

THE LAST HABITAT REDD+ PROJECT MONITORING REPORT 2020 – 2021



Document Prepared by PASKAY SAC



Project Title	The Last Habitat REDD+ project
Project ID	3344
Version	04
Report ID	TLH-MR-02
Date of Issue	26 March 2024
Project Location	Peru, Region Ucayali
Project Proponent(s)	Bosques Amazónicos S.A. Av. Víctor Andrés Belaunde 147 Vía Principal 123, Office 201 Edificio Real Uno San Isidro, Lima, Perú Jorge Cantuarias Falconi Phone: (+51) 01 4801192 www.bosques-amazonicos.com ; jcantuarias@bosques-amazonicos.com ; mcantuarias@bosques-amazonicos.com
Prepared By	PASKAY SAC Calle Grimaldo del Solar 162, Of. 904, Miraflores, Lima - Peru Jorge Torres Padilla Phone: (+51) 01 7452122 www.paskay.pe contacto@paskay.pe ; jtorres@paskay.pe
Validation/Verification Body	AENOR CONFIA, S.A.U Jose Luis Fuentes jfuentes@aenor.com (+34) 914 326 000
GHG Accounting/ Crediting Period	01 January 2020 – 31 December 2039; 20-years
Monitoring Period of this Report	01 January 2020 – 31 December 2021
History of CCB Status	In process for validation
Gold Level Criteria	Biodiversity

The project maintains the populations of *Myrmoborus melanurus* “black-tailed antbird”, *Tapirus terrestris* “sachavaca” and *Panthera onca* “jaguar”, categorized by the IUCN Red List as endangered, vulnerable and near threatened, respectively, through measures implemented within the framework of the Science Program, protecting bodies of water and areas of forests.

Field expeditions were carried out for periodic evaluations and biodiversity monitoring, complemented with a network of camera trap stations installed in strategic areas, in order to understand the movement of fauna species and implement specific measures.

Additionally, preventive patrol, control and surveillance actions have been carried out, channeling environmental complaints with the collaboration of the competent authorities and the implementation of a communication plan with training events for project stakeholders, to promote the conservation of biodiversity and confront driving agents of deforestation, forest degradation and illegal hunting.

These implemented activities are helping to conserve threatened species, ensuring the ecological processes and functionality of the natural forest; in addition to generating new knowledge about biodiversity and maintaining and improving wild refuge zones and connectivity of forest areas within and around the project area, improving awareness and value of biodiversity among project stakeholders.

Table of Contents

1	Summary of Project Benefits.....	6
1.1	Unique Project Benefits	6
1.2	Standardized Benefit Metrics	8
2	General.....	13
2.1	Project Description.....	13
2.2	Project Implementation Status.....	18
2.3	Stakeholder Engagement	25
2.4	Management Capacity.....	40
2.5	Legal Status and Property Rights	45
3	Climate.....	52
3.1	Monitoring GHG Emission Reductions and Removals.....	52
3.2	Quantification of GHG Emission Reductions and Removals	79
3.3	Optional Criterion: Climate Change Adaptation Benefits.....	106
4	Community.....	107
4.1	Net Positive Community Impacts.....	107
4.2	Other Stakeholder Impacts	112
4.3	Community Impact Monitoring.....	115
4.4	Optional Criterion: Exceptional Community Benefits	118
5	Biodiversity.....	119
5.1	Net Positive Biodiversity Impacts.....	119
5.2	Offsite Biodiversity Impacts.....	127
5.3	Biodiversity Impact Monitoring.....	127
5.4	Optional Criterion: Exceptional Biodiversity Benefits	138
6	Additional Project Implementation Information.....	139
7	Additonal project Impact Information.....	139

Tables

Table 2.1. Property limits vertices	16
Table 2.2. The Last Habitat REDD+ Project main milestones.....	18
Table 2.3. Project risks identification	20
Table 2.4. Informational meetings	28
Table 2.5. Social Matrix.....	34
Table 2.6. Employment created during the monitoring period.....	37
Table 2.7. References of land titles	46
Table 2.8. National and Regional regulatory framework relevant to the project activities	49
Table 3.1. Activities implemented as part of the Monitoring Control and Surveillance system	73
Table 3.2. Ecozone stratification of the properties that comprise the Project Area.....	79
Table 3.3. Projected areas to be deforested in each PA, per year	81
Table 3.4. Planned area to be deforested by stratum (Selva Maestra)	81
Table 3.5. Planned area to be deforested by stratum (Nuestro Señor Jesucristo)	81
Table 3.6. Carbon pools considered for calculation of the baseline scenario (pre-deforestation).....	82
Table 3.7. Carbon pools considered for calculation of the post-deforestation use	83
Table 3.8. Calculation of the differences between pre and post deforestation uses	84
Table 3.9. Carbon stock changes, distributed by year and by carbon pool	88
Table 3.10. Parameters for estimation of emissions from biomass burning	89
Table 3.11. Emissions calculations from biomass burning.....	89
Table 3.12. Net and accumulated baseline GHG emissions from planned deforestation	90
Table 3.13. Parameters and values used to calculate net GHG emissions in the REDD project scenario	91
Table 3.14. Parameters and values used to calculate annual ex-post GHG emissions.....	91
Table 3.15. Areas of recorded deforestation in the project area in the monitoring period	93
Table 3.16. Carbon stock changes in all pools in the monitoring period	93
Table 3.17. Annual distribution of project emissions in the monitoring period	93
Table 3.18. Analysis of error matrix	94
Table 3.19. Kappa index	95
Table 3.20. Allometric equations	99
Table 3.21. Results from the 1% limited sampling	99
Table 3.22. Potential emissions of degradation resulting from the 1% limited sampling	100
Table 3.23. Evaluation of the significance of emissions due to degradation, using T-SIG tool.....	100
Table 3.24. Evaluated transects and compartment separation (AGC and BGC), from the 3% sampling	100
Table 3.25. Potential emissions of degradation resulting from the 3% sampling	101
Table 3.26. Annual net carbon stock changes as a result of degradation	102
Table 3.27. Emissions calculations from biomass burning in the monitoring period.....	102
Table 3.28. Net GHG emissions in the REDD project scenario in the monitoring period.....	103
Table 3.29. Parameters and values used to estimate activity shifting leakage of the project	103
Table 3.30. Ex-Ante Estimated of Net Emission Reduction Credits.....	104
Table 3.31. Total error in REDD+ project activity baseline scenario	105
Table 3.32. Cumulative uncertainty for the REDD+ project activities.....	105
Table 3.33. Ex-post calculation of the Verified Carbon Units during the monitoring period.....	105
Table 4.1. Negative Community Impact Mitigation.....	110
Table 4.2. Net Positive Community Well-Being	111
Table 4.3. Activities developed with other stakeholders	113
Table 4.4. Monitoring results of the impacts in community's well-being	115
Table 5.1. Activities carried out for Specific Objective 1: Identify, monitor, and permanently protect the biological richness (flora and fauna) within the Project Area.....	122
Table 5.2. Activities carried out for Specific Objective 2: Establish alliances with top-level scientific institutions that ensure international prestige and recognition of the information generated	123
Table 5.3. Activities carried out for Specific Objective 3: Control the illegal extraction of flora and fauna in the project area with the support of the authorities and other competent organizations.	124
Table 5.4. Activities carried out for Specific Objective 4: Implement workshops and awareness-raising efforts on the importance of biodiversity protection in the project area.	124

Table 5.5. Biodiversity variables (sampling, indicators, and results)	128
Table 5.6. Importance value index (IVI) results for each monitoring site	131

Figures

Figure 2.1. Project area boundaries	16
Figure 2.2. Proof of dissemination of project documentation	27
Figure 2.3. Example of information letters sent about the certification process	30
Figure 2.4. Flowchart of the implementation of requests form communities, hamlets, or human settlements (AA.HH.) surrounding the project	32
Figure 2.5. Book of suggestions front page.....	33
Figure 2.6. Map of Selva Maestra	46
Figure 2.7. Map of Nuestro Señor Jesucristo	49
Figure 3.1. Organizational structure	69
Figure 3.2. Process of identification, control, and report.....	71
Figure 3.3. Fires and hot spots in Project Area (2020)	72
Figure 3.4. Fires and hot spots in Project Area (2021)	72
Figure 3.5. Brochures.....	77
Figure 3.6. Publications in local media	77
Figure 3.7. Annual reports and information shared in social media	78
Figure 3.8. Ecozone stratification and deforested areas by 2019	80
Figure 3.9. Forest Benchmark Map 2021	95
Figure 3.10. Validation points distribution	96
Figure 3.11. Access routes and area subject to degradation (buffer of 450 m).....	97
Figure 3.12 Distribution of stumps in the longitudinal axis of the transects	98
Figure 4.1. Example of donations and campaigns made in favor of local communities	111
Figure 5.1. Mammal species accumulation curve	132
Figure 5.2. Bird species accumulation curve.....	132
Figure 5.3. Herpetofauna species accumulation curve.....	133
Figure 5.4. Transects distribution	133

1 SUMMARY OF PROJECT BENEFITS

1.1 Unique Project Benefits

Outcome or Impact	Achievements during the Monitoring Period	Section Reference	Achievements during the Project Lifetime
1) Under the implementation of a plan for the protection of critical habitats, 09 species of mammals (including a Peruvian endemic species) categorized in appendices I, II and III of CITES will be protected; 02 species of birds in Appendix I (almost threatened in Peru), 01 amphibian species, 02 species of reptiles and 34 species of birds categorized in Appendix II, and one forest species, the quinilla (<i>Manilkara bidentata</i>), categorized in situation vulnerable by national regulations (D.S.004-2014-MINAGRI).	The biodiversity assessment of fauna reached superior levels of species richness in the monitoring period than the baseline evaluation. Conservation status: - Birds: 2 endemic sp., 2 sp. VU, 2 sp. NT, 3 sp. LC (IUCN), 46 sp. (CITES II), 2 sp. (CITES III). - Mammals: 3 VU, 2 NT, 6 LC, 3 CITES I, 9 (CITES II), 4 NT (MINAGRI 2014, Peru). - Amphibians: 1 CITES I, 2 endemics. - Reptiles: 1 CITES II. Regarding Flora, 63 forest species have been evaluated in the same plots that were surveyed for the baseline, having identified: 1 EN sp. (<i>Handroanthus serratifloius</i>), 46 LC sp. (IUCN), 1 VU sp. (<i>Manilkara bidentata</i>).	Section 5.1.1	The biodiversity assessment of fauna reached superior levels of species richness in the monitoring period than the baseline evaluation (Table 5.2) Conservation status: - Birds: 2 endemic sp., 2 sp. VU, 2 sp. NT, 3 sp. LC (IUCN), 46 sp. (CITES II), 2 sp. (CITES III). - Mammals: 3 VU, 2 NT, 6 LC, 3 CITES I, 9 (CITES II), 4 NT (MINAGRI 2014, Peru). - Amphibians: 1 CITES I, 2 endemics. - Reptiles: 1 CITES II. Regarding Flora, 63 forest species have been evaluated in the same plots that were surveyed for the baseline, having identified: 1 EN sp. (<i>Handroanthus serratifloius</i>), 46 LC sp. (IUCN), 1 VU sp. (<i>Manilkara bidentata</i>).
2) Conservation of the biodiversity of the project	Intensive daily patrolling by the personnel who work in	Sections 5.1.2	Intensive daily patrolling by the personnel who work in

Outcome or Impact	Achievements during the Monitoring Period	Section Reference	Achievements during the Project Lifetime
area as part of an almost continuous biological corridor, around a set of protected natural areas, fragile ecosystems, conservation concessions, and indigenous territories that provide and configure an ecological space necessary for species to ensure connectivity, functionality, and ecological integrity.	the existing camps (Pucallpillo, Quinillal, Milagros and Palmeras in the project area and 2 camps in adjacent zones, Agua Blanca, Mirianita). Recognition as a Private Conservation Area by the Ministry of the Environment.		the existing camps (Pucallpillo, Quinillal, Milagros and Palmeras in the project area and 2 camps in adjacent zones, Agua Blanca, Mirianita). Recognition as a Private Conservation Area by the Ministry of the Environment.
3) Generation of a greater knowledge of biodiversity, on the status of prioritized species and evaluated in inventories, and the ecological characterization of natural communities, through the development of a Science Program, which allows zoning, establishing areas for protection of critical habitats and conserve the project area.	Implementation of the Science Program, involving field site expeditions (2020, 2021). Agreement with San Diego University that resulted in the installation of 300 camera traps. Training for installation of camera traps. Training on the identification and handling of reptiles.	Section 5.1.2	Implementation of the Science Program, involving field site expeditions (2020, 2021). Agreement with San Diego University that resulted in the installation of 300 camera traps. Training for installation of camera traps. Training on the identification and handling of reptiles.
4) Ensure the maintenance of ecological processes and environmental services provided by the forest, such as water regulation of both the Lower Manantay basin, a tributary of the Ucayali River, and the Lower Pachitea, resilience to climate change, pollination services and natural regeneration of the forest, among other provision,	Maintenance of the three types of plant formation that cover the largest area of the project area: <i>Mauritia flexuosa</i> dominated palm swamp (aguajales), Palm and Mixed Palm Swamp Forest and Lowland Tropical Rainforest), including the fragile ecosystem called "Honorio Norte".	Sections 5.1.2	Maintenance of the three types of plant formation that cover the largest area of the project area (<i>Mauritia flexuosa</i> dominated palm swamp, "aguajales", Palm and Mixed Palm Swamp Forest and Lowland Tropical Rainforest), including the fragile

Outcome or Impact	Achievements during the Monitoring Period	Section Reference	Achievements during the Project Lifetime
support, and cultural services.			ecosystem called "Honorio Norte".

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.	Not applicable	-	Not applicable
	Net estimated emission reductions in the project area, measured against the without-project scenario.	1,293,629 tCO ₂ e	Section 3.2.4	1,293,629 tCO ₂ e
Forest ¹ cover	For REDD ² projects: Number of hectares of reduced forest loss in the project area measured against the without-project scenario	3,166.3 ha	Section 3.2.2	3,166.3 ha
	For ARR ³ projects: Number of hectares of forest cover increased in the project area measured against the without-project scenario	Not applicable		Not applicable

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*)

Category	Metric	Achievements during Monitoring Period	Section Reference	Achievements during the Project Lifetime
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	Not applicable		Not applicable
	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	Not applicable		Not applicable
Training	Total number of community members who have improved skills and/or knowledge resulting from training provided as part of project activities	Improvement skills and/or knowledge resulting from training provided as part of project activities: 105	Section 4.1.1	Improvement skills in health knowledge: 105.
	Number of female community members who have improved skills and/or knowledge resulting from training provided as part of project activities	Female community members with improved skills: 14	Section 4.1.1	
Employment	Total number of people employed in of project activities, ⁵ expressed as number of full-time employees ⁶	Full time employees: 122	Section 2.3.14	Full time employees: 122

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)

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])

Category	Metric	Achievements during Monitoring Period	Section Reference	Achievements during the Project Lifetime
	Number of women employed in project activities, expressed as number of full time employees	Full time employees: 26	Section 2.3.14	Full time employees: 26
Livelihoods	Total number of people with improved livelihoods ⁷ or income generated as a result of project activities	Total: 122 (full time employees) Total: 710 boys and girls	Section 2.3.14 Section 4.1.1	Total: 122 (full time employees) Total: 710 boys and girls
	Number of women with improved livelihoods or income generated as a result of project activities	Total: 26 (full time employees) Total: 386 girls	Section 2.3.14 Section 4.1.1	Total: 26 (full time employees) Total: 386 girls
Health	Total number of people for whom health services were improved as a result of project activities, measured against the without-project scenario	Total: 102	Section 4.1.1	Total: 102
	Number of women for whom health services were improved as a result of project activities, measured against the without-project scenario	Total: 68 women	Section 4.1.1	Total: 68 women
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	Total: 105	Section 4.1.1	Total: 105
	Number of women and girls for whom access to, or quality of, education was improved as a result of project activities, measured against the without-project scenario	Total: 14	Section 4.1.1	Total: 14

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
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	Not applicable		Not applicable
	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	Not applicable		Not applicable
Well-being	Total number of community members whose well-being ⁸ was improved as a result of project activities	Total: 222	Section 2.3.14 and 4.1.1	Total: 222
	Number of women whose well-being was improved as a result of project activities	Total: 72 women	Section 2.3.14 and 4.1.1	Total: 72 women
Biodiversity conservation	Change in the number of hectares significantly better managed by the project for biodiversity conservation, ⁹ measured against the without-project scenario	3,166.3 ha of avoided planned deforestation where Science Program has taken place, undergoing annual biodiversity expeditions.	Section 5.1.1 (equal to Section 3.2.2)	3,166.3 ha of avoided planned deforestation where Science Program has taken place, undergoing annual biodiversity expeditions.

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.

Category	Metric	Achievements during Monitoring Period	Section Reference	Achievements during the Project Lifetime
	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	Conservation status: - Birds: 2 sp. VU, 46 sp. (CITES II), 2 sp. (CITES III). - Mammals: 3 VU, 3 CITES I, 9 (CITES II) - Amphibians: 1 CITES I. - Reptiles: 1 CITES II. Flora: 1 EN sp. (<i>Handroanthus serratifloius</i>), 1 VU sp. (<i>Manilkara bidentata</i>).	Section 5.1.1	Conservation status: - Birds: 2 sp. VU, 46 sp. (CITES II), 2 sp. (CITES III). - Mammals: 3 VU, 3 CITES I, 9 (CITES II) - Amphibians: 1 CITES I. - Reptiles: 1 CITES II. Flora: 1 EN sp. (<i>Handroanthus serratifloius</i>), 1 VU sp. (<i>Manilkara bidentata</i>).

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 Last Habitat REDD+ Project aims at the maintenance and conservation of the forest cover in two private estates duly registered in the Register of Property in Pucallpa: SELVA MAESTRA (SM) property owned by Bosques Amazónicos S.A. (project developer), an area of 12,730.41 Ha, and NUESTRO SEÑOR JESUCRISTO (JSC) owned by JCC Inversiones SAC (company part of Bosques Amazónicos SFM S.A. economic group), an area of 8,049 Ha.

As indicated in the Project's Theory of Change Matrix presented in the VCS CCB Project Description, the strategies designed for achieving emission reductions are coupled within three (3) specific objectives: avoidance of deforestation and forest degradation, protection of the integrity of biological diversity and ecological processes, and the strengthening of the socio-economic situation of the interest groups, specifically the villages and communities neighboring the project area. During this monitoring period, the project contributed to mitigate the effects of planned deforestation by reducing 1,293,629 tCO₂e emissions.

From January 2020 the implementation of the project formally begun (crediting period) following the requirements of the VCS-CCB standards. During this monitoring period, the project proponent was active in implementing technologies/measures for conservation purposes, such as: the installation and maintenance of control camps in strategic points to optimally monitor the project area; the hiring of a specialized team in charge of patrolling the area following the **monitoring, control, and surveillance system protocols established**; the hiring a team in charge of community relations to ensure adequate dialogue and cooperation with stakeholders, among others detailed in the present document.

The operation of the project activity(s) during this monitoring period, include:

- The development of a **monitoring, control, and surveillance system (MCSS)**, which seeks to reduce deforestation threats within the project area through an integral approach that comprises:
 - A satellite monitoring system: daily alerts for identifying hot spots.
 - A field monitoring system: regular inspections (patrolling); reporting; cleaning and maintenance of boundaries; perimeter demarcation; among others.
 - A legal monitoring system: management and follow-up of environmental complaints in conjunction with the corresponding authorities.
- The implementation of **BAM's Science Program** to permanently evaluate and monitor the ecological wealth found within the project area (biodiversity assessments carried out in collaboration of prestigious scientific institutions).
- Development and implementation of the **Community Relationship Plan** that seeks to improve the quality of life of the populations in the area of interest, promoting conservation and sustainable management of forest (regular meetings, cultural events, training and formation in the prevention and control of forest fires; support in basic needs, among others).
- Permanent dialogue and coordination with stakeholders for promoting conservation and sustainable development in the area of influence.

To this end, the project developer coordinated with the different stakeholders, in some cases entering into inter-institutional agreements in order to achieve the project's objectives and maintaining open

communication from the design to the implementation of the project, providing openness for dialogue and feedback.

These same activities are destined to mitigate the occurrence of leakage outside the project area as well as protect in the long-term the mitigation results obtained so far by the project implementation. It is worth noting that the project developer has not relocated the original productive activities to the other properties it has, on the contrary, conservation and restoration are the main objectives within all the Company's premises.

2.1.2 Project Category and Activity Type

- Sectoral scope 14 – Agriculture, Forestry and Other Land Use.
- AFOLU project category: Reduced Emissions from Deforestation and Degradation (REDD).
- Activity type: Avoiding Planned Deforestation, as defined according to the decision tree located in the methodology used (VM0007).
- This is a grouped project, however no new project instances have joined during this monitoring period.

