RIO ANAPU-PACAJA REDD PROJECT MONITORING REPORT

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Project Title	Rio Anapu-Pacaja REDD Project
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Project Location	Brazil
Project Proponent(s)	Brazil Agfor LLC
Prepared By	Michael Greene
Validation/Verification Body	4K Earth Science Pvt Ltd
GHG Accounting/ Crediting Period	1 January 2016 – 31 December 2045; 30 years
Monitoring Period of this Report	1 January 2016 – 30 April 2020; 4 years 4 months
History of CCB Status	First Verification
Gold Level Criteria	NA

Table of Contents

1 SUMMARY OF PROJECT BENEFITS

The project protects over 165,707 **ha** in Portel, Para one of the most highly threatened regions of the Amazon. The project has clear benefits in the reduction of GHG emissions. The project has a strong social goal and that is to provide full land tenure including title to all the riverine people (traditional people) and traditional rural villagers that live around the project area. As well as improve the economy of the riverine people. In addition to this the project has delivered eco-cook stoves to everyone that wants one. The project has already been successful in bringing stability to the area and targeting the drivers of deforestation and destruction.

1.1 Unique Project Benefits

Outcome or Impact	Achievements during the Monitoring Period	Section Reference	Achievements during the Project Lifetime
1.) Preservation of 165,707	The project has been able to preserve the land during the verification period. Despite a far more aggressive effort by illegal loggers. The project has provided protection and conservation to 165,707 hectares of private property land in a highly unstable municipality of Portel, Para. This has resulted in the protection of flora and fauna across a large area.	2.1.1.	Same as Monitoring Period.
2) Cook stove distributed to community people	The project has distributed around 50 eco-stoves to the communities in the periphery of the project area.	2.1.1.	Same as Monitoring Period
3) Land Demarcation to prevent dislocation and eviction : land tenure related issues solved	127 people (Over 8,000 hectares) registered in the program to obtain the use from land that was titled as private property as par to the project and is shifted over to the riverine people and traditional rural villagers to be their land. The CAR documents can be found in the government website for the Environmental Ministry for the state of Para – all 50 are there. The project has helped almost more than 127 families in between 2016-2045 to get the Cadastro Ambiental Rural Certificate from the Brazilian government, currently which is being	2.1.1	Same as Monitoring Period

	implemented all over Brazil, a kind of agricultural certification program.		
4) Sustainable Agro-forestry Technics	50 people benefitted in learning about alternative cash crops which will improve the economy once they use this training and implement projects. This helps the local population and transitions them away from nearly solely relying on Cassava production which has very little economic benefit. The project has built up the local economy by focusing on Jatai medical grade honey production, which is a high dollar product that greatly improves the local economy without requiring deforestation. The project started in 2020 is delivering bee keeping equipment.	2.1.1	Same as Monitoring
5) Bio-diversity Monitoring	50 people were trained to monitor the fauna that would enter the area in the vicinity of their homes. They were guided to use their cell phone cameras to take pictures and record the animals that they saw.	2.1.1	Same as monitoring.

1.2 Standardized Benefit Metrics

Category	Metric	Achievements during Monitoring Period	Section Reference	Achievements during the Project Lifetime
GHG emission reductions & removals	Net estimated emission removals in the project area, measured against the without-project scenario	0		0
	Net estimated emission reductions in the project area, measured against the without-project scenario	6,240,621	3.2.4	39,489,204

Category	Metric	Achievements during Monitoring Period	Section Reference	Achievements during the Project Lifetime
Forest[1] cover	For REDD[2] projects: Number of hectares of reduced forest loss in the project area measured against the without-project scenario	165,707 Ha	3.2	165,707 Ha
	For ARR[3] projects: Number of hectares of forest cover increased in the project area measured against the without-project scenario	NA		-
Improved land management	Number of hectares of existing production forest land in which IFM[4] practices have occurred as a result of the project's activities, measured against the without-project scenario	NA		-
	Number of hectares of non-forest land in which improved land management has occurred as a result of the project's activities, measured against the without-project scenario	5,000 hectares	4.3.1	Same as Monitoring Period
Training	Total number of community members who have improved skills and/or knowledge resulting from training provided as part of project activities	50 families	4.3	Same as Monitoring Period
	Number of female community members who have improved skills and/or knowledge resulting from training provided as part of project activities of project activities	50	4.3	Same as Monitoring Period

[1] Land with woody vegetation that meets an internationally accepted definition (e.g., UNFCCC, FAO or IPCC) of what constitutes a forest, which includes threshold parameters, such as minimum forest area, tree height and level of crown cover, and may include mature, secondary, degraded and wetland forests (*VCS Program Definitions*)
[2] Reduced emissions from deforestation and forest degradation (REDD) - Activities that reduce GHG emissions by slowing or stopping conversion of forests to non-forest land and/or reduce the degradation of forest land where forest biomass is lost (*VCS Program Definitions*)
[3] Afforestation, reforestation and revegetation (ARR) - Activities that increase carbon stocks in woody biomass (and in some cases soils) by establishing, increasing and/or restoring vegetative cover through the planting, sowing and/or human-assisted natural regeneration of woody vegetation (*VCS Program Definitions*)
[4] Improved forest management (IFM) - Activities that change forest management practices and increase carbon stock on forest lands managed for wood products such as saw timber, pulpwood and fuelwood (*VCS Program Definitions*)

Category	Metric	Achievements during Monitoring Period	Section Reference	Achievements during the Project Lifetime
Employment	Total number of people employed in of project activities,[5] expressed as number of full time employees[6]	11	4.3	Same as Monitoring Period
	Number of women employed in project activities, expressed as number of full time employees	3	4.3	Same as Monitoring Period
Livelihoods	Total number of people with improved livelihoods[7] or income generated as a result of project activities	193	4.3	Same as Monitoring Period
	Number of women with improved livelihoods or income generated as a result of project activities	50	4.3	Same as Monitoring Period
Health	Total number of people for whom health services were improved as a result of project activities, measured against the without-project scenario	193	4.3	Same as Monitoring Period
	Number of women for whom health services were improved as a result of project activities, measured against the without-project scenario	50	4.3	Same as Monitoring Period
Education	Total number of people for whom access to, or quality of, education was improved as a result of project activities, measured against the without-project scenario	43	4.3	Same as Monitoring Period
	Number of women and girls for whom access to, or quality of, education was improved as a result of project activities, measured against the	22	4.3	Same as Monitoring Period

[5] Employed in project activities means people directly working on project activities in return for compensation (financial or otherwise), including employees, contracted workers, sub-contracted workers and community members that are paid to carry out project-related work.
[6] Full time equivalency is calculated as the total number of hours worked (by full-time, part-time, temporary and/or seasonal staff) divided by the average number of hours worked in full-time jobs within the country, region or economic territory (adapted from UN System of National Accounts (1993) paragraphs 17.14[15.102];[17.28])
[7] Livelihoods are the capabilities, assets (including material and social resources) and activities required for a means of living (Krantz, Lasse, 2001. *The Sustainable Livelihood Approach to Poverty Reduction*. SIDA). Livelihood benefits may include benefits reported in the Employment metrics of this table.

Category	Metric	Achievements during Monitoring Period	Section Reference	Achievements during the Project Lifetime
	without-project scenario			
Water	Total number of people who experienced increased water quality and/or improved access to drinking water as a result of project activities, measured against the without-project scenario	150	4.3	Same as Monitoring Period
	Number of women who experienced increased water quality and/or improved access to drinking water as a result of project activities, measured against the without-project scenario	50	4.3	Same as Monitoring Period
Well-being	Total number of community members whose well-being[8] was improved as a result of project activities	193	4.3	Same as Monitoring Period
	Number of women whose well-being was improved as a result of project activities	93	4.3	Same as Monitoring Period
Biodiversity conservation	Change in the number of hectares significantly better managed by the project for biodiversity conservation,[9] measured against the without-project scenario	165,707 Hectares	2.1.1	Same as Monitoring Period
	Number of globally Critically Endangered or Endangered species[10] benefiting from reduced threats as a result of project activities,[11] measured against the without-project scenario	6	5.1	Same as Monitoring Period

[8] Well-being is people's experience of the quality of their lives. Well-being benefits may include benefits reported in other metrics of this table (e.g. Training, Employment, Health, Education, Water, etc.), but could also include other benefits such as empowerment of community groups, strengthened legal rights to resources, conservation of access to areas of cultural significance, etc.
[9] Biodiversity conservation in this context means areas where specific management measures are being implemented as a part of project activities with an objective of enhancing biodiversity conservation.
[10] Per IUCN's Red List of Threatened Species
[11] In the absence of direct population or occupancy measures, measurement of reduced threats may be used as evidence of benefit

2 GENERAL

2.1 Project Description

2.1.1 Implementation Description

The project has been fully operational since 2016. The PD is under validation and verification process and 165,707 hectares is conserved as a native forest land.

The project has given out 50 cook stoves in between 2017 to 2020 period. These cook stoves have a tremendous benefit in the region for several reasons.

The project goal it to prove out the economic feasibility of preserving the forest in regions that are already heavily degraded, and where it is still considered socially acceptable to convert forest to agriculture. Prior to the current owner the land was a degraded forest, with no cutting plan, the forest area still has a high threat situation, and it is common for illegal loggers to be operating in and around the project area.

As discussed more thoroughly in Section 3.2, no further leakage monitoring is required. Permanence is addressed through the risk buffer. A Non-Permanence Risk Report was prepared under VCS 3.2 and provided to the Verifier. After buffer calculation, total of 6,240,621 VCUs has been generated from the start date of the project till 30th April 2020 of the current monitoring period.

2.1.2 Project Category and Activity Type

The project corresponds to the VCS Scope VM00015 – for Unplanned Emissions from Deforestation and forest Degradation. The project aims to protect rainforest, which are expected to be deforested in the absence of the Project.

Project Scope 14: Agriculture, Forest and other Land Use (AFOLU)

Project Category: Reduction Emission from Deforestation and Degradation (REDD)

Grouped Project: No

Type of Activity: Avoided Unplanned Deforestation (AUD)

This Project is planned to be registered under the Verified Carbon Standard (VCS) as a Reducing Emissions from Deforestation and forest Degradation (REDD) project and has been developed in compliance with the Verified Carbon Standard,11 Version 3. The Project will reduce emissions from unplanned deforestation.

2.1.3 Project Proponent(s)

Organization name	Brazil Agfor L.L.C
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2.1.4 Other Entities Involved in the Project

Association de Ribeirinhos e Moradores de Portel, Para Ltda.

2.1.5 Project Start Date (G1.9)

The project started on January 1, 2016

Although, forest protection initiatives and activities were developed prior, setting a 2016 project start date was a conservative approach to make sure the project had enough monitoring and enforcement experience to start producing conservation results.

No actual help to the riverine people and traditional rural villagers occurred prior to 2016, besides informal conversations.

2.1.6 Project Crediting Period (G1.9)

30 years starting from 1st January 2016 and ending to 31st December 2045. Baseline will be renewed for every 10 years after the project start date. First baseline period renewal will be from 1st January 2026.

2.1.7 Project Location

The project is located in northwest of Brazil, in the State of Para, micro region of Portel, municipality of Portel (Figure 1). The regular main transport to arrive in Portel is by boat, the trip takes approximately, 8 hours from Belem. Some parts of the area are also accessible by car, as the network of roads of the Transamazonica highway (BR-230) has already connected to logging (pioneer) roads that keep developing in the project area.

To arrive in the project a person takes a ferry from Belem to Portel, which takes 8 to 14 hours. There are two options for ferry, one in the evening at 6 PM arriving the next morning. The other option is a day ferry at 8 AM arriving 8 hours later. From the city of Portel the project boat will take people out to the land. The closest point is 5 hours a away in the project boat, or in a speed boat about 2.5 hours away.

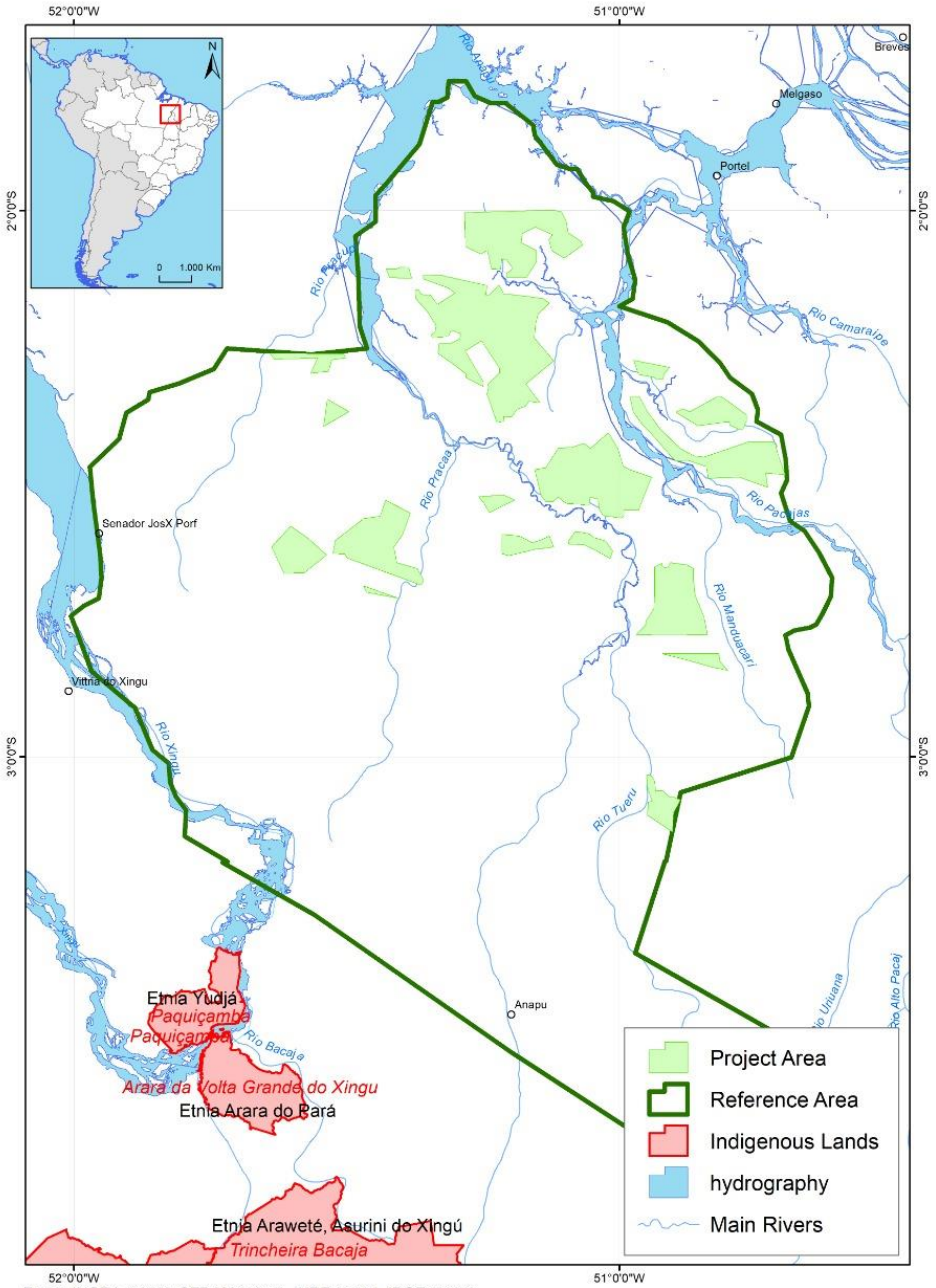
The land of the Project (LP) has 182,210 ha and the Project Area (PA) has 165,707 ha (KML file has been submitted separately).

In total, the project area is constituted by 36 different individually titled properties registered in the registry office of Portel, Para.

All properties have certified Maps with the Federal Land agency known as INCRA.

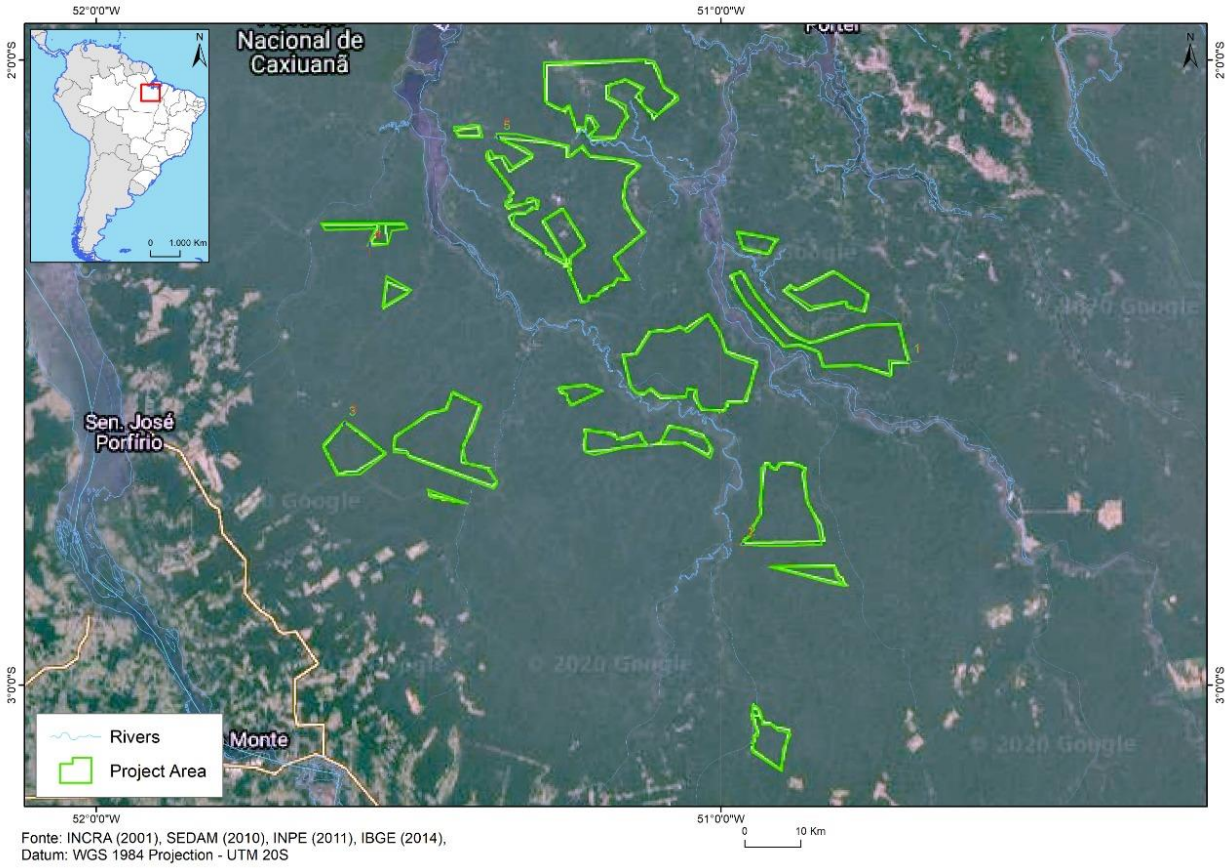
The Leakage Management Area is constituted as the Riverine communities and traditional rural villagers that are without title, but are neighboring to the project area.

