Expansion of community activities	✅	5	SU	5°	Public health	✅	5	SU	8°	Carbon credit benefits	✅	6	SU
3°	Associations and Cooperatives	📉	4	SA	6°	Community education and training	✅	6	SU	9°	Securing of funds	❌	1	C
Average			📉 4.3	SA	Average			✅ 5.3	SU	Average			📉 4.0	SA
Indicators evaluated			3		Indicators evaluated			3		Indicators evaluated			3	
C	Critical		0	0.0%	C	Critical		0	0.0%	C	Critical		1	33.3%
SA	Satisfactory		2	66.7%	SA	Satisfactory		0	0.0%	SA	Satisfactory		0	0.0%
SU	Sustainable		1	33.3%	SU	Sustainable		3	100.0%	SU	Sustainable		2	66.7%
Natural Resource			Score	Analysis	Biodiversity Resource			Score	Analysis	Carbon Resource			Score	Analysis
10°	Land tenure	✅	6	SU	13°	Non-timber forest products (NTFPs)	❌	2	C	16°	Buffer reduction	❌	2	C
11°	Social and environmental investments	✅	6	SU	14°	Biodiversity monitoring	📉	4	SA	17°	Stakeholder consultation	📉	3	SA
12°	Quality control	✅	6	SU	15°	Impact on remaining flora	✅	5	SU	18°	Project Performance	✅	6	SU
Average			✅ 6.0	SU	Average			📉 3.7	SA	Average			📉 3.7	SA
Indicators evaluated			3		Indicators evaluated			3		Indicators evaluated			3	
C	Critical		0	0.0%	C	Critical		1	33.3%	C	Critical		1	33.3%
SA	Satisfactory		0	0.0%	SA	Satisfactory		1	33.3%	SA	Satisfactory		1	33.3%
SU	Sustainable		3	100.0%	SU	Sustainable		1	33.3%	SU	Sustainable		1	33.3%

APPENDIX IV: ACTION PLAN FOR COMMUNICATION AND GRIEVANCE REDRESS PROCEDURE

ABC NORTE REDD+ PROJECT

ACTION PLAN FOR COMMUNICATION AND GRIEVANCE REDRESS PROCEDURE

1. Context

The primary stakeholders of the ABC Norte REDD+ project are detailed in section 2.2 Local Stakeholder of the VCS PD. This group includes public agencies, non-governmental organizations, private entities, academic institutions, and 13 communities surrounding Fazenda Pacajá. During the project validation phase, a remote public consultation was held on July 13, 2021, for institutional stakeholders, while in-person consultations took place from June 25 to 27, 2021, with five communities: Cristo Salvador, Divino Espírito Santo, Monte Sião/Santa Terezinha, Nossa Senhora do Carmo and São Sebastião do Cipoal. These consultations introduced the official communication channels and grievance mechanism, which have since been reinforced as needed during monthly visits to the communities as part of the ABC Norte Social and Environmental Responsibility Program.

On November 22, 2023, the Caminheiro do Bem and Fonte de Luz communities were visited by the program team, where they were introduced to ABC Norte's initiatives, including the Social and Environmental Responsibility Program and the REDD+ carbon project. Informational materials on communication channels and the grievance mechanism were also distributed.

The following year, in July 2024, the project initiated the identification of High Conservation Values (HCVs). As part of this process, the communities of Santa Rosa/Nossa Senhora Aparecida and Nossa Senhora da Luz were visited, and communication channels were established. Following this initial contact, the Santa Rosa/Nossa Senhora Aparecida community reached out to the Proponent to request inclusion in the Social and Environmental Responsibility Program, which was implemented starting in October 2024. On November 15, 2024, ABC Norte conducted another activity, sending a team to visit the communities of Deus Proverá, Nova Jerusalém, and Vista Alegre. During these visits, the REDD+ carbon project, communication channels, and grievance mechanism were presented.

Of the 13 communities involved in the project, the Nossa Senhora do Bom Remédio community has not yet been reached, primarily due to access difficulties and the lack of contact with a local leader.

ABC Norte maintains continuous communication with stakeholders, particularly with local communities, through a variety of official channels, including:

- Email of the Forest Operations Supervisor at ABC Norte (antonio.cardoso@algarfarming.com.br);
- WhatsApp for Fazenda Pacajá (+55 91 98517-3832);
- Algar Farming Ethics Channel (0800 034 2525);
- Radio and internet communication available at the Fazenda Pacajá guard posts;
- In-person contact with UPbio representatives during monthly technical visits conducted as part of the Social and Environmental Responsibility Program.