2.1.3 Project Proponent(s)

Organization name	Bosque Amazónicos SA (BAM)
Contact person	Jorge Cantuarias Falconi
Title	General Manager
Address	Av. Víctor Andrés Belaunde 147 Vía Principal 123, Office 201 Edificio Real Uno San Isidro, Lima 27, Perú
Telephone	+(51 1) 480 11 92
Email	jcantuarias@bosques-amazonicos.com mcantuarias@bosques-amazonicos.com

2.1.4 Other Entities Involved in the Project

Organization name	JCC Inversiones SAC
Contact person	Jorge Cantuarias Falconi
Title	General Manager
Address	Jr. Atahualpa 760, distrito de Callería, provincia de Coronel Portillo, departamento de Ucayali
Telephone	+(51 1) 480 11 92
Email	www.bosques-amazonicos.com jcantuarias@bosques-amazonicos.com mcantuarias@bosques-amazonicos.com
Role in the project	Legal owner of Nuestro Señor Jesucristo property

Organization name	PASKAY SAC
Contact person	Jorge Torres Padilla
Title	General Manager
Address	162 Grimaldo del Solar, Int. 904, Miraflores 15074, Lima, Peru
Telephone	+(51 1) 943 206 810
Email	www.paskay.pe contacto@paskay.pe jtorres@paskay.pe
Role in the project	Preparation of the PD and provision of general advice on the implementation of the project. In charge of monitoring the changes in GHG emission reductions resulting from project activities, for use as offsets, in accordance with the monitoring plan established in the PD. Likewise, in charge of preparing the monitoring reports according to the validated design, and the requirements of the CCB&VCS standards.

2.1.5 Project Start Date (G1.9)

01 January 2020

2.1.6 Project Crediting Period (G1.9)

01 January 2020 – 31 December 2039; 20-year crediting period.

2.1.7 Project Location

The project area comprising two properties (Selva Maestra and Nuestro Señor Jesucristo) is located within the regions of Ucayali and Huánuco in Peru. Three districts are part of the project area, the Campo Verde and Manantay districts (Ucayali), and the Honoria district (Huánuco).

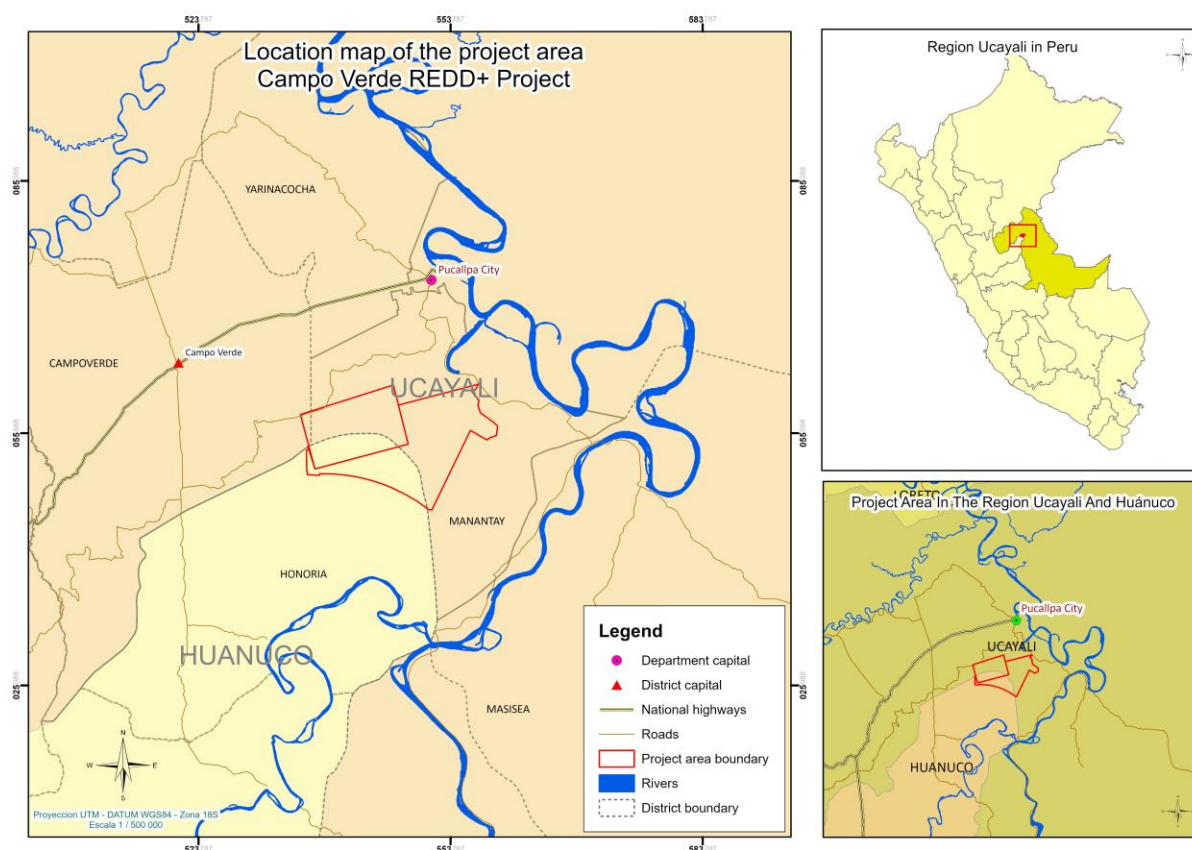


Figure 2.1. Project area boundaries

Table 2.1. Property limits vertices

Vertex	Property	X (East)	Y (North)
1	Selva Maestra	551121	9046026
2		542365	9049935
3		538185	9050255
4		538180	9050066
5		538180	9050066
6		536735	9050157
7		536632	9053037
8		536905	9053099
9		536792	9053468
10		536822	9053470
11		537643	9050834
12		548746	9053778
13		547580	9058424
14		557098	9060909
15		556797	9060311
16		556321	9060021

Vertex	Property	X (East)	Y (North)
17		557167	9059006
18		557035	9058416
19		557337	9057501
20		559386	9055933
21		559234	9054810
22		558433	9054517
23		558116	9054277
24		556143	9055416
25		555021	9053100
26		555021	9053100
27		551556	9045949
28	Nuestro Señor Jesucristo	546981	9060813
29		548746	9053778
30		537643	9050834
31		535913	9057306
32		546981	9060813

2.1.8 Title and Reference of Methodology

This project is using VCS approved methodology **VM0007**, Version 1.6, 08 September 2020, Sectoral Scope 14, “REDD+ Methodology Framework (REDD+ MF)”. The project also applies the following set of modules and tools:

Carbon pool modules:

- **VMD0001** Estimation of carbon stocks in the above- and belowground biomass in live tree and non-tree pools (CP-AB), Version 1.1.
- **VMD0004** Estimation of stocks in the soil organic carbon pool (CP-S), Version 1.0.

Baseline modules:

- **VMD0006** Estimation of baseline carbon stock changes and greenhouse gas emissions from planned deforestation/forest degradation and planned wetland degradation (BL-PL). Version 1.3.

Leakage modules:

- **VMD0009** Estimation of emissions from activity shifting for avoiding planned deforestation/forest degradation and avoiding planned wetland degradation (LK-ASP), Version 1.3.

Emission modules:

- **VMD0013** Estimation of greenhouse gas emissions from biomass and peat burning (E-BPB), Version 1.2.

Monitoring modules:

- **VMD0015** Methods for monitoring of greenhouse gas emissions and removals in REDD project activities (M-REDD), Version 2.2.

Miscellaneous modules:

- **VMD0016** Methods for stratification of the project area (X-STR), Version 1.2.
- **VMD0017** Estimation of uncertainty for REDD+ project activities (X-UNC), Version 2.2.

Tools:

- CMD Tool for testing significance of GHG emissions in A/R CDM project activities (**T-SIG**), Version 1.
- **VT0001** Tool for the demonstration and assessment of additionality in VCS agriculture, forestry, and other land use (AFOLU) project activities (**T-ADD**), Version 3.0.
- VCS AFOLU Non-Permanence Risk Tool (**T-BAR**), Version 4.0.

2.1.9 Other Programs (G5.9)

The project does not participate in any Emission Trading Programs and Other Binding Limits, nor other forms of environmental credit or other GHG program. The current VCS CCB project is entirely independent of any carbon project scheme in Peru; therefore, no double counting has occurred.

2.1.10 Sustainable Development

As described in the PD, Section 2.1.12, the project activities are aligned with the national sustainable development priorities, by the fulfillment of the specific objectives of the project: avoid deforestation and forest degradation in the project area, protect the integrity of biological diversity and ecological processes in the project area, and strengthen the socio-economic situation of the interest groups, specifically the villages and communities neighboring the project area.

2.2 Project Implementation Status

2.2.1 Implementation Schedule (G1.9)

Table 2.2. The Last Habitat REDD+ Project main milestones

Date	Milestone(s) in the project's development and implementation
19 August 2019	BAM institutionalizes the company's Science Program to assess and monitor the biodiversity of the forests in its areas of influence.
15 November 2019	BAM signs a cooperation agreement with CORBIDI (scientific organization) in the framework of the BAM science program.
17 November 2019	As part of the forestry week, training on conservation and fire control is provided to neighboring communities.
December 2019	The construction of the first security camp in Quinillal begins.
01 January 2020	Project Start Date (start of crediting period).
24 January 2020	Territorial security activities implemented: patrolling and boundary maintenance.
March 2020	A first drone overflight is carried out to collect more details on the conservation status of the forests (monitoring system).

Date	Milestone(s) in the project's development and implementation
09 March 2020	First Biodiversity Expedition - Quinillal Camp takes place.
02 July 2020	COVID-19 Plan is implemented as a health measure in the context of the global pandemic and a first medical campaign is carried out.
15 September 2020	A new training event on prevention and control of forest fires is carried out.
February 2021	A medical campaign is carried out in the community of Nuevo Belén.
23 February 2021	BAM signs a cooperation agreement with Universidad Nacional Agraria La Molina (UNALM) in the framework of the BAM's Science Program for the promotion of forest conservation and restoration efforts.
August 2021	First diagnose evaluation of climate, community and biodiversity by Paskay
18 August 2021	12 camera traps are installed within the project area (biodiversity evaluation).
28 April 2022	Contribution to the infrastructure of the educational center of the Túpac Amaru Limón community.
May 2022	Construction of a soccer field in the community of Belen as a socio-cultural space that promotes health and sports for the surrounding communities.
01 July 2022	Daily early warning reports (hot spots) were initiated as part of the monitoring system in the project area.
15 July 2022	BAM signs a cooperation agreement with the community of Pucallpillo.
08 Ago 2022	Contribution to the construction of a communal raft as a means of river transportation that allows the community to increase its income and benefits the surrounding communities.
29 September 2022	Part of the forests protected by BAM are recognized as the Second Private Conservation Area of Ucayali, Peru
August 2022	300 camera traps are installed in collaboration with San Diego Zoo as part of BAM's Science Program.
09 May 2023	New frog species is discovered in the project area.
20 June 2023	VVB validation and verification visit.
2039	End of project crediting period.

2.2.2 Methodology Deviations

No methodology deviations have been applied.

2.2.3 Minor Changes to Project Description (Rules 3.5.6)

No minor changes have been proposed.

2.2.4 Project Description Deviations (Rules 3.5.7 – 3.5.10)

No project description deviations have been proposed.

2.2.5 Grouped Projects

This is a grouped project, however no new areas were added in the present monitoring period. If in the future, new instances join the project, the eligibility criteria as well as the standard requirements will be applied. Also, the project area presented at validation remains the same.

1) New Project Areas and Communities (G1.13)

Not applicable to this monitoring period.

2) Removed Project Areas and Communities (G1.13)

Not applicable to this monitoring period.

3) Eligibility Criteria for Grouped Projects (G1.14)

Not applicable to this monitoring period.

4) Scalability Limits for Grouped Projects (G1.15)

Not applicable to this monitoring period.

5) Risk Mitigation for Grouped Projects (G1.15)

Not applicable to this monitoring period.

6) Project Zone Map (G1.13)

Not applicable to this monitoring period.

7) Changes to Management (G4.1)

Not applicable to this monitoring period.

2.2.6 Risks to the project

Table 2.3. Project risks identification

Identify Risk	Potential impact of risk on climate, community and/or biodiversity benefits	Actions needed and designed to mitigate the risk
Uncontrolled burning	Prolonged drought events during periods or days of continuous low or no rainfall contribute to the spread of forest fires that originate at that time of year (June to September) when farmers take the opportunity to open their farms (slash and clear, burn forests, low secondary vegetation, pastures) and cannot control the burning (which spreads with the help of climatic events such as strong winds and high ambient temperatures). In 2021, in the department of Ucayali, a total of 234 forest fires were reported, identifying 7,488.6 hectares affected, with the district of Manantay (where the project area is located) being the most affected with 2,637.6 hectares (35%), and the month of August, the month with the highest occurrence of forest fires. https://www.facebook.com/permalink.php?story_fbid=359532442870227&id=100064404236894https://www.facebook.com/permalink.php?story_fbid=359532442870227&id=100064404236894	Planning: Prior to the start of the forest fire season, priority areas, where uncontrolled burning frequently occurs as a result of the opening of farms, are identified. Training: To minimize the risk of uncontrolled burning and fires in the area training has been provided to neighboring communities. Monitoring Control and Surveillance system (MCSS): the satellite system has been implemented to provide early warnings to the project team as burning occurs, mainly during times when the intensity and frequency of rainfall decreases to the minimum annual average. The application of satellite technologies used and provided by the SERFOR GEOBOSQUES platform allows visualizing and identifying heat

Identify Risk	Potential impact of risk on climate, community and/or biodiversity benefits	Actions needed and designed to mitigate the risk
	story.fbid=359532442870227&id=100064404236894	sources, which constitutes a support tool for the prevention and implementation of fire control strategies. Early warning maps of hot spots have been generated, using official information during the monitoring period. Likewise, as part of the Control and Surveillance Monitoring System (Territorial Security), measures are reinforced in times of high heat sources, through permanent surveillance rounds by the territorial security team personnel, who carry out their monitoring work starting from the installed surveillance camps.
Illegal logging and timber extraction activities	Illegal logging activities are mainly carried out by organized groups of settlers who come primarily from neighboring communities and who are provided with resources (logistics, budget, payment of wages, equipment) through a timber "facilitator" in order to enable them to access the forest area and possibly the project area, through different fronts, including entry through streams using small boats (peque peque). In the last 4 years there has been a tendency to increase these types of illegal entrance: in 2021, the Environmental Management prosecutor's office (FEMA) of the fiscal district of Ucayali attended to 76.79% of the total cases registered and entered (complaints, files, preventive investigation), being the fiscal district or region at the national level that attended the least cases, according to the Statistical Yearbook of the Public Ministry, 2021. https://cdn.www.gob.pe/uploads/document/file/2912946/Anuario%20Estadistico%202021.pdf.pdf These illegal logging activities increase the level of degradation of the forest ecosystem within the project area, affecting the biodiversity that it contains and the capacity of its forests to continue providing environmental goods and services.	- Monitoring Control and Surveillance System: the project has implemented a monitoring, control and surveillance system based on spatial analysis of the area (satellite monitoring), as well as technical and legal support for the correct identification and control of deforestation threats in the project area. - Collaboration agreements: the project seeks to collaborate with local and national authorities to strengthen the capacity to prevent or mitigate possible invasions for illegal logging and timber extraction activities. - Area demarcation: project boundaries and signs are clear and well maintained in order to favor better monitoring and control of the forests. - Promotion of sustainable activities related to the conservation and sustainable use of forest resources: the project proposes to promote the development of environmentally friendly activities among project stakeholders (identified communities)
Land invasion	The demand for access to forested land to grow agricultural crops is high in the area given the limited availability of land for such economic activities. This triggers the arrival of migrants	MCSS: The identification of invading groups is fundamental to take appropriate measures (preventive and control). As part of the Monitoring Control

Identify Risk	Potential impact of risk on climate, community and/or biodiversity benefits	Actions needed and designed to mitigate the risk
	from other areas or regions in search of forest areas (private or free) where there are no agricultural activities and therefore are not "being exploited economically" and where "the standing forest as such has no productive value" after commercial trees have been extracted for timber sales. In this context, these people (migrants/land invaders) believe they have the right to access the areas (e.g. private lands) and request that they be adjudicated by the competent authorities, given that their owners "are not developing productive economic activity or agricultural purposes", meaning that they are not making use of the area. Based on this self-analysis, a process of land invasion (which legally should not proceed) begins in a planned and organized manner in groups of migrants or producers seeking more land than they need, often supported by the interests of groups of armed land traffickers. In the case of BAM's properties, there have been several cases of land invasions (duly supported by complaints and lawsuits) by third parties trying to take possession and settle in different parts of the project area, which represents a threat of deforestation because these damaging situations lead to forest clearing, logging and burning, being the system of shifting agriculture the regular mode of operation to open farms, leading to land use change and the generation of emissions from deforestation.	and Surveillance System, the project seeks to generate alliances with competent entities in order to promote greater control in the project area and the capacity of the authorities to respond quickly and efficiently to conflicts and risks in the area. BAM-Community cooperation: The role of the project's community relations team is essential for conflict management and resolution, considering the needs of these groups for access to land. Promote sustainable forestry management: As part of the activities, the project proposes providing training on topics related to sustainable forest management, as well as implementing sustainable production pilots that allow communities to generate economic resources through the appropriate management of forest goods and services (instead of the alternative which implies deforestation and degradation).
Non-timber products extraction	The same applies to non-timber products: residents of the surrounding areas pose a risk as they can enter the project area without the corresponding authorization to harvest the fruits of the aguaje palm trees (<i>Mauritia flexuosa</i>), ecosystems that mainly dominate the JCC property and the Selva Maestra.	MCSS: The identification of invading groups is fundamental to take appropriate measures (preventive and control). As part of the Monitoring Control and Surveillance System, the project seeks to identify any possible invasion to illegally and inappropriately harvest forest resources in the project area. Promote sustainable forestry management: The project seeks to propose productive pilots to generate win-win strategies, bringing economic benefits to the community and carried out in an environmentally friendly manner. In this sense, the pilots could include productive processes for

Identify Risk	Potential impact of risk on climate, community and/or biodiversity benefits	Actions needed and designed to mitigate the risk
		example on the collection and commercialization of aguaje, avoiding that the population enters unauthorized and with poor technologies for its use. This will be done through the characterization and natural zoning of the properties to evaluate the potential use and management of biodiversity, formulating the respective forest management plans for a sustainable use of non-timber products, increasing the economic value of the standing forest, which does not mean the removal of trees.
Land invasion	The demand for access to forested land to grow agricultural crops is high in an area characterized by limited land availability. This is further enhanced by the wave of migrants from other areas or regions in search of new land for the development of subsistence activities that include land use change. The invasion is often supported by the interests of groups of land traffickers.	MCCS: The identification of invading groups is fundamental to take appropriate measures (preventive and control). As part of the Monitoring Control and Surveillance System, the project seeks to identify any possible invasion to illegally and inappropriately harvest forest resources in the project area, or any other risk of deforestation / degradation. Area demarcation: project boundaries and signs are clear and well maintained in order to favor better monitoring and control of the forests. Training: The project seeks to provide technical assistance and develop capacities to strengthen production chains and apply good sustainable agricultural practices, with a market approach. BAM-community cooperation: Implement together with the authorities and representatives of the local communities and leaders of community groups, a strategy of negotiation and resolution of conflicts, which leads to the generation of reciprocity agreements, with commitments aimed at putting an end to incursions and land invasion events.
Climatic events of precipitation and extreme "droughts"	Both events represent a potential risk for access to the project area since, if prolonged, they could affect the proper implementation of previously planned activities and thus hinder the achievement of the outputs intended to generate benefits for the climate, biodiversity and communities.	Planning and logistics: the scheduling of project activities is developed considering possible climatic factors (seasons) that may affect entry to different areas of the project. To minimize risks, the company has adequate means of transportation (e.g.

Identify Risk	Potential impact of risk on climate, community and/or biodiversity benefits	Actions needed and designed to mitigate the risk
	Seasons of low rainfall (June to September): relatively easy to enter the project area and its surroundings with vehicles and walking through trails or roads which facilitates entry to develop community relations activities in the surrounding area and monitoring within the project area. There are flood-prone sites, which are difficult to access (on foot or by boat) due to muddy terrain with a lot of mud or streams and streams with low flow, which does not allow going beyond certain sites. In times of high rainfall, it is no longer possible to enter the temporary flooding areas with vehicles considering that a large part of the project area is floodable. Access is facilitated by using the hydrographic network by means of small boats to cover large areas of the project area and develop certain specific activities.	4x4, motorcycles, small boats, etc.) to properly enter the project area. Safety protocols: BAM also has internal occupational health and safety regulations to ensure the well-being of its employees during their activities at all times.