Figure 1: Project area – 165,707 hectares



Fonte: INCRA (2001), SEDAM (2010), INPE (2011), IBGE (2014),
Datum: WGS 1984 Projection - UTM 20S

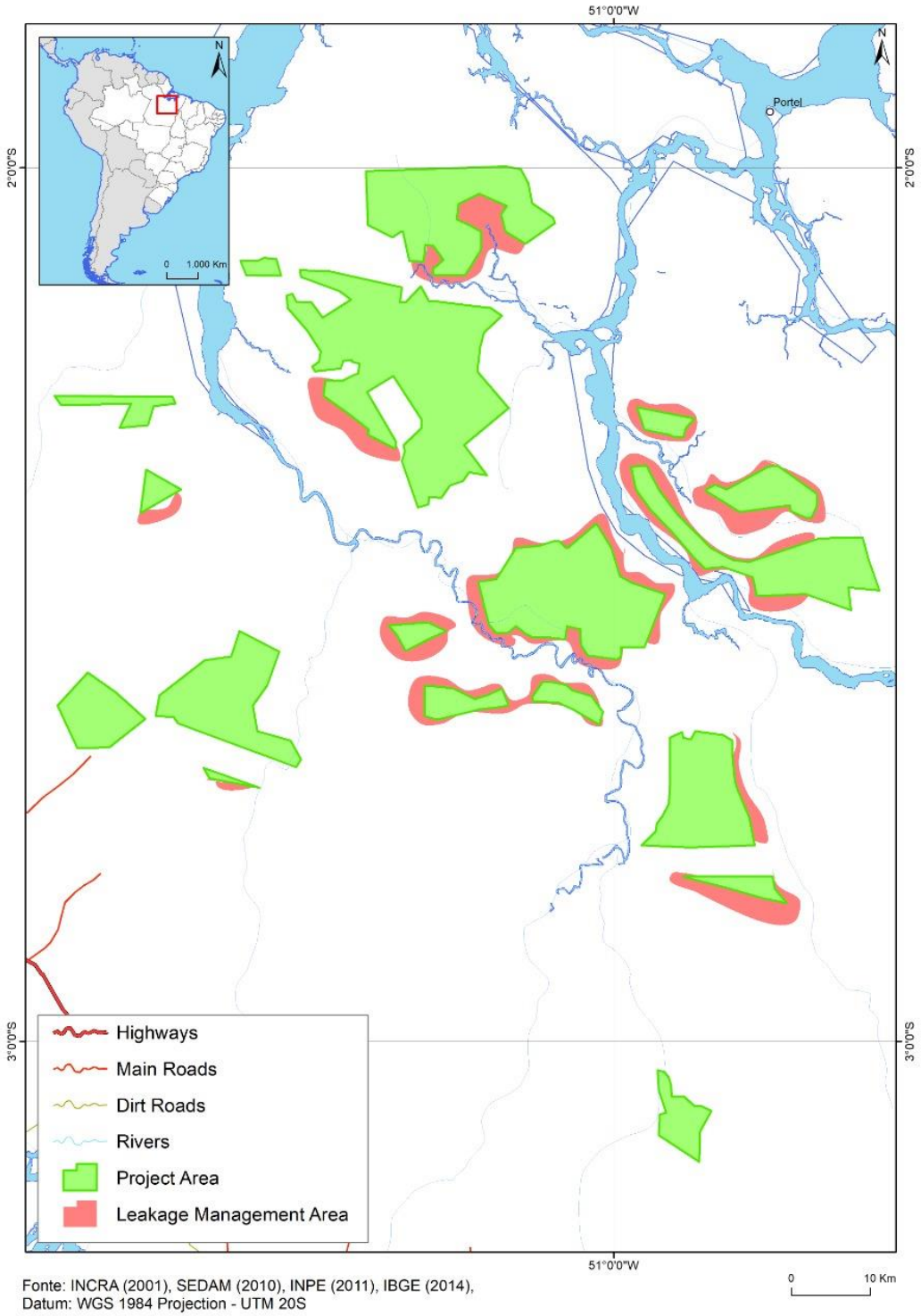
Figure 2: Satellite Picture of Project Area



Fonte: INCRA (2001), SEDAM (2010), INPE (2011), IBGE (2014),
Datum: WGS 1984 Projection - UTM 20S

Figure 3: Leakage Management Area – 16,503 hectares

Project Area in Green
Leakage Management Area in red



2.1.8 Title and Reference of Methodology

The project used the VCS-approved methodology VM0015, v1.1, "Methodology for Avoided Unplanned Deforestation" for quantification of GHG emission reductions and removals generated from avoided unplanned mosaic deforestation In combination with the methodology, the latest version of the following approved tools and modules were used by the project:

(Ref: https://verra.org/wp-content/uploads/2018/03/VM0015-Avoided-Uplanned-Deforestation-v1.0.pdf).

Tools and Modules applied:

• VCS Tool VT001 Version 3.0 – Tool for demonstration and Assessment of Additionality in AFOLU Project Activities.
• Tool for AFOLU non-permanence risk analysis and buffer determination," Version 3.2

2.1.9 Other Programs (G5.9)

• Emission Trading Programs and Other Binding Limits: there are no other emissions trading

• Other Forms of Environmental Credit: there are no other forms of environmental credits under which the Project is planning to be eligible to participate.

• Participation under Other GHG Programs: the Project is not considering to be validated under any other GHG program.

• Currently, there is no national or jurisdictional REDD+ program. Therefore, the project is not located within a jurisdiction covered by a REDD+ jurisdictional program in Brazil and not required to follow the VCS jurisdictional REDD+ requirements.

This section is not applicable because Brazil does not have an emissions trading program and REDD+ projects from Brazil are currently not eligible for any compliance market. In contrast, the current Project is being validated and verified to the VCS and CCBS and shall be regularly verified to both the VCS and CCBS. The issuance of Verified Carbon Units (VCUs) onto the VCS Registry helps to ensure the avoidance of GHG emissions being double counted. In addition, Project Participant's finances and project portfolio are independently audited each year by a certified public accountant (CPA). The current Project is not participating in any other GHG programs other than the VCS and CCBS. The current Project is not generating any other forms of environmental credits such as biodiversity offsets, watershed protection payments, or renewable energy certificates (RECs). Furthermore, the current Project has not been rejected by any other GHG program.

2.1.10 Sustainable Development

Following the Warsaw Framework for REDD-plus adopted at the UN Climate Change Conference COP19, Brazil is the first country to voluntary submit and have a forest reference emission level technical assessed and also the first country to submit REDD-plus results in a technical annex to the Biennial Update Report (BUR) for technical analysis. A key component of Brazil's National Climate Change Policy is the voluntary reduction in greenhouse gas emissions. The Project is in compliance with this voluntary target because the Project is a Reducing Emissions from Deforestation and Degradation (REDD+) project. Furthermore, this compliance is demonstrated via periodic verifications of the Project.

The following are the 6 SDGs and how the Project is working towards helping to meet these voluntary SDGs:

2. Zero hunger –

While the communities have access to crops, some fish in the nearby streams, and food from the forests, the Project will be working to help improve the communities' agricultural techniques, while both increasing and diversifying incomes. The project believes that providing the riverine people and traditional rural villagers with land title will give incentive to invest back into the land. With this stability they can grow higher dollar crops such as Jatai Honey and Black Pepper, and this will help the financial situation, which will insure a better diet.

4. Quality education –

The project has brought educational material to the communities on both black pepper and Jatai honey. However long-term plan is to build a new school in the Jacare Puru community and in the Jabotinema community. A larger long term plan is to partner with other groups and build a high grade high-school in the Santa Amaro community that will have dormitories for high school kids to stay in, as the house are too remote and the education is inadequate.

5. Gender equality –

The Project is working to include more women in project activities. This results in decision making from both the male and females in the communities.

12. Responsible consumption and production –

As an avoided deforestation project and in conjunction with the locals, the project hopes to help the locals to focus on black pepper crop instead of Casava. One tenth of one hectare of black pepper makes more profit than 3.5 hectares of Cassava. This in turn results in much higher profits for very small area. This also is significantly less tedious work. Though black pepper is a crop that requires perfectionism to be successful.

13. Climate action –

One of the main goals of the Project is to reduce deforestation and the associated GHG emissions.

2.2 Project Implementation Status

2.2.1 Implementation Schedule (G1.9)

Date	Milestone(s) in the project's development and implementation
June 2, 2012	The project signed the contract with the landowners.
September 2015	Free, Prior and Informed Consent (FPIC) process
2016	The community groups were contacted and one-on-one meetings took place to gain support for the project signature goal of inserting into the government database the necessary documentation to allow each family to gain land tenure documents.
January 1, 2016	Start date of GHG accounting Period (First Verification).
January 15th 2016	Initial Participatory Rural Appraisal (PRA)

March 2nd 2016	Stakeholder's meeting on carbon credits
January 1, 2017 to July 30 2017	Eco-Stoves were delivered for 17 families Some land survey work was completed for each family.
2nd September 2017	Implementation of biodiversity monitoring plan
January 1, 2018 to July 30 2018	Eco-Stoves were delivered to 17 families in the project area
January 1, 2019 to July 30 2019	Eco-Stoves were delivered to 17 families. The first land tenure documents were inserted into the government database
10th May 2019	Resource Management Plan completed and signed
January 1, 2020 to April 20, 2020	Additional land survey work for each family parcel is being completed so that the data can be submitted to the government for the final step in a long process to gain land title deeds for each Riverine and traditional rural villagers' family.
20th August 2020	Completion of PD and MR
Year 2020 to 2045	• Development and monitoring of environmental and social management activities • Monitoring of deforestation and emissions • Monitoring of biodiversity (Fauna and Flora) and High Conservation Value Areas • Development of scientific research • Verification of credits (Selection and contracting of verification body; Production of follow-up bulletins for Verification Project; Monitoring of field audit; Registration of credits) • Conducting of credit marketing processes

2.2.2 Methodology Deviations

No Deviations.

2.2.3 Minor Changes to Project Description (*Rules* 3.5.6)

Not applicable

2.2.4 Project Description Deviations (*Rules* 3.5.7 – 3.5.10)

Not applicable – No deviations

2.2.5 Grouped Projects

Not applicable

2.2.6 Risks to the Project (G1.10)

Human induced risks:

The greatest human induced risk to the Project's benefits is continued deforestation and government programs that support the invasion and subsequent deforestation of private properties, even if they are already owned by other people.

The Project Zone is undergoing large pressures for new agricultural land from both the expanding population and on-going immigration into the area from the south, west and east where poor families have already deforested for there to be thousands of small cattle farms.

Mitigation for this risk is through the Project Activities, mainly in the form of increased protection of the Project Area, creation of new income generating activities and through the promotion of improved agricultural methods as described in the Project Description Section.

The project is embarking on massive legal spending to halt the invasion of land in the project area that is being "virtually invaded" This is when a person uses a government program, registers a survey map in the government program and proceeds to try to gain title.

Land Grabbing takes place with similar steps that the project takes to help the Riverine community groups gain title. However in the case of land grabbers they pay multiple straw men money in order for them to use the persons ID number and they round up 40 or 50 people to land grab 40 or 50 plots, each plot about 1000 hectares. The program up until 2018 allowed up to 1500 hectares to be claimed.

The Project in this monitoring period has continued to reduce the risk of leakage, illegal logging and fire by building strong partnerships with villagers in the Project Boundaries and it its vicinity thus preventing deforestation activities to start.

The project is also able to stop land claims be registering the project area land title with INCRA and SEMA government agencies, showing that it is already "taken". Only the most brazen and corrupt will proceed to land grab land that is already "taken". Unfortunately, these brazen groups form mafias and try to undermine legitimate land title in order to create their own.

The project is able to halt the land grabbing by employing attorneys to aggressively target when these virtual invasions take place.

Illegal logging risks was mitigated through a number of measures including demarcating boundaries and posting signage, and regular patrolling.

Natural Risks

The region in which the Project is located is not generally susceptible to severe or destructive natural events. Due to the fact it is a true rainforest and falls into the inter-tropical region, thus gains heavy rains year-round. Other parts of the Amazon away from the equator have pro-longed dry seasons which causes there to be higher risk to fire. The biggest issue is actually flooding and if an area floods for more than 6 months then there can be forest die-off.

The primary types of natural events that could occur would be geologic events, pests or disease, flooding or a fire in the south side of the project area could happen if it was man-made. The area is not prone to any geologic activity and poses little to no risk to the Project. As the Project Area is a native and bio diverse ecosystem the risk from pests or disease that result in significant emissions reversal is low. The primary mitigation for this risk is to maintain the forest, and ensure through monitoring that the trees and ecosystem remain healthy and intact. There can be minor seasonal flooding from the annual strong rain season. However, the species of this area are all adapted to the hydrological cycles and are not liable to flooding. The Project Area is not mountainous and there is a no risk of erosion or landslides.

The risk of human induced fire has the most potential to cause damage to the forests of the Project Area. However, the risk of significant emissions reversal is low. There have been no catastrophic fires in forests of this type in this region. Therefore, natural events have low risks to the Project's benefits.

The VCS non-permanence risk report submitted identified such risks as minimal which is applicable for this monitoring period.

1. Communities lack of effectiveness to control the Conservation Forest area

The Project did provide permanent land use rights against results for conservation to those families living within the Project Boundary. Families were trained to monitor the area and to protect the forest.

With the completed census, and knowing who individually owns what, if a family breaks the Conservation Forest Area plan, it is easy to identify who they are and future benefits from the project will be curtailed if the behavior continues. The project has no way to revoke title that has been provided the riverine people and traditional rural villagers. Around 127 CARs were registered for this monitoring period.

2. Population growth forces agricultural expansion in project area.

Although population is growing in the area, it is clear from the PRA and the LULC change analysis that small-scale agriculture is not a significant driver of deforestation in the area. Nevertheless, the Project includes capacity building on agroforestry techniques to help riverine people and traditional rural villagers to develop more efficient crop systems that require less area and longer rotation times, thus reducing the need of clearing forest patches under regeneration. 50 members of the community benefited from such trainings during this monitoring period.

3. Loss of carbon stocks through fire, illegal felling, and land clearing

The Project has reduced the risk of leakage, illegal logging and fire by building strong partnerships with the households in the Project Boundaries and it its vicinity thus preventing deforestation activities to start. This includes by giving out cook stoves and also paying for the riverine and traditional rural villagers in these locations to gain title. Also, capacity building workshops were held to better monitor the forest, thus preventing further LULC change in the area.

Illegal logging risks were mitigated through a number of measures including demarcating boundaries and posting signage, blocking machinery access through trenching and other methods.

4. A new highway is planned to connect the city of Belem and Altimira. The highway is behind schedule, but if this highway is built it will result in the "hair comb" deforestation to take place throughout the project area. This is a future threat and will result in numerous security houses informing drivers of where the property starts and where it finishes, with a truck and security personal patrolling here constantly.

2.2.7 Benefit Permanence (G1.11)

Community activities are designed to transform local economies over the life of the Project. In this regard, the focus of the Anapu-Pacaja developed local business and income-generating activities that are critical components of a long-term low carbon economy. Project activities that met this overarching objective focus on education, sustainable agriculture, community-based ecotourism and sustainable management of natural resources. These activities reduced the necessity of community members to deforest and degrade the Project Area. During the Project Lifetime, this is achieved, for example, facilitating better education, through training farmers in sustainable agriculture.

The project focuses on three principal strategies to ensure the maintenance and enhancement of the project benefits beyond the project lifetime. For this monitoring period also the focus is the same.

1. Skill and capacity development.
2. Goal of permanent Land ownership
3. Health benefits

1. The skills are learnt by the communities throughout the projects lifetime. These relate to better land resource management. The project has initiated several awareness programs for efficient use of land for agricultural practices and has also provided cook stoves which have the benefit of lessening the time for Farinha production and the overall cooking time. The protection of the forests itself ensure that due to lesser degradation there is greater potential to provide timber and non-timber forest products on a sustainable basis. The community has been made aware and trained in alternative crops of agroforestry such as black pepper, honey or andiroba oil. Around 200 community members have received training during this monitoring period.

2. The goal of permanent land ownership to the communities is one of the main initiatives of the project and this provides permanent ownership even beyond the project lifetime. This provides the community to implement the skills and learnings on their own land which is self-sustainable and provides benefits beyond the projects lifetime. Around 127 CARs have been distributed during this monitoring period.

3. The health benefits to the women and to the overall community is expected to continue beyond the projects lifetime. In a 2002 report, WHO listed indoor smoke from solid fuels among the top 10 risks to human health. "Day in and day out, and for hours at a time, women and their small children breathe in amounts of smoke equivalent to consuming two packs of cigarettes per day," WHO reported in the 2006 report Fuel for Life: Household Energy and Health. As greenhouse gas emissions have increased, the smoke from kitchens in the developing world has escalated from a local to a worldwide threat. The average cooking fire produces about as much carbon dioxide as a car, and produces more soot, also known as black carbon. Reducing these emissions may be among the fastest, cheapest ways to fight global climate change. Around 150 women have received cook stoves which translates to improved livelihood during this monitoring period.

The permanence of the benefits associated with the project are captured during the feedback from the community during the periodic community meetings in which around 78% of them prefer to continue the good practices.

2.3 Stakeholder Engagement

2.3.1 Stakeholder Access to Project Documents (G3.1)

All the documents/results are published in the project website and communicated in Portuguese in a simple language to the council of stakeholders for their awareness and free participation. The project CCB implementation from validation onwards is described in the relevant section in the MR.

The website is www.Ribeirinho.org.br

Apart from the survey teams the main form of communication followed was one-to-one meetings with the community in which the feedback on the benefits provided were communicated which are periodic. Further during this period, the benefits were mainly related to Skill and capacity development, Goal of permanent Land ownership and improved land management practices which were categorized as both long term and short term benefits in the relevant sections of the MR. sample of the survey forms and attendance records of one to one meetings have been submitted to the VVB.