ABC Norte has also implemented a specific Standard Operating Procedure (SOP 11) for conflict resolution. This procedure outlines communication guidelines between ABC Norte, the company responsible for the Sustainable Forest Management Plan (PMFS) for Fazenda Pacajá, and the surrounding communities, ensuring clarity and consistency in dialogue.

Additionally, to meet the requirements of the VCS and CCB Standards, a "grievance and suggestions mechanism" has been developed. This mechanism focuses on receiving, evaluating, and addressing complaints and/or suggestions from communities and other stakeholders related to the project.

Recognizing the importance of expanding and strengthening communication with all stakeholders, including the community not yet formally consulted about the project, this Action Plan is being developed. The presented plan may be supplemented by the plan outlined in Appendix V if access to communities located in more remote areas proves unfeasible. This approach demonstrates flexibility, ensuring that, even in the face of challenges, alternatives are in place to meet the project's objectives.

2. Objective

To implement an accessible and efficient mechanism for continuous communication and grievance reporting, enabling all relevant stakeholders, including communities surrounding Fazenda Pacajá, to express concerns about potential negative impacts during the project's implementation and operation. This mechanism aims to meet the requirements of sections 3.18.18 and 3.18.19 under the Communication and Consultation guidelines of the VCS Standard v4.4, promoting transparency, constructive dialogue, and conflict resolution.

3. Target audience

13 Communities surrounding Fazenda Pacajá and other stakeholders listed in section 2.2 Local Stakeholder of the VCS PD.

4. Communication Channels

Based on the official communication channels available from ABC Norte, an initial mapping was conducted to identify the most suitable means of communication for each stakeholder group. This step aimed to ensure that communication strategies align with the characteristics of each audience, fostering more effective and inclusive interactions.

The mapping considered factors such as accessibility, stakeholders' familiarity with the channels, and

the ability to ensure a continuous and clear flow of information. It also took into account the cultural and logistical specificities of each community or group consulted. As part of the engagement process, this mapping will be validated during local stakeholder consultations scheduled to occur alongside the project's revalidation.

Stakeholder	Whatsapp	E-mail	In-person contact	Fazenda Pacajá guard posts
Public agencies				
Academic institutions				
Private entities				
Non-governmental organizations				
Communities				

5. Implementation stages

5.1. Consultation with remaining stakeholders and formal invitation to project activities

The first phase of the Action Plan will involve reaching out to all remaining communities through a dedicated effort to inform them about the project, communicate the established channels for grievances and inquiries, and foster closer connections between the communities, the project team, and project activities by the end of 2024.

5.2. Social Action Event

The Social Action is an annual event organized by ABC Norte's Social and Environmental Responsibility Program in partnership with the Portel City Hall. Aimed at residents of the areas surrounding Fazenda Pacajá, the event offers a wide range of services, including healthcare, social assistance, beauty services, recreational activities for children, and initiatives promoting citizenship and quality of life. Over the years, Social Action has become a key opportunity to strengthen relationships with local communities, fostering dialogue and direct support.

The 5th edition of Social Action will take place on December 6, 2024, at Fazenda Pacajá. Among the planned activities is a session led by teams from ABC Norte and UPbio, gathering representatives from neighboring communities to discuss key aspects of the project. During the session, the project's objectives and expected contributions to local development will be presented. Additionally, official communication channels and the grievance mechanism will be explained, outlining the process for submitting concerns or disputes and the steps for resolution.

5.3. Stakeholders consultation

During the revalidation of the baseline for the ABC Norte REDD+ Project, a new Local Stakeholder

Consultation will be conducted to ensure that communities are informed about the project's objectives, planned activities, expected benefits, available official communication channels, and the grievance mechanism.

5.4. The Social Responsibility Program (PRS) achieves its goal of reaching all 13 communities

The fourth and final phase of this Action Plan involves renewing the contract with Upbio – the third-party company responsible for the Socioenvironmental Responsibility Program – to include all 13 communities in its activities, starting in February 2025. This will ensure that all communities be directly impacted by the ABC Norte REDD+ Project, fostering closer engagement with the communities and reinforcing the use of communication and grievance channels.