2.2.7 Benefit Permanence (G1.11)

During the verification period (2020-2021), the project ensured the permanence of climate, community, and biodiversity benefits through:

- The implementation of measures to mitigate emissions generated by deforestation and forest degradation (e.g., the monitoring, control and surveillance system) as indicated in section 3.1, which includes prevention activities promoted amongst the different groups located in the area of influence (communities, hamlets) such as training on fire prevention and control and the promotion of sustainable forest management, forest and biodiversity preservation. In this manner, the Project seeks to provide communities with tools and skills that will allow them to live in harmony with the forest in the long term, building their capacity to sustainably manage forest resources in an appropriate manner.
- In the same line, the project incorporates communities and stakeholders into its value proposition so that they can participate in a sustainable model over time. For example, the project includes neighboring communities in its current projects, providing opportunities for work and participation in sustainable development initiatives such as reforestation. The project is also designed so that the communities can participate in monitoring processes and the development of productive pilots, among other proposed activities. The project seeks, through a participatory and economically productive approach, that the community finds value for the development of their families in the conservation and sustainable management of the forest.
- Likewise, the relationship between the project proponent and the communities/other stakeholders favors openness and collaborative participation of different groups to promote forest conservation in the long term. For example, the project proponent has signed collaboration agreements with scientific organizations, authorities, and communities to promote the protection of the forests and their biodiversity, in an environmentally friendly manner and for the well-being of the community.
- The permanent dialogue and openness to feedback that the project promotes and is demonstrated in the following document, as well as the commitment of the different parties to collaboration, allows the

project to evolve favorably over time for accomplishing its goals for forest conservation and sustainable socio-economic development.

- The capacity building promoted on sustainable forestry management (e.g., in fire control, productive chains, forestry control and surveillance, social management, technical support, among others) for community groups, leaders and authorities, ensures that the impact of the Project transcends its group of influence and that its impact lasts over time.
- The promotion of knowledge around the biodiversity found in the area (Science Program) in collaboration with independent scientific organizations of great prestige allows the understanding and awareness regarding the ecological value found in the Peruvian Amazon ecosystems (diversity of flora, fauna, etc.) transcend the limits of the Project area, promoting understanding with respect to our ecosystems, vulnerable species, and the value of conservation.

2.3 Stakeholder Engagement

2.3.1 Stakeholder Access to Project Documents (G3.1)

The project plan and design were firstly shared with community representatives through one-to-one meetings and then shared with the community members through decentralized reunions (see folders: Project diffusion reports (PD & RM) >>> Project diffusion and dissemination; and 12.Supporting evidence Community section >>> Meetings with stakeholders).

As part of the socialization process, printed information brochures about REDD+ The Last Habitat project were distributed to each of the participants. Additionally audiovisual recordings were produced with the assistance of a journalist from the region. A list of participants was compiled. During this process, the impact of the project, its location, the main objectives, the activities to be developed, the importance of protecting the forests, BAM's relationship with the communities, and the main benefits and risks of the project were communicated. Furthermore, information on how to access project documents and information through project staff, project office, company website and the Feedback and Grievance Procedure (see folder: 12. Supporting evidence of community section >>> MAQR) was shared.

Final PD and Monitoring Report: once the PD and Monitoring Report for period 2020-2021 are finalized and registered under VERRA, these documents will be both shared with the Project's stakeholders through its representatives and made public in BAM's website: www.bosques-amazonicos.com.

2.3.2 Dissemination of Summary Project Documents (G3.1)

Summaries of project documents were shared at community meetings through communication tools such as presentations, brochures, and posters to summarize the most relevant aspects of the project (see folder: Project diffusion reports (PD & RM) >>> Project diffusion and dissemination).

CCB Version 3, VCS Version 3



Proyecto REDD+ El Último Hábitat



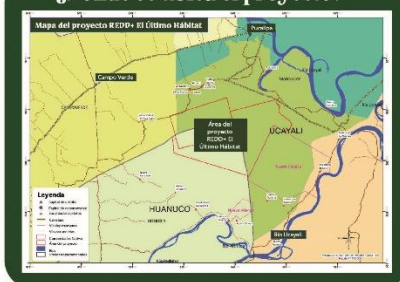
¿Quiénes somos?

Bosques Amazónicos S.A. (conocida como **BAM**) es una **empresa privada de Ucayali** con más de 17 años de experiencia en el sector forestal en la Amazonía peruana.

Nos dedicamos a:

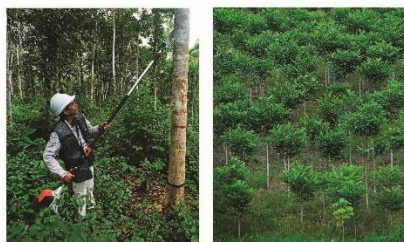
1. Proteger y restaurar los bosques.
2. Conservar la flora y fauna de la amazonía.
3. Contribuir al desarrollo sostenible.
4. Mitigar los efectos del cambio climático.

¿Dónde se ubica el proyecto?



¿Qué hace el proyecto?

- 1 Evita la deforestación y degradación de los bosques.
- 2 Protege la flora y fauna.
- 3 Contribuye a mejorar la calidad de vida de las poblaciones vecinas.

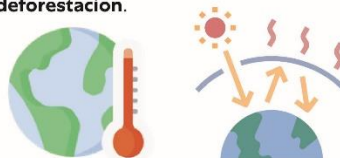


¿Qué es el cambio climático?

El **aumento de temperaturas del planeta** durante un largo periodo de tiempo.

¿Que está causando este cambio?

La emisión de gases de efecto invernadero (GEI), principalmente por la quema de combustibles y en el caso del Perú, por la **deforestación**.



En este contexto nacen los proyectos REDD+. Estas iniciativas permiten **generar recursos** económicos para la:

- Reducción de Emisiones** producto de la
- Deforestación y Degradación** de los bosques.



Conservar estos bosques es importante porque son uno de los últimos bosques en la cercanías a Pucallpa. Son valiosos por que **benefician a toda la población y a las futuras generaciones** brindándonos agua potable, alimentos, trabajos sostenibles, entre otros.

RECUERDA: Todos los caseríos, centros poblados, comunidades y asentamientos humanos que se encuentran aledaños al proyecto, son **beneficiarios indirectos**. Esto significa que la **participación** en las actividades que se plantean para mejorar los medios de vida es **voluntaria**.

Figure 2.2. Proof of dissemination of project documentation

Once the PD and Monitoring Report for period 2020 - 2021 are registered under VERRA, the summary of the final documents will be shared with the community through its representatives and made public in BAM's website: www.bosques-amazonicos.com

2.3.3 Informational Meetings with Stakeholders (G3.1)

During the monitoring period, informational meetings with communities were carried out participatively. Prior to the informational meetings to take place, the Project team had previous dialogues and coordination meetings with their community leaders and representatives, who were responsible of asking the community of their interest and permission to meet with the Project team (see folder: 12. Supporting evidence of community section >>> Meetings with Stakeholders).

Table 2.4. Informational meetings

Date	Communities	Topic
26/02/2018	Agua Blanca	Dialogue meeting to sign cooperation agreement.
09/09/2018	Tierra Roja	Meeting to coordinate forest fires prevention course
04/08/2020	Agua Dulce, Manco Cápac	Informational meeting about REDD+ project and coordination for data collection
05/08/2021	Agua Blanca, Tierra Roja y CP Nueva Esperanza	Informational meeting about REDD+ project and coordination for data collection
06/08/2021	Túpac Amaru Limón, San Cristóbal de Agua Blanca	Informational meeting about REDD+ project and coordination for data collection
07/08/2021	José Olaya, Native Community Nuevo Oriente de Chanjao	Informational meeting about REDD+ project and coordination for data collection Informational meeting about REDD+ project and coordination for data collection
09/08/2021	Native communities Nueva Alianza y Nuevo Paraíso	Informational meeting about REDD+ project and coordination for data collection
10-11/08/2021	Nuevo Belén, Ampliación Túpac Amaru, La Lupuna de Manantay	Informational meeting about REDD+ project and coordination for data collection
11-12/08/2021	Nueva Esperanza y La Soledad	Informational meeting about REDD+ project and coordination for data collection
13/08/2021	Native Community Nueva Alianza	Informational meeting about REDD+ project and coordination for data collection
01/11/2021	Native Community Nuevo Paraíso	Dialogue meeting with the director of the community school
02/11/2021	Native Community Nuevo Paraíso	Informational meeting about REDD+ project

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

At all times communities and groups are informed that their participation in the project activities is completely voluntary, as they are indirect beneficiaries (they are not part of the project area).

During the informative meetings, the Project Team shared relevant information on potential costs, risks, and benefits of implementing the project's activities, using summary documents and communicational materials such as infographics, power point presentations, flyers, and brochures (see folder: Project diffusion reports (PD & RM) >>> Project diffusion and dissemination). During these meetings it is explained that there are no direct costs nor risks for the communities related to limiting current land uses or significant opportunity costs, as they are not inside the project area.

Concerns about potential costs, risks and benefits expressed during the informational meetings, meetings with their leaders, and during the community monitoring processes, are documented (see folder: Supporting evidence of community section >>> Meetings with stakeholders) and considered for the implementation of strategies and activities aimed at improving well-being in the communities, which voluntarily agree to participate after having been duly informed. This process and understanding is followed for the structure and design of the cooperation agreements signed with the communities (see folder: 12. Supporting evidence of community section >>> Cooperation agreements with communities).

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

Validation and verification processes were explained to the communities of interest in the informative meetings held by the project (see folder: 12. Supporting evidence of community section >>> Meetings with stakeholders; and Project diffusion reports (PD & RM) >>> Project Diffusion and Dissemination).

Likewise, communities were informed of the validation and verification processes through their representatives. The channels of communication used were:

- Informal: through direct contact between community representatives and the project team, in a meeting or visit to the project offices which are open Monday through Friday from 8am to 6pm or by phone calls / WhatsApp.
- Formal: through informative communications such as letters sent by the General Coordinator of the project as a representative of BAM to the authorities and representatives of the communities, and stakeholders (see folder: Project diffusion reports (PD & RM) >>> Project Diffusion and Dissemination / MR 2020-2021 >>> Lettters auditor's visit jun2023).

For the auditor's site visit, letters were sent to community representatives as described in the next section. Validation/Verification results are reported as indicated above.

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

During the process of socialization of the project to the community as well as in the several meetings held with the representatives of the different groups, the steps involved in the design and implementation of the project under the REDD+ mechanism and the VCS+CCB standards were explained, such as the completion of the PD and the visit of the external auditor, indicating the need to schedule interviews with community members and stakeholders.

In the case of the specific verification process, after receiving the auditor's visit final schedule, letters from the General Project Coordinator were sent to the community leaders in a timely manner to inform them about the auditor's forthcoming visit and the meetings that will possibly be generated between the auditor and the communities as part of the regular verification process (See folder: Project diffusion reports (PD & RM) >>> MR 2020-2021 >>> Lettters auditor's visit jun2023). During the auditor's visit, members of the communities voluntarily attended the coordinated meetings held in spaces conducive to direct conversation between the VVB and the community, where they were able to respond directly to the questions raised by the VVB.

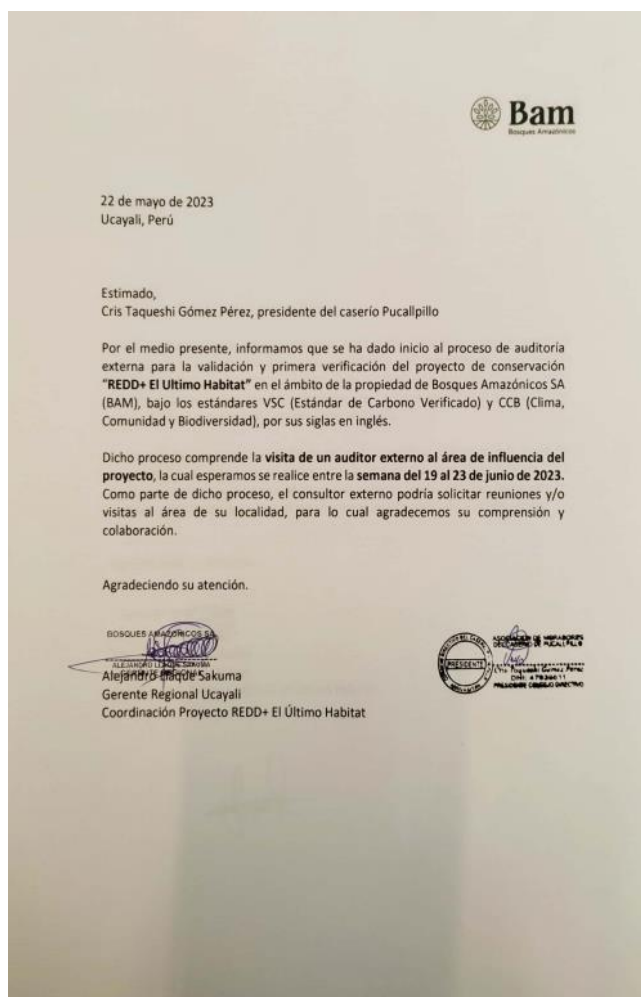


Figure 2.3. Example of information letters sent about the certification process

2.3.7 Stakeholder Consultation (G3.4)

The interests, needs and concerns of the communities voluntarily involved in the project were gathered through:

- Initial diagnosis of the socio-economic situation of the communities. As part of the Project design, an exhaustive social diagnosis was carried out to better understand the situation of each group of influence in terms of, for example, basic needs (health, education, etc.), regular productive activities, among others, with the purpose of mapping the level of capacities / opportunities desires / access of the different groups in terms of conservation, sustainable forest management, sustainable productive activities, etc. (see folder: 12. Supporting evidence of community section >>> Social diagnosis - Evaluation).
- During the initial socialization process of the project (see folder: Project diffusion reports (PD & RM) >>> Project diffusion and dissemination): decentralized meetings favored to obtain greater understanding on the socio-economic situation, opening dialogue to exchange ideas regarding the priority needs of the community and the integrity of the forests. In general, a very positive relationship was observed between the communities and the forest, understanding the need for the

communities to grow their economic and productive capacity to maintain this positive relationship over time.

- During periodic information meetings and the understandings set forth in the cooperation agreements (see folder: 12. Supporting evidence of community section >>> cooperation agreements with communities).

Furthermore, regarding consultation processes, the project required the community's leaders to discuss any agreement in their community meetings before signing or committing to an activity with the project. An example of this are the cooperation agreements signed with the communities in which their leaders discuss the content and relevance of the agreement in a community meeting as a requirement before signing the document with BAM.

With other stakeholders, information has been gathered through informal meetings with authorities and other stakeholders in particular to understand their perception of the threats of deforestation and the potential for sustainable development in the area (see file: 12. Supporting evidence of community section >>> Meetings with stakeholders).

In this way, the project gathers input from stakeholders for the efficient execution of its activities, seeking the greatest impact for the fulfillment of its objectives. All these inputs are taken into consideration for the development of project strategies and activities, such as:

- Community development plan (see folder: 12. Supporting evidence of community section >>> community development plan).
- Territorial security protocol (see folder: 16. Health and safety of working condition >>> Territorial Security Protocol).
- Identification and development of the activities proposed by the project (see folder: 12. Supporting evidence of community section >>> community projects).
- Others.

Due to Covid-19 pandemic, many of the activities implemented by the project during 2020-2021 period responded to the urgent health needs and demands expressed by the communities.

2.3.8 Continued Consultation and Adaptive Management (G3.4)

Throughout the meetings conducted by the project, feedback has been received regarding the project strategies and operations. These meetings are designed as a participatory instrument to analyze and evaluate the progress of the project in terms of results and impacts, articulated to achieve levels of sustainability. In these workshops, an analysis of the limitations and potentialities regarding the proposals that are being implemented, the position of the stakeholders involved, recommendations are formulated, and alternatives are identified (see files: Project diffusion and dissemination and Meetings with stakeholders).

As mentioned before and details in Figure 2.4 below, as part of the Project's strategy to promote a bilateral communication and to include community feedback in the design and implementation on the activities, the project receives all kind of requests which are received by the project team for evaluation and possible implementation. Furthermore, the project coordinator periodically holds meetings with the representatives of the different stakeholders to receive feedback in favor of permanent collaboration between the parties, regularly at BAM's permanent office in the City of Pucallpa, which is open to visits from Monday to Friday.

Additionally, the Project's Community Relations team holds regular visits to the different communities/hamlets to maintain permanent communication and collaboration. Other feedback tools have been implemented e.g., suggestion/complaints notebooks installed in camps.

The response process begins with the formalization of the request through a letter from the authority representing the community addressed to the Project to initiate the registration of the request. The second step is the analysis of the proposal described, it is important to point out that during the participatory workshops the communities are encouraged to identify needs, problems and propose solutions that will allow them to improve their livelihoods within the framework of the Project's objectives. Once the proposal has been analyzed, it is divided into two scenarios: a request for a service or work and/or a specific request for a need (donation oriented to community development). The communities by means of the formality of the request will be able to approach the offices or have direct communication with personnel of Bosques Amazónicos to know the state of the request and the evaluation that it has had.

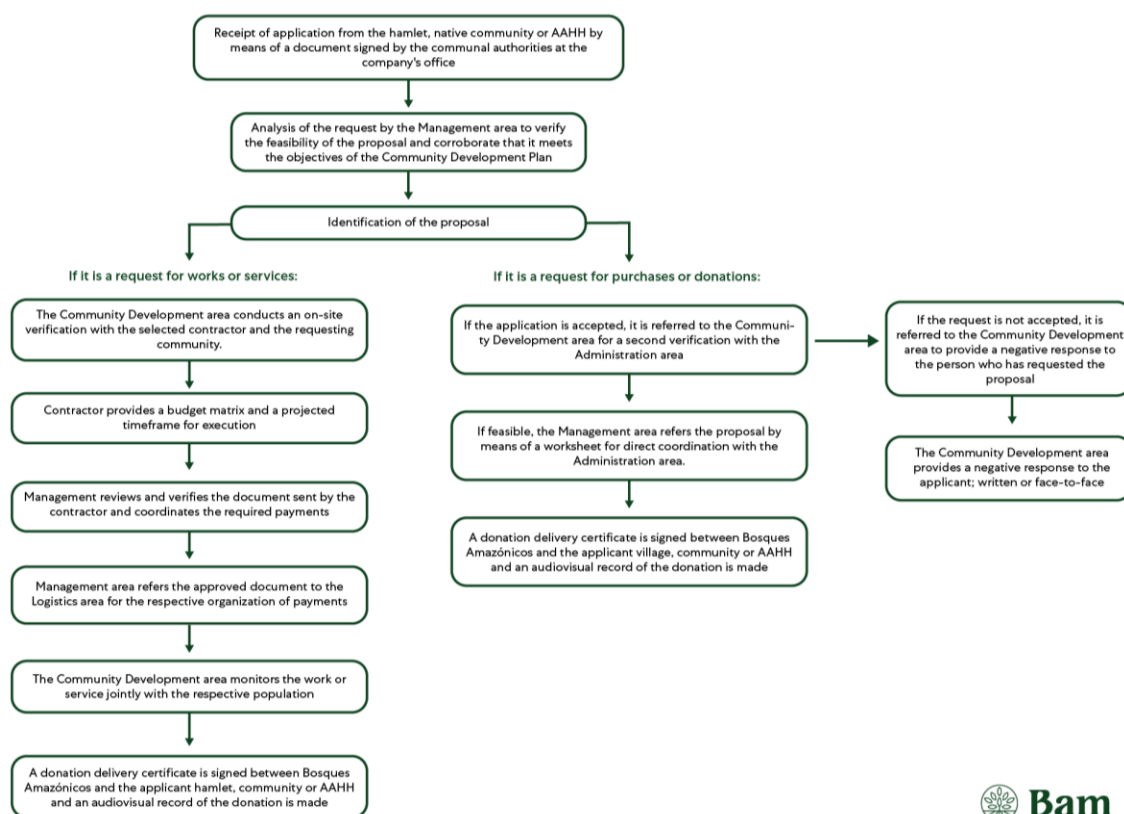


Figure 2.4. Flowchart of the implementation of requests from communities, hamlets, or human settlements (AA.HH.) surrounding the project

2.3.9 Stakeholder Consultation Channels (G3.5)

As mentioned before, the following channels have been used for stakeholder consultation.