2.3.2 Dissemination of Summary Project Documents (G3.1)

All the documents/results are published in the project website and communicated in Portuguese in a simple language to the council of stakeholders for their awareness and free participation.

Apart from the survey teams the main form of communication followed was one-to-one meetings with the community in which the feedback on the benefits provided were communicated which are periodic. Further during this period, the benefits were mainly related to Skill and capacity development, Goal of permanent Land ownership and improved land management practices which were categorized as both long term and short term benefits in the relevant sections of the MR. sample of the survey forms and attendance records of one to one meetings have been submitted to the VVB

2.3.3 Informational Meetings with Stakeholders (G3.1)

The meetings with the local stakeholders and communities were organized by the PP and the process was similar to the meetings already had with them previously (at the beginning of the Project). Each person responsible for every stakeholders group took care to advertise all members of the group about the possibility to participate at the meetings usually through the internal bulletin boards and with e-mails.

The meetings with communities were organized through the following mechanisms:

▪ At the beginning of each meeting, participants received a summary sheet of the project.

▪ During the meeting aspects related to the project and summary information on monitoring results were released and explained.

▪ There were question and answer sessions after the talks. The questions of the participants were resolved and all observations were heard and taken into consideration.

▪ The information provided included contacts (phone number and email) of the people in charge of the project documentation (PP), in order to give the attendants the possibility to permanently communicate their concerns or comments.

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

Information about Community Costs, Risks, and Benefits was exchanged and discussed during consultative meetings. The project has no costs to the communities, the team of technicians have always based the modus operandi as go-to-the point, thus the project team goes to the community, we don't request the community to come to the project team. The travel cost is the greatest burden for the community. It was discussed and explained during all meetings that the carbon credit project costs the community nothing, it was explained that the project is 100% there to benefit the locals in a business-as-usual situation.

As explained in the community meetings and one-on-one discussions there is no risk to the community.

The benefits are explained to be cook stoves, land tenure documentation and survey work and training for a better sustainable living and improved livelihoods.

2.3.5 Information to Stakeholder on Verification Process (G3.3)

The Project's executive summary, including project information and project benefits has been translated into Portuguese and is posted in public places in communities throughout the Project Zone.

During community meetings held by project staff as part of the project outreach process the monitoring and verification process was described.

A poster/notice in Portuguese advertising the Project's public comment period and the validation /verification field visit was posted in communities throughout the Project Zone.

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

The Project Proponent has actively communicated to community members and stakeholders about the start of the Public Comment Period and the methods with which they can submit comments on the Project as well as how to view full project documentation. This was accomplished by communicating the Project - Public Comment Period and Verification field visit dates to previously identified stakeholders, community leaders, leaders of the faith communities and public officials. They were then requested to pass that information onto their communities.

Six weeks prior to the site visit in June 2020, verbal communication was done, and it was requested that up to 1 person from all 50 families will be prepared to answer questions of the auditor. One-on-one interviews were arranged.

2.3.7 Stakeholder Consultation (G3.4)

Through local consultation, we assessed the possible impacts of the Project and the perceptions of stakeholders were identified.

So far, the design and implementation Project have not been modified, as comment received do not affected the design of the Project. The plan to maintain continuous communication with stakeholders includes a communication channel that addresses possible suggestions and complaints, training activities, dissemination of monitoring reports achievements, etc.

2.3.8 Continued Consultation and Adaptive Management (G3.4)

Two of the project team Sergio and Camerao live in Portel and have been with the project since the beginning. They were hired as they know each family in the project area their local knowledge facilitated the warm reception for the project. They are both the project guides and pilots for the technicians and team. Sergio has become much more and has started managing the team.

They know first-hand everyone in the community and this knowledge allows there to be seamless communication between the project team and the local communities. It may require a cell phone call to Camerao, who then calls on the radio to the specific river to reach the family.

The project has to adapt as well, we had in the beginning hired people from Rio de Janeiro to go and meet with the community but "outsiders" brought a colder reception than locals and it also alerted the illegal loggers of the project. Thus the project focuses on hiring local teams or people from the state.

Throughout the lifetime of the project, we maintain a direct line of communication with community members, and relevant stakeholders. This establishes a commitment to communication and consultation to keep stakeholders informed of project activities including restoration, maintenance, monitoring and the CCB validation and verification process.

With-project scenario there is an increase to the socio-ecological resilience, reduce the vulnerability and improve the adaptation capacity through a better management of the natural resources, including adaptive management. In addition to this, forest protection in the project area does provide a healthy ecosystem with much greater adaptation potential to climate change, with a higher resistance and recovery capability to extreme meteorological phenomena and a wide range of benefits to the neighboring people.

Hence there is no change in the consultative and adaptive management system during this monitoring period.

2.3.9 Stakeholder Consultation Channels (G3.5)

The stakeholders identified were invited to report and comment in reference to the Project implementation through local consultation. As described in the 2.3.1, we organized consultation meetings with different communities and stakeholders (owners of neighboring farms, stakeholders of the afforestation supply chain, forest technicians, permanent/semi-permanent workers of the farm, Portel and project workers) in the Portel. The invitation to these events was always conducted by telephone. In addition were involved various governmental and non-governmental organization that we can call “institutional stakeholders”.

The meetings with these institutional stakeholders were organized by means of personal visits. During all the consultation process the aspects of climate change and carbon markets were addressed by providing information and general concepts in simple language that could be understood by all participants. The documentation and information regarding the Project was made available to the community through the following mechanisms:

▪ At the beginning of each meeting, participants received a summary sheet of the Project for them to understand the Project.

▪ During the meetings aspects related to forest carbon projects, specific project activities and participants were explained.

▪ There were question and answer sessions after the talks. The questions of the participants were resolved and all observations were heard and taken into consideration.

▪ The information provided, included contacts (phone number and email) of the people in charge of the Project documentation (Project developers), in order to give the attendants, the possibility to permanently communicate their concerns or comments.

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

During this monitoring period, consultations have ensured to engage with both men and women, and more marginal stakeholder groups in culturally appropriate ways to ensure that the project can hear a wide range of perspectives. Apart from the survey teams the main form of communication followed was one-to-one meetings with the community.

2.3.11 Anti-Discrimination Assurance (G3.7)

Rio Anapu-Pacaja REDD project has company policies to prevent discrimination and outline a course of action, should it occur, the human resource (HR) policy provides a clear statement on discrimination relating to gender, religion or sexual discrimination. Discrimination is considered a level A misconduct under the HR policy. Where discrimination occurs within the company, partner organizations or within project areas (project participants), actions are outlined in the grievance policy to ensure that any discrimination is dealt with by the senior management. All company employees and field partners sign a code of conduct with ES that includes anti-discrimination. No such related incidents have been reported for this monitoring period.

2.3.12 Grievances (G3.8)

The conflict resolution approach sequentially adopted and responds to the conformity or inconformity of the complainer to the proposed solution. The evaluator may also propose a specific approach for the resolution depending on the complexity of the case and the assessment of the same. All the issues are addressed as per the company grievance policy.

The present mechanism does not exclude the right of local people to present the case to any public entities.. Actually, during the census, the Project's management team informs local people of the creation of such committee and be informed of their right to present grievances directly to the team on the ground, making a clear point that all claims and/or complaints are addressed equally *notwithstanding the line of grievance.* No such related incidents have been reported for this monitoring period.

The project does not foresee grievances from the local population. The project does not overpromise and keeps a simple mission: "Land title for all"

The land certificates are never provided with a "here it is" take it or leave it. They are delivered with great detailed explanations and to prevent grievances the project technician will request that if there is anything wrong it is corrected at that moment. The data retrieved will be used to correct the documentation and then on a subsequent trip back to the location will bring updated land tenure certificates with the corrected data.

2.3.13 Worker Training (G3.9)

Project's activity #2 (after the plots for the poor) is designed to provide training to local community groups (jatai honey, black pepper) that generates the required capabilities to undertake forest monitoring as well as monitoring for social and biodiversity variables.

The Project ensures that all members of the community groups have the same opportunity to attend capacity building workshops and participate in demonstrational activities, regardless of race, religion, sexual orientation, or gender. Although the opportunity to actively participate in all the activities of the Project, it is finally a decision of each stakeholder to participate with no pressure.

Special attention was given to under-represented groups (elder people, woman and children) are aware of the on-going training workshops and activities. The content and language of capacity training and demonstrational activities were adapted accordingly to each participating group. The Project considers developing and implementing workshops specifically designed for age classes groups to better transmit the information.
Due to the existing educational level within the under-represented groups in the region, the one-one one workshops took adequate time in explaining how things could be done different. Sometimes the training and explanations had to define even common words. I.e. What is "carbon". What is a "credit". Both words are new for most of the people in the community. The project did its best to help bring a different insight but most community groups wanted to focus on what they knew already which is Casava.

Capacity building is a relevant aspect in the implementation and operation of the project. In order to achieve the goals successfully the member of the community must be trained to have the skills and knowledge to effectively carry out the work.

50 community people have benefited from the training programs during this monitoring period.

To fulfil their responsibilities, the recruiting manager is responsible for integrating and managing confidential personnel information, verify information provided and drawing up contracts. Once hired, the staff goes through a trial period. For the selection of officials, the human resources team will have the principle to find qualified and reliable staff whose skills are in line with the requirements and objectives of

the company, through technical, transparent and non-discriminatory procedures, based on merits and excellence.

At the end of the most important training, the workers sign the participation document and specific certificates are given to each worker who, in addition to attesting their participation, also have the function of enhancing the person and increasing the professionalizing process of each participant. These are training group therefore the skills are extended to all workers preventing lost capacity in the case of turnover.

2.3.14 Community Employment Opportunities (G3.10)

The Project designed employment opportunities to make sure underrepresented groups of local community have equal opportunities of finding employment within the Project management and demonstrative activities. Recruitment was done as per the recruitment policy of the company.

Employment positions that require demanding physical work and a higher risk (i.e. on the ground monitoring of former logging trails, sampling biomass in forest plots, monitoring of Project Boundaries by boat to detect illegal logging activities, setting and revisiting biodiversity camera traps) are filled by persons between the age of 18 and 60 years and/or according to the experience and physical strength of a person, assessed on and individual basis.

Other employment opportunities that require less physical effort and by their nature are less risky are for the elderly people or less physically apt people. Such activities can be but not limited to: social assessment surveying and monitoring, running demonstrative activities to other members of the local communities and to neighbor communities, actively participating in setting up demonstrative activities (i.e. home gardens, forest gardens, improved fallows, energy efficient cook stoves, etc.).

Around 11 people have been employed of which 3 are women for this monitoring period.

Future employment will be with Jatai bee house manufacturing as well as added security positions.

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

The local community received clear and adequate information about the requirements of national and international regulations on worker's rights before entering in a contract agreement with Anapu-Pacaja.

Anapu-Pacaja made sure to comply with the applicable national regulations on worker's rights. This is assured by yearly audits held by a third party that was identified when the census was done. Such audits were announced to local authorities and community and they were encouraged to meet with audit entity. This way, local people can rest assure that all their complaints about workers" rights are known in a straightforward and clear way.

The following is a list of Brazil's all relevant laws and regulations covering worker's rights:

The Brazilian Constitution, Chapter II-Social Rights, Articles 7- 11 which addressed: o Minimum wage o Normal working hours on Guidance on vacation and weekly leave on Guidance on maternity and paternity leave o Recognition of collective bargaining o Prohibition of discrimination.

In addition to the Constitution, there are two additional decrees related to Brazilian labor laws. Consolidação das Leis do Trabalho (CLT): DECRETO-LEI N.o 5.452, DE 1o DE MAIO DE 1943 (Consolidate of Working Laws)35. This decree gives more clarification on: o Hourly, daily, weekly and monthly work hours of Employment of minors and women o Establishes a minimum wage of Worker safety and safe working environments of Defines penalties for non-compliance by employers Establishes a judicial work-related process for addressing all worker related issues.

Estatui normas reguladoras do trabalho rural: LEI No 5.889, DE 8 DE JUNHO DE 1973 (Establishes Regular Norms for Rural Workers)36. This is a complimentary law to the aforementioned 1943 decree because prior to 1973, rural workers did not have the same rights as urban workers. In 1973, this law was established to specify the equality between urban and rural workers, along with compensation for overtime.

Hence it is stated that the project complies with relevant horst country rules for this monitoring period as there have been no reported incidents to the contrary.

Other laws related to workers:

▪ Lei 605/1949 - Repouso Semanal Remunerado (Paid Weekly Rest);
▪ Lei 2.959/1956 - Contrato por Obra ou Serviço Certo (Contract for Work or Right Service);
▪ Lei 3.030/1956 - Desconto por Fornecimento de Alimentação (Discount for Food Supply);
▪ Lei 4.090/1962 - Gratificação de Natal (Christmas Bonus);
▪ Lei 4.749/1965 - 13º Salário (13th salary);
▪ Lei 4.886/1965 - Representantes Comerciais Autônomos (Autonomous Business Representatives);
▪ Lei 4.950-A/1966 - Remuneração de Profissionais (Engenharia, Química, Agron. e Veter.) (Remuneration of Professionals (Engineering, Chemistry, Agron. And Veter.);
▪ Lei 5.859/1972 - Empregado Doméstico (Housekeeper);
▪ Lei 5.889/1973 - Trabalho Rural (Rural Work);
▪ Lei 6.019/1974 - Trabalho Temporário Urbano (Temporary Urban Work);
▪ Lei 6.494/1977 - Estagiários (Trainees);
▪ Lei 6.919/1981 - FGTS de Diretores (FGTS of Directors);
▪ Lei 6.932/1981 - Médicos Residentes (Resident Doctors);
▪ Lei 7.418/1985 - Vale-Transporte (Transportation vouchers);
▪ Lei 8.036/1990 - Lei do FGTS (FGTS Law);
▪ Lei 8.906/1994 - Advogados (Lawyers);
▪ Lei 9.601/1998 - Banco de Horas e Contrato por Prazo Determinado (Bank of Hours and Contract for Term Determined);
▪ Lei 10.101/2000 - Participação dos Trabalhadores nos Lucros ou Resultados (Workers' Participation in Profits or Results);
▪ Lei 10.607/2002 - Declara Feriados Nacionais (National Holidays);
▪ Lei 10.748/2003 - Programa Primeiro Emprego – PNPE (First Job Program);
▪ Lei 10.820/2003 - Desconto de Prestações em Folha de Pagamento (Discount on Payroll Benefits);

2.3.16 Occupational Safety Assessment (G3.12)

Project's activities do not hold risk besides those inherent to the day-to-day life in the forest. Project's activities do not require the use of heavy machinery or dangerous substances. Nevertheless, the Project management team has been provided adequate protection equipment to employees working in forest monitoring activities. Also, monitoring staff were equipped with first aid kits. Protection equipment included but was not be limited to:

Hard hat
Cap with the company's logo
Reflective/fluorescent security vest with the company's logo
Rubber boots
Gloves
Two-way radios
GPS
Camera
Field backpack
Camel pack
LED Flashlight

Whistle
Machete
First aid kid

Risks for each type of work was assessed and safety guidelines were developed helping identifying and reducing such risks. Guidelines were written in clear and adequate language and distributed among workers. Additionally, workers have received safety instructions to make sure any doubts and suggestions are taken care of.

PP has a safety policy that is shared with employees and is on the PP's Mobile website.

During this period such training was provided to 20 people who have been employed of which 3 are women.

2.4 Management Capacity

2.4.1 Required Technical Skills (G4.2)

Organization Involved	Type of Group/ Organization	Brief Description of Activities
Association of Ribeirinhos e Moradores of Portel, Para	Project Social outreach arm	- Administrative - Administered by Michael Greene
Brazil Agfor	Technical Partner	- Reinvestment - Financial planning - Market research - Project prospecting - Administer funds - Review field data, track project developments - Serve as key actor in dispute resolution
Vale Geographer Services	Survey Partner	- De-conflict land disputes - Provide CAR land tenure document and all work involved in this - Provide Technical Staff - Provide Team that made the Carbon Inventory in the forest.

2.4.2 Management Team Experience (G4.2)

Michael Greene – Project Coordinator and landowner. Is currently responsible for the general coordination of the project. He has a Bachelor's degree in Industrial Engineering from Kettering University in Michigan. He has lived in Brazil for 10 years, consulting related to complex real estate situations. Michael's specialty is the coordination of the program plots for the poor. This is a program to help each family gain title. He oversees an engineer and geomancer team of 4 people in the field and 2 people in

front of computers, categorizing each family a and there their plots of land are located. He also directs the security boat patrols and is taking quotations from companies to build 30 security houses within the project area.

Professor David Vale - **Technical Director,** is currently responsible for coordinating, managing and implementing the social aspects of the project. David is professor of Geography at the Federal University in the state of Para. He has worked over the last 20 years in numerous projects involving land survey work in the Amazon, making him suitable for Assisting Michael Greene with helping the Riverine people gain survey and land tenure documents. While this work is taking place, a huge amount of face-time occurs between the riverine people and traditional rural villagers and the technicians, allowing for strong relationships to be built and making these moments ideal for agroforestry lessons and eco-cook stove distribution.

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

Dr. Evelise da Cruz Pires Greene – (Association de Ribeirinhos e Moradores de Portel, Para Ltda.) Project Coordinator and is responsible for helping coordinate the team and help coordinate the work in the field.

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

The project is funded by the landowners. No outside investors are involved in the Rio Anapu-Pacaja project.

The financial mechanisms adopted is the following:

▪ Forestry activities (including feasibility study, site preparation, seedling, planting, cutting test, maintenance, etc.) were funded with private resources by the Project Owner only.

▪ Project costs (including Project Design Document, validation, verification, registration, etc.) were funded by Project Proponent only.

This breakdown of costs gives to the Project Owner the opportunity to concentrate his financial efforts only on the implementation of the forest activities and related co-benefits.

The financial mechanisms adopted to achieve the Project climate, community and biodiversity benefits is generated by the following revenue streaming:

▪ Mainly because of the revenue generation from the selling of carbon credits.

Project Owner has taken all the responsibility to cover all the costs and has been useful for the maintenance of project area. Based on the carbon credit sales next verification and developments will be focused. Project implementation and continuation of achieving CCB benefits is mainly dependent on carbon credit sales, since this is the only revenue generation stream for REDD projects globally.

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

Brazil Agfor signed the contract with the land owner's to implement several REDD+ projects in area of Brazil including the RioAnapu REDD Project. Brazil Agfor successfully financed the project in the Portel and Paragominas and is thus, well-aware of the financial resources required for the REDD+ projects in Brazil.