For communities surrounding Fazenda Pacajá, these activities will be organized in person to facilitate direct dialogue and foster closer engagement. The main steps include:

- **Invitation to Community Leaders:**

Personalized invitations will be sent to community leaders via WhatsApp, respecting the dynamics of each location and ensuring direct engagement with key representatives.

- **In-Person Meetings in Communities:**

A meeting will be held in each community, led by project representatives. These sessions will include:

- **Presentation of Project Objectives:** A detailed explanation of the project's purpose and its expected contributions.
- **Description of Implementation Steps:** An overview of planned activities, timelines, and implementation expectations.
- **Clarification of Benefits, Risks, and Costs:** An open and transparent discussion about community advantages, potential risks, and any direct or indirect costs associated with project activities.
- **Introduction to Communication Channels:** Presentation of official contact options, including WhatsApp, social media, and in-person support during monthly technical visits.
- **Explanation of the Grievance Mechanism:** An outline of how the grievance reporting system works, including steps for submitting concerns and the resolution process.

- **Informative Materials:**

Printed explanatory materials will be distributed, designed to be clear and accessible, providing detailed information about the project and its communication channels.

For institutional stakeholders, companies, NGOs, and other involved groups, a remote consultation will be organized to accommodate their needs and availability. The planned actions include:

- **Sending Invitations via Email:**

Formal invitations will be sent, inviting stakeholders to participate in virtual meetings. This ensures all stakeholders have the opportunity to engage in dialogue about the project.

- **Providing Digital Materials:**

A set of explanatory materials in digital format will be shared, offering detailed information on the project's objectives, steps, benefits, and risks. Additionally, the materials will include guidance on using the communication channels and grievance mechanism.

6. Grievance Redress Procedure

The grievance mechanism is primarily designed to receive, evaluate, and address complaints and/or suggestions from communities and other stakeholders related to the project. The process management steps are detailed below:

- **Step 1:** Maintenance of communication channels;
- **Step 2:** Promotion of communication channels;
- **Step 3:** Recording feedback or complaints;
- **Step 4:** Analyzing feedback or complaints;
- **Step 5:** Responding to received feedback or complaints;
- **Step 6:** Sharing complaints and/or feedback along with proposed solutions.

The detailed content of the mechanism can be found in Annex A of this Plan.

7. Timeline

The Social Action event is scheduled to take place on December 6, 2024, at Fazenda Pacajá. Preparations for the event will include promotional efforts and logistical arrangements to ensure the participation of surrounding communities.

The first semester of 2025 has been selected as the estimated timeframe for the renewal of the contract with Upbio and for the next stakeholder consultation for revalidation of the project. However, the exact date will be determined based on two critical factors: weather conditions and accessibility to the involved communities.

In this region, weather patterns can significantly affect logistics, particularly in remote areas where heavy rainfall may disrupt roads and transportation routes. To address this, the organizing team will monitor weather forecasts and infrastructure conditions closely, ensuring the consultation is held at an optimal time for safety and efficiency.

This proactive approach not only minimizes logistical risks but also ensures full participation from communities and stakeholders, fostering an inclusive and representative dialogue.

APPENDIX V: ACTION PLAN FOR COMMUNITY INCLUSION IN THE SOCIAL AND ENVIRONMENTAL RESPONSIBILITY PROGRAM

ABC NORTE REDD+ PROJECT

ACTION PLAN FOR COMMUNITY INCLUSION IN THE SOCIAL AND ENVIRONMENTAL RESPONSIBILITY PROGRAM

1. Context

The Social and Environmental Responsibility Program, developed by ABC Norte, aims to promote sustainable development and improve the quality of life for local populations. Launched in 2019, the program includes, among other initiatives, monthly visits by a specialized team from Upbio Soluções Ambientais. During these visits, activities focused on income generation, education, and social assistance are carried out, using participatory methodologies that encourage learning and open dialogue.

Initially, the PRS served the communities of Cristo Salvador, Divino Espírito Santo, Monte Sião/Santa Terezinha, Nossa Senhora do Carmo and São Sebastião do Cipoal. Starting in October 2023, the project also began including the communities of Caminheiro do Bem and Fonte de Luz, and in October 2024, it began engaging with the community of Nossa Senhora da Aparecida. The remaining communities, although they do not yet receive monthly visits from Upbio, participate in other initiatives promoted by ABC Norte's Program, such as the "Social Action" event. The communities not yet regularly served by the Program are located in remote areas, often with limited or non-existent infrastructure. The lack of proper transportation routes requires rigorous logistical planning and the allocation of additional resources, making direct and continuous communication with these areas challenging.