- Meetings with community representatives (see file: Diffusion and dissemination of the project and Meetings with stakeholders)

- Meetings with the communities families (see file: Diffusion and dissemination of the project and Meetings with stakeholders)
- Surveys conducted in during the social diagnosis process (see file: Diffusion and dissemination of the project)
- Meetings with local authorities (FEMA, GRFFS, Police, etc.) (see file: Meetings with Other stakeholders)
- Letters of request for donation
- Suggestion notebooks



Figure 2.5. Book of suggestions front page

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

It is important to emphasize that the communities identified, which voluntarily participate in the activities proposed based on their recommendations and needs and aligned with the fulfillment of project objectives. The identified communities are not part of the project area and have no binding commitments, nonetheless the project has promoted spaces that enable their participation in decision making and implementation of activities. Some of these are:

- The informational meetings through the process of socialization of the project (see file: Supporting evidence of community section – Project diffusion and dissemination).
- The participatory workshops/meetings, events in which information, opinions, concerns, comments, contributions, and recommendations are exchanged with the stakeholders (see file: Supporting evidence of community section – Meetings with stakeholders)
- Feedback and grievance procedure (see file: Supporting evidence of community section – MAQR).

In each of these spaces or mechanisms, a participatory, intercultural and gender approach is used to ensure that all stakeholders and participants have an equal opportunity to express themselves. For a summary of the participatory meetings with stakeholders see Table 2.4.

In relation to any agreement or commitments reached during the meetings, community institutions and local decision-making processes were respected to ensure the legitimacy of the agreement (see file: Cooperation agreements with communities). Furthermore, if participation of vulnerable groups such as women or elderly people was not achieved, direct communication was established with them through community relationships staff.

Finally, the main needs and interests expressed by the communities through the participatory mechanisms have been summarized in a matrix that allows the project team to monitor and make culturally appropriate decisions.

During the 2020-2021 period, due to Covid-19 pandemic context the project activities were limited, prioritizing health related activities for general population. In this period the project team conducted a detailed identification of the more vulnerable groups, therefore for the following verification period specific activities for women are going to be implemented.

Table 2.5. Social Matrix

Location	Type	Name	Needs, interests
Km 15	Rural settlement	Nuevo Belén	Groups of families involved in cassava, rice and farifia production demand support from public and private institutions to increase their production in order to improve their livelihoods. % of women population: 45.45
Honoría	Rural settlement	San Antonio de Honoría	Because of their location in a remote area in the border of two regions, regional and national authorities have a weak presence. The supply of medicines is one of the main problems. % of women population: 44.14%
Río Ucayali/ honoría	Native community	Nuevo Paraíso	Their territory is threatened by third party actors that want to access resources within their land and a road proposal that would increase the risk of deforestation and encroachment. They want to obtain organic certification for their bananas. % of women population: 51.34%
Pucallpillo	Rural settlement	Nuevo San Juan	Strengthen their livelihoods related to the production of casava and banana. % of women population: 50.38%
Pucallpillo	Rural settlement	Pucallpillo	Improving the means of river transport is necessary to be able to transport their products as well as to mobilize the community's teachers and health personnel. Also, because the community is located in a flood zone, camu camu production is their main livelihood alternative. % of women population: 48.87%

2.3.11 Anti-Discrimination Assurance (G3.7)

The project proponent has an official policy against any type of discrimination, which is uploaded in the company webpage. The gender equity, diversity and inclusion policy approved in its board of directors, includes the following basic principles of action. This Policy applies to all employees, directors and officers, as well as contracted consultants, regardless of their nationality or residence. It also applies to relationships with all BAM's stakeholders (see supporting documents - BAM policies).

a) Equal opportunities without discrimination.

- To guarantee the quality of employment with the aim of promoting equal opportunities and non-discrimination, encouraging the maintenance of stable and quality jobs.
- Practice and demonstrate equitable treatment that promotes personal and professional progress.
- Comply with current legislation on diversity, equal opportunities, and inclusion.
- To respect diversity, ensuring non-discrimination based on gender, age, race, nationality, ethnic origin, sexual orientation, religion, ideology, marital status, family responsibility or disability.
- Ensure that all employees, without discrimination based on gender or any other personal condition, are provided with the same opportunities for access to the training necessary for their professional development.
- Extend to BAM's value chain its commitment to respect diversity and equal opportunities. Promote the hiring of suppliers that have policies in this area or adhere to the principles of this Policy.

b) Reconciliation of personal, family and work life.

- Encourage the organization of working conditions with a gender perspective, allowing the reconciliation of personal and professional life for all workers.
- Ensure that working conditions allow the reconciliation of work and personal life of workers, implementing measures such as digital disconnection or flexible schedules in accordance with the responsibilities of each worker.
- Attend with the appropriate integration measures, among others, the situations of single people, married people, unmarried couples, divorced, separated, widowed, with or without children and with other family and emotional circumstances, including the specific link with pets, as living beings endowed with sensitivity.

c) Zero tolerance against sexual harassment.

- Preserve an environment free of workplace harassment, especially that which has as its intention or basis direct or indirect discrimination.
- Collaborate in the fight against gender-based violence.

This policy comprises commitments in:

- Creating a work environment based on respect that values difference and provides equal opportunity, allowing full and active participation of all members of BAM's workforce.
- Create an inclusive team culture characterized by openness and constructive challenge, where people feel respected, valued, and supported.
- Accept and encourage diversity of thought and experience to maximize the company's performance.

- To treat personnel fairly and without any form of discrimination; acting in such a way as to protect all employees from any discriminatory treatment that would be unethical or unlawful.
- To implement and develop policies for selection, hiring, promotion, training, professional classification, and other working conditions, based solely on criteria of merit and ability.
- Provide workers with flexible work options that focus on improving their personal and family life.
- Promote working conditions that prevent labor and sexual harassment due to, among others, gender, sex, sexual orientation, gender identity and expression, as well as any discriminatory conduct based on nationality, ethnic or social origin, skin color, marital status, family responsibility, religion, age, disability, social status, political opinion, health status, both in a face-to-face and digital work environment.
- In addition, BAM is committed to ensuring that its employees, as well as any stakeholders with whom the company interact, interact in an environment free of discriminatory, derogatory, or hostile remarks, gestures or other behavior.

2.3.12 Grievances (G3.8)

No grievances were received during the monitoring period.

2.3.13 Worker Training (G3.9)

Workers are properly briefed on the requirements and responsibilities expected of their role upon entering the position (see supporting documents - entry manual and safety protocol). BAM has trained personnel with several years of experience working on forestry projects, who provide training to new hires and induct them into their new role. Furthermore, employees periodically receive training on topics related to their duties, such as fire control and others.

In the context of the covid 19 pandemic, employees were assisted by a health professional, who performed the corresponding medical check-up and trained the staff on care and prevention measures in the face of the global pandemic (see file: health and safety of working condition).

Furthermore, the project proposes training activities for the identified community as detailed in the Theory of Change Matrix (Project Description document). For example, for the fulfillment of climate objectives, the project proposes trainings on sustainable forest management and prevention of fires and environmental crimes. To meet biodiversity objectives que project promotes awareness-rising initiatives are implemented on the importance of biodiversity in the project area and how to deal with potential threats on the matter. In this manner, the community is actively involved in monitoring the area, in collaboration with the company.

In that regard, during the monitoring period, three community training in sustainable forestry management / fire prevention and control were held:

- Tierra Roja: Participatory meeting for the development of the forestry week event and promotion of forest fire prevention activities. 27 participants.
- Santa Teresita de Aguablanca: Training on prevention and control of forest fires with 19 participants.
- Caserío Agua Blanca: Training on prevention and control of forest fires with 43 participants.

2.3.14 Community Employment Opportunities (G3.10)

BAM creates employment opportunities at the base of the pyramid, including neighboring communities within the value proposition, generating local rural jobs for both men and women. Within the Ucayali area, BAM employed the following number people to cover its operations during the monitoring period (see folder: Employment).

Table 2.6. Employment created during the monitoring period

	2020	2021
Men	61	96
Women	14	26
Total	75	122

All the aforementioned personnel were on the company's payroll, receiving the following benefits:

- Compensation for time of service (CTS) 2 times per year
- Gratuity 2 times a year
- 1 month vacation entitlement
- Life insurance
- Supplementary risk work insurance (SCTR)
- Social Security (Essalud)

Labor regulations are strictly complied with and decent, non-forced or child labor is promoted; based on the capabilities and experience of each person. Equality at work and performance of activities is also promoted, without discrimination. All this as part of the action commitments established in the Corporate Sustainability Policy (See file: BAM Policies), adding that the recruitment, selection, and retention of talent is carried out under a favorable framework of labor relations based on equal opportunities, respect for diversity, and in conciliation with personal and work life.

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

Workers enjoy the rights established in the Peruvian Labor Law. They receive a fair wage, which is over the minimum wage established by the Peruvian government, they have vacation days available, retirement compensation, bonuses, health insurance, education grants, and other benefits established in the law. There are complementary benefits for workers over fifty years of age, such as retirement benefits. Without affecting the aforementioned benefits, the workers can organize into labor unions to negotiate better working conditions if they deem it appropriate (see supporting documents – BAM Policies).

The Project is articulated under the standards of the Labor Productivity and Competitiveness Law No. 728, which promotes the training and labor formation of their workers as a mechanism to improve their income and labor productivity, while following the constitutional norms of labor security.

- Supreme Decree 002-97-TR: Single Ordered Text of Legislative Decree No. 728, Law on job promotion and training
- Supreme Decree 007-2002-TR: Single Ordered Text of the Law on working hours, hours and overtime work; and its respective Regulation

- Supreme Decree 004-2006-TR: Provisions on the registration of attendance and exit control in the labor regime of private activity
- Law No. 28051: Law on food benefits for the benefit of workers subject to the labor regime of private activity and its respective Regulation
- Law No. 25129: Concept of family allowance to be received by workers in private activity whose remuneration is not regulated by collective bargaining
- Law No. 27735: Law that regulates the granting of bonuses for workers of the private activity regime for national holidays and Christmas; and its respective Regulation
- Law No. 29549: Law that modifies Legislative Decree No. 688 Law of consolidation of social benefits and creates the mandatory registration of life insurance contracts law; and its respective Regulation
- Supreme Decree 009-2020-TR: Approves the regulations of the Emergency Decree No. 044-2019 related to life insurance
- Supreme Decree 009-1998-TR: Regulation for the application of the right of workers in private activity to participate in the profits generated by the companies where they provide services
- Supreme Decree 001-1997-TR: Single Ordered Text of the Law on compensation for length of service; and its respective Regulation
- Supreme Decree 012-2016-TR. They specify the provisions of Law No. 30334, referring to the non-affectation of legal bonuses and the availability of compensation for time of service
- Law No. 26644: They specify the enjoyment of the right to pre-natal and post-natal rest of the pregnant worker; and its respective Regulation
- Supreme Decree 002-2016-TR: Adaptation of the regulations that regulate maternity leave and the payment of the maternity subsidy to the provisions of Law No. 30367, Law that protects working mothers against arbitrary dismissal and prolongs their period Rest
- Law No. 27403: Law that specifies the scope of the permit for breastfeeding
- Law No. 29409: Law that grants the right to paternity leave to workers in public and private activity; and its respective Regulation
- Law No. 30012: Law that grants the right to leave to workers with direct family members who are seriously or terminally ill and suffer a serious accident; and its respective Regulation.
- Law No. 30119: Law that grants the right to leave to workers in public and private activities for medical assistance and rehabilitation therapy for people with disabilities; and its respective Regulation
- Supreme Decree 039-91-TR: establish the internal work regulations, which determine the conditions that employers and workers must abide by in the fulfillment of their benefits
- Law No. 28783: Occupational Health and Safety Law; its modification (Law 30222)
- Supreme Decree 005-2012-TR: Regulation of the Occupational Health and Safety Law
- Supreme Decree 010-2014-TR: Approving complementary regulations for the adequate application of the Only Temporary Complementary Provision of Law 30222
- Law No. 28048: Protection Law in favor of pregnant women who perform work that puts their health and/or the normal development of the embryo and fetus at risk; and its regulations
- Law 29773: General Law of Persons with Disabilities; and its corresponding Regulation

- Supreme Decree 020-2001-TR: Regulation of the General Law on labor inspection and defense of the worker (Legislative Decree No. 910 and its Amendment)

After the signing of contracts, workers are provided with a “Entry Manuals” with detail information on the legal benefits that they acquire when signing the respective contracts with the company (see Supporting Documents - “Health and safety of working condition”). Furthermore a list of the relevant legal framework related to workers' rights is detailed below. This information is shared with employees during training/induction events that take place when the person first joins the company.

In addition, workers involved in The Last Habitat REDD+ project are provided with the “Territorial Security System Protocol, where the possible risks and their mitigation measures are detailed for the information of the employees, promoting an adequate and safe response protocol to meet the objectives of the project while safeguarding the welfare of its workers (see Supporting Documents - “Health and safety of working condition”).

2.3.16 Occupational Safety Assessment (G3.12)

No substantial risks to worker safety have arisen due to project implementation in the monitoring period.

All team members have had the necessary equipment to comply with the safety measures required to protect the integrity of the personnel from possible risks that may occur, especially in the field work. The project provides its workers with clothing such as vests, polo shirts, long-sleeved shirts so as not to expose the body to risks, sun hats to prevent burns and animal bites, boots, and raincoats. It also provides various personal protection equipment (PPE) such as helmets, safety glasses, backpacks, basic first aid kits, machetes with sheaths, flashlights, drones, GPSs, long-sighted, among others. In the case of vehicles, the project provides its team with 4x4 and motorcycles for safe transportation, which have vehicle insurance policies and SOAT. In addition, they undergo permanent preventive maintenance.

The project has made a mapping of the possible risks of the project to prevent any occurrence and act appropriately in case of any event, following the due protocols. (See Supporting Documents - Health and safety of working condition – Territorial Security Protocol).

Furthermore, at a company level BAM has analyzed the main legal framework related to occupational safety and has done a specific analysis of the main risks associated to its operations. As mentioned, BAM is committed to protect its employees, complying with the provisions of Law 31246 on occupational safety and health. In addition, BAM has an Occupational Health and Safety Regulation (See Supporting Documents - BAM Policies) which establishes and regulates the procedures to ensure the safety and health of its employees when carrying out their different jobs and activities. As part of the action commitments established by BAM in its Corporate Sustainability Policy (See supporting documents - “BAM Policies”), it ensures a safe and healthy work environment, complying with current legislation in matters of occupational safety and hygiene and sexual harassment.

Workers are provided with the protocol explaining the company's policies, practices and regulations, as well as the activities, methods and forestry techniques used, to ensure that all employees are fully aware of the company's management framework and that of its operations. Furthermore, employees undergo a training process where they are instructed on the different fronts of the project operations and are accompanied in a first stage by the leaders or people with more experience in the group. They are taught about the use of the tools or instruments to be used in the execution of the activities. In addition, in this training process,

protocols and action plans are explained in the event of different scenarios such as a (possible) forest fire or the presence of illegal loggers.

In the context of the covid 19 pandemic, employees were assisted by a health professional, who performed the corresponding medical check-up and trained the staff on care and prevention measures in the face of the global pandemic (see file: health and safety of working condition).

2.4 Management Capacity

2.4.1 Required Technical Skills (G4.2)

The following key positions and skills were identified as necessary for the project to be implemented and have been maintained in the monitoring period (2020-2021):

- Project Coordinator: professional with experience in the development of forestry / conservation projects, with skills for project management in the different areas the REDD+ project requires for its optimal implementation. Preferably, a professional who lives in the region where the project area is located. +5 year experience in managing environmental projects.
- Territorial security coordinator: professional in Forestry Engineering or similar careers, with knowledge and experience in conservation and forest management/monitoring. +4-year experience working in forest conservation projects in the Amazon.
- Legal Coordinator: Lawyer with experience in environmental matters. +4-year experience working in environmental matters.
- Community Relations Coordinator: professional with knowledge and experience in community work, community relations, participatory methodologies, socioeconomic analysis, and diagnostics. +4-year experience working in community relations matters / projects.
- Biodiversity and head of science: professional with expertise in biological assessments, with knowledge in endangered species and in national and international laws that protects them. The candidate must have worked in biological monitoring and special habitat census. +5 years of experience.
- Technical Project developer management: experience in carbon analysis and reporting. Professional with expertise in developing Project Design Documents and Monitoring Reports under the VCS and CCB standards. In charge of drafting the official documents for validation and verification processes. +5 years working in carbon forest projects.
- GIS Specialist: Professional with experience in information development and geospatial calculations, including REDD+ projects in Peru. Specialist in geographic information systems and vegetation cover deforestation modeling analysis. +4 years of experience.

As can be seen in the following section, these key roles are filled by competent and experienced professionals that have been involved in the project from the beginning.

2.4.2 Management Team Experience (G4.2)

BAM is a company with more than 17 years contributing to the restoration, conservation and sustainable development of the Peruvian Amazon. BAM's awards and recognitions include:

- BAM's restoration and reforestation program with native species has been recognized locally and internationally as one of the most successful experiences, receiving awards such as the United Nations award granted by the FAO to the best company for the restoration of degraded areas in the jungle and Peru category in 2015; the National Entomology Award ,2015; and the Antonio Brack National Environmental Award for the most eco-efficient model in Peru, 2011.
- BAM's forest conservation and genetic improvement programs have been recognized in the Peru 2021 and 2022 “Boscares” awards, winning the Forests and Climate Change category, and in the Research and Innovation in Forestry category.
- BAM is a pioneer in the international carbon market. Its restoration/reforestation and conservation (REDD+) programs have been among the first forest carbon initiatives in the world to achieve the Verified Carbon Standard (VCS), the most prestigious standard in the voluntary carbon market.
- BAM's plantations are Forest Stewardship Council™ (FSCTM) certified, which validates the sustainable management of its operations and ensures compliance with Forest Stewardship Council™ forest management and Chain of Custody standards.
- In accordance with its commitment to sustainability, BAM became the first forestry company to obtain the Environmental Declaration of Ongoing Activities (DAAC) through a Resolution issued by the Ministry of Agrarian Development (MIDAGRI).
- BAM is the first forestry company to enter the Lima Stock Exchange and place debt instruments to scale its sustainable development efforts in the Amazon. In addition, BAM is the first Peruvian company and the first forestry company in LATAM to receive the Climate Bond Initiative's (CBI) "Climate Bond Certified" standard for a green financial instrument aimed at the conservation and restoration of Amazonian ecosystems.

BAM staff has extensive experience in the design and implementation of AFOLU projects, successfully achieving validation and verification of those under VCS and CCB standards. The project has a team of experts dedicated to the implementation of the project activities, and to give permanent assistance and support to all concessionaires that are members of the project. This team includes people specialized in the different areas the project requires.

The management experience of the professionals in key positions is:

- Founder and General Manager: Jorge Cantuarias

Jorge has more than 25 years of experience working in the development of projects in the Peruvian rainforest with emphasis on forestry operations. His vision to develop sustainable businesses has led him to be a reference in reforestation programs in Peru and a pioneer in the carbon market in the world. He founded Bosques Amazónicos BAM in 2004 and since then has led it to become one of the leading forestry and environmental services companies in the country. Jorge holds a degree in Economics from the University of Lima, where he also studied law.

- Conservation and Carbon Markets Manager: Maria Alejandra Cantuarias

María Alejandra holds a Bachelor's degree in Business Management from Universidad del Pacífico, Peru and a Master's degree in Economic Psychology, Behavioural Science, from the London School of Economics LSE, London UK. After specializing in business consulting and economic systems, Maria Alejandra joined BAM in 2019 to complement the REDD+ and Carbon Markets project team. Since then Maria Alejandra leads the aforementioned area, ensuring the correct registration and development of BAM's conservation projects under the international standards and markets. María Alejandra is also responsible of the commercial side of BAM's carbon business, maintaining the relationship with the client portfolio and ensuring the positioning of BAM and the projects among its different audiences.

- Project coordinator: Alejandro Llaque

Alejandro has more than 30 years of experience in forest management and on agricultural projects and has been leading the BAM team in the Ucayali region for 11 years. His previous experience includes positions such as Executive Director at SENASA. Alejandro has a Bachelor of Animal Husbandry from the Universidad Nacional Agraria La Molina.

- Territorial Security: Fabiola Rojas

With a 12-year career, Fabiola has excelled in strengthening indigenous organizations and implementing social projects in native communities and hamlets in the Peruvian Amazon. Her skills span diverse fields, including the facilitation of prior consultation processes, the elaboration of communal life plans and the management of the legal physical sanitation of communal territories. Her professional experience includes roles in organizations such as Rainforest Foundation US, the Instituto del Bien Común (IBC) and the Servicio Nacional de Áreas Naturales Protegidas por el Estado (SERNANP). He is a specialist in community relations from the Universidad Nacional Mayor de San Marcos.

- Head of Community Relations: Sebastian Llerena

Sebastian holds Bachelor's degree in Communication from the Universidad de Lima in Perú. He also has a Master's degree in Interdisciplinary Sustainability Studies with a specialization in Ecological Economics from the Universidad Autónoma de Barcelona in Spain. Other academic experiences include studies in social and environmental considerations for investment projects at the JICA Center, in Tokyo, Japan. Sebastian's professional experience centers around the analysis, communication, and management of socio-environmental impacts, conflicts, and participatory processes in intercultural contexts around Peru.