A comprehensive online search was performed and as a result, there are no reports that demonstrate that the Project Participants (Project Proponent, Project Owner and Land Owner) are involved or complicit in any form of corruption. Similarly, the various Project participants, professionals, enterprises linked to the planting, maintenance, harvesting of the forest report no judicial, disciplinary or tax records in the databases of the Brazil's National Police and the General Attorney. Such proofs are available for public consultation.

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

There is no commercially sensitive information in this monitoring report document, itself. Supporting documents which include commercially sensitive information that are not made publicly available include: the MOU; Contracts with Buyers and Service Providers; and documents related to project financials.

2.5 Legal Status and Property Rights

2.5.1 Recognition of Property Rights (G5.1)

Name of the Law	Description	Project Compliance
Law number 4771, September 15th 1965 (D.0.U of September 16th 1965)	The Brazilian forest code of 1965 – Brazilian Forest Code –provides for example: II – area of permanent preservation: protected area in the terms of article 20 and 30 of this law, covered or not by native vegetation, with the role of protecting the water resources, landscape, geological stability, biodiversity, flux of genes of plants and animals, protect de soil and secure a good environment for the human population; III – Legal Reserve Areas: Area located in the property or "posse rural" excluding the areas of permanent preservation, for the sustainable use of the natural resources, conservation and restoration of the ecological process, biodiversity conservation and refugee and protection of native animals and plants; Art. 150 – It is prohibited under empirical form the exploration of primitive forest of the Amazon watershed, but only can be explored in accordance of technical management plans approved by act of Public authorities, to be issued in one year *term.*	All properties have legal reserve areas and APPs defined. In accordance with the CARs (Environment Rural Registry) at SEMA (Environment *State Institute)*
Normative Instruction number 003 of May 23th 2007 – Executive office of environment , science and technology - *SECTAM*	Regulatory of the Environmental Rural Registry -CAR in the state of Pará and providence of other requirements. Art 1 – establish criteria and procedures for implementation of the CAR – PA as an instrument for identification of the rural properties in the state of Pará that must be issued by SECTAM-PA in accordance with this Normative Instruction. Art 2 – It is necessary for all rural properties in the state of Pará to be registered in the CAR-PA, even the properties that have no production activity. Art 3 – The issuance of the CAR-PA, as toll for identification of the property was done only once for each property. It has a registry number with a sequential number. This number is in all licenses, authorizations, and other documents issued for the environmental regularization of the rural property. This registry number is linked to the land, independent if the land is	Development of CAR in all lands in the Project Area

	sold, transferred or taken possession by other person. Single paragraph – There are no concessions of any license for the land that has no registry at CAR-PA. Art 4 – In the CAR-PA it is mentioned all the basic data of the rural property, Total area- AT, Area of permanent preservation – APP, legal reserve areas – ARL, and area of alternative use of the soil – AUAS , in addition the name and profession of the land owner, geographic coordinates and other information required by complementary laws	
Federal Decree number 5.975/2006	Art. 10 – Forest exploration and succession formations that require shallow harvest of the forest only are permitted under specific authorization for alternative land uses issued by SISNAMA. # 1o By alternative land use is understood any conversion of the forest to other land cover, such as settlements, agriculture, pasture, industry, energy generation, mining and transportation.	All properties have legal reserve areas and APPs defined. In accordance with the CARs (Environment Rural Registry) at SEMA (Environment State Institute)

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

The tenancy agreements between the Land Owner and the Project Owner and the Parcels where the Project is implemented, it proves that the Project doesn't invade any community property or government property.

2.5.3 Property Right Protection (G5.3)

Our project activities do not lead to involuntary removal or relocation of property rights holders from their lands or territories and does not force rights holders to relocate activities important to their culture or livelihood.

There will never be a relocation of anyone, unless they decide to relocate. If in the future any relocation of activities needs to be undertaken, it will take place with a written agreement that demonstrates that the agreement was made with the free, prior, and informed consent of those concerned and includes provisions for just and fair compensation.

All residents even land grabbers are permitted to keep the land they have taken up to 100 hectares.

However land grabbing are not be tolerated and when it occurs inside the project area, that had no one living when the project started in 2016. The project landowner has already and will aggressively pursue these threats within the legal system of Brazil.

2.5.4 Identification of Illegal Activity (G5.4)

Illegal activities in the area are constituted by unplanned timber extraction. Such logging operations are evidenced by the proliferation of pioneer roads as presented. It is known from literature that extractive operations take advantage from the fact that local farmers don't have land titles to displace them or to gain access to the forest resources nearby villages (Araujo, Bonjean et al. 2009). At the same time, illegal logging operations thrive whenever there are forested areas that seem to be under no-use and where the presence of the landowner is not made evident (Margulis 2004).

The Project has trained local community members to work as monitoring staff in the Project Area and the LMA. This is the main activity to identify, prevent and avoid illegal activities from taking place in the Project Area.

As support measures against illegal activities, the Project did provide land titles against conservation results to households living within the Project LMA Boundaries and did provide support to neighboring communities to achieve land tenure on unused public lands.

Stakeholders in neighboring communities were encouraged to report encroachers and illegal loggers trying to get into nearby forests. The Project did proceed to make the respective denounce to local authorities as just like the situation is occurring in the Project Area. Through this mechanism the project were generating positive leakage.

No identification of illegal activities were reported for this monitoring period.

2.5.5 Ongoing Disputes (G5.5)

It is not a dispute it is an imposition of a settlement area. It basically takes land that was unused and tries to get it to be used. This land has been omitted from the project.

Dispute:

15,936 hectares with title, and CAR, but in a settlement area.

The government of President Bolsanaro has blocked all Settlement Areas in the Amazon. These typically were done by legal or occasionally illegal or government actions to expropriate land. In this case the previous government in 2010 placed a settlement area on part of the property. However the actually settling of this area is on hold at the moment, the land is not invaded by land grabbers either, at least for the time being there is no conflict. However if a different president in the future is in favor of settlement areas then the land is in further risk of extremely high land invasion.

Reports by international ONGs have blamed settlement areas in the Amazon for 2/3rds of all deforestation. (Forest Trends)

However currently the Amazon has no more land that is not already taken. Thus to do a settlement area, one needs to take private property that is “undeveloped”.

15,936 hectares are affected by the settlement area. The land has the Cadastrol Ambiental Rural, the land has title deeds, tax records for 30 years.

The project plan is to use the next 2 years during the President of Bolsanaro to start a negotiation with the Federal Government to cancel the settlement area on these 15,936 hectares.

A meeting was originally schedule with Carlos Luiz Nabhan for March 12th in Brasilia, however the team postponed it due to the Coronavirus issues. Mr. Nabhan is in charge of resolving the Foundation issues with land in Brazil, his department is known as “Assuntos Fundiaria”

The titles that are affected are: Title Matricula 278 and INCRA CCIR number 045.071.051.829-2 as well as Matricula 166 a total of 4,356 hectares for this property is affected by this dispute. The other land affected is Title Matricula 166 which has 045.071.051-900-00 a total of 11,580 hectares is affected from these titles which have a total of 21,780 hectares.

2.5.6 National and Local Laws (G5.6)

Even though there aren't any national law or regulations regarding REDD policies, there are some local initiatives to encourage REDD projects. The majority of these initiatives are at the municipality level. For example: Paragominas, a municipality located at about 400 km from the project area, has approved (July 26th 2011) a municipality environmental policy (Law number 765/2011) that includes REDD. With this it was created a municipal-level system for reduction of emissions from degradation and deforestation that will be linked to a potential national or state REDD system.

As of July 1, 2019, the following is a list of all the international, national and state-level laws and regulations identified by the Project Proponents which are relevant to the Project. To the best of the Project Proponents' knowledge, there have not been any new laws relevant to the Project since the Project's inception.
Brazil is a party to numerous international conventions and treaties such as the:

1. Convention on Biological Diversity;
2. United Nations Framework Convention on Climate Change;
3. Convention on International Trade in Endangered Species of Wild Fauna and Flora;
4. International Tropical Timber Organization (i.e., Brazil is a Producing Member);
5. Ramsar Convention on Wetlands;
6. Universal Declaration of Human Rights;
7. United Nations Declaration on the Rights of Indigenous Peoples;
8. Convention on the Elimination of All Forms of Discrimination Against Women; and
9. International Labor Organization Convention.

There was also a Memorandum of Understanding (MOU) signed on March 3, 2010 between Brazil and the United States of America on "cooperation regarding climate change.

Furthermore, there was an international MOU between California (United States), Chiapas (Mexico) and Acre (Brazil) signed on November 16, 2010.
Local Legislation

The main laws governing the forestry sector in the State of Para are:

- State Law no. 7,389, of 04/01/2012: Defines the activities of local environmental impact in the State of Pará and other measures.

- State Law no. 7,381, of 3/19/2010: Provides for the restoration of the vegetation cover, of the riparian forests of the State of Pará.

- State Law no. 6,745, of 6/6/2005: Establishes the Ecological-Economic Macro zoning of the State of Pará and other measures.

- State Law no. 6,506 of 12/02/2002: It establishes the basic guidelines for the realization of the Ecological-Economic Zoning (EEZ) in the State of Pará and other measures.

- State Law no. 6,462, of 7/4/2002: Provides for the State Policy on Forests and other forms of vegetation.

- State Law no. 5,977, of 7/10/1996: Provides for the protection of wildlife in the State of Pará.

- State Law no. 5,887, of 5/9/1995: Provides for the State Environmental Policy and other measures.

- State Decree no. 518, of 09/05/2012: Establishes the Para-Forum of Climate Change and other measures.

- State Decree no. 216, of 9/22/2011: Provides for the environmental licensing of agrosilvopastoral activities carried out in altered and/or underutilized areas outside the legal reserve area and permanent preservation area in the rural properties of the State of Pará.

- State Decree no. 2,436, of 8/11/2010: Regulates the actions related, directly or indirectly, to agrosilvopastoral activities, carried out within the areas of alternative land use, considered to be of low environmental impact.

- State Decree no. 2,099, of 1/27/2010: It provides for the maintenance, recomposition, conduction of natural regeneration, compensation and composition of the Legal Reserve area of rural properties in the State of Pará and other measures.

- State Decree no. 1,697, of 6/5/2009: Establishes the Prevention, Control and Alternatives Plan for the deforestation of the State of Pará and other measures.

- State Decree no. 1,148, of 7/17/2008: Provides for the Rural Environmental Registry - CAR-PA, Legal Reserve area and other measures.

- State Decree no. 58, of 11/27/2006: Establishes the Register of Explorers and Consumers of Forest Products of the State of Pará - CEPROF-PA and the System of Commercialization and Transportation of Forest Products of the state of Pará SISFLORA-PA and its operational documents and other measures.

- State Decree no. 56, of 3/31/2006: Regulates provisions of State Law No. 6,462 of July 4, 2002; which provides for the State Policy on Forests and Other Forms of Vegetation and provides other measures, aiming at encouraging the recovery of altered and/or degraded areas and restoring legal reserve, for energy, wood, fruit, industrial or other purposes, through reforestation and agroforestry with native and exotic species and other measures. - State Decree no. 856, of 01/30/2004: Regulates the Register of Forest Activity.

- Resolution no. 54, of 10/24/2007 (APPENDIX1): Homologates the list of endangered species of flora and fauna in the State of Pará.

The RioAnapu REDD Project complies with all the law requirements of land use, not affecting natural forests and strategic ecosystems.

3 CLIMATE

3.1 Monitoring GHG Emission Reductions and Removals

3.1.1 Data and Parameters Available at Validation

Data / Parameter	**Deforestation**
Data unit	Hectare (ha)
Description	Maps of forest cover areas converted into non-forest cover areas
Source of data	Measured through data from the PRODES/INPE Project
Value applied	0.40%/year on average (2000-2014)

Justification of choice of data or description of measurement methods and procedures applied	Data from the PRODES Digital program (official mapping satellite of Brazilian Amazon Forest) were used to map the deforestation and production of the Forest Cover Excellence Brand Map. During the analyzed period, a total of 46 Landsat images were used. And for the classification of the images in the mapping of forest classes, non-forest vegetation, hydrography and deforestation, the ISOSEG method of unsupervised classification was used
Purpose of data	• - Determination of baseline scenario • - Calculation of baseline emissions • - Calculation of project emissions - Calculation of leakage
Comments	View the documents: - Câmara et al. 2006. Methodology for the calculation of the annual rate of deforestation in the Legal Amazon - Determination of the Forest Carbon Stock for the REDD+ Project

Data / Parameter	**CF**
Data unit	T
Description	Carbon contained in dry biomass
Source of data	Nogueira et al. (2008). Estimates of forest biomass in the Brazilian Amazon: New allometric equations and biomass adjustments of wood volume inventories. Forest Ecology and Management, v. 256, n. 11, p. 1853-1867, 2008
Value applied	0.485
Justification of choice of data or description of measurement methods and procedures applied	Value found in scientific literature
Purpose of data	• - Determination of baseline scenario • - Calculation of baseline emissions • - Calculation of project emissions - Calculation of leakage
Comments	

Data / Parameter	ABSLRRt
Data unit	Ha

Description	Annual area of baseline deforestation within the RR at year t
Source of data	Calculated, see Annex VM0015 tables
Value applied	Table 9a, 11a Annex VM0015 tables 2016: 18,788 2017: 18,788 2018: 18,788 2019: 18,788 2020: 6,263
Justification of choice of data or description of measurement methods and procedures applied	Calculated according to requirements of the VM0015 v1.1.
Purpose of data	Calculation of baseline emissions
Comments	Activity data for calculating GHG emissions in the baseline scenario

Data / Parameter	ABSLRR
Data unit	Ha
Description	Cumulative area of baseline deforestation in the reference region at year t
Source of data	Calculated, see VCS Annex
Value applied	Table 9a, 11a Annex VM0015 tables 81,415
Justification of choice of data or description of measurement methods and procedures applied	Calculated according to requirements of the VM0015 v1.1.
Purpose of data	Calculation of baseline emissions
Comments	Activity data for calculating GHG emissions in the baseline scenario

Data / Parameter	ABSLPAt
Data unit	Ha

Description	Annual area of baseline deforestation in the project area at year t
Source of data	Calculated, see VCS Annex ER sheet
Value applied	Table 9b, 11b, 13b of Annex VM0015 2016: 1,695.9 2017: 2,248.2 2018: 2,571.6 2019: 2,457.8 2020: 752.0
Justification of choice of data or description of measurement methods and procedures applied	Calculated according to requirements of the VM0015 v1.1.
Purpose of data	Calculation of baseline emissions
Comments	Activity data for calculating GHG emissions in the baseline scenario

Data / Parameter	ABSLPAicl,t
Data unit	Ha
Description	Area of initial (pre-deforestation) forest class icl deforested at time t within the project area in the baseline
Source of data	Calculated, see VCS Annex ER sheet
Value applied	Table 11b of Annex VM0015 2016: 1,695.9 2017: 2,248.2 2018: 2,571.6 2019: 2,457.8 2020: 752.0
Justification of choice of data or description of measurement methods and procedures applied	Calculated according to requirements of VM0015 v1.1, 5.1 by applying land cover map to the result of Table 9b
Purpose of data	Calculation of baseline emissions
Comments	Activity data for calculating GHG emissions in the baseline scenario

Data / Parameter	ABSLPAi,t
Data unit	Ha
Description	Annual area of baseline deforestation within stratum (i) of the project area at year t
Source of data	Calculated, see VCS Annex
Value applied	Table 9b of Annex VM0015 1,696 2,248 2,572 2,458 752
Justification of choice of data or description of measurement methods and procedures applied	Calculated according to requirements of VM0015 v1.1, 4.1.2.2
Purpose of data	Calculation of baseline emissions
Comments	Activity data for calculating GHG emissions in the baseline scenario

Data / Parameter	ABSLPA
Data unit	Ha
Description	Cumulative area of baseline deforestation within the project area at year t
Source of data	Calculated, see VCS Annex
Value applied	Table 9b, Table 11b, Table 13b of Annex VM0015 9,725
Justification of choice of data or description of measurement methods and procedures applied	Calculated according to requirements of the VM0015 v1.1.
Purpose of data	Calculation of baseline emissions
Comments	Activity data for calculating GHG emissions in the baseline scenario

Data / Parameter	ABSLPAz,t
Data unit	Ha
Description	Area of the zone z "deforested" at time t within the project area in the baseline case; ha
Source of data	Calculated, see VCS Annex ER sheet
Value applied	Table 13b of Annex VM0015 2016: 1,696 2017: 2,248 2018: 2,572 2019: 2,458 2020: 752
Justification of choice of data or description of measurement methods and procedures applied	Equal to values of Table 11b grouped by zones.
Purpose of data	Calculation of baseline em issions
Comments	Calculating net GHG emissions via post-deforestation C-stocks

Data / Parameter	ABSLLKt
Data unit	Ha
Description	Annual area of baseline deforestation within the leakage belt at year t
Source of data	Calculated, see VCS Annex ER sheet
Value applied	Table 9c, 11c, 13c of Annex VM0015 2016: 17,092 2017: 16,540 2018: 16,216 2019: 16,330 2020: 5,511
Justification of choice of data or description of measurement methods and procedures applied	Calculated according to requirements of VM0015 v1.1.
Purpose of data	Calculation of leakage

Comments	Activity data for calculating GHG emissions in the baseline scenario

Data / Parameter	ABSLLKicl,t
Data unit	Ha
Description	Area of initial (post-deforestation) forest class fcl deforested at time t within the leakage belt in the baseline case
Source of data	Calculated, see VCS Annex ER sheet
Value applied	Table 11c of Annex VM0015

2016	17,092.1
2017	16,539.7
2018	16,216.3
2019	16,330.2
2020	5,511.0

Justification of choice of data or description of measurement methods and procedures applied	Calculated according to requirements of VM0015 v1.1, 5.1 by applying land cover map to the result of Table 9c
Purpose of data	Calculation of leakage
Comments	Activity data for calculating GHG emissions in the baseline scenario

Data / Parameter	ABSLLKI,t
Data unit	Ha
Description	Annual area of deforestation in stratum (i) within the leakage belt at year t
Source of data	Calculated. See VCS annex – ER sheet
Value applied	Table 9c, 11c, 13c of Annex VM0015.