The project is set to officially include all 13 communities in the Program starting in 2025. However, recognizing logistical challenges, an additional phased plan has been developed to ensure all communities are effectively reached over time.

2. Objective

Gradually include the communities surrounding the project area within the scope of ABC Norte's Social and Environmental Responsibility Program activities.

3. Target audience

13 communities surrounding Fazenda Pacajá, as presented in section 2.2 Local Stakeholder of the VCS PD.

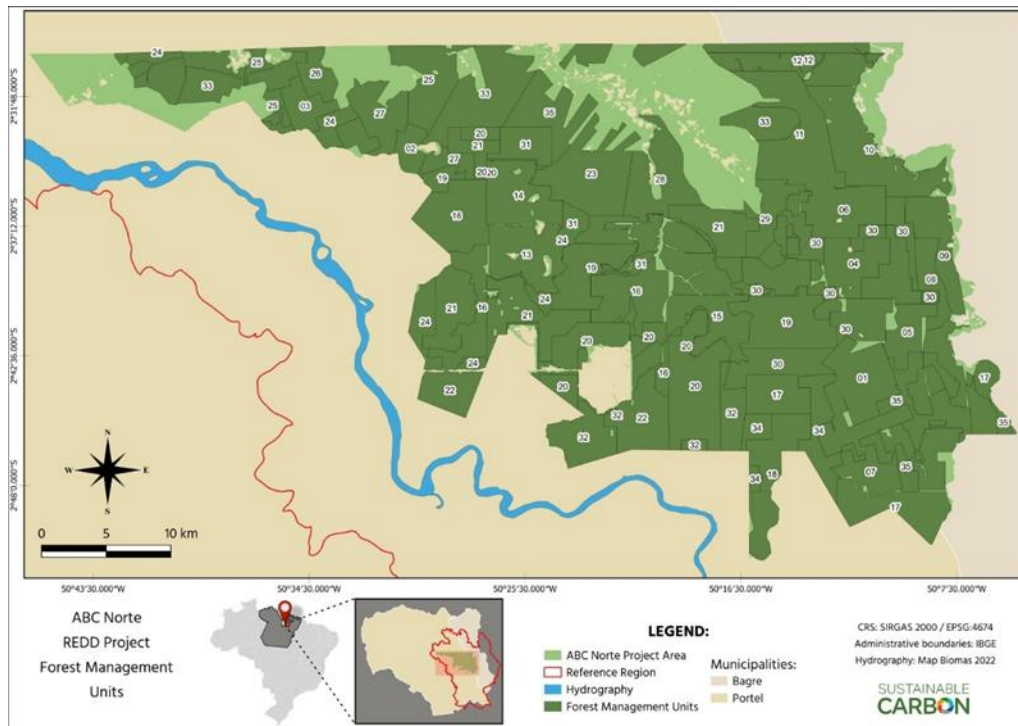
4. Implementation Stages

The inclusion of the communities in the PRS program will be gradual due to the logistical and management challenges. The approach will be based on the activities of the Fazenda Pacajá Sustainable Forest Management Plan (SFMP) and is justified by two main reasons:

- **Logistics:** access to the communities near “Fazenda Pacajá” presents significant challenges due to the density of the Amazon rainforest, the lack of road infrastructure, and adverse geographical conditions, such as rugged terrain and watercourses. However, the farm's SFMP activities include the construction of a strategic road network, which facilitates access to local communities. This road network consists of primary, secondary and tertiary roads, designed to optimize connectivity and reduce logistical barriers. The guidelines and procedures related to the construction of these roads are detailed in the Fazenda Pacajá Sustainable Forest Management Plan, which was made available to the VVB team.
- **Strategy:** the forest management activities also enable the recurring presence of representatives from the companies involved in Fazenda Pacajá's operations. This allows for the establishment of direct and efficient communication with local communities, providing opportunities for more frequent and constructive interactions among stakeholders.

It is also worth noting that the planning of forest management activities is based on Annual Production Units (APUs). These units are defined to ensure the sustainable exploitation of forest resources, considering environmental, economic, and social criteria. In the case of the Fazenda Pacajá Forest Management Unit, the area was divided into Annual Production Units, with a management cycle of 35-years. The location of each APU can be seen in the figure below.