- Head of Biodiversity: Walter Wust

Walter has more than thirty years of leading biological diversity assessment programs on the coast, the Andes, and the Peruvian Amazon. His publications—more than 600 books and guides—have led him to be the most important author on nature, culture and sustainable resource management experiences in the country. He is currently member of the Directing Council of SERNANP, ACCA, IBC, Líderes+1, and CCERO. Mr. Wust is the founder of the new engineering and environmental management career at the Peruvian University of Applied Sciences, UPC. Walter holds a bachelor's degree in Forestry Engineering from the La Molina National Agrarian University.

- Technical Project developer management: Claudia Polindara

Forestry Engineer graduated from the Universidad Distrital Francisco José de Caldas, specialist in Environmental Law and Master in Environmental Law and Management from the

Universidad del Rosario. With skills in planning, development and analysis of projects aimed at Environmental Management and Environmental Audits. Experience in validation and verification audits of forestry projects aimed at GHG Mitigation (AR/REDD+ Projects) under ISO14064-2, capacity for diagnosis, formulation and implementation of projects aimed at mitigating Climate Change in the forestry sector. Experience in Environmental Feasibility, environmental licensing, design and implementation of Forest Compensation processes (Reforestation, ecological restoration). Experience in Rural Territorial Development, Food Security and socio-environmental aspects in moorlands and environmentally strategic areas.

- GIS Expert: Carlos Huamán

Carlos holds a Bachelor's degree in Forestry Engineering from Universidad Nacional Agraria La Molina and a Master's degree in Environmental Sciences - UNALM. Specialist in Geographic Information Systems (GIS) with more than 10 years of experience, as well as experience in monitoring, image processing and forest conservation. Carlos has experience using GIS tools and software such as ArcGIS and QGIS to collect, analyze and visualize geospatial data. Carlos' focus has been on conservation and sustainable forest management, generating thematic maps, performing spatial pattern analysis and providing accurate information to support decision making. Keeping up to date on the latest trends and advances in GIS technology.

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

The project has partnered with the company PASKAY (www.paskay.pe) for the development of the technical documents required during the validation and verification processes. Also, PASKAY has given support for monitoring the community, biodiversity and climate results, by performing field assessments and producing the carbon emissions/reductions estimates.

PASKAY SAC is a consulting company that provides advice on the implementation of comprehensive sustainable development programs and projects with a climate and territorial management approach, contributing to the sustainable development of the environment and the population through the analysis of technical, legal, social, political, and economic, design, execution and promotion of activities, projects, programs and research with various actors. It's interdisciplinary team is composed by specialists in carbon accounting and MRV, legal framework and carbon rights, community aspects and participatory processes, among others. For further detail please refer to: <https://paskay.pe/equipo/>.

In addition, the project seeks to establish cooperation agreements with other leading organizations and companies to strengthen their capacity to implement project activities. For example, with universities and scientific organizations to implement activities of the Science program (see supporting documents – Inter-Institutional cooperation agreements).

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

BAM is the implementing organization of the Project. The company's audited Financial Statements are public and will be shared with the auditors and VERRA during the verification process. BAM's financial health is supported on:

CCB Version 3, VCS Version 3

Real assets: BAM has a private property of 24,544 hectares in Ucayali, Peru, and a forest plantation (biological asset) of +1,200 hectares which backs its operations as real assets (See supporting documents - Financial Sustainability file – Financial Statements).

Short-term income streams: By selling carbon credits in an increasingly consolidated market, the company expects to have sufficient revenues to ensure financial sustainability to implement activities to meet project objectives. Throughout its years of operation, BAM has consolidated a portfolio of clients that includes the most important actors in the market, achieving an important positioning worldwide. A list of the clients that have purchased carbon credits generated by the Project and examples of the latest transactions will be shared with the auditor. (See supporting documents - Financial Sustainability file – VCUs Sales 2019 to 2023).

Long-term flows: BAM manages a commercial plantation for more than 12 years, which has begun to be sustainably harvest. The commercial species of the BAM plantation, mainly marupa and shihuahuaco, are forest species with an excellent market price, which ensures an additional revenue stream for the company. (See supporting documents - Financial Sustainability file – Financial Statements).

Capital Markets: BAM is the first forestry company in Peru to enter the Lima Stock Exchange, successfully placing thematic debt instruments (green/sustainable) in the market. In 2021 alone, BAM placed around US\$ 17 million in the capital market, fulfilling all its financial responsibilities, and maintaining an excellent relationship with its investors. Likewise, BAM is the first company in LATAM to certify a green debt instrument under the Climate Bonds Standard of the Climate Bonds Initiative (CBI). The company and its financial health are supervised by the Superintendence of the Securities Market, a decentralized public body attached to Peru's Ministry of Economy and Finance. (See supporting documents - Financial Sustainability file – Financial Statements and Annual Report).

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

Within its Internal Rules of Conduct Chapter VII, 7.3 reporting and reporting of irregularities (See file Supporting Documents BAM Policies), BAM encourages its employees and business partners to report in good faith, or based on a reasonable belief, the attempt of bribery, alleged or actual, or any violation or breach of the Rules of Conduct. Any complaint or query related to any suspicion of non-compliance with these rules may be submitted anonymously, through email channels or web page, protecting the complainant. Likewise, an internal regime of sanctions is established for those who fail to comply with what is indicated in the Internal Rules of Conduct. Any person who is under the scope of the Regulations will receive a copy of said document, recording its receipt in writing, as a sworn statement, in the sense of having received it and committing to read it carefully, understand it and comply with it. The same procedure will be followed with any person who obtains a position in the company, who will also be explained the principles and fundamental values contained in such Rules during the activities induction in which they participate.

The company applies for the development of its activities, policies for the prevention of money laundering and financing of terrorism, which is established in its Corporate Governance Policy (See file Supporting Documents BAM Policies) taking as reference the provisions set forth in the Prevention Rules of Money Laundering and Financing of Terrorism issued by the Superintendency of the Securities Market (PLAFT Regulations), without prejudice to not being an entity supervised by any of the regulatory bodies. In this sense, the company operates under the following directives:

- Not participate and in no way assist in money laundering and financing of terrorism, having as its main commitment to abide by and comply with the regulations on the matter.
- The directors, managers and all company personnel are committed to complying with the PLAFT Standards through the application of the policies described in the Risk Management System document.
- The company will offer its support to the competent authorities through the provision of information that they require for investigation and analysis purposes.

The company, in accordance with the provisions of the PLAFT regulations, considers prohibited operations those that imply the following:

- Customers who receive transfers from countries considered non-cooperative by the FATF, with risk related to money laundering and financing of terrorism, with little banking supervision, or from countries included in the OFAC list.
- Clients acting through trusts without identifying the identity of the settlor, trustee, and trustees.
- Politically exposed persons (PEP) or who manage public resources. It is not considered a PEP when acting on behalf of a legal person participating in the State.
- Legal entities in which a PEP owns at least 5% of the capital stock, contribution, or participation and that, according to the reporting entity, poses a high risk of money laundering or financing of terrorism.

BAM is an organization in which all the processes that are carried out for the hiring of personnel and service providers avoid nepotism and favoritism. As part of its Corporate Sustainability Policy (See the folder “BAM Policies” in the supporting documents - validation CCB 2022) it accepts to support the principles of the United Nations Global Compact, in the fight against corruption.

2.4.6 Commercially Sensitive Information (Rules 3.5.13 – 3.5.14)

Information regarding BAM’s Financial Statements where the company’s assets, liabilities and equity are reported, Commercial Contracts and sales details with information on transactions, the number of credits sold per year and price, will be available and shared with audit team during validation process and VERRA if required (see supporting documents: Financial Sustainability).

2.5 Legal Status and Property Rights

2.5.1 Recognition of Property Rights (G5.1)

NUESTRO SEÑOR JESUCRISTO, located in Manantay district, is owned by the company JCC Inversiones S.A.C. (part of the Bosques Amazónicos group) as recorded in the Peruvian Real Estate Registry. JCC Inversiones S.A.C. is a company that has assigned its present and future forest carbon rights to Bosques Amazónicos S.A. (hereinafter BAM), including the authorization to trade the carbon credits generated on NUESTRO SEÑOR JESUCRISTO’s land and to receive the corresponding revenues through a Forest Carbon Rights Assignment Agreement signed between both entities (see file: Property rights evidence). In that line, any reference to JCC Inversiones SAC, shall be understood together with the assigned rights in favor of BAM.

SELVA MAESTRA is privately owned by Bosques Amazónicos S.A., as recorded in the SUNARP, National Property Registry Office.

Both lands are protected by good faith registration, under the following references:

Table 2.7. References of land titles

Name	Date	Approval document	File	Area (ha)
Selva Maestra	December 15, 1998	Resolution Directorial N° 452-98	N° 40010854	12,730.41
Nuestro Señor Jesucristo	January 9, 2009	Resolution Directorial N° 001-2009-GRU-P-DRSAU	N° 11042622	8,049.87

Source: Own elaboration

The property rights of both SELVA MAESTRA and NUESTRO SEÑOR JESUCRISTO were established through a purchase-sale contract approved by the Regional Directorate of Agriculture of Ucayali (see file: property rights evidence). All payments to the State have been made. Therefore, all property rights are recognized, respected, and supported.

It is worth mentioning that, while SELVA MAESTRA's land title identifies ownership over 12,730.41 ha (see file: property rights evidence), the use of more recent techniques has identified that Selva Maestra's land rights are over 14,176.13 ha. This is a common problem in the Amazon that is due to evolving methods of calculating acreage. The hectares shown in the title were calculated using pencil and paper, while the most recent calculations made have been done using much more accurate software.

Having noted this, BAM will only allocate 12,413.5 ha of the Selva Maestra property to the REDD+ Project, as detailed in Figure 2.6. The remaining areas of the Selva Maestra property will remain under BAM's possession for other activities.

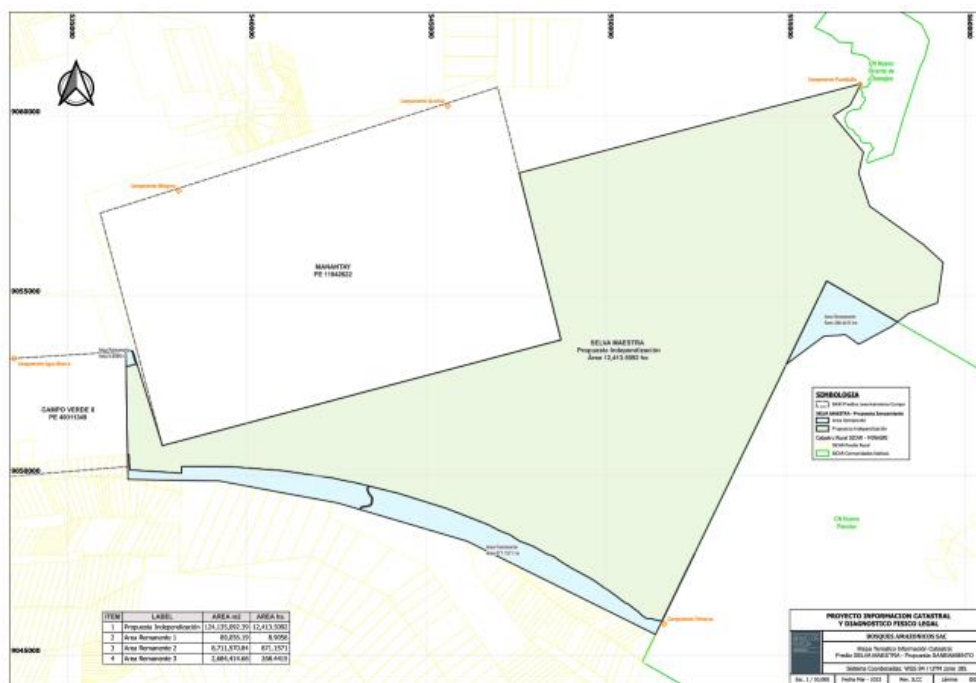


Figure 2.6. Map of Selva Maestra

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

There are no indigenous groups living in the project area (comprising both SELVA MAESTRA and NUESTRO SEÑOR JESUCRISTO properties) nor traditional uses of forest resources are limited by the project's activities. Thus, no Free, Prior and Informed Consent is needed and dispositions established in Prior Consultation Law, Law No. 29785, as well as in Agreement 169 of the International Labor Organization on indigenous and tribal peoples (ILO) are duly respected. Hence, the project will not encroach uninvited on private property, community property, or government property.

It is worth mentioning that BAM has implemented a program of socialization and dissemination of information with the surrounding communities (including native communities outside the project area), which is carried out on an ongoing basis regarding the details of the project, including the area and scope of the project (see file: Project Diffusion and dissemination).

2.5.3 Property Right Protection (G5.3)

NUESTRO SEÑOR JESUCRISTO and SELVA MAESTRA have their rights protected by their sale contract approved by the Regional Directorate of Agriculture of Ucayali (see file: property rights evidence), which is protected by good faith registration purchase at the SUNARP, the National Property Registry Office. As above mentioned, the properties were purchased in 1999 and 2009 by companies of the Bosques Amazonicos group. There were/are no groups living in the project area, so there has never been a need for relocation.

Regarding NUESTRO SEÑOR JESUCRISTO property, there is no overlap or ongoing disputes, no other landowners or land rights holders are affected. The project does not lead nor will lead to the involuntary removal or relocation of property rights holders from their lands and does not force rights holders to relocate activities in the NUESTRO SEÑOR JESUCRISTO property.

Regarding the area of SELVA MAESTRA property considered for this project, there is no overlap or ongoing disputes in this area, no other landowners or land rights holders are affected. Furthermore, there is no one living in the area allocated for the REDD+ project. BAM have all property rights regarding the Selva Maestra property.

2.5.4 Identification of Illegal Activity (G5.4)

Risks from illegal activities are detailed in Section 2.1.18. The main illegal activities of potential risk to the project include: land encroachment, which is defined as an infraction in the Forestry and Wildlife Law (Article 146 (e)), normally for change of use for other activities (cattle ranching, agriculture) and others such as forest fires or illegal logging caused by external agents.

Mitigation measures taken by the project to address and avoid these threats include:

- Monitoring Control and Surveillance System (MCSS): the project's MCSS includes an early warning system to identify hot spots on a daily basis in the area of influence. These alerts are reported using official satellite data such as that provided by GEOBOSQUES (MINAM). Also the MCSS comprises technical and legal support for the correct identification and control of deforestation threats in the project area in a timely manner. For this purpose, the project

area has properly implemented infrastructure (camps) and a monitoring and security team in charge of supervising the area and specifically the boundaries of the property.

- Collaboration agreements: the project seeks to collaborate with local and national authorities to strengthen the capacity to prevent or mitigate possible invasions to the area.
- In case of suspected logging or encroachment, an action protocol is initiated (see sheet: health and safety working conditions - territorial security protocol), which may include notification/involvement of the Forestry Authority, the Public Prosecutor's Office and the National Police.
- Area demarcation: project boundaries and signs are clear and well maintained in order to favor better monitoring and control of the forests.
- Training at community-level is key in the attempt to prevent the negative impacts of burning. As part of the training provided by the project, the aim is to train the identified communities in sustainable forest management, including how to react to possible fires. As part of the training events, the project seeks to work with experts and competent authorities in each specific area. For example, in the area of fire control, we will seek to work with INDECI (Institute of Civil Defense).
- Promotion of sustainable activities related to the conservation and sustainable use of forest resources: the project proposes to promote the development of environmentally friendly activities among project stakeholders (identified communities)
- The project also seeks the improvement of the communities identified in relation to access to basic services such as water, health, electricity and others in order to avoid their displacement to the project area.

2.5.5 Ongoing Disputes (G5.5)

Litigation involving the property that has been resolved over the past twenty years is detailed below.

NUESTRO SEÑOR JESUCRISTO: all litigation has been resolved.

Previous:

- Land overlapping litigation with the Instituto Superior Tecnológico Suiza, was filed by the authorities and therefore resolved. Report 28-2019-OPDR-ABOG/AAR of the Regional Attorney's Office of the Regional Government of Ucayali confirmed that the deadline to file the lawsuit for nullity of the legal act of resolution of purchase and sale of the land in favor of JCC had expired (Article 2001 of the Peruvian Civil Code establishes a 10-year term). In this sense, the definitive file was declared closed and, consequently, it is a closed conflict. There is no overlapping of properties with the Instituto Superior Tecnológico Suiza.
- There is no issue of conciliation of balances for the purchase and sale of land in JCC. This dispute is archived and, therefore, solved. In this regard, Regional Directorial Resolution No.155-2020-GRU-DRA left without effect letter No.182-2016-GRU-DRA for the collection by conciliation of balances for purchase and sale of land and confirmed that BAM had already proceeded with the payment of this debt. Therefore, a letter from the Regional Management confirming that the reversion of the property does not proceed is not required because the Regional Directorial Resolution No.155-2020-GRU-DRA already confirms the non-reversion. In short, all balances have been paid and the dispute was solved.
- There is no dispute of overlapping with public domain-State-owned land in JCC which was archived and solved by Report No. 002-2022-GRU-DRA/DISAFILPA/PSCR-TUPA of the

Directorate for Land Rights Consolidation Processes of the Regional Directorate of Agriculture of Ucayali (see the orange strip in Map No. 3 here below to visualize the overlap solved and archived). This report confirmed that BAM has ownership over the overlapping area.

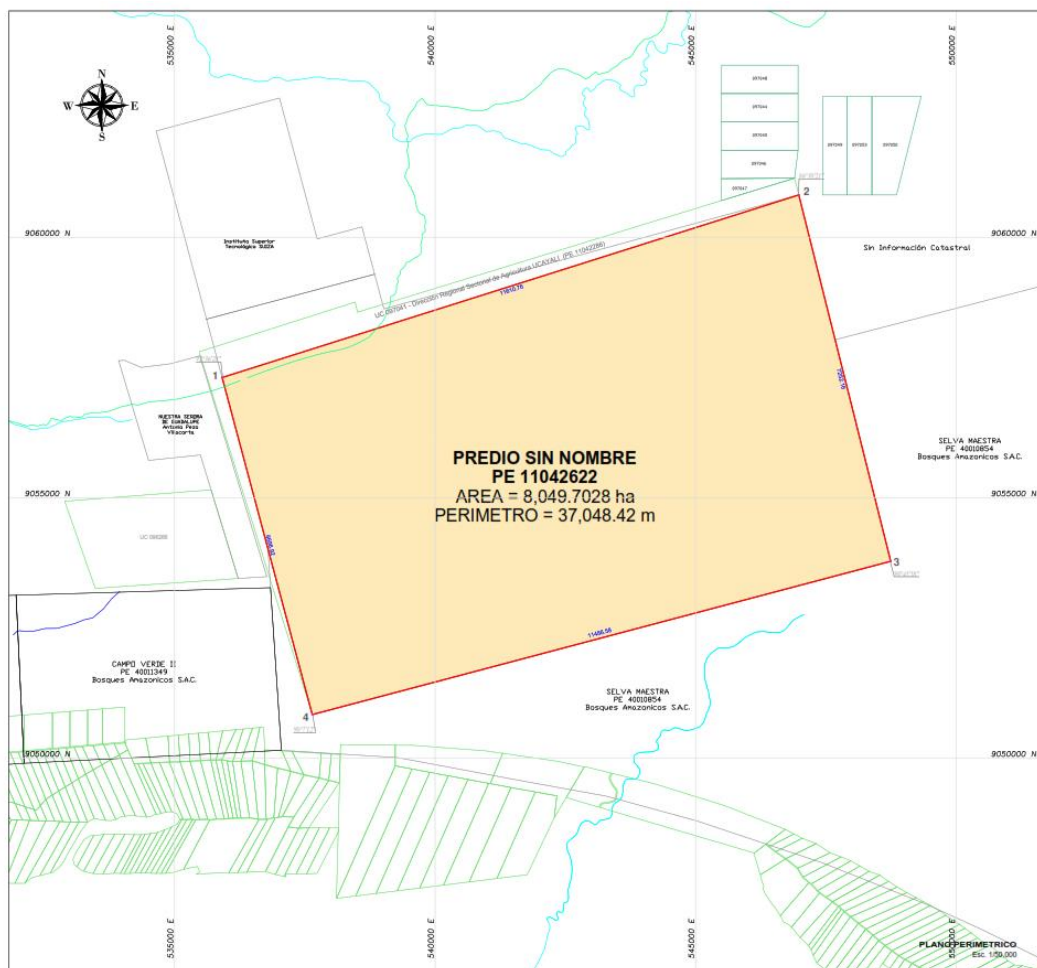


Figure 2.7. Map of Nuestro Señor Jesucristo

SELVA MAESTRA:

BAM has considered the areas described in section 5.2.2 for the REDD+ project. This area has no past or current conflicts. The remaining areas of the Selva Maestra property will remain under BAM's possession for other activities.

2.5.6 National and Local Laws (G5.6)

The project complies with all relevant national and regional laws and regulations relevant to the Project activities. Also, no new regulation or modification to the existing ones have occurred during the monitoring period. In this sense, the same list considered in the Project Description is presented in the following table.

Table 2.8. National and Regional regulatory framework relevant to the project activities

Law	Legal analysis
General Environment Law, Law No. 28611	According to article 92, the “State promotes the sustainable use of forest resources and wildlife, as well as the conservation of natural forests”. Besides, “the State promotes and supports the sustainable management of wild fauna and flora, prioritizing the protection of endemic and endangered species and varieties, based on technical information, scientific, economic and traditional knowledge”. In this framework and to achieve those goals, the State recognizes in article 94 that “natural resources and other components of the environment perform functions that allow maintain the conditions of the ecosystems and the environment, generating benefits that are used without mediate remuneration or compensation, for which the State establishes mechanisms to value, remunerate and maintain the provision of said environmental services, seeking to achieve the conservation of ecosystems, biological diversity and other natural resources”. The State recognizes that mitigation of green gas emissions is considered environmental services (article 94.2). Thus, to achieve those conservation forest goals, “the National Environmental Authority promotes the development of mechanisms for financing, payment and supervision of environmental services”, such as those developed in this project. In the same line, article 150 recognizes that “measures or processes that, at the initiative of the owner of the activity, are implemented and executed with the purpose of reducing and/or prevent degradation of natural resources, beyond what is required by the applicable regulations or the competent authority and that responds to the objectives of environmental protection”, “constitute behaviors that can be rewarded with incentives”. Accordingly, BAM activities are implemented for forest conservation purposes can be rewarded with incentives such as carbon credits benefits.
National Environmental Policy approved by Supreme Decree No. 12-2009-MINAM	The elaboration of the National Environmental Policy is a mandate that comes mainly from the Political Constitution of Peru and the General Environmental Law, constituting a set of guidelines, objectives, strategies and instruments of a public nature that have the purpose of defining and orienting the actions of the entities of the National, Regional and Local Government, the private sector and the civil society, in environmental matters. The National Environmental Policy is divided into 5 objectives, 4 policy axes and specific objectives and guidelines for each policy. One objective of the National Environmental Policy relevant to the Project is to achieve the conservation and sustainable use of the country's natural heritage, with efficiency, equity and social welfare, prioritizing the integrated management of natural resources. The environmental services are identified within the National Policy of the Environment in diverse points, indicating the necessity to foment its economic valuation through economic and financial instruments, emphasizing the importance of implementing systems of conservation of forests and protection of such as far as the degradation and deforestation.
Organic Law for the sustainable use of Natural Resources, Law No. 26821	According to article 8 “the State shall ensure that the granting of the right to the sustainable use of natural resources is carried out in harmony with the interest of the Nation, the common good, and within the limits and principles established in this Law, in special laws and in regulatory norms on the matter”. On the other hand, the Law confirms that “all use of natural resources by individuals creates a financial retribution that is determined by economic, social and environmental criteria. The financial retribution previously mentioned, includes any concept that must be contributed to the State for the natural resource, whether as

Law	Legal analysis
	compensation, right of granting or right of validity of the title containing the right, established by special laws. In this regard, BAM has paid all balances.
Forest and Wildlife Law, Law No. 29763	For both Selva Maestra and Nuestro Señor Jesucristo, according to the Forest and Wildlife Law No. 29763 (LFFS), the title of ownership includes ownership over emissions reductions (see file: Property rights evidence).
Regulation for forest management approved by Supreme Decree No. 018-2015-MINAGRI	According to article 39.1 “the enabling title is the administrative action granted by the forest and wildlife authority, that allows the natural or legal person the access for the sustainable use of natural resources, wildlife, and forest ecosystem services, through Management Plan. Bosques Amazónicos SA and JCC Inversiones SAC, respectively, has a title of ownership(see file: Property rights evidence).
Prior Consultation Law	The implementation of this project does not constitute an administrative or legislative measure and, consequently, it does not require a prior consultation process in accordance with Article 1 of the Prior Consultation Law.
Law No. 27783 Law on the Bases of Decentralization	It regulates the structure and organization of the State in a democratic, decentralized and deconcentrated way, corresponding to the National Government, Regional Governments and Local Governments. It also defines the rules that regulate administrative, economic, productive, financial, tax and fiscal decentralization. Likewise, this law establishes the competencies of the three levels of government and determines the assets and resources of the regional and local governments; and regulates the relations of government in its different levels. Article 36 mentions shared competences, one of them being the promotion, management and regulation of economic and productive activities in their scope and level, corresponding to the different sectors, including the environmental sector.
Law No. 27867 Organic Law of Regional Governments	Law that, in its sections 9 and 10, establishes constitutional, exclusive and shared competences to Regional Governments in environmental matters to promote and regulate activities or services in the environmental sector. They also establish exclusive competences to promote the sustainable use of forest resources and biodiversity; and shared competences for the sustainable management of natural resources, the improvement of environmental quality and the preservation and administration of regional reserves and natural protected areas. Article 53 of the same law establishes the functions of the regional governments in environmental and land-use planning matters. For the Regional Governments to be able to exercise the competences assigned by this law, a process of transference of those competences must be followed, which has the objective of accrediting that this level of government has the institutional capacities to assume them.

3 CLIMATE

3.1 Monitoring GHG Emission Reductions and Removals

3.1.1 Data and Parameters Available at Validation

Data / Parameter	$AA_{planned,i,t}$
Data unit	ha
Description	Annual area of baseline planned deforestation for stratum i in year t.
Source of data	Calculated based on VMD0006 v1.3 Equation 4.
Value applied	See the values applied in Table 3.4 and Table 3.5.
Justification of choice of data or description of measurement methods and procedures applied	Estimated based on total area of planned deforestation over the baseline period for stratum i ($A_{planned,i}$), the projected annual proportion of land that will be deforested in stratum i during year t ($D\%_{planned,i,t}$) and the Likelihood of deforestation for stratum i ($L-D_i$) according to VMD0006 v1.3 equation 5.
Purpose of the data	Calculation of baseline emissions.
Comments	-

Data / Parameter	$A_{planned,i}$
Data unit	ha
Description	Total area of planned deforestation over the fixed baseline period for stratum i.
Source of data	Remote Sensing data.
Value applied	See the values applied in Table 3.4 and Table 3.5.
Justification of choice of data or description of measurement methods and procedures applied	Determined according to what is recognized as an immediate site-specific threat of deforestation, which, in its turn, is a function of the legal permissibility for deforestation, the suitability of the project area for conversion to alternative non-forest land use, the government approval for deforestation and a management plan for deforesting the project area. See Section 3.2.1 for a complete description of measurement methods and procedures applied.
Purpose of the data	Calculation of baseline emissions.
Comments	-

Data / Parameter	$D\%_{planned,i,t}$
Data unit	% year ⁻¹
Description	Projected annual proportion of land that will be deforested in stratum i at year t.
Source of data	-
Value applied	There is no fixed proportion, but fixed annual areas (see Table 3.3)

Justification of choice of data or description of measurement methods and procedures applied	Where a valid verifiable plan exists for rate at which deforestation is projected to occur, this rate must be used, according to VMD0006 v1.3, Section 1.3 criteria.
Purpose of the data	Determination of baseline scenario.
Comments	-

Data / Parameter	$L-Di$
Data unit	%
Description	Likelihood of deforestation in stratum i.
Source of data	Analysis of Land Tenure.
Value applied	100%
Justification of choice of data or description of measurement methods and procedures applied	L-Di is equal to 100% for all planned deforestation areas that are not both under Government control and zoned for deforestation, according to VMD0006 v1.3, Section 1.4.
Purpose of the data	Determination of baseline scenario.
Comments	-

Data / Parameter	$\Delta CAB_{tree,i}$
Data unit	t CO ₂ e.ha ⁻¹
Description	Baseline carbon stock change in aboveground tree biomass in stratum i; t CO ₂ e ha ⁻¹ .
Source of data	Calculated based on VMD0006 v1.3 Equation 6.
Value applied	See the values applied in Table 3.8.
Justification of choice of data or description of measurement methods and procedures applied	Estimated based on the forest carbon stock in aboveground tree biomass in stratum i ($CAB_{tree,bsl,i}$) and the post-deforestation carbon stock in aboveground tree biomass in stratum i ($CAB_{tree,post,i}$), according to VMD0006 v1.3 equation 6.
Purpose of the data	Calculation of baseline emissions.
Comments	-

Data / Parameter	$\Delta CBB_{tree,i}$
Data unit	t CO ₂ e ha ⁻¹
Description	Baseline carbon stock change in belowground tree biomass in stratum i.
Source of data	Calculated based on VMD0006 v1.3 Equation 8.
Value applied	See the values applied in Table 3.8.
Justification of choice of data or description of measurement methods and procedures applied	Estimated based on the forest carbon stock in aboveground tree biomass in stratum i ($CAB_{tree,bsl,i}$) and the post-deforestation carbon stock in aboveground tree biomass in stratum i ($CAB_{tree,post,i}$); according to VMD0006 v1.3 Equation 8.
Purpose of the data	Calculation of baseline emissions.
Comments	-

Data / Parameter	$\Delta CSOC_i$
Data unit	t CO ₂ e ha ⁻¹
Description	Baseline carbon stock change in soil organic carbon in stratum i.
Source of data	Calculated based on VMD0006 v1.3 Equation 12.
Value applied	See the values applied in Table 3.8.
Justification of choice of data or description of measurement methods and procedures applied	Estimated based on forest carbon stock in soil organic carbon in stratum (CSOC,bsl,i) and post-deforestation carbon stock in soil organic carbon in stratum i (CSOC,PD-BSL,i), according to VMD0006 v1.3 Equation 12.
Purpose of the data	Calculation of baseline emissions.
Comments	-

Data / Parameter	$CAB_{tree,i}$
Data unit	t CO ₂ e ha ⁻¹
Description	Carbon stock in aboveground biomass in trees in the baseline in stratum i,
Source of data	FREL (2021) ¹² - Lowland Tropical Rainforest Garcia, Honorio & Del Castillo (2012) ¹³ - Mixed Palm Swamp and Palm Swamp - <i>Mauritia flexuosa</i> dominated palm swamp
Value applied	See the values applied in Table 3.6.
Justification of choice of data or description of measurement methods and procedures applied	The selected sources meet the criteria VMD0001 v1.1
Purpose of the data	Calculation of baseline emissions.
Comments	-

Data / Parameter	$CBB_{tree,i}$
Data unit	t CO ₂ e ha ⁻¹
Description	Carbon stock in belowground biomass in trees in the baseline in stratum i
Source of data	FREL (2021) ¹⁴ - Lowland Tropical Rainforest Freitas et al. (2006) ¹⁵ - Mixed Palm Swamp and Palm Swamp - <i>Mauritia flexuosa</i> dominated palm swamp.
Value applied	See the values applied in Table 3.6.
Justification of choice of data or description of	The selected sources meet the criteria VMD0001 v1.1

¹² https://redd.unfccc.int/files/nref_peru_final.pdf

¹³ <https://revistas.iap.org.pe/index.php/foiaamazonica/article/view/43/80>

¹⁴ https://redd.unfccc.int/files/nref_peru_final.pdf

¹⁵ https://repositorio.iap.gob.pe/bitstream/20.500.12921/228/2/Freitas_documentotecnico_2006.pdf

measurement methods and procedures applied	
Purpose of the data	Calculation of baseline emissions.
Comments	-

Data / Parameter	<i>R</i>
Data unit	Dimensionless
Description	Root to shoot ratio appropriate to forest type.
Source of data	Freitas et al. (2006)
Value applied	Pure and mixed aguajal = 0.40
Justification of choice of data or description of measurement methods and procedures applied	BGC of pure and mixed aguajal.
Purpose of the data	Calculation of baseline emissions.
Comments	-

Data / Parameter	<i>CSOC_i</i>
Data unit	t CO ₂ e ha ⁻¹
Description	Mean carbon stock in soil organic carbon in the baseline in stratum i.
Source of data	Cuellar & Salazar (2016) ¹⁶ and Garcia, Honorio & Del Castillo (2012) ¹⁷
Value applied	See the values applied in Table 3.6.
Justification of choice of data or description of measurement methods and procedures applied	The selected sources meet the criteria VMD0004 v1.0.
Purpose of the data	Calculation of baseline emissions.
Comments	-

Data / Parameter	<i>CF</i>
Data unit	Dimensionless
Description	Carbon fraction
Source of data	IPCC 2006
Value applied	0.47
Justification of choice of data or description of measurement methods and procedures applied	The reference level of forest emissions due to gross deforestation of Peru in the Amazon biome works with the carbon fraction proposed by the IPCC (2006).

¹⁶ <http://repositorio.inia.gob.pe/handle/20.500.12955/490>

¹⁷ <https://revistas.iap.org.pe/index.php/foiaamazonica/article/view/43/80>

Purpose of the data	Calculation of baseline emissions.
Comments	-

Data / Parameter	$CAB_{post,i}$
Data unit	t CO ₂ e ha ⁻¹
Description	Post-deforestation carbon stock in aboveground tree biomass in stratum i.
Source of data	FREL (2021) - Lowland Tropical Rainforest Garcia, Honorio & Del Castillo (2012) - Mixed Palm Swamp and Palm Swamp - <i>Mauritia flexuosa</i> dominated palm swamp
Value applied	See the values applied in Table 3.7.
Justification of choice of data or description of measurement methods and procedures applied	Based on referenced literature values.
Purpose of the data	Calculation of baseline emissions.
Comments	-

Data / Parameter	$CBB_{post,i}$
Data unit	t CO ₂ e ha ⁻¹
Description	Post-deforestation carbon stock in belowground tree biomass in stratum i.
Source of data	FREL (2021) - Lowland Tropical Rainforest Garcia, Honorio & Del Castillo (2012) - Mixed Palm Swamp and Palm Swamp - <i>Mauritia flexuosa</i> dominated palm swamp.
Value applied	See the values applied in Table 3.7.
Justification of choice of data or description of measurement methods and procedures applied	Based on referenced literature values.
Purpose of the data	Calculation of baseline emissions.
Comments	-

Data / Parameter	$CSOC_{post,i}$
Data unit	t CO ₂ -e ha ⁻¹
Description	Mean post-deforestation stock in soil organic carbon in the post deforestation stratum i
Source of data	Cuellar & Salazar (2016) and Garcia, Honorio & Del Castillo (2012)
Value applied	See the values applied in Table 3.7.
Justification of choice of data or description of measurement methods and procedures applied	Based on referenced literature values.
Purpose of the data	Calculation of baseline emissions.
Comments	-

Data / Parameter	<i>GHG BSL-E,i,t</i>
Data unit	t CO ₂ e yr ⁻¹
Description	Greenhouse gas emissions as a result of deforestation activities within the project boundary in the baseline stratum i in year t.
Source of data	Calculated based on VMD0006 v1.3 Equation 15.
Value applied	See the values applied in Table 3.10.
Justification of choice of data or description of measurement methods and procedures applied	Calculated based on the non-CO ₂ emissions due to biomass burning in stratum i in year t (EBiomassBurn,i,t), according to VMD0006 v1.3 Equation 15.
Purpose of the data	Calculation of baseline emissions.
Comments	Net CO ₂ e emission from fossil fuel combustion in stratum i in year t (EFC,i,t) and direct N ₂ O emission as a result of nitrogen application on the alternative land use within the project boundary in stratum i in year t (N ₂ Odirect-N,i,t) are conservatively excluded from the project scope and the calculation of the baseline estimates following VM0007 v1.6 Section 5.4 criteria.

Data / Parameter	<i>EBiomassBurn,i,t</i>
Data unit	t CO ₂ e
Description	Greenhouse gas emissions due to biomass burning in stratum i in year t of each GHG (CO ₂ , CH ₄ , N ₂ O).
Source of data	Calculated based on VMD0013 v1.3 equation 1.
Value applied	See the values applied in Table 3.11.
Justification of choice of data or description of measurement methods and procedures applied	Calculated based on area burnt for stratum i in year t (Aburn,i,t), average aboveground biomass stock before burning stratum i, in year t (Bi,t), combustion factor for stratum i (unitless) (COMFi), emission factor for stratum i for gas g (Gg,i) and the Global warming potential for gas g (GWPg), according to VMD0013 v1.3 Equation 1.
Purpose of the data	Calculation of baseline emissions.
Comments	-

Data / Parameter	<i>Aburn,i,t</i>
Data unit	ha
Description	Area burnt for stratum i in year t.
Source of data	Equal to AApplanned,i,t in the baseline case.
Value applied	See the values applied in Table 3.11.
Justification of choice of data or description of measurement methods and procedures applied	For the calculation of baseline emissions, the burned area is considered equivalent to the annual deforested area, assuming that all deforestation is preceded by a fire to clear the land in the baseline case.
Purpose of the data	Calculation of baseline emissions.
Comments	-

Data / Parameter	$B_{i,t}$
Data unit	tonnes d.m. ha ⁻¹
Description	Average aboveground biomass stock before burning for stratum i, year t.
Source of data	Calculated based on VMD0013 v1.3 Equation 2.
Value applied	See the values in Table 3.6.
Justification of choice of data or description of measurement methods and procedures applied	Calculated based on carbon stock in aboveground biomass in trees in stratum i in year t ($CAB_{tree,i,t}$), Carbon stock in dead wood for stratum i in year t ($CDW_{i,t}$), Carbon stock in litter for stratum i in year t ($CLI_{i,t}$) and Carbon fraction of biomass (CF), according to VMD0013 v1.3 Equation 2.
Purpose of the data	Calculation of baseline emissions.
Comments	-

Data / Parameter	$COMF_i$
Data unit	Dimensionless
Description	Combustion factor for stratum i.
Source of data	IPCC 2006
Value applied	0.5
Justification of choice of data or description of measurement methods and procedures applied	Default values in Table 2.6 of IPCC, 2006 - Appendix 2.
Purpose of the data	Calculation of baseline emissions.
Comments	The combustion factor is a measure of the proportion of the fuel that is actually combusted, which varies as a function of the size and architecture of the fuel load (i.e., a smaller proportion of large, coarse fuel such as tree stems will be burnt compared to fine fuels, such as grass leaves), the moisture content of the fuel and the type of fire (i.e., intensity and rate of spread).

Data / Parameter	$G_{g,i}$
Data unit	kg t ⁻¹ d.m. burnt
Description	Emission factor for stratum i for gas g
Source of data	IPCC (2006)
Value applied	CH ₄ =6.8; N ₂ O=0.2, CO ₂ =1580
Justification of choice of data or description of measurement methods and procedures applied	Default values in Table 2.6 of IPCC, 2006 - Appendix 2.
Purpose of the data	Calculation of baseline emissions.

Comments	Defaults can be found in Volume 4, Chapter 2, of the IPCC 2006 Inventory Guidelines in table 2.5 (see Appendix 2: emission factors for various types of burning for CH ₄ and N ₂ O).
----------	--

Data / Parameter	<i>GWP_g</i>
Data unit	Dimensionless
Description	Global warming potential for gas g.
Source of data	Fifth Assessment Report (AR5) IPCC (2006)
Value applied	CH ₄ =28; N ₂ O=265
Justification of choice of data or description of measurement methods and procedures applied	Default factor from the latest IPCC Assessment Report.
Purpose of the data	Calculation of baseline emissions.
Comments	-

Data / Parameter	$\Delta C_{BSL,i,t}$
Data unit	t CO ₂ e
Description	Net carbon stock changes in all pools in the baseline stratum i in year t.
Source of data	Calculated based on VMD0006 v1.3 Equation 4.
Value applied	See the values applied in Table 3.12.
Justification of choice of data or description of measurement methods and procedures applied	Estimated based on the annual area of baseline planned deforestation for stratum i in year t ($AA_{planned,i,t}$), the baseline carbon stock change in aboveground tree biomass in stratum i ($\Delta CAB_{tree,i}$), the baseline carbon stock change in belowground tree biomass in stratum i ($\Delta CBB_{tree,i}$), the baseline carbon stock change in aboveground non-tree biomass in stratum i ($\Delta CAB_{non-tree,i}$), the baseline carbon stock change in belowground non-tree biomass in stratum i ($\Delta CBB_{non-tree,i}$), the baseline carbon stock change in wood products in stratum i ($\Delta CWP,i$), the baseline carbon stock change in dead wood in stratum i ($\Delta CDW,i$), the baseline carbon stock change in litter in stratum i ($\Delta CLI,i$) and the baseline carbon stock change in soil organic carbon in stratum i, according to VMD0006 v1.3 Equation 4.
Purpose of the data	Calculation of baseline emissions.
Comments	-

Data / Parameter	$\Delta C_{BSL,planned}$
Data unit	t CO ₂ e
Description	Net greenhouse gas emissions in the baseline from planned deforestation.
Source of data	Calculated based on VMD0006 v1.3 Equation 1.
Value applied	See the values applied in Table 3.12.
Justification of choice of data or description of	Estimated based on the net carbon stock changes in all pools in the baseline ($\Delta C_{BSL,i,t}$) and GHG emissions as a result of

measurement methods and procedures applied	deforestation activities within the project boundary in the baseline stratum i in year t (GHG BSL-E, i,t), according to equation 1 from VMD0006 v1.3.
Purpose of the data	Calculation of baseline emissions.
Comments	-

3.1.2 Data and Parameters Monitored

Data / Parameter	$A_{DefPA,i,u,t}$
Data unit	ha
Description	Area of recorded deforestation in the project area in stratum i converted to land use u in year t .
Source of data	Remote sensing imagery
Description of measurement methods and procedures to be applied	Annual deforestation is measured using remote sensing techniques and reported with spatial explicit data by raster and shapefile evidence.
Frequency of monitoring/recording	Annual
Value monitored	33.77 (see Table 3.15)
Monitoring equipment	GEOBOSQUES official data, validated with Planet-NICFI images.
QA/QC procedures to be applied	GIS measurement using remote sensing techniques and field evaluations.
Purpose of the data	Calculation of project emissions
Calculation method	Monitoring will be carried out using the country's official tool GEOBOSQUES.
Comments	-

Data / Parameter	$CP_{post,u,i}$
Data unit	t CO ₂ e
Description	Carbon stock in all pools in post-deforestation land use u in stratum i .
Source of data	Calculated according to VMD0015 v2.2, Equation 06
Description of measurement methods and procedures to be applied	Calculated based on carbon stock in aboveground tree biomass in stratum I ($CAB_{tree,i}$), carbon stock in belowground tree biomass in stratum I ($CBB_{tree,i}$), carbon stock in aboveground non-tree vegetation in stratum ($CAB_{non-tree,i}$), carbon stock in belowground non-tree vegetation in stratum I ($CBB_{non-tree,i}$), carbon stock in dead wood in stratum I (CDW,i), carbon stock in litter in stratum I (CLI,i), mean post-deforestation stock in soil organic carbon in the post deforestation stratum I ($CSOC,PD-BSL,i$), according to VMD0015 v2.2, equation 06.
Frequency of monitoring/recording	10 years (in each baseline revalidation)
Value monitored	See the values applied in Table 3.6
Monitoring equipment	N/A
QA/QC procedures to be applied	-
Purpose of the data	Calculation of project emissions
Calculation method	See VMD0015 v2.2, Equation 05.
Comments	-

Data / Parameter	$\Delta C_{pools,Def,u,i,t}$
------------------	------------------------------

Data unit	t CO ₂ e
Description	Net carbon stock changes in all pools as a result of deforestation in the project case in land use u in stratum i at time t.
Source of data	Calculated according to VMD0015 v2.2, Equation 05.
Description of measurement methods and procedures to be applied	Calculated based on carbon stock in all pools in the baseline case in stratum I (C _{BSL,i}), carbon stock in all pools in post-deforestation land use u in stratum I (C _{P,post,u,i}) and carbon stock sequestered in wood products from harvests in stratum I (C _{WP,i}), according to VMD0015 v2.2, Equation 05.
Frequency of monitoring/recording	10 years (in each baseline revalidation)
Value monitored	See the values applied in Table 3.16
Monitoring equipment	N/A
QA/QC procedures to be applied	-
Purpose of the data	Calculation of project emissions
Calculation method	See VMD0015 v2.2, Equation 05.
Comments	-

Data / Parameter	$\Delta CP, DefPA, i, t$
Data unit	t CO ₂ e
Description	Net carbon stock change as a result of deforestation in the project case in the project area in stratum i at time t.
Source of data	Calculated according to VMD0015 v2.2, Equation 03
Description of measurement methods and procedures to be applied	Calculated based on the area of recorded deforestation in the project area stratum i converted to land use u at time t (A _{DefPA,u,i,t}) and the net carbon stock changes in all pools in the project case in land use u in stratum i at time t ($\Delta C_{pools, Def, u, i, t}$), according to VMD0015 v2.2, Equation 03.
Frequency of monitoring/recording	Before every verification event with a minimum frequency of 5 years.
Value monitored	See the values in Table 3.17
Monitoring equipment	-
QA/QC procedures to be applied	-
Purpose of the data	Calculation of project emissions
Calculation method	See VMD0015 v2.2, Equation 03.
Comments	-

Data / Parameter	A _{DegW,i}
Data unit	ha
Description	Area potentially impacted by degradation processes in stratum i
Source of data	Buffer area from all access points
Description of measurement methods and procedures to be applied	The area subject to degradation is delineated based on an access buffer from all access points, such as roads and rivers or previously cleared areas, to the project area, with a width equal to the distance of degradation penetration.
Frequency of monitoring/recording	Before every verification event with a minimum frequency of 5 years.
Value monitored	See the values applied Table 3.24
Monitoring equipment	GPS and Compass.

QA/QC procedures to be applied	Each brigade has a team leader in charge of supervising the collection of information. All the information collected will be double-checked in the cabinet.
Purpose of the data	Calculation of project emissions
Calculation method	See VMD0015 v2.2, Equation 08.
Comments	Ex-ante estimates of net carbon stock changes as a result of degradation in stratum i in the project area in year t ($\Delta CP, DegW, i, t$) were made based on participatory rural appraisals (PRA) and field evaluations.

Data / Parameter	CDegW,i,t
Data unit	t CO _{2e} ha ⁻¹
Description	Biomass carbon of trees cut and removed through degradation process from plots measured in stratum i in year t.
Source of data	Estimated through diameter of stumps directly measured in the field.
Description of measurement methods and procedures to be applied	The diameter of all tree stumps is measured and conservatively assumed to be the same as the DBH. The above and below ground carbon stock of each harvested tree are estimated using the same allometric regression equation and root to shoot ratio used for estimating the carbon pool in trees in the baseline scenario
Frequency of monitoring/recording	Before every verification event with a minimum frequency of 5 years.
Value monitored	See the values applied in Table 3.24
Monitoring equipment	Diameter tape.
QA/QC procedures to be applied	Field measurement quality control.
Purpose of the data	Calculation of project emissions.
Calculation method	Calculated through allometric equation used for estimating the carbon pool in trees in the baseline scenario.
Comments	Ex-ante estimates were made based on PRAs, which considered the amount of wood used for firewood, the construction of houses and boats per family.

Data / Parameter	APi
Data unit	ha
Description	Total area of degradation sample plots in stratum i.
Source of data	Ground measurement.
Description of measurement methods and procedures to be applied	Sampling plots covering 1% of ADegW,i
Frequency of monitoring/recording	Before every verification event with a minimum frequency of 5 years.
Value monitored	25.775 ha (see Table 3.214)
Monitoring equipment	Tape measure, GPS.
QA/QC procedures to be applied	Remote evaluation.
Purpose of the data	Calculation of project emissions.
Calculation method	Fixed area plots covering 1% of the ADegW,i in the monitoring period.
Comments	-

Data / Parameter	$\Delta CP, DegW, i, t$
Data unit	t CO ₂ e
Description	Net carbon stock changes as a result of degradation in stratum i in the project area in year t.
Source of data	Calculated according to VMD0015 v2.2, Equation 08.
Description of measurement methods and procedures to be applied	Calculated based on area potentially impacted by degradation processes in stratum I (ADegW,i) and biomass carbon of trees cut and removed through degradation process from plots measured in stratum i in year t (CDegW,i,t) and total area of degradation sample plots in stratum I (APi), according to VMD0015 v2.2, Equation 08.
Frequency of monitoring/recording	Annual
Value monitored	See the values applied in Table 25
Monitoring equipment	N/A
QA/QC procedures to be applied	-
Purpose of the data	Calculation of project emissions
Calculation method	See VMD0015 v2.2, Equation 08.
Comments	-

Data / Parameter	$\Delta CP, SelLog, i, t$
Data unit	t CO ₂ e
Description	Net carbon stock change as a result of degradation through selective logging of FSC certified forest management areas in the project area in the project case in stratum i in year t.
Source of data	Calculated according to VMD0015 v2.2, Equation 09.
Description of measurement methods and procedures to be applied	Calculated based on actual net project emissions arising in the logging gap in stratum i in year t (CLG,i,t), actual net project emissions arising from logging infrastructure in stratum i in year t (CLR,i,t) and the carbon stock in wood products pool from stratum i, in year t (CWPI,t), according to VMD0015 v2.2, Equation 09.
Frequency of monitoring/recording	-
Value monitored	0
Monitoring equipment	N/A
QA/QC procedures to be applied	-
Purpose of the data	Calculation of project emissions
Calculation method	-
Comments	-

Data / Parameter	Aburn,i,t
Data unit	ha
Description	Area burnt for stratum i in year t.
Source of data	Equal to ADistPA,q,i,t + ADefPA,i,u,t in the project case.
Description of measurement methods and procedures to be applied	For the calculation of project emissions, the burned area is considered equivalent to burn scars monitored plus annual deforested area monitored, assuming that all deforestation is preceded by a fire to clear the land in the project case.
Frequency of monitoring/recording	Annual.
Value monitored	See the values applied in Table 3.27
Monitoring equipment	-

QA/QC procedures to be applied	Remote monitoring and surveillance system.
Purpose of the data	Calculation of project emissions
Calculation method	-
Comments	-

Data / Parameter	GHG P,E,i,t
Data unit	t CO ₂ e yr ⁻¹
Description	Greenhouse gas emissions as a result of deforestation activities within the within the project area in the project case stratum i in year t.
Source of data	Calculated based on VMD0006 v1.3 Equation 30.
Description of measurement methods and procedures to be applied	Calculated based on the non-CO ₂ emissions due to biomass burning in stratum i in year t (EBiomassBurn,i,t), according to VMD0006 v1.3 Equation 15.
Frequency of monitoring/recording	Before every verification event with a minimum frequency of 5 years.
Value monitored	See the values applied in Table 3.27
Monitoring equipment	-
QA/QC procedures to be applied	-
Purpose of the data	Calculation of project emissions.
Calculation method	Calculated based on VMD0006 v1.3 Equation 30.
Comments	Net CO ₂ e emission from fossil fuel combustion in stratum i in year t (EFC,i,t) and direct N ₂ O emission as a result of nitrogen application on the alternative land use within the project boundary in stratum i in year t (N ₂ Odirect-N,i,t) are conservatively excluded from the project scope and the calculation of the baseline estimates following VM0007 v1.6 section 5.4 criteria.

Data / Parameter	EBiomassBurn,i,t
Data unit	t CO ₂ e
Description	Greenhouse gas emissions due to biomass burning in stratum i in year t of each GHG (CO ₂ , CH ₄ , N ₂ O)
Source of data	Calculated based on VMD0013 v1.3 Equation 1.
Description of measurement methods and procedures to be applied	Calculated based on area burnt for stratum i in year t (Aburn,i,t), average aboveground biomass stock before burning stratum i, in year t (Bi,t), combustion factor for stratum i (unitless) (COMFi), emission factor for stratum i for gas g (Gg,i) and the Global warming potential for gas g (GWPg), according to VMD0013 v1.3 Equation 1.
Frequency of monitoring/recording	Before every verification event with a minimum frequency of 5 years.
Value monitored	See the values applied in Table 3.27
Monitoring equipment	-
QA/QC procedures to be applied	-
Purpose of the data	Calculation of project emissions.
Calculation method	Calculated based on VMD0013 v1.3 equation 1.
Comments	-

Data / Parameter	ΔCWPS-REDD
Data unit	t CO ₂ e
Description	Net GHG emissions in the REDD project scenario up to year t.

Source of data	Calculated according to VMD0015 v2.2, Equation 01.
Description of measurement methods and procedures to be applied	Calculated based on net carbon stock change as a result of deforestation in the project area in the project case in stratum i in year t ($\Delta CP, DefPA, i, t$), Net carbon stock change as a result of degradation in the project area in the project case in stratum i in year t ($\Delta CP, Deg, i, t$), Net carbon stock change as a result of natural disturbance in the project area in the project case in stratum i in year t ($\Delta CP, DistPA, i, t$) and Greenhouse gas emissions as a result of deforestation and degradation activities within the project area in the project case in stratum i in year t ($GHGP-E, i, t$), according to VMD0015 v2.2, Equation 01.
Frequency of monitoring/recording	Before every verification event with a minimum frequency of 5 years.
Value monitored	76,776.91 (See Table 3.28)
Monitoring equipment	N/A
QA/QC procedures to be applied	GHG information system and controls associated with the project and its monitoring. This information system rules the process for obtaining, recording, compiling and analyzing data and information important for quantifying and reporting GHG emissions and removals relevant for the project (including leakage) and baseline scenario.
Purpose of the data	Calculation of project emissions
Calculation method	See VMD0015 v2.2, Equation 01.
Comments	-

Data / Parameter	$\Delta CLK-AS, planned$
Data unit	t CO ₂ e
Description	Net GHG emissions due to activity shifting leakage for projects preventing planned deforestation up to year t*
Source of data	Calculated according to VMD0009 v1.3, Equation 01.
Description of measurement methods and procedures to be applied	Calculated based on the area of activity shifting leakage in stratum i in year t ($LKA_{planned, i, t}$), the net carbon stock changes in all pre- deforestation pools in baseline stratum i, ($\Delta C_{BSL, i}$) and the Greenhouse gas emissions as a result of leakage of avoiding deforestation activities in stratum i in year t ($GHG_{LK, E, i, t}$), according to VMD0009 v1.3, Equation 01.
Frequency of monitoring/recording	Before every verification event with a minimum frequency of 5 years.
Value monitored	0
Monitoring equipment	-
QA/QC procedures to be applied	-
Purpose of the data	Calculation of leakage.
Calculation method	Calculated according to VMD0009 v1.3, Equation 01.
Comments	-

Data / Parameter	NER REDD
Data unit	t CO ₂ e
Description	Total net GHG emission reductions of the REDD project activity up to year t (t CO ₂ e).
Source of data	Calculated according to VM0007 v1.6 Equation 2.

Description of measurement methods and procedures to be applied	Calculated based on the net GHG emissions in the REDD baseline scenario up to year t ($\Delta\text{CBSL-REDD}$), the net GHG emissions in the REDD project scenario up to year t ($\Delta\text{CWPS-REDD}$) and the net GHG emissions due to leakage from the REDD project activity up to year t ($\Delta\text{CLK-REDD}$), according to VM0007 v1.6 Equation 2.
Frequency of monitoring/recording	Before every verification event with a minimum frequency of 05 years.
Value monitored	See the values applied in The net emissions reductions achieved during the first monitoring period are presented in the next table. Table 3.3030
Monitoring equipment	-
QA/QC procedures to be applied	-
Purpose of the data	Calculation of VCUs
Calculation method	According to VM0007 v1.6 Equation 2.
Comments	-

Data / Parameter	BufferPlanned
Data unit	t CO ₂ e
Description	Buffer withholding for avoiding planned deforestation project activities
Source of data	Calculated according to VM0007 v1.6 equation 8.
Description of measurement methods and procedures to be applied	Calculated based on the net greenhouse gas emissions in the baseline from planned deforestation up to year t ($\Delta\text{CBSL,planned}$) and the buffer withholding percentage (Buffer%), according to VM0007 v1.6 Equation 8.
Frequency of monitoring/recording	Before every verification event with a minimum frequency of 5 years.
Value monitored	10% (see Table 3.3333)
Monitoring equipment	-
QA/QC procedures to be applied	-
Purpose of the data	Calculation of VCUs
Calculation method	Calculated according to VM0007 v1.6 Equation 8.
Comments	-

Data / Parameter	UncertaintyREDD-BSL,SS
Data unit	%
Description	Total uncertainty in the combined carbon stocks and greenhouse gas sources in the REDD baseline scenario
Source of data	Calculated according to VMD0017 v2.2 Equation 5.
Description of measurement methods and procedures to be applied	Calculated based on the percentage uncertainty in the combined carbon stocks and greenhouse gas sources in stratum i in the REDD baseline scenario (UREDD-BSL,SS,i), and the sum of combined carbon stocks and GHG sources in the REDD baseline scenario (EREDD-BSL,SS,t,i), according to VMD0017 v2.2 Equation 5.
Frequency of monitoring/recording	Before every verification event with a minimum frequency of 5 years.
Value monitored	See the values applied in Table 3.31
Monitoring equipment	-
QA/QC procedures to be applied	-
Purpose of the data	Calculation of VCUs

Calculation method	Calculated according to VMD0017 v2.2 equation 5.
Comments	Uncertainty in baseline rate of deforestation is set as zero ($\text{UncertaintyREDD-BSL,RATE} = 0$), as the deforestation rates are based on actual deforestation plans, following VMD0017 v2.2, Section 5.1.1 criteria. In this sense $\text{UncertaintyREDD-BSL,SS}$ equals to cumulative uncertainty in REDD baseline scenario up to year t ($\text{UncertaintyREDD-BSL,t}^*$).

Data / Parameter	UncertaintyREDD-WPS
Data unit	%
Description	Total uncertainty in the REDD project scenario
Source of data	Calculated according to VMD0017 v2.2 Equation 13.
Description of measurement methods and procedures to be applied	Calculated according to the percentage uncertainty in the combined carbon stocks and greenhouse gas sources in stratum i in the REDD project scenario (UREDD-WPS,SS,i) and the sum of combined carbon stocks and GHG sources multiplied by the area of stratum i (A_i) in the REDD project scenario (EREDD-WPS,SS,t,i), according to VMD0017 v2.2 Equation 13.
Frequency of monitoring/recording	Before every verification event with a minimum frequency of 5 years.
Value monitored	See the values applied in Table 3.3131
Monitoring equipment	-
QA/QC procedures to be applied	-
Purpose of the data	Calculation of VCUs.
Calculation method	Calculated according to VMD0017 v2.2 Equation 13.
Comments	-

Data / Parameter	NER REDD+ERROR
Data unit	%
Description	Cumulative uncertainty for the REDD+ project activities up to year t
Source of data	Calculated according to VMD0017 v2.2 Equation 21
Description of measurement methods and procedures to be applied	Calculated based on Cumulative uncertainty in REDD baseline scenario up to year t ($\text{UncertaintyREDD_BSL,t}$), the total uncertainty in the REDD project scenario ($\text{UncertaintyREDD_WPS}$), the Net GHG emissions in the REDD baseline scenario up to year t ($\Delta\text{CBSL-REDD,t}$), and the Net GHG emissions in the REDD project scenario up to year t ($\Delta\text{CWPS-REDD,t}$), according to VMD0017 v2.2 Equation 21
Frequency of monitoring/recording	Before every verification event with a minimum frequency of 5 years.
Value monitored	See the values applied in Table 3.3232
Monitoring equipment	-
QA/QC procedures to be applied	-
Purpose of the data	-
Calculation method	Calculation of VCUs
Comments	Calculated according to VMD0017 v2.2 Equation 21

Data / Parameter	Adjusted_NERREDD+
Data unit	%

Description	Total net GHG emission reductions of the REDD+ project activities up to year t* adjusted to account for uncertainty
Source of data	Calculated according to VMD0017 v2.2 Equation 21
Description of measurement methods and procedures to be applied	Calculated based on the total net GHG emission reductions of the REDD project activity up to year t (NERREDD), and the cumulative uncertainty for the REDD+ project activities up to year t (NERREDD+ _ERROR).
Frequency of monitoring/recording	Before every verification event with a minimum frequency of 5 years.
Value monitored	Equals the value of NER REDD
Monitoring equipment	-
QA/QC procedures to be applied	-
Purpose of the data	Calculation of VCUs.
Calculation method	Calculated according to VMD0017 v2.2 Equation 21.
Comments	No deduction should result for uncertainty given that the value (5.03%) is below the threshold (15%)

Data / Parameter	VCUt
Data unit	VCU
Description	Number of Verified Carbon Units at year t* or t2 - t1
Source of data	Calculated according to VMD0017 v2.2 Equation 19.
Description of measurement methods and procedures to be applied	Calculated based on the total net GHG emission reductions of the REDD+ project activity up adjusted to account for uncertainty (Adjusted_NERREDD+), and the total permanence risk buffer withholding (BufferPlanned), according to VMD0017 v2.2 equation 19.
Frequency of monitoring/recording	Before every verification event with a minimum frequency of 05 years.
Value monitored	See the values applied in Table 3.33
Monitoring equipment	-
QA/QC procedures to be applied	-
Purpose of the data	Calculation of VCUs
Calculation method	Calculated according to VMD0017 v2.2 Equation19.
Comments	-

3.1.3 Monitoring Plan

Monitoring Organizational Structure

The organizational structure that carried out the monitoring activities in cooperation with PASKAY (external consultant) is detailed below:

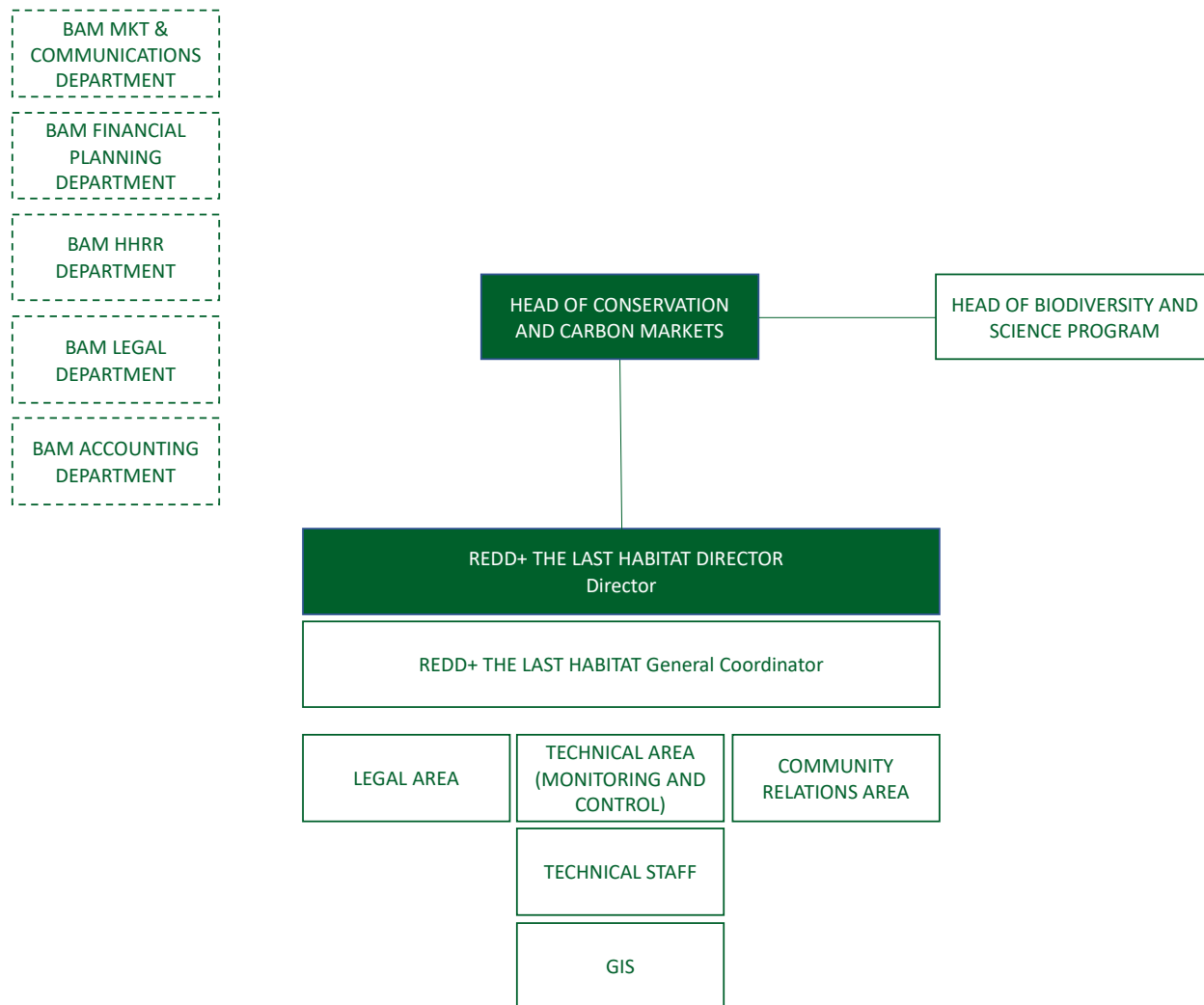


Figure 3.1. Organizational structure

a. Science and conservation program leader

During the monitoring period, the head of BAM's Science Program lead all studies carried out to evaluate and monitor the ecological wealth found within the area of influence of the project. Among its assigned functions were to lead the activity in terms of the development of biodiversity expeditions and inventories, perform ecological characterization, and establish alliances with prestigious scientific institutions. The expeditions carried out during the monitoring period and lead by the Head of Science are detailed further on the document.

b. General coordinator of the Project

The Last Habitat REDD+ General Coordinator had the responsibility to lead the group in charge of conducting the activities for the optimal implementation of the project, ensuring compliance with the budget and the defined deadlines. Furthermore, the General Coordinator had the responsibility to represent BAM in front of the different interest groups such as competent authorities, collaborative organizations, community, among others, reporting the progress of the execution to the Head of Conservation and Carbon Markets.

c. Coordinator of the Department of Territorial Security (Monitoring Control and Surveillance)

The coordinator of the Department of Territorial Security has had the role of ensuring the security of the territory, avoiding deforestation, degradation and any environmental crime or threat to the forests included in the project area. Specifically, to identify, control and monitor any threat or conflict that could have occurred within the project area. The activities implemented by the Department of Territorial Security for fulfilling their responsibilities are detailed further below.

d. Legal Coordinator

The Legal Coordinator has been in charge of all processes related to possible risks of deforestation in the area such as invasions, illegal logging, and others, as well as the collaboration on such matters with the competent authorities.

e. Community Relations Coordinator

The Community Relations coordinator have been working with the different groups in the area of influence to continue strengthening the relationship between BAM and its stakeholders, ensuring fluid bilateral communication, a reciprocal and close relationship that allows achieving the objectives of the project, as well as to improve the life situation of the people directly or indirectly involved in it. The Community Relations coordinator have also represented BAM before communities and opinion leaders.

f. Audiovisual assistant / communicator

The audiovisual assistant / communicator has been in charge of registering and archiving the events, activities, etc. made by the project and around it in videos, photos, reports, or other communication tools that allow sharing and recording its progress.

All this team is exclusively dedicated to the project activities and had been widely supported by BAM's biggest structure: admin, financial planning, marketing, accounting, etc.

Monitoring Plan and Activities

As stated on the PD, the process for identifying, controlling, and reporting any possible threat of deforestation is explained in the diagram below:

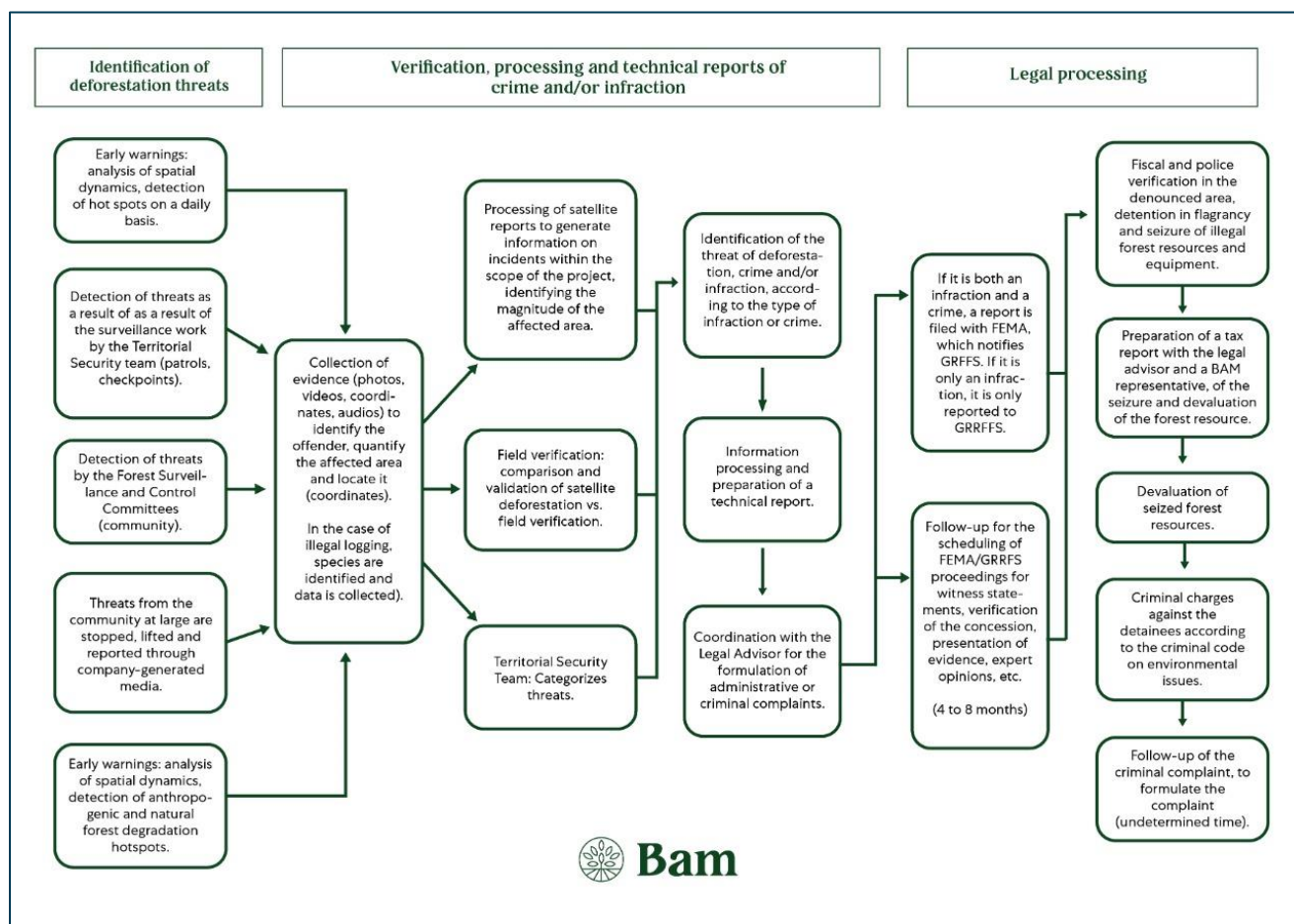


Figure 3.2. Process of identification, control, and report.

During the monitoring period, among the different activities developed, a comprehensive monitoring control and surveillance system was implemented, which includes:

- Satellite monitoring: daily alerts on fire hotspots (Figure 3.3 and Figure 3.4) were reported using satellite data for identifying on a permanent basis any possible risk of deforestation in the area, providing the ability to respond this matter immediately.
- Technical and legal monitoring: as part of the technical monitoring system the project team conducted regular patrolling on the area and demarcation of the project limits and boundaries, reporting and confronting any unusual/illegal activity to the legal team, and later, if the case, to the competent authorities for controlling any possible risk in the area of influence.

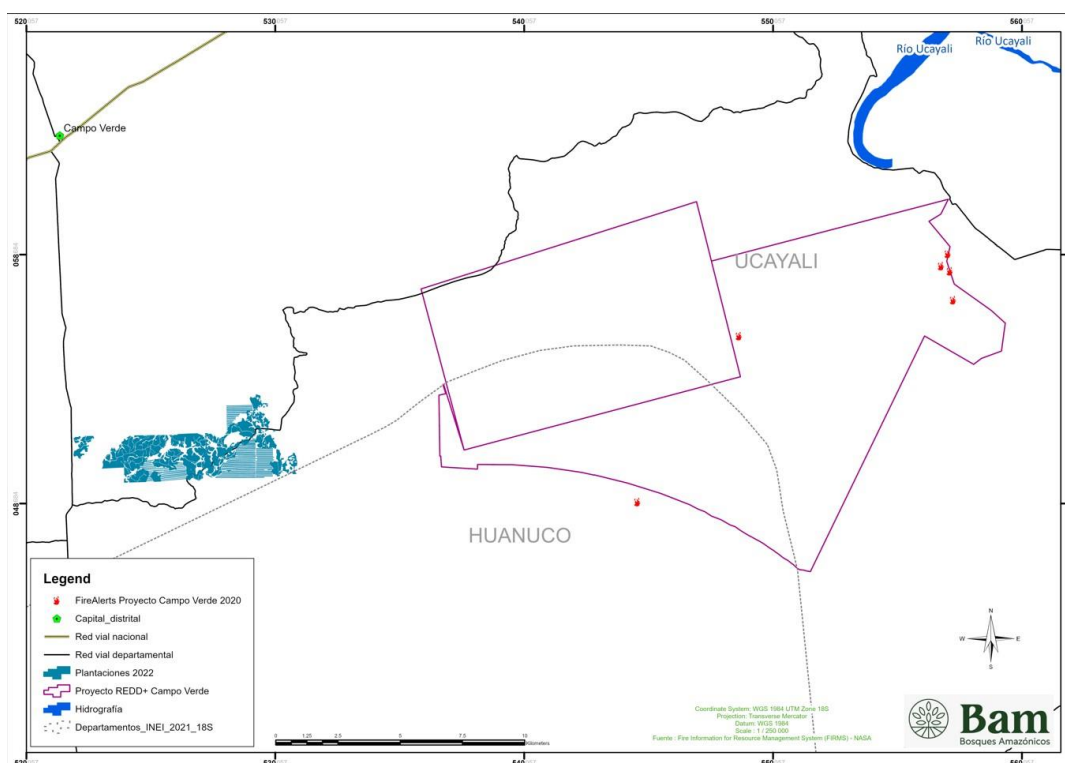


Figure 3.3. Fires and hot spots in Project Area (2020)

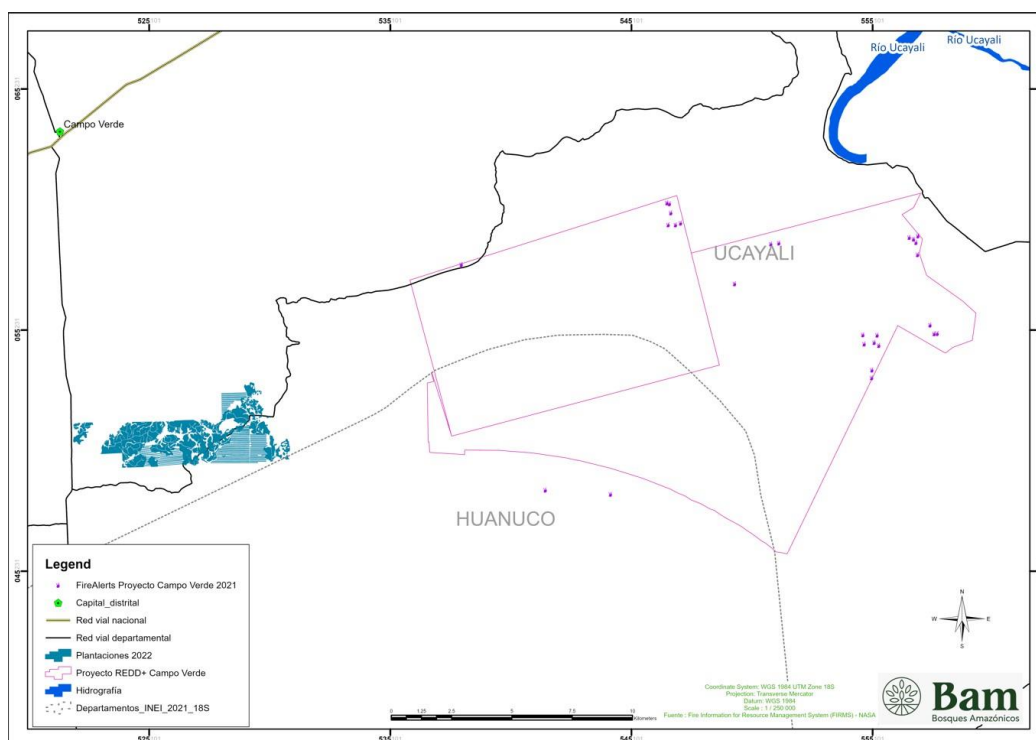


Figure 3.4. Fires and hot spots in Project Area (2021)

Table 3.1. Activities implemented as part of the Monitoring Control and Surveillance system

N°	Activities	Date	Comment (if needed)
1	Eviction of invaders with heavy machinery.	January, February, March 2018	Part of the monitoring, control and surveillance system developed on an ongoing basis (permanent).
2	Seizure of 900 units of Cumala wood species, being taken care of for more than 3 months - sawmill in Manantay	Feb-18	
3	Invitation with neighbors and authorities to address the issue of illegal logging.		Reinforcing the joint work with the corresponding authorities.
4	First intervention in the Shiquihual and Maputay area against illegal loggers in Selva Maestra, resulting in a decrease in anthropogenic activity.	April-18	
5	Reconstruction of Milagros camp.	June – July-18	Camps must be renewed in order to be maintained over time.
6	Installation of a wire fence in Mirianita camp on the north side of the camp.	Jan – Aug 2019	Outside (adjacent to) project area but within the premises of project proponent.
7	Preparation of materials and construction of fence at the Palmeras camp.	Feb – Mar-19	
8	Installation of fence in the Agua Blanca camp.	Sept - Oct 2019	Outside (adjacent to) project area but within the premises of project proponent.
9	Construction of the Palmeras camp.	Nov-19	The company seeks to implement new territorial security camps to safeguard and monitor a larger area of forest.
10	Maintenance of boundaries and cleaning of roads in the camps: Pucallpillo, Quinillal, Agua Blanca, Palmeras and Mirianita.	January, April, and May 2020	To properly define property boundaries. Reports were made on the construction of facilities in the camps.
11	Patrols in camps: Palmeras, Pucallpillo, Quinillal and Mirianita, achieving a total of approximately 10 patrols. Daily patrols in JCC and Milagros and inter-daily patrols in Agua Blanca.	Jan-20	Patrol operations against illegal logging and visits by the Territorial Security Supervisor.
12	Installation of the Quinillal camp.	March-20	
13	Patrols in camps: Milagros, Palmeras, Pucallpillo, Quinilla, Mirianita and JCC, achieving a total of approximately 13 patrols in total, and inter-daily patrols at Camp Agua Blanca.	April-20	With intervention to groups of invaders.

N°	Activities	Date	Comment (if needed)
14	Installation of 400 posts and demarcations with wire fences in the construction of the Mirianita camp.	May-20	
15	Replanning the boundaries for the installation of row fences.	May-20	
16	Installation of poles at the Mirianita camp	June-20	
17	Entry of PASKAY's technical team to the Native Community (CCNN) of Nuevo Paraíso.	July-20	Strengthening community relations and fostering bilateral communication. Social diagnosis. Project socialization.
18	Medical visit to the Mirianita camp.	July-20	Strengthening the health and safety of the company's workers.
19	Meeting with the Association of Rice Farmers of the Belen hamlet	Aug-20	Strengthening community relations and fostering bilateral communication.
20	Intensive patrols due to strong threats in Agua Blanca, Pucallpillo and Milagros camps.	Aug-20	Threats: possible entry to the farm, shots fired and intercepted motorized vehicles.
21	Patrolling in Quinillal camp.	Sept-20	
22	Installation of boundary lines with Mr. Walter Sánchez.	Oct-20	
23	Forestry group visit to the Quinillal camp.	Oct-20	
24	Meeting at the San Antonio de Honoria Community Center.	Nov-20	Strengthening community relations and fostering bilateral communication.
25	Reported crime: Trespassing and violence with firearms in Selva Maestra.	July-2021	These complaints are the result of illegal interventions by the peasant patrols of Honoria entering the Palmeras camp and destroying the boundaries and signs of the Selva Maestra property.
26	Paskay's visit to Quinillal for biodiversity evaluation.	Oct-21	
27	Reported crime: Usurpation and kidnapping.	2021	Details of the crime: It occurred as a result of an illegal intervention in Palmeras camp. The criminals intercepted two workers of the camp where they were held for two and a half days in the hamlet of San Antonia. The complaint was filed with the police station of Honoria and then passed to the corporate criminal prosecutor's office of Campo Verde.

N°	Activities	Date	Comment (if needed)
28	Reported crime: Deforestation in Selva Maestra.	2021	Details of the crime: Mr. Luis Hacha Jimenez put a caterpillar tractor and made a 2 and a half kilometers open field in the Selva Maestra property.
29	Reported crime: Usurpation and violence in Selva Maestra.	2021	Reported: Tomas Huamán Becerra and Víctor Nolasco Stage of proceedings: filed.
30	Reported crime: Deforestation in Selva Maestra.	2021	Reported: Luis Acha Jiménez Stage of proceedings: preliminary investigation.

The methods used for generating/measuring, recording, storing, aggregating, collating, and reporting the data on monitored parameters are detailed below:

- **Monitoring (Territorial Security):** As part of the surveillance system, daily reports of hot spots are generated and recorded in the company's system. Likewise, the technical field security team keeps a record in logbooks, where any possible event or action in the field is reported. As for the legal aspect of monitoring threats in the field, legal complaints are handled by the lawyer in charge, who develops and reports the files to the general coordinator of the project for subsequent storage of the information.
- **Community:** Reports on the different actions and activities carried out are prepared by the head of community relations in the area and sent to the project's general coordinator. All activities carried out with the community have a photographic record that is stored as supporting documentation.
- **Biodiversity:** biodiversity