2016	17,092
2017	16,540
2018	16,216
2019	16,330
2020	5,511

Justification of choice of data or description of measurement methods and procedures applied	Activity data for calculating GHG emissions. Calculated according to requirements of VM0015 v1.1.
Purpose of data	Calculation of leakage
Comments	Activity data for calculating GHG emissions in the baseline scenario

Data / Parameter	ABSLLK
Data unit	Ha
Description	Cumulative area of baseline deforestation within the leakage belt at year t
Source of data	Calculated
Value applied	Table 9c, 11c, 13c of Annex VM0015. 71,689
Justification of choice of data or description of measurement methods and procedures applied	Calculated according to requirements of VM0015 v1.1.
Purpose of data	Calculation of leakage
Comments	Activity data for calculating GHG emissions in the baseline scenario

Data / Parameter	CFj
Data unit	Dimensionless
Description	Carbon fraction for tree tr, of species, group of species or forest type j
Source of data	IPCC GPG 2006 Chapter 6
Value applied	forest classes: 0.5 Post-deforestation classes: 0.47
Justification of choice of data or description of measurement methods and procedures applied	Default values IPCC GPG 2006, Chapter 6

Purpose of data	Calculation of baseline emission
Comments	Conversion from biomass to CO2e

Data / Parameter	Cabcl
Data unit	t CO2e ha-1
Description	Average carbon stock per hectare in the above-ground biomass carbon pool of LU/LC class cl
Source of data	ER sheet
Value applied	forest class: bh-M: 250.75 bh-MB: 350.22 bh-PM: 196.63 bmh-M: 216.28 bmh-MB: 448.24 bmh-PM and and bmh-PMt: 460.92 bms-T: 169.23 bp-M: 183.36 bp-MB: 181.47 bp-PM: 398.95 bs-MB: 165.78
Justification of choice of data or description of measurement methods and procedures applied	Derived from forest inventory data, IDEAM. See VCS Annex.
Purpose of data	Calculation of baseline emission
Comments	Emissions factors for estimating GHG emissions from deforestation.

Data / Parameter	Rj
Data unit	Relation factor
Description	Root shoot ratio
Source of data	IPCC/Literature value
Value applied	0.24

Justification of choice of data or description of measurement methods and procedures applied	Default value of 0.24 from IPCC Guidelines for National Greenhouse Gas Inventories. 2006. Table 4.3/Mokany 2006
Purpose of data	Calculation of baseline emission
Comments	Belowground biomass estimation

Data / Parameter	Cbbcl
Data unit	t CO2e ha-1
Description	Average carbon stock per hectare in the below-ground biomass carbon pool of LU/LC class cl
Source of data	ER sheet
Value applied	forest class: bh-M=60.18 bh-MB=122.05 bh-PM=47.19 bmh-M=51.91 bmh-MB=107.58 bmh-PM and bmh-PMt=75.65 bms-T=40.62 bp-M=44.01 bp-MB=43.55 bp-PM=95.75 bs-T=39.79
Justification of choice of data or description of measurement methods and procedures applied	Calculated by applying the default value of 0.24 from IPCC Guidelines for National Greenhouse Gas Inventories. 2006.
Purpose of data	Calculation of baseline emission
Comments	Emissions factors for estimating GHG emissions from deforestation.

Data / Parameter	Ctot(icl)
Data unit	t CO2e ha-1

Description	Average carbon stock per hectare in the below-ground biomass carbon pool of LU/LC class cl
Source of data	ER sheet
Value applied	forest class: bh-M=310.92 bh-MB=630.61 bh-PM=243.82 bmh-M=268.19 bmh-MB=555.82 bmh-PM y bmh-PMt=390.85 bms-T=209.85 bp-M=227.37 bp-MB=225.02 bp-PM=494.70 bs-T=205.57
Justification of choice of data or description of measurement methods and procedures applied	Derived from various forest inventory data. See ER sheet
Purpose of data	Calculation of baseline emission
Comments	Emissions factors for estimating GHG emissions from deforestation.

Data / Parameter	Ctoticl,t
Data unit	t CO2e ha-1
Description	Average carbon stock of all accounted carbon pools in forest class icl at time t
Source of data	Calculated, see Table Significancia, Annex VM0015
Value applied	Deemed de-minimus
Justification of choice of data or description of measurement methods and procedures applied	Significance analysis.
Purpose of data	Calculation of baseline emission
Comments	N.A

Data / Parameter	Cabfcl
Data unit	t CO2e ha-1
Description	Average carbon stock per hectare in the above-ground biomass carbon pool of final post-deforestation class fcl
Source of data	Calculated, see table CarbonPostdef, Annex GEI DB
Value applied	Grassland: 17.95 Heterogeneous farmland: 23.74 Crops: 21.78
Justification of choice of data or description of measurement methods and procedures applied	Calculated according to requirements of VM0015 v1.1.
Purpose of data	Calculation of baseline emission
Comments	Calculate GHG emissions from deforestation

Data / Parameter	Cp
Data unit	t CO2e ha-1
Description	Average carbon stock per hectare in the carbon pool p
Source of data	Table 17
Value applied	58.045
Justification of choice of data or description of measurement methods and procedures applied	Requirements of the VM0015 sec. 6.1.2.
Purpose of data	Calculation of baseline emission
Comments	Baseline GHG emissions estimates

Data / Parameter	Ctotfcl, t
Data unit	t CO2e ha-1
Description	Average carbon stock of all accounted carbon pools in non-forest class fcl at time t;
Source of data	N.A

Value applied	N.A
Justification of choice of data or description of measurement methods and procedures applied	Leakage management activities do not decrease carbon stocks.
Purpose of data	Calculation of baseline emission
Comments	N.A

Data / Parameter	ΔCabABSLKK
Data unit	t CO2e
Description	Cumulative baseline carbon stock changes for the above-ground biomass pool in the leakage belt
Source of data	Table 21.c.1, Annex VM0015
Value applied	6,11,65,314.78
Justification of choice of data or description of measurement methods and procedures applied	GHG accounting in the leakage belt.
Purpose of data	Calculation of leakage
Comments	N.A

Data / Parameter	ΔCbbABSLKK
Data unit	t CO2e
Description	Cumulative baseline carbon stock changes for the below-ground biomass pool in the leakage belt
Source of data	Table 21.c.2 Annex VM0015
Value applied	See Table 21.c.2 Annex VM0015 45,21,055
Justification of choice of data or description of measurement methods and procedures applied	GHG accounting in the leakage belt.

Purpose of data	Calculation of leakage
Comments	N.A

Data / Parameter	ΔCabBSLPA
Data unit	t CO2e
Description	Cumulative baseline carbon stock changes for the above-ground biomass pool in the project area
Source of data	Table 21.b.1 Annex VM0015
Value applied	See Table 21.b.1 Annex VM0015 67,30,043
Justification of choice of data or description of measurement methods and procedures applied	GHG accounting in the project area.
Purpose of data	Calculation of baseline emissions
Comments	N.A

Data / Parameter	ΔCbbABSLPA
Data unit	t CO2e
Description	Cumulative baseline carbon stock changes for the below-ground biomass pool in the project area
Source of data	Table 21.b.1 Annex VM0015
Value applied	See Table 21.b.1 Annex VM0015 4,31,903
Justification of choice of data or description of measurement methods and procedures applied	GHG accounting in the project area.
Purpose of data	Calculation of baseline emissions
Comments	N.A

Data / Parameter	ΔCADLK

Data unit	t CO2e
Description	Cumulative total decrease in carbon stocks due to displaced deforestation
Source of data	Table 36 Annex VM0015
Value applied	0
Justification of choice of data or description of measurement methods and procedures applied	GHG accounting from displaced leakage
Purpose of data	Calculation of leakage
Comments	N.A

Data / Parameter	ΔCBSLPA
Data unit	t CO2-e
Description	Total baseline carbon stock changes in the project area
Source of data	Table 36, Annex VM0015
Value applied	See Table 36, Annex VM0015 71,97,895
Justification of choice of data or description of measurement methods and procedures applied	GHG accounting in the project area
Purpose of data	Calculation of leakage
Comments	N.A

Data / Parameter	ΔCPSPA
Data unit	t CO2-e
Description	Cumulative project carbon stock change within the project area at year t
Source of data	See Tables 27 and 36, Annex VM0015
Value applied	Tables 27 and 36, Annex VM0015 359,895

Justification of choice of data or description of measurement methods and procedures applied	Calculation of net GHG emissions reductions
Purpose of data	Calculation of baseline emissions
Comments	N.A

Data / Parameter	ΔCUDdPA
Data unit	t CO2-e
Description	Cumulative actual carbon stock change due to unavoided unplanned deforestation at year t in the project area
Source of data	Table 27, Annex VM0015.
Value applied	3,59,895
Justification of choice of data or description of measurement methods and procedures applied	Assumption of project effectiveness
Purpose of data	Calculation of project emissions
Comments	N.A

Data / Parameter	ΔREDDt
Data unit	t CO2-e
Description	Net anthropogenic greenhouse gas emission reduction attributable to the AUD project activity at year t
Source of data	See Table 36, Annex VM0015
Value applied	Table 36, Annex VM0015 11,92,859 16,02,949 18,59,015 18,11,653 6,43,068

Justification of choice of data or description of measurement methods and procedures applied	The cumulative result of applying the VM0015 methodology
Purpose of data	Calculation of project emissions
Comments	Final GHG calculations

Data / Parameter	DLF
Data unit	%
Description	Displacement leakage factor
Source of data	Table 34, Annex VM0015
Value applied	5
Justification of choice of data or description of measurement methods and procedures applied	ex-ante leakage
Purpose of data	Calculation of leakage
Comments	N.A

Data / Parameter	EI
Data unit	%
Description	ex-ante estimated Effectiveness Index
Source of data	Estimate generated by the project
Value applied	0.40
Justification of choice of data or description of measurement methods and procedures applied	Estimate generated by the project
Purpose of data	Calculation of project emissions
Comments	N.A

Data / Parameter	ELK
Data unit	t CO2-e
Description	Cumulative sum of ex-ante estimated leakage emissions at year t
Source of data	Table 36 Annex VM0015
Value applied	0
Justification of choice of data or description of measurement methods and procedures applied	The cumulative result of applying the VM0015 methodology
Purpose of data	Calculation of leakage
Comments	N.A

Data / Parameter	RFt
Data unit	%
Description	Risk factor used to calculate VCS buffer credits
Source of data	VCS Non Permanence Risk analysis
Value applied	11.75
Justification of choice of data or description of measurement methods and procedures applied	see VCS Non-Permanence Risk Analysis
Purpose of data	Calculation of project emissions
Comments	N.A

Data / Parameter	VBCt
Data unit	t CO2-e
Description	Number of Buffer Credits deposited in the VCS Buffer at time t;
Source of data	See Table 36, Annex VM0015
Value applied	Table 36, Annex VM0015 2016 | 1,34,304

	2017: 1,80,583 2018: 2,09,554 2019: 2,04,382 2020: 72,964 Total = 801,786
Justification of choice of data or description of measurement methods and procedures applied	Calculated
Purpose of data	Buffer calculation
Comments	N.A

3.1.2 Data and Parameters Monitored

Data / Parameter	ABSLLKt
Data unit	Ha
Description	Annual area of deforestation within the leakage belt at year t
Source of data	Satellite images
Description of measurement methods and procedures to be applied	Brazil Agfor will be in charged for the climate monitoring according to the methodology VM0015 v1.1. Table 9c, 11c, 13c of Annex VM0015.
Frequency of monitoring/recording	At each verification period
Value applied	2016: 17,092 2017: 16,540 2018: 16,216 2019:

		16,330
	2020	5,511
Monitoring equipment	GIS software	
QA/QC procedures to be applied	Quality control/quality assurance (QA/QC) procedures will be performed by PP	
Purpose of data	Activity data for calculating GHG emissions. Calculated according to requirements of VM0015 v1.1.	
Calculation method	Calculation of leakage	
Comments	N.A	

Data / Parameter	ABSLPA
Data unit	Ha
Description	Cumulative area of deforestation within the project area at year t
Source of data	Satellite images
Description of measurement methods and procedures to be applied	Brazil Agfor will be in charged for the climate monitoring according to the methodology VM0015 v1.1. Table 9b, 11b, 13b of Annex VM0015.
Frequency of monitoring/recording	At each verification period
Value applied	9,725
Monitoring equipment	GIS software
QA/QC procedures to be applied	Quality control/quality assurance (QA/QC) procedures will be performed by PP

Purpose of data	Activity data for calculating GHG emissions. Calculated according to requirements of VM0015 v1.1.
Calculation method	Calculation of project emissions
Comments	N.A

Data / Parameter	ABSLPAt
Data unit	Ha
Description	Annual area of deforestation in the project area at year t
Source of data	Satellite images
Description of measurement methods and procedures to be applied	Brazil Agfor will be in charged for the climate monitoring according to the methodology VM0015 v1.1. Table 9b, 11b, 13b of Annex VM0015.
Frequency of monitoring/recording	At each verification period
Value applied	2016: 1,695.9 2017: 2,248.2 2018: 2,571.6 2019: 2,457.8 2020: 752.0
Monitoring equipment	GIS software
QA/QC procedures to be applied	Quality control/quality assurance (QA/QC) procedures will be performed by Brazil Agfor
Purpose of data	Activity data for calculating GHG emissions. Calculated according to requirements of VM0015 v1.1.

Calculation method	Calculation of project emissions
Comments	N.A

Data / Parameter	ΔCPSPAt
Data unit	t CO2-e
Description	Annual project carbon stock change within the project area at year t
Source of data	Satellite images and carbon stocks defined in 4.1
Description of measurement methods and procedures to be applied	Brazil Agfor will be in charged for the climate monitoring according to the methodology VM0015 v1.1. Table 27 and Table 36, Annex VM0015.
Frequency of monitoring/recording	At each verification period
Value applied	(60,290) (81,062) (94,064) (91,738) (32,741)
Monitoring equipment	N.A
QA/QC procedures to be applied	Quality control/quality assurance (QA/QC) procedures will be performed by Brazil Agfor
Purpose of data	Calculation of project emissions

Calculation method	Activity data for calculating GHG emissions reductions.
Comments	N.A

Data / Parameter	ΔREDD
Data unit	t CO2-e
Description	Cumulative net anthropogenic greenhouse gas emission reduction attributable to the AUD project activity
Source of data	Methodology VM0015 v1.1. Table 36, Annex VM0015
Description of measurement methods and procedures to be applied	According to the methodology VM0015 v1.1. Table 36, Annex VM0015.
Frequency of monitoring/recording	At each verification period
Value applied	71,09,545
Monitoring equipment	N.A
QA/QC procedures to be applied	Brazil Agfor will assign a QA/QC coordinator
Purpose of data	Calculation of project emissions
Calculation method	Final GHG calculations
Comments	N.A

Data / Parameter	ΔREDDt
Data unit	t CO2-e

Description	Net anthropogenic greenhouse gas emission reduction attributable to the AUD project activity at year t
Source of data	Methodology VM0015 v1.1. Table 36, Annex VM0015
Description of measurement methods and procedures to be applied	According to the methodology VM0015 v1.1. Table 36, Annex VM0015
Frequency of monitoring/recording	At each verification period
Value applied	11,92,859 16,02,949 18,59,015 18,11,653 6,43,068
Monitoring equipment	N.A
QA/QC procedures to be applied	Brazil Agfor will assign a QA/QC coordinator
Purpose of data	Calculation of project emissions
Calculation method	Final GHG calculations
Comments	N.A

Data / Parameter	RFt
Data unit	%
Description	Risk factor used to calculate VCS buffer credits
Source of data	VCS Non Permanence Risk analysis

Description of measurement methods and procedures to be applied	AFOLU Non permanence Risk Tool v.3.2
Frequency of monitoring/recording	At each verification period
Value applied	11.75
Monitoring equipment	N.A
QA/QC procedures to be applied	N.A
Purpose of data	Calculation of project emissions
Calculation method	N.A
Comments	Buffer calculation

Data / Parameter	VBCt
Data unit	t CO2-e
Description	Number of Buffer Credits deposited in the VCS Buffer at time t;
Source of data	Methodology VM0015 v1.1. Table 36, Annex VM0015
Description of measurement methods and procedures to be applied	According to the methodology VM0015 v1.1. Table 36, Annex VM0015
Frequency of monitoring/recording	At each verification period
Value applied	1,34,304 1,80,583

	2,09,554 2,04,382 72,964
Monitoring equipment	N.A
QA/QC procedures to be applied	N.A
Purpose of data	Calculation of project emissions
Calculation method	N.A
Comments	Buffer calculation

Data / Parameter	VCUt
Data unit	t CO2-e
Description	Number of Verified Carbon Units (VCUs) to be made available for trade at time t
Source of data	Methodology VM0015 v1.1. Table 36, Annex VM0015
Description of measurement methods and procedures to be applied	According to the methodology VM0015 v1.1. Table 36, Annex VM0015
Frequency of monitoring/recording	At each verification period
Value applied	10,58,555 14,22,367 16,49,462 16,07,271 5,70,104

Monitoring equipment	N.A
QA/QC procedures to be applied	N.A
Purpose of data	Calculation of project emissions
Calculation method	N.A
Comments	Buffer calculation

3.1.3 Monitoring Plan

Quality control and quality assurance procedures:

As monitoring was conducted mainly by using remote sensing imagery in a GIS environment, quality management procedures are related with GIS data quality. When working with geographical information, positional accuracy is often synonymous with data quality. Data compilation from several different sources often requires very good data quality.
Quality procedures must be employed to ensure that data are properly collected, handled, processed, used and maintained throughout the data lifecycle while performing monitoring activities.

For Satellite Images, GIS and GPS data:
Quality Management Procedures before data collection:
- Monitoring was done by trained project personnel, understanding the importance of accurate data collecting.

- Format: Satellite Images were collected in TIFF raster digital format. Vector files were collected in shape file GIS format. GPS was also collected in digital format.

- Spatial Reference: Data was always use the Projected UTM System, South 22 Zone, Datum WGS84.

- Imagery: Landsat LCDM (Landsat 8) is the type of image selected for permanent monitoring.

- Source: Imagery were downloaded from the US Geologic Survey website (currently http://glovis.usgs.gov/).

- Responsibility for quality assurance was assigned to a person with adequate background suitable to the task.

- References on GPS and satellite images calibration are described in this document in the section “Equipment calibration”.

- Metadata: Metadata was created for the data to be collected.

- GPS accuracy: To obtain accuracies such as those reported, the GPS Receiver must be located in an area that is free from overhead obstructions and reflective surfaces and have a good field of view to the

horizon (for example, they do not work very well under a heavy forest canopy). Data coordinates were collected in meters using the spatial reference units noted above.

- The staff member for monitoring evaluates the data gathering team to identify errors in field techniques, verify measurements processes and correct any identified problems before measurements are carried out.

Quality Management Procedures during data entry:

- Protocols and Guides: Data in digital formats must be treated according to protocols on data management. Methodology to process and classify satellite images must be carried out according to the annexed section on “Classification and Accuracy Assessment”.

- Design an efficient storage system for the data: Data was stored in a computerized database for use with specialized software (GPS, GIS, Remote sensing) for processing it. One person was in charge of managing this dataset.

- All modifications to the dataset shall be documented.
Quality Management Procedures after data entry:

- Regular backup of data helps ensure consistent quality levels.

- Data integrity: Data was not altered or destroyed in an unauthorized manner, or accidentally or maliciously modified.

- Data integration: Geographical datasets are difficult to integrate when there are inconsistencies between them, which may involve both the spatial and attributes characteristics of the data.

- Given the timeframe of the project, and the pace of production of updated versions of software and new hardware for storing data, electronic copies of data and reports were periodically updated or converted to a format that can be assessed by any future software applications.

All activities included in the Monitoring Plan are documented, as guides or protocols to be used permanently. It is required a data quality testing in each phase of data capture, including validation of GPS coordinates measured in the field (at a level community scale), choice of relevant data from a relevant source, positional accuracy of satellite images and GIS data, using automated GIS software tools and accuracy assessment of classified images.

Positional accuracy in satellite images

It is very important to ensure that remote sensing images in a time series overlay properly to each other and to other GIS maps used in the analysis. To geometrically correct the acquired images, it is necessary to have at least one orthorectified image to use as a reference image, and to undertake a process called geo-referencing.

Images were geometrically corrected to the projection UTM Zone 22 South datum WGS 1984 using an orthorectified image by collecting manually selected control points in both images. Among the features to be identified as control point locations we have road or stream intersections, the mouth of a stream, the corner of an established plot, or roads corners. The second-order polynomial transformation and the nearest neighbor resampling technique could be used to correct images. RMS errors of less than one pixel obtained from the geometric correction process was acceptable.

Accuracy of the baseline deforestation

Accuracy assessment follows the guidelines of the document „Methodology Procedures Used in Processing, Classification, and Accuracy Assessment of Remotely Sensed Data" included the excel sheet submitted to VVB.

GHG emissions calculations

The tables to calculate GHG emission benefits from the project have been reviewed during the verification process and errors have been corrected. A cell by cell review was performed to follow the formulas and values to make sure all were correct.

The Operational and Management Structure and responsibilities for the Project was divided into three basic departments: General Management, Technical Management and Operators (Figure 4).

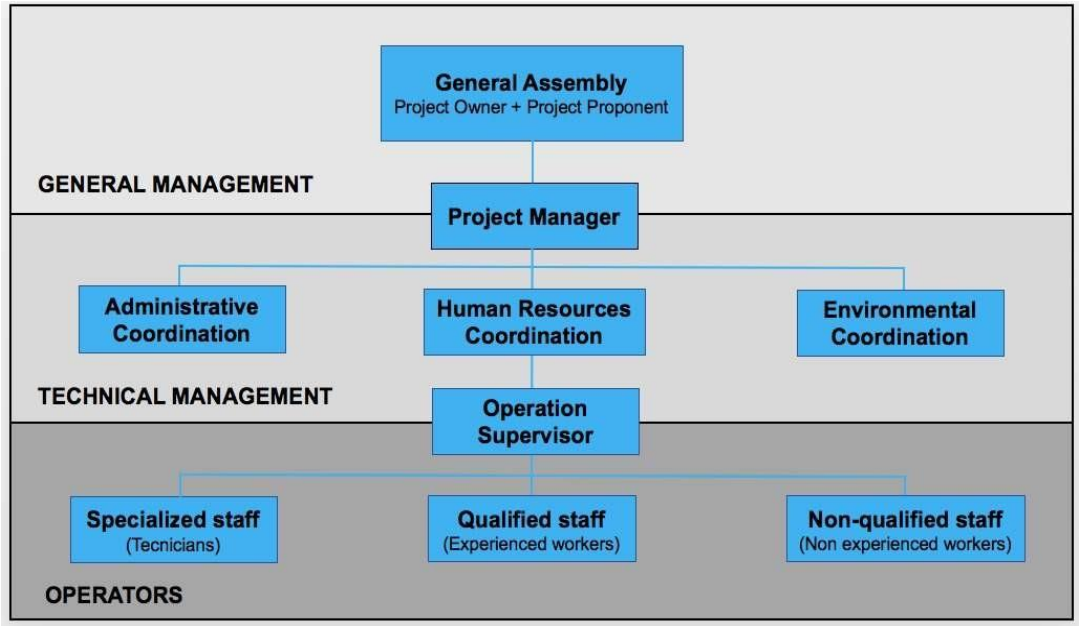


Figure 4: Operational and Management Structure.

Data Collecting Process

Random sampling method was chosen for ecological data collection, procedure is as explained: select one point randomly as your starting point. Then select the next point using a random number generator, and so on and so forth, until the required number of plots is reached. Plot size and location varies between 100 to 1000 sq.mts. Team recorded the plots by taking GPS coordinates and marked the boundary as well. Plots can be square or rectangular or circular depending on the geography.

Field sampling:

Sample size or number of plots to be established was based on the following calculation:

$$n = \frac{t^2 s^2}{E^2}$$

Where;

n = samples to estimate ±E

t = t-value from student t-test table

s = standard deviation from prior/ trial run works

E = standard error of the mean

The project accounting area was divided into eight main clusters. Within each cluster sample plots were randomly established. All plots had their GPS coordinates recorded. The sampling strategy used was cluster sampling in which 10 to 32 plots were randomly clustered together in one area. Within the cluster the plots were spaced at a minimum distance of 1 to 2 km.

A total of 120 sample plots were the ideal number of plots to generate a representative data set based on the calculation. However, in the field one-hundred-forty sample plots were established of which seventy-five percent (75%) of the sample plots were converted to permanent sample plots (PSP).

Entire field process was carried out as mentioned in the carbon inventory report of the project.

Once the personal was contracted for monitoring the Project activities, the data collecting process started. For this component of the Project, permanent plots have been the base of data collecting. Data have been collected by the field crews that were composed by at least four members. The crew was composed by four forestry experts (qualified staff), one of them being the crew leader, and one additional person (qualified or not) that is familiarized with the local site, routes, strata, etc. The responsibilities for each crew member are summarized in Table 1.

Table 1: Crew members' responsibilities.

Crew member	Responsibilities
Forestry expert (Crew leader)	Organizing all the phases of the fieldwork, from the preparation to the data collection. This includes: preparing the fieldwork by carrying out bibliographic research, preparing field forms and maps, plan the work for the crew, administer the location of plots, ensure that field forms are properly filled in and that collected data is reliable, organize meetings after fieldwork in order to sum up daily activities, and organize working safety plan. When needed, crew leader will be in charge of training the crew for guarantying the accuracy of the data collection. Additionally, he had to contact and maintain good relationship with the survey

	manager and overview the progress achieved in the fieldwork.
Forestry expert (assistant of the crew leader)	Help the crew leader to carry out his/her task, take necessary measurements and observations, make sure that the equipment of the crew is always complete and operational, and supervise and guide workers.
Forestry expert	Measure DBH, height, litter, deadwood
Local person	Help to measure distances, facilitate access and visibility to technicians and inform about access to the strata.

TASK 1: Monitoring changes in carbon stocks and GHG emissions for periodic verification

1.1 Monitoring actual changes in carbon stocks and GHG emissions in the project area;
1.2 Monitoring leakage;
1.3 Ex-post calculation of GHG emission reductions.
1.4 Monitoring the impacts of natural disturbances and other catastrophic events.
1.1 Monitoring actual changes in carbon stocks and GHG emissions in the project area
1.1.1 Monitor the Implementation of the project

This task of developing the monitoring report was the responsibility of the landowners. The landowner was in charge of sending patrol to the project area to identify loggers and squatters. The monitoring activities are done by STA solutions located in Belem.

Monitoring was~~te~~ conducted mainly by using remote sensing imagery and forest inventory made for the project. Remotely sensed data have been widely used as a cost effective tool in the mapping and monitoring of large areas (e.g. Danaher et al. 1998; Gould 2000; Mayaux et al. 2000; Freeman et al. 2002). Satellite optical or radar images could be used depending on the availability of the scenes, cloud cover and related acquisition and processing costs. Satellite images need be calibrated (pre-processing procedures) before performing the principal analysis. These preprocessing operations could include (1) radiometric preprocessing to adjust digital values for effects of a hazy atmosphere and/or (2) geometric preprocessing to bring an image into registration with a map or another image (Campbell and Wynne, 2011).

At the same time, monitoring patrols composed by local people that patrol the Project Area to dissuade any invasion or illegal logging attempt. Fieldwork was done using a ground-based GPS approach to register the geographical position of any activity that need to be reported.

The Project Area was divided in patrols to better manage the extent of the Project Area and LMA and assure an effective on the ground monitoring. Patrol leaders oversee the activities, compile, and analyze the results from monitoring patrols3 (Figure 2). Patrol leaders report to the office in Belem. These two offices were responsible of informing local authorities about illegal activities happening in the Project Area and to follow up the enforcement of the required measures to remove invaders (Figure 3).

EQUIPMENT CALIBRATION

GPS

Besides any operational considerations when using a GPS receiver in the field, this equipment need not be calibrated for this monitoring. Average positional accuracy of most GPS receivers (15 meters) is enough to register monitoring activities in the field (i.e. location of loggers or squatters in the Project Area). GPS coordinates were used 'for information only' and its accuracy is considered appropriate to clearly show in maps where any feature or activity in the Project Area is located.

Satellite Images

Monitoring was conducted mainly by using remote sensing imagery. Before processing the image data to produce land cover maps, satellite imagery need be calibrated, this is, some preprocessing procedures must be applied to the imagery. These procedures enhance the quality of the image data by reducing or eliminating various radiometric and geometric errors caused by internal and external conditions.

a. Geometric correction procedures address errors in the relative position of pixels due to factors such as variation in altitude, attitude and velocity of the sensor platform, Earth curvature, panoramic distortion, relief displacement and non-linearities in the sweep of a sensor (Lillesand and Kiefer 1994). It is very important to ensure that images in a time series overlay properly to each other and to other GIS maps used in the analysis. To geometrically correct the images, it is necessary to have a spread of Ground Control Points (GCPs) located either on a 1:100,000 official topography or another rectified image, to undertake a process called geo-referencing. For all resampling operations, we use the Nearest Neighbor algorithm to maintain radiometric integrity of the image.

b. Radiometric correction procedures account for errors that affect the brightness value of pixels due to both a sensor system detector error and an environmental attenuation error (e.g. changes in scene illumination, atmospheric conditions and viewing geometry [Lillesand and Kiefer 1994]). One of these procedures involved conversion of the measured multi-espectral brightness values to top of atmosphere reflectance units. This normalization procedure is crucial when creating multi-temporal and/or multi-spatial mosaics as it largely removes variations between these images due to sensor differences, Earth-sun distance and solar zenith angle (caused by different scene dates, overpass time and latitude differences)(Bruce and Hilbert, 2004).

The activities of the Project and their monitoring can be grouped as follows:

1. **Forest monitoring:**

Monitoring of forest cover was done mainly by remote sensing imagery and as per the forest inventory report made for the project. The choice of imagery depend on the availability of scenes, cloud cover, and related acquisition and processing costs. Remote sensing imagery could be either satellite (i.e Landsat) or radar (i.e Alos Palsar) or a combination of both.

LULC-change analysis using remote sensing imagery could be conducted annually of by periods depending on the availability of scenes. Therefore, verification event could occur annually of by periods.

The fixed degradation frontier map was updated at each verification event to account for areas that may have changed their carbon stocks due to unavoided illegal logging activities. The fixed degradation frontier was assessed based on the availability of scenes, cloud cover, and related acquisition and processing costs. Remote sensing imagery could be either satellite (i.e Landsat) or radar (i.e Alos Palsar) or a combination of both.

The landowners did limited patrols from 2012 to 2016 due to lack of money. These patrols would generate a hand-written report in Portuguese and then a law firm hired by the landowner would clean the reports and translate these to English. During this period no GPS points were taken to identify the exact location of deforestation activities. All original hand-written repots and the official translations are available in digital formats.

Prior to July 2016, patrolling activities were scaled-up by hiring local people as forest monitoring patrols. They were responsible for each monitoring patrol who generate monthly reports unless illegal activities are spotted, in which case a report was submitted immediately as described in the next section.

Of particular importance is the implementation of the surveillance system that allows continuous monitoring of the Project Area to prevent the entry of squatters and illegal loggers. The objective of forest patrolling is to make evident the presence of the landowner and dissuade pioneer agents (i.e loggers, squatters) from encroaching the Project Area. This activity functions as a complement of remote sensing-based monitoring but does not replace it. Furthermore, the generation of carbon credits for avoided emissions does not rely on the results of patrolling,

The Project Area was divided in patrols (based on river affluents) to facilitate monitoring such a large area. Each Patrol leader compiles the information from patrolling reports into adequate digital format5 all the information from the reports to keep track of the areas that are being patrolled each week and what are the findings of each patrol. Digital reports were sent to the office in Belem to be organized and stored.

The actual size of a patrol and the numbers of community members to be hired depends on the results from the census that were conducted after validation. The area of a patrol is reasonable to allow for an effective surveillance given available staff. If not enough local community members are willing to work as monitoring staff; Anapu-Pacaja has hired people from Portel, Para urban area.

Patrols did identify illegal activities (invasions and timber extraction) and reported them the patrol leader. When illegal activities are spotted, patrols geo-reference the finding and make a short description of what was found. Patrols approach squatters or loggers to let them know –in good terms- that this is private land, they cannot undertake such activities there and they must leave immediately. (virtual squatters are handled in the Brazilian legal system)

With the information supplied by each patrol, patrol leaders complete a monitoring report that include at least the coordinates where the illegal activities are taking place, the date and a brief report of what was identified. Finally, each patrol leader did submit this information to the local police in Portel and to IBAMA in Portel and in Belem.

Monitoring reports are numbered, filed appropriately, and be scanned to have digital copies in an archive as backup.

Once every two months, patrol leaders perform random site visits to verify that monitoring patrols are covering the assigned area and that each patrol is wearing the adequate field equipment. Patrol leaders complete a report that was submitted to office in Belem. A monitoring patrol that does not wear adequate field equipment or does not cover the designed monitoring route, did receive a warning. If a patrol is a reoffender, the patrol leader has a meeting with the offender to attempt to correct the issues.

Maps, reports and records are available to validators at each verification event.

2. **Biodiversity monitoring:** monitoring will follow the guidelines described in section “B3. Biodiversity Impact Monitoring” of the associate CCB PDD.

Biodiversity activities and their indicators will be:

1. Biodiversity protection is directly related with ecosystem health, which is in turn linked to forest cover. Positive impacts on biodiversity will be estimated indirectly through remote analysis of forest cover. Preserving forest cover through avoided deforestation and degradation will allow implying that net positive impacts on biodiversity are being generated.

2. Biodiversity spotting by local people. Local people participating in the biodiversity component of the project will be in charge of reporting animal spotting at the boundaries of the LMA and the PA. Spotting frequency and animal species identified will indirectly assess net positive impacts on ecosystem health.

3. Active biodiversity monitoring. Local people will be hired to monitor ants, bats and bryophytes. Results are a good indirect indicator of ecosystem health.

All information should be properly reported following the protocols developed by Anapu-Pacaja after the fieldwork . Reports should provide geo-referenced information about biodiversity spotting and data as determined by the protocols. All data from the reports should be input into electronic format prior to the analysis. Maps, reports and records will be available to validators at each verification event.

3. Social Monitoring: will be undertaken by social monitoring squads. There will be a responsible for each monitoring squad who will generate monthly activities reports. Each squad will be in charge of specific villages and will use approved questionnaires to gather socio-economic data about the impacts of the activities of the Project. Questionnaires will also include a section for comments to include information that is not contained in the template.

Monthly reports will be submitted to the brigade leader who will input the information into electronic format to analyze it. The results from this analysis will be used to assess the impact of each activity and to identify villages that require particular attention.

The Project management teams in Protel and Belem will held bimonthly meetings to assess the effectiveness of the activities in local villages. Based on the information supplied by the brigade leaders, the management teams will improve the proposed activities. Maps, reports and records will be available to validators at each verification event.

1.1.2 Monitoring change and land use within the project area.

This task will be the responsibility of Anapu-Pacaja. According to the categories presented in Table 35 of the VM0015 methodology (Table 2), the Project will implement MRV to identify and assess LULC-changes within the Project Area.

Table 2: Categories that require MRV (refer to Table 35 – VM0015 methodology)

ID	Type	Conditions under which monitoring is mandatory	Explanations	Applicability to the Project
I	Area of forest land converted to non-forest land	Mandatory in all AUD project activities		Applicable
II	Area of forest land undergoing carbon stock decrease	Mandatory only for AUD project activities having planned logging, fuel-wood collection and charcoal production activities above the baseline	Change in carbon stock must be significant according to ex-ante assessment, otherwise monitoring is not required	Does not apply because none of the Project's activities involve planned logging, fuel-wood collection and charcoal production

III	Area of forest land undergoing carbon stock increase	Mandatory only for AUD project activities wishing to claim carbon credits for carbon stock increase	Increase must be significant according to ex-ante assessment and can only be accounted on areas that will be deforested in the baseline case	Does not apply because the project will not claim carbon credits from carbon stock increase.

Monitoring of forest cover will be done mainly by remote sensing imagery. The choice of imagery will depend on the availability of scenes, cloud cover, and related acquisition and processing costs.

Remote sensing imagery could be either satellite (i.e Landsat) or radar (i.e Alos Palsar) or a combination of both.

LULC-change analysis using remote sensing imagery could be conducted annually of by periods depending on the availability of scenes. Therefore, verification event could occur annually of by periods.

LULC-change analysis will be done for the the Reference Region, Project Area and Leakage Belt using the protocol described in detail in the excel sheet submitted to VVB.. This imagery classification analysis will result in forest and non-forest classes that should be compared with the results from the deforestation model for the date of a specific verification event. The results from such analysis will be reported using the appropriate VCS" tables and formats.

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

None of the cases presented in Section 1.1.3 of the VM0015 methodology apply to the Project (Table 3). So, the Project is not required to set sampling plots to measure carbon stocks in either the project area or leakage belt.

Table 3: Applicability criteria for monitoring non-CO2 gasses

	ID	Type	Applicability to the Project
	Within the Project Area		
Mandatory monitoring of the carbon stocks	I	Areas subject to significant carbon stock decrease in the project scenario according to ex-ante assessment	Does not apply
	II	Areas subject to unplanned and significant carbon stock decrease e.g., due to uncontrolled forest fires and other catastrophic events	Does not apply
	III	Area of forest land undergoing carbon stock increase	Does not apply
	Within Leakage Management Area		

	IV	Areas subject to planned and significant carbon stock decrease in the project scenario according to ex-ante assessment	Does not apply
Option monitoring of carbon stocks	Within the Project Area		
	V	Areas subject to carbon stock increase after planned harvest activities	Does not apply
	VI	Areas recovering after disturbances	Does not apply
	Within Leakage Management Areas		
	VII	Areas subject to carbon stock increase due to leakage prevention measures	Does not apply
	Within Leakage Belt		
	VIII	Areas undergoing significant changes in carbon stock	Does not apply

1.1.4 Monitoring of the impacts of natural disturbances and other catastrophic events

Catastrophic events are not expected in the Project Area or Leakage Belt. Nevertheless, if by any chance a catastrophic event presents during the Project's lifetime, such events will be evaluated and reported if significant. Monitoring will follow VM0015 Tables 20.f, 20.g, 21.f and 21.g to report reductions by catastrophic events.

1.1.5 Total ex post estimated actual net carbon stock changes and GHG emissions in the project area

All ex post estimations in the Project Area will be summarized using the format of Table 24 of the VM0015 methodology.

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

A monitoring plan for climate benefits along with the monitoring plan and results were communicated to the communities and other stakeholders via the website for the project where the Monitoring plan is listed.

In addition to this the technicians who travel to the land are required to carry all the most up-to-date documents and go through them with the communities at their request.

The head of each household was shown a hard copy.

3.2 Quantification of GHG Emission Reductions and Removals

3.2.1 Baseline Emissions

Total emissions in the baseline scenario for year 2020 are 285,836 tCO2e as presented in Table 4.

Table 4: Total net baseline carbon stock change in baseline scenario in the Project area (table 21b of VCS VM0015)

Carbon stock changes in the above-ground biomass per initial forest class *icl*		Total carbon stock change in the above-ground biomass of the initial forest classes in the project area		**Carbon stock changes in the above-ground biomass per post-deforestation zone *z***		Total carbon stock change in the above-ground biomass of post-deforestation zones in the project area		Total net carbon stock change in the above-ground biomass of the project area	
ID icl>	*1*	$\triangle Cab\ BSLPA_{icl,t}$	$\triangle Cab\ BSLPA_{icl}$	*ID iz>*	*1*	$\triangle Cab\ BSLPA_{z,t}$	$\triangle Cab\ BSLPA_{z}$	$\triangle Cab\ BSLPA_{t}$	$\triangle Cab\ BSLPA$
Name >		annual	cumulative	Name >		annual	cumulative	annual	cumulative
Project year *t*	tCO_2-e	tCO_2-e	tCO_2-e	Project year *t*	tCO_2-e	tCO_2-e	tCO_2-e	tCO_2-e	tCO_2-e
0	0	0	0	0	0	0	0	0	0
1	(11,66,416)	(11,66,416)	(11,66,416)	1	-	-	-	(11,66,416)	(11,66,416)
2	(15,46,324)	(15,46,324)	(27,12,740)	2	3,281	3,281	3,281	(15,49,605)	(27,16,021)
3	(17,68,753)	(17,68,753)	(44,81,492)	3	7,631	7,631	10,912	(17,76,384)	(44,92,405)
4	(16,90,458)	(16,90,458)	(61,71,950)	4	12,607	12,607	23,519	(17,03,065)	(61,95,469)
5	(5,17,211)	(5,17,211)	(66,89,161)	5	17,362	17,362	40,881	(5,34,573)	(67,30,043)

Carbon stock changes in the below-ground biomass per initial forest class *icl*		Total carbon stock change in the below-ground biomass of the initial forest classes in the project area		**Carbon stock changes in the below-ground biomass per post-deforestation zone *z***		Total carbon stock change in the below-ground biomass of post-deforestation zones in the project area		Total net carbon stock change in the below-ground biomass of the project area	
ID icl>	*1*	$\triangle Cab\ BSLPA_{icl,t}$	$\triangle Cab\ BSLPA_{icl}$	*ID iz>*	*1*	$\triangle Cab\ BSLPA_{z,t}$	$\triangle Cab\ BSLPA_{z}$	$\triangle Cab\ BSLPA_{t}$	$\triangle Cab\ BSLPA$
Name >		annual	cumulative	Name >		annual	cumulative	annual	cumulative

Project year *t*	tCO_2-e	tCO_2-e	tCO_2-e
0	0	0	0
1	(25,986)	(25,986)	(25,986)
2	(60,435)	(60,435)	(86,421)
3	(99,840)	(99,840)	(1,86,261)
4	(1,37,500)	(1,37,500)	(3,23,761)
5	(1,49,023)	(1,49,023)	(4,72,784)

Project year *t*	tCO_2-e	tCO_2-e	tCO_2-e
0	0	0	0
1	-	-	-
2	3,281	3,281	3,281
3	7,631	7,631	10,912
4	12,607	12,607	23,519
5	17,362	17,362	40,881

tCO_2-e	tCO_2-e
0	0
(25,986)	(25,986)
(57,154)	(83,140)
(92,209)	(1,75,348)
(1,24,894)	(3,00,242)
(1,31,661)	(4,31,903)

Carbon stock changes in litter per initial forest class *icl*		Total carbon stock change in litter of the initial forest classes in the project area	
ID icl>	*1*	$\triangle Cab\ BSLPA_{icl,t}$	$\triangle Cab\ BSLPA_{icl}$
Name >		annual	cumulative
Project year *t*	tCO_2-e	tCO_2-e	tCO_2-e
0	0	0	0
1	(13,397)	(13,397)	(13,397)
2	(17,761)	(17,761)	(31,158)
3	(20,316)	(20,316)	(51,474)
4	(19,416)	(19,416)	(70,890)
5	(5,941)	(5,941)	(76,831)

Carbon stock changes in litter per post-deforestation zone *z*		Total carbon stock change in litter of post-deforestation zones in the project area	
ID iz>	*1*	$\triangle Cab\ BSLPA_{z,t}$	$\triangle Cab\ BSLPA_{z}$
Name >		annual	cumulative
Project year *t*	tCO_2-e	tCO_2-e	tCO_2-e
0	0	0	0
1	-	-	-
2	3,281	3,281	3,281
3	7,631	7,631	10,912
4	12,607	12,607	23,519
5	17,362	17,362	40,881

Total net carbon stock change in litter of the project area	
$\triangle Cab\ BSLPA_{t}$	$\triangle Cab\ BSLPA$
annual	cumulative
tCO_2-e	tCO_2-e
0	0
(13,397)	(13,397)
(14,480)	(27,877)
(12,685)	(40,562)
(6,810)	(47,371)
11,422	(35,950)

Project year *t*	Baseline carbon stock changes		Baseline GHG emissions	
	annual	cumulative	annual	cumulative
	$\Delta CBSLPA_t$	$\Delta CBSLPA$	$EBBBSLPA_t$	$EBBBSLPA$
	tCO_2-e	tCO_2-e	tCO_2-e	tCO_2-e
0	-	-	-	-
1	(12,05,799)	(12,05,799)	(49,842.41)	(49,842.41)
2				

	(16,21,239)	(28,27,038)	(66,076.35)	(1,15,918.76)
3	(18,81,277)	(47,08,315)	(75,581.01)	(1,91,499.77)
4	(18,34,768)	(65,43,083)	(72,235.37)	(2,63,735.14)
5	(5,74,730)	(7,117,813)	(22,101)	(285,836)

Total Baseline Emissions: 285,836 tCO2e

3.2.2 Project Emissions

Emissions due to planned deforestation:

No emissions associated to planned deforestation were developed in the Project area from 1st January 2016 to 30th April 2020.

Emissions due to planned logging activities

No emissions associated to planned logging activities were developed in the Project area from 1st January 2016 to 30th April 2020.

Emissions due to planned fuel-wood and charcoal activities

No emissions associated to planned fuel-wood and charcoal activities were developed in the Project area. Removals due to carbon stock increase of planned activities

Carbon stock increase due to planned activities in areas that would be deforested in the baseline case is not considered.

Total ex post carbon stock decrease in the Project area

No carbon stock decrease associated to Project activities has occurred in the Project area from 1st January 2016 to 30th April 2020

Emissions due to unavoidable unplanned deforestation

A total of 2,245 hectares of unavoidable unplanned deforestation was observed within the Project area in this monitoring period.

Total of emissions related to unavoidable unplanned deforestation is 210,276 tCO2e. Emissions due to forest fires and catastrophic events

No emissions associated to forest fires and catastrophic events have occurred in the Project area during present monitoring period.

Ex post estimated net carbon stock change in the Project area

Total ex post estimated carbon stock change in Project area under the Project scenario in this monitoring period is presented in Table 5.

Table 5. Ex post estimated net carbon stock change in the Project area under the Project scenario (Table 29 of VCS VM0015)

Project year *t*	Total *ex ante* carbon stock decrease due to planned activities		Total *ex ante* carbon stock increase due to planned activities		Total *ex ante* carbon stock decrease due to unavoided unplanned deforestation		Total *ex ante* carbon stock change		Total ex ante estimated actual non-CO_2 emissions from forest fires in the project area	
	annual $\triangle CPAdPA_t$ tCO_2-e	cumulative $\triangle CPAdPA$ tCO_2-e	annual $\triangle CPAiPA_t$ tCO_2-e	cumulative $\triangle CPAiPA$ tCO_2-e	annual $\triangle CUDdPA_t$ tCO_2-e	cumulative $\triangle CUDdPA$ tCO_2-e	annual $\triangle CPSPA_t$ tCO_2-e	cumulative $\triangle CPSPA$ tCO_2-e	annual $EBBPSPA_t$ tCO_2-e	cumulative $EBBPSPA$ tCO_2-e
0	0	0	0	0	0	0	0	0	0	0
1	0	0	0	0	(60,290)	(60,290)	(60,290)	(60,290)	(2,492)	(2,492)
2	0	0	0	0	(81,062)	(1,41,352)	(81,062)	(1,41,352)	(3,304)	(5,796)
3	0	0	0	0	(94,064)	(2,35,416)	(94,064)	(2,35,416)	(3,779)	(9,575)
4	0	0	0	0	(91,738)	(3,27,154)	(91,738)	(3,27,154)	(3,612)	(13,187)
5	0	0	0	0	(32,741)	(359,895)	(32,741)	(359,895)	(1,105)	(14,292)

Non-CO2 emissions from forest fires. Not subjected to monitoring and accounting.

Total Project Emissions = 14,292

3.2.3 Leakage

One source of leakage was monitored: leakage due to displacement activity.

Leakage due to displacement activity was monitored by mapping forest cover change in the leakage belt. As defined in the VCS Methodology VM0015, deforestation above the baseline in the leakage belt area will be considered activity displacement leakage. Activity data for the leakage belt area was determined using the same methods applied to deforestation mapping in the Project area.

Total ex post estimated leakage

Ex post total net carbon stock changes in the leakage belt due to displacement of activity in this monitoring period are presented in Table 6. Leakage was calculated as the difference between the ex post and ex ante the assessment. As the result is <0, total ex post leakage was set to zero.

Total Leakage Emissions = 0 tCO2e

3.2.4 Net GHG Emission Reductions and Removals

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

$$\Delta REDDt = (\Delta CBSLPAt + EBBBSLPAt) - (\Delta CPSPAt + EBBPSPAt) - (\Delta CLKt + ELKt)$$

Where:

Δ*REDDt Ex post* net anthropogenic greenhouse gas emission reduction attributable to the AUD project activity at year *t*; tCO2e

Δ*CBSLPAt* Sum of baseline carbon stock changes in the project area at year *t*; tCO2e

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

Δ*CPSPAt* Sum of *ex post* estimated actual carbon stock changes in the project area at year *t*; tCO2e

Note: If Δ*CPSPAt* represents a net increase in carbon stocks, a negative sign before the absolute value of Δ*CPSPAt* shall be used. If Δ*CPSPAt* represents a net decrease, the positive sign shall be used.

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

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

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

The net anthropogenic GHG emissions reductions were calculated following the equation 19, 20 and 21 of VCS VM0015 version 1.1. The risk factor used to calculate VCS buffer credits (VBC) is 11.75%, as calculated in Non-permanence Risk Report.

Table 6: Ex-ante estimated net anthropogenic GHG emission reductions (DREDDt) and Voluntary Carbon Units (VCUs)

Project year *t*	Baseline GHG Emissions	Project GHG Emissions	Leakage	Net Anthropogenic GHG emissions reductions	VCUs Tradable	Buffer Credits
1st January 2016 – 31st December	49,842.41	2,492	-	1,192,859	1,058,555	134,304

2016						
1st January 2017 – 31st December 2017	66,076.35	3,304	-	1,602,949	1,422,367	180,583
1st January 2018 – 31st December 2018	75,581.01	3,779	-	1,859,015	1,649,462	209,554
1st January 2019 – 31st December 2019	72,235.37	3,612	-	1,811,653	1,607,271	204,382
1st January 2020 – 30th April 2020	22,101.00	1,105	-	643,068	570,104	72,964

Estimates of GHG credits eligible for issuance as VCUs were calculated in Table 6, were

Estimated GHG emission reduction credits = Baseline emissions, fixed for 10 years at validation minus, Project emissions minus, Leakage minus, Non-permanence Risk Buffer withholding (calculated as a percent of net change in carbon stocks prior to deduction of leakage)

Net Emissions Reduction = 11,92,859 + 16,02,949 + 18,59,015 + 18,11,653 + 643,068

Net Emissions Reduction = 71,09,545 tCO2e

$VCUt = \Delta REDDt - VBCt$
$VBCt = (\Delta CBSLPAt - \Delta CPSPAt) \times RFt$

Where:

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

Note: If $VCUt < 0$ no credits (VCUs) will be awarded to the proponents of the AUD project activity.
Δ*REDDt Ex post* estimated net anthropogenic greenhouse gas emission reduction attributable to the AUD project activity at year *t*; tCO2e

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

Δ*CBSLPAt* Sum of baseline carbon stock changes in the project area at year *t*; tCO2e

Δ*CPSPAt* Sum of *ex post* carbon stock changes in the project area at year *t*; tCO2e ha-1

RFt Risk factor used to calculate VCS buffer credits; %

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

Ex-ante Verified Carbon Units = 10,58,555 + 14,22,367+ 16,49,462 + 16,07,271 + 5,70,104

Total ex-ante Verified Carbon Units = **63,07,759** tCO2e

Table 7: Summary of estimated tradable net anthropogenic GHG emission reductions (DREDDt) and Voluntary Carbon Units (VCUs) after application of buffer

Project Year	VCU tradable	
	Vintage wise	Buffer applied
2016	1,058,555	11.75%
2017	1,422,367	11.75%
2017	1,649,462	11.75%
2019	1,607,271	11.75%
2020	570,104	11.75%

3.3 Optional Criterion: Climate Change Adaptation Benefits

Not applicable

3.3.1 Activities and/or processes implemented for Adaptation (GL1.3)

Not applicable

4 COMMUNITY

4.1 Net Positive Community Impacts

4.1.1 Community Impacts (CM2.1)

Community Group	- Riverine Community and traditional rural villagers - The entire community is all the riverine in the project area. - The community is broken into households, these households are better described as families. Each household may have up to 13 houses each being houses of the children of the original settler. The project has targeted to have 5 people trained in diversity.
Impact	

	- Number of riverine people and traditional rural villagers participating in the monitoring - Improved livelihood - monitoring activities each month - One person in each river that is next to the project area, with a general awareness to all member in each community. - 5 People total, as 5 primary different rivers. - Team of technicians completing the survey work for each family are trained to biodiversity monitor and report back any unique events. - Over 50 people along 5 different river affluents. - 50 received land tenure document known as CAR
Type of Benefit/Cost/Risk	- Actual benefit. - Capacity building related to the monitoring and CCB management of the forest and biodiversity. - Very little cost, as the monitoring is done via cell phone camera when there is a unique event, such as a large carnivore enter the area in the vicinity of the houses. - Job Opportunities - Providing land ownership legal rights
Change in Well-being	- Improved livelihood – more aware of the fauna and flora. - Capacity building - Improved agricultural practices - Increase in safety and security

Community Group	Women of the community are seen as vulnerable group
Impact	- 50 women were trained on the efficient cook stoves. - 50 cook stoves have been provided to the riverine people. - Number of improved cooking stoves pilots implemented in local families - Capacity building related to efficient and improved cooking stoves - improvement in health
Type of Benefit/Cost/Risk	- Actual benefit - overall satisfaction and health of community
Change in Well-being	- Improvement in overall satisfaction and health of community

The population health situation is very precarious and this is a major problem facing in the region. The project during the 2016 to 2020 time period initially focused on cookstoves to resolve the smoke and respiratory issues arising from open fire cooking.

From 2019 and onward the project started adding the water filters, to help provide clean drinking water.

In 2020 the project started focusing on the pilot water well program – though far better than drinking water from the river.

As of now health programs have been taking place regularly.

4.1.2 Negative Community Impact Mitigation (CM2.2)

There are no negative community impacts and hence there is no need for mitigation.

4.1.3 Net Positive Community Well-Being (CM2.3, GL1.4)

Net Positive community impacts for this monitoring period is summarized as:

• Secured land tenure
• Diversification of food through agroforestry practices thus an improvement in local nutrition
• More efficient technologies to produce farinha therefore less time is consume in this activity.
• Generation of income from monitoring activities.
• Better understanding of the importance of protecting the forest and how forest conservation benefits their livelihoods.

As shown in Section 4.1.1, most of the activities initiated during the reporting period have multiple positive impacts on a large segment of the communities under the Anapu-Pacaja. The potential costs or negative impacts from implementing the proposed project activities are nil/minimal and are being mitigated for to some extent through the community projects (e.g., for poachers). Consequently, the net well-being impacts for the reporting period are overwhelmingly positive given the proportion of the population potentially impacted, the magnitude of the impacts and their long-term nature

4.1.4 Protection of High Conservation Values (CM2.4)

As shown under Section 4.1.1, the project activities undertaken during the reporting period were all geared towards reducing pressure on the forest by diversifying livelihoods away from direct natural resource exploitation and enhancing forest protection. No negative effects are observed because of the project activities.

No High Conservation Values (HCVs) were negatively affected as a result of the project. HCVs related to community identified by the Project are the better conditions of life and work of the communities linked to the Project itself.

4.2 Other Stakeholder Impacts

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

There are not expected negative offsite impacts thus no mitigation strategies are required.

4.2.2 Net Impacts on Other Stakeholders (CM3.3)

The Project activities have not resulted in net negative impacts on the well-being of other stakeholders because all the activities were conducted in a private area and in addition to that all the stakeholders were always consulted and the results of this consultation can be considered very positive.

4.3 Community Impact Monitoring

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

The project proponents have designed a Social Impacts Monitoring Plan in accordance to the results obtained in the rural participatory diagnosis developed in the project area and initially considering the indicators for the products of the proposed activities based on the identification of the necessities indicated by the population and the strategies foreseen to accomplish the project goals.

For presenting community impact monitoring's results few parameters were considered and the same has been presented in the table format. Table 8 below shows which takes the key impact factors for the community and other stakeholders. It was observed that the project area, before the start of the Project, there were just a farm worker and his family, that lived in the farm and who took care of the livestock. Nowadays the farm workers community living today in the farm are very happy to see the developments in and around the project area due to REDD project. In order to include the evaluation of the Project impacts with the farm workers' point of view, we gave them a questionnaire (Table 8) so they could complete it in an absolutely anonymous way. For other stakeholders (commercial and institutional), instead, a verbal interview was conducted.

Table 8: key impact factors for the community and other stakeholders

The following Table (Table 8) shows a non-comprehensive list of activities and indicators that were considered during monitoring. A full and detailed list is presented below:

Category	Impact	Results and evaluation	Sampling method	Frequency and dates/Milestones
FARM WORKERS COMMUNITY	**Employment**	The Project has created 60 permanent new jobs, 20 temporary jobs, employed 9 technicians, given employment up to **89 people**. These workers perceive better salaries compared to those obtained in absence of the Project. Work condition are at good level: high safety, social security and unemployment insurance.	Questionnaire compiled by the workers. Data analysis prepared by Project Proponent.	December 2019: date of the questionnaire. December 2019: data analysis by PP. Next evaluations: each verification period. Milestone: For the entire monitoring period.

	Training and education	Thanks to the numerous training sessions and workshops carried out during the monitoring period, workers have increased their technical skills and forestry knowledge.	Questionnaire compiled by the workers. Data analysis prepared by Project Proponent.	December 2019: date of the questionnaire. December 2019: data analysis by PP. Next evaluations: each verification period. Milestone: For the entire monitoring period.
	Life conditions and health	Life conditions and health have been improved thanks to fair salaries, decent housing conditions, free transports to the city, internet connections, drinking water, internal road maintenance, horticulture and small scale livestock breeding (chicken and pork's).	Questionnaire compiled by the workers. Data analysis prepared by Project Proponent.	December 2019: date of the questionnaire. December 2019: data analysis by PP. Next evaluations: each verification period. Milestone: For the entire monitoring period.
INSTITUTIONAL STAKEHOLDERS	**Knowledge**	Municipality of Portel, Brazil Agfor, as well as locals had the opportunity to learn about the Project, to keep update regarding the evolution of it, and to transfer important information to their network. Being the first carbon project of the region has aroused a strong interest from these institutions that recognize in it an excellent tool for sustainability.	Interviews made by PP.	December 2019: date of the questionnaire. December 2019: data analysis by PP. Next evaluations: each verification period. Milestone: For the entire monitoring period.
	Opportunity	The strong interest regarding the Project has generated several requests of set-up carbon projects form small-medium forestry entrepreneurs.	Interviews made by PP.	December 2019: date of the questionnaire. December 2019: data analysis by PP. Next evaluations: each verification period. Milestone: For the entire monitoring period.
COMMERCIAL STAKEHOLDERS	**Knowledge**	Brazil Agfor had the opportunity to learn about the Project, to keep update regarding the evolution of the Project and to transfer important information to their network.	Interviews made by PP.	December 2019: date of the questionnaire. December 2019: data analysis by PP. Next evaluations: each verification period. Milestone: For the entire monitoring period.

	Business	Supply chain's stakeholder have had a positive economic impact having been able to benefit from various forms of work and revenues.	Interviews made by PP.	December 2019: date of the questionnaire. December 2019: data analysis by PP. Next evaluations: each verification period. Milestone: For the entire monitoring period.

4.3.2 Monitoring Plan Dissemination (CM4.3)

The plan was provided to local access via the project webpage and they have this.

In addition to this the technicians who travel to the land are required to carry all the most up-to-date documents and go through them with the communities at their request. All the information was disseminated in their local language Portuguese.

The head of each household were shown a hard copy of the results and a discussion took place to make sure that this person understood it.

4.4 Optional Criterion: Exceptional Community Benefits

Not applicable.

5 BIODIVERSITY

5.1 Net Positive Biodiversity Impacts

5.1.1 Biodiversity Changes (B2.1)

The project focusses exclusively on conservation measures within the project boundaries and its buffer, which makes negative offsite effects unlikely to happen. Besides, monitoring of flora and fauna this assures that any minimal offsite negative effect was taken care of immediately. Also, as mentioned on G3.2, the Project's activities do not involve the introduction of non-native species and the engagement of local community contributes for the socio-environmental safeguarding activities.

It is also very unlikely that the Project's activities within its boundaries (implementation of agroforestry techniques, energy efficient cook stoves for farinha production, and tenure rights) have any offsite impact. Therefore, considering these activities and "with project" scenario, the effects of the project on biodiversity is positive.

Change in Biodiversity	Increase in biodiversity (FLORA)
Monitored Change	Analyzing the Project Area and the Project Zone with a quick and superficial examination it could be stated that the Rio REDD project represents a very good conservation initiative steps to conserve natural forests. Native amazon (composed of rain forest areas), it has been well preserved due to the presence of the Project, that nowadays constitute a real “mosaic of ecosystems” that clearly differentiate from the definition of deforestation. Also in the surrounding areas there is a real undergrowth, rich in botanical species, which thus enriches the Project Zone with biodiversity.
Justification of Change	Regarding the Amazon areas of the project, it can be stated that in recent years it has gone through a real conservation process. As described and tested later in the specific section on fauna, project has led to an increase in animal populations, to the fact that the native tree species were conserved, provide shelter to the animals and allow an easy and safe displacement for the same between the amazon areas. These areas have begun to benefit and regenerate after the beginning of the Project. In fact during the Project Period these areas have been geo-referenced, surrounded by fences (which limit the entry of people, machineries and cattle but do not prevent the displacement of wild animals) and it has been strictly prohibited entry to people, even to farm workers. Obviously hunting and other illegal activities were prohibited in these areas.

Change in Biodiversity	Total planned area for conservation
Monitored Change	At the time of current Monitoring Report, the planned conserved areas (Project Area) correspond to the initial planned area of 165,707 ha (see 1.1.2.1 – Project Design of PDD). During the first 5 years and 0 months of Project, no loss of areas has ever occurred. Neither fires, nor floods, nor other climatic events have compromised the development of the trees that make up the forest.
Justification of Change	Periodic analysis of satellite imagery and GIS analysis and assumptions used to estimate or document the change. Greatly reduced illegal logging in the project area, and this is mostly allowed old logging roads to fill with vegetation. This elimination of illegal wood activities has helped the flora replenish The old logging roads from satellite footage from 2008 to the present have mostly filled in, on current 2020 satellite maps.

Change in Biodiversity	Increase in number of are-limited species
Monitored Change	*Monitor area-limited species: species that require large patches to maintain viable populations, such as large carnivores. That indicates potential habitat losses and prey availability* Increase in number of specific category species noted by sightings during regular patrolling for this monitoring period Puma concolor/ onca-parda- 4 Panthera onca/ onca-pintada - 4
Justification of Change	Increase in number of specific category species as the project area is not disturbed by agents of deforestation. This is noted by sightings during regular patrolling

Change in Biodiversity	Increase in number of resource-limited species
Monitored Change	*Monitor resource-limited species: species requiring specific resources, such as frugivorous species, nectar species, snags etc. Bats can be great bio indicators as they have different feeding habits, such as insects, fruits, nectar/pollen, blood etc. They are also abundant through the region and its taxonomy has been well documented* Increase in number of specific category species noted by sightings during regular patrolling for this monitoring period: araçari-de-pescoço-vermelho - 1 João-teneném-castanho - 2 jacupiranga - 1 mãe-de-taoca – 1
Justification of Change	Increase in number of specific category species as the project area is not disturbed by agents of deforestation. This is noted by sightings during regular patrolling

Change in Biodiversity	Increase in number of special interest species
Monitored Change	Increase in number of specific category species noted by sightings during regular patrolling for this monitoring period: *Monitor "special interest" species, critically endangered species, endangered species, and threatened species (IUCN, IBAMA)* Anta - 10 Queixada - 1 Graxaim - 4 macaco-da-noite - 1 Puma concolor/ onca-parda- 4

	Panthera onca/ onca-pintada - 4
Justification of Change	Increase in number of specific category species as the project area is not disturbed by agents of deforestation. This is noted by sightings during regular patrolling

Biodiversity monitoring in the project area is well documented and managed. Local community member has been trained to record and manage the biodiversity in and around the project area. More number of local community members are being trained and employed to monitor biodiversity in the near future.

Capuchin Monkeys are a very rare breed present in Amazon area. Due to wildlife trade and illegal logging, Capuchin monkey's habitat were disturbed and many monkeys were killed and exported illegally. One of the main strategies of our project is to improve the security for Capuchin monkeys and also to improve their habitat, which is evident after the implementation of the project.

Small medicinal plant nurseries have also been developed in and around the project to create more business opportunities for the local communities in and around the project area, which in turn increases the biodiversity value of the local amazon medicinal species.

The yellow-footed tortoise (*Chelonoidis denticulatus*), also known as the Brazilian giant tortoise, commonly referred to as the Brazilian giant turtle, or more commonly, the big turtle, is a species of tortoise in the family Testudinidae and is closely related to the red-footed tortoise (*C. carbonarius*). It is found in the Amazon Basin of South America. *Chelonoidis denticulata* is an endangered species. The major populations located in South America are protected under the Convention on International Trade in Endangered Species, Appendix II. Yellow-footed tortoise are used in international smuggling by local illegal loggers, which has a very high demand in the area for illegal smuggling. As with many species of turtles and tortoises, many yellow-footed tortoises end up as food items in local markets. RioAnapu project implementation has reduced the illegal wildlife trade of these tortoise by implementing more security in and around the project area and also having an understanding with local police to protect these species.

River turtles/ tortoise inhabit both aquatic and terrestrial areas. Where they occur, they are responsible for various ecological processes such as seed dispersal. Their varied diet includes plants (leaves, fruits and seeds), insects, fish and dead matter, and they are part of complex food webs, both as predators and prey, as they are eaten by caiman, large fish, mammals, birds and other animals. Thus, the group is important for nutrient cycling (transforming live and dead organic matter into animal protein) in the forest and aquatic environments. By consuming large amounts of dead material, they act as 'cleaners' of the rivers. Yellow-footed tortoises play a vital role in balancing the ecosystem of amazon rain forest, which is one of our major goal to protect these species.

Many plans are being worked out to strengthen the biodiversity factor in and around the project area, which will be implemented in the near future.

As on today, there is no wildlife trade activities have been occurred in our project area and we have well managed strategies to avoid the same.

5.1.2 Mitigation Actions (B2.3)

The project during the monitoring period has sent teams of people, every year in two forms: Security and Monitoring, and the other team is training / implementing social projects (land tenure/cook stoves) and conservation education. The biodiversity monitoring is implemented as part of the regular patrolling

conducted. The patrol guards note the sightings in the log book, which is reflected for this monitoring period. On an average 6 to 7 patrols have been conducted each year during this monitoring period. It is also informed that such patrols which have been on-going since project start date of 2009 onwards Security Patrols are coordinated by Silas, Camerao and Sergio. Further mitigation actions such as creating the awareness on conservation issues to the community and steps to prevent and remove land grabbers and illegal logging activities have ensured that the habitat is not fragmented.

Samples of the patrol logs have been submitted to the VVB.

5.1.3 Net Positive Biodiversity Impacts (B2.2, GL1.4)

Net positive impacts on biodiversity have been demonstrated for this monitoring plan over time through periodic monitoring and reporting of biodiversity indicators as per the Biodiversity Monitoring Plan.

As already described in the PD, the Baseline Scenario was considered to be degraded land with damage forest cover, which was used for extensive cattle grazing, with very low meet production per hectare. The practice of breeding was totally irrational, “extractive” and not sustainable. Fire has often been used to stimulate pasture sprouting in the grazing areas and also in the Legal Reserve areas. Farm workers occasionally practiced hunting outside and inside the farm borders, including Legal Reserve areas. All these practices have brought to a drastic reduction in biodiversity over the years. In fact fauna, because of fire, the presence of livestock, hunting and the scarcity of food and shelter, was practically absent from the region. Also the flora was clearly compromised, because of degraded soil, use of fire and animal pressure that did not allow grazing to regenerate. The Project Scenario has led to a marked increase in biodiversity (flora and fauna) for all the arguments explained in the previous paragraphs.

5.1.4 High Conservation Values Protected (B2.4)

High Conservation Value	Caxiuana National Forest
Qualifying Attribute	The Caxiuana National Forest is considered the oldest in the Amazon region and the second in Brazil. It is amongst the most known conservation units in north of Brazil, and it has the presence of many important researchers from Brazil and abroad. There have been no changes to the HCV area for this monitoring period as analyzed from GIS data. Further this serves as a biodiversity corridor resulting in the sightings of the endangered specifies in the project area.
Focal Area	On the northern border of the reference region there is a national conservation unit called National Forest Caxiuanã. It was created in 1961 and today it has an area of 322,694.34 hectares. The Conservation Units are types of conservation areas that were created to allow sustainable use of the forest and its natural resources

5.1.5 Invasive Species (B2.5)

None of the Project’s activities introduce invasive species or genetically modified organisms. The Project’s developer only approve agroforestry activities that use native species commonly known to occur

in the Para region and are not in the Global Invasive Species Database before approving the utilization of particular species. Hence no invasive species were introduced for this monitoring period.

5.1.6 Impacts of Non-native Species (B2.6)

No non-native species was used in the Project Accounting Area.

5.1.7 GMO Exclusion (B2.7)

No GMOs was used both within the Project Accounting Area and Project Zone.

5.1.8 Inputs Justification (B2.8)

Not applicable

5.2 Offsite Biodiversity Impacts

5.2.1 Negative Offsite Biodiversity Impacts (B3.1) and Mitigation Actions (B3.2)

The conservation itself as the aim of the project is already a mitigation strategy. The entire area has greatly benefited since there is no activity involving any kind of human disturbance. Furthermore, conservation of the project area increases landscape integrity and adaptation, avoiding edge effect, as described in the “with project” scenario, benefiting biodiversity (Wunder 2008).

A representative conservation area in which biodiversity can persist guarantees the maintenance of ecological processes and contributes to avoid fragmentation of the ecosystem, both through timber extraction and agricultural activities. The project helps landscapes enhancing its ecological health, including its adaptability to climate change and consequently reducing offsite greenhouse gas emissions (Wunder 2008). Moreover, the conservation of this area maintains microclimate, avoiding wildfires (Soares-Filho *2006).*

Hence as there are no offsite negative biodiversity impacts observed during this monitoring period, there are no planned mitigation measures.

5.2.2 Net Offsite Biodiversity Benefits (B3.3)

The Project is expected to generate positive leakage on biodiversity by avoiding ecosystem fragmentation through voluntary engagement of neighbor communities in the Project’s activities. As described above, the project focus exclusively on conservation measures within the project boundaries and its buffer, which makes negative offsite effects unlikely to happen. Besides, monitoring of flora and fauna assures that any minimal offsite negative effect was taken care of immediately. Also, as mentioned on G3.2, the Project’s activities do not involve the introduction

Of non-native species. Therefore, considering these activities and “with project” scenario, the effects of the project on biodiversity is positive for this monitoring period.

5.3 Biodiversity Impact Monitoring

5.3.1 Biodiversity Monitoring Plan (B4.1, B4.2, GL1.4, GL3.4)

For presenting biodiversity impact monitoring's results we have created the Table 9 below, that takes into account all biodiversity variables identified in the monitoring plan, dates, frequency, locations, sampling methods used and finally the results and the evaluation of monitoring.

Table 9: key impact factors for the community and other stakeholders.

No.	Variables to be monitored	Results and evaluation	Sampling method and location	Frequency
1	Total planned area for conservation	The planned conservation areas (Project Area) corresponds to the initial planted area of 165,707 **ha.** No losses occurred.	Measuring conserved areas in Project Area.	Each verification period
2	Tree density and diversity	The average number of trees encountered per plot is 40 (each plot being 325.06 m, this means that the average per hectare today is 650 trees/ha.	Permanent samples plots in Project Area.	Each verification period
3	Reduction in soil erosion	There are no more erosions within the Project Area and also within the Project Zone.	Observations in Project Area and Zone	Each verification period
4	Increased natural regeneration in Legal Reserve Zones	During the 5 years of this MP there has been an increase of natural regeneration of the Legal Reserve Zones.	Visual analysis	Each verification period.
5	Increase in biodiversity (FLORA)	▪ Formation of a "mosaic of ecosystems" in the Project Zone composed due to the conservation of native forest cover ▪ Regeneration of the surrounding Reserve Areas.	Sampling plots in Project Area	Continuous. The registries will be compiled and reported every verification period
6	Increase in biodiversity (FAUNA)	In the Project Zone live permanently populations of 2 species considered "Vulnerable", according to the IUCN Red List: the Jaguar and the Giant Anteater. Also 4 species belong to the "Near threatened" category, are present: the Monkey, the Forest Dear, and the wolf. Other species are present in the Project Zone and their presence from the beginning of the Project to date has had a considerable increase.	Observations in Project Area and Zone.	Continuous. The registries will be compiled and reported every verification period
7	Frequency and intensity of fires	During the 5 years of this Monitoring Period no fire events were recorded within the Project Area, nor in the Legal Reserve Areas.	Observations in Project Area and Zone.	Continuous. Every verification period

5.3.2 Biodiversity Monitoring Plan Dissemination (B4.3)

A summary of the monitoring plan was translated to local language and disseminated to the community groups and other stakeholders prior to validation. Monitoring results was also communicated through meetings and also uploaded on the project website.

5.4 Optional Criterion: Exceptional Biodiversity Benefits

Not applicable.