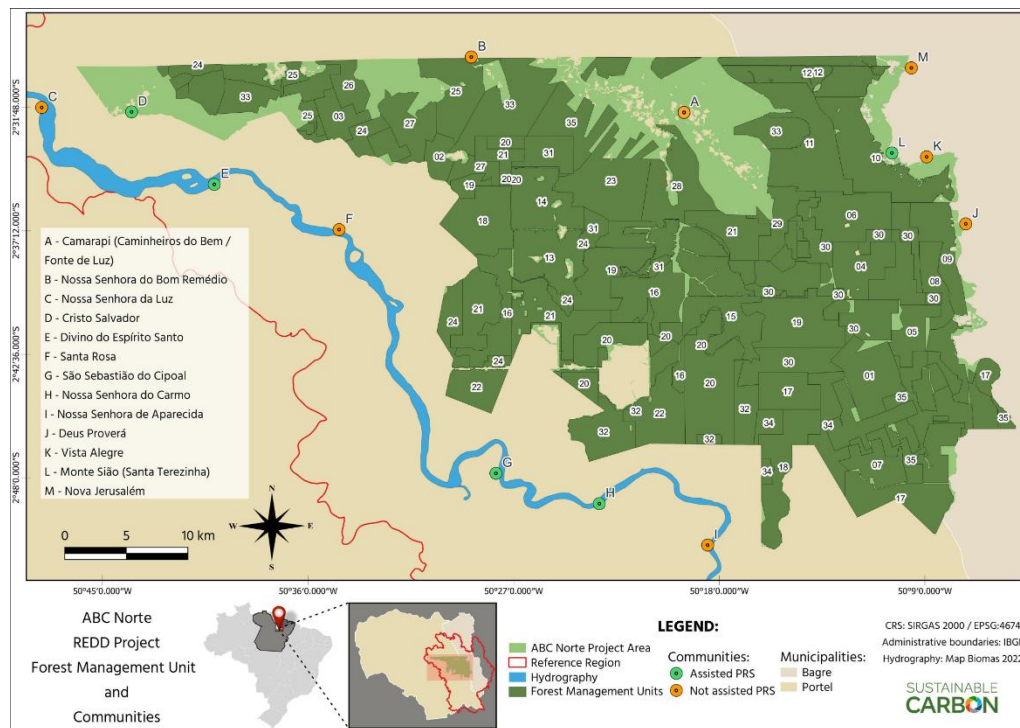
Figure 1. APU Locations - Sustainable Forest Management Plan for “Fazenda Pacajá”



Source: prepared by the Sustainable Carbon team based on data provided by the project proponent

By overlaying the APUs with the location of the communities near “Fazenda Pacajá”, it is possible to strategically identify which communities can be accessed during sustainable forest management activities. This allows for the planning of PRS engagement in these communities. The figure below illustrates the arrangement of the APUs in relation to the communities.

Figure 2. APUs Location and the communities near “Fazenda Pacajá”



Source: prepared by the Sustainable Carbon team based on data provided by the project proponent

Thus, based on the figure above, the plan to reach the communities not yet covered by the PRS can be summarized as follows:

Figure 3. Plan for Engaging Communities not Included in the PRS, based on the UPAs of the SFMP of “Fazenda Pacajá”



Source: prepared by the Sustainable Carbon team

As illustrated in Figures above , the engagement with the communities currently identified as Fonte de Luz, Caminhos do Bem, Nossa Senhora da Aparecida/Santa Rosa and Nossa Senhora da Luz should

occur between 2023-2028. For the communities Deus Proverá, Nossa Senhora do Bom Remédio, Nova Jerusalém and Vista Alegre, the engagement and communication will take place between 2029-2034.

It is important to emphasize that this plan is subject to changes depending on the need to reorganize the APUs, which may be modified due to environmental, legal, logistical, socioeconomic factors, among others. Due to these potential variations, the engagement with the communities was defined by periods rather than annually, allowing for greater flexibility and adaptability. However, regardless of the necessary adjustments throughout the forest management cycle, the commitment remains that, by the end of the cycle, all identified communities will potentially be included in the Program.

Thus, given the multifaceted nature of the challenges inherent in planning and executing the action plan involving the inclusion of all communities around the ABC Norte Project, it becomes evident that adopting a long-term strategy is the most appropriate approach to ensure the effectiveness and sustainability of the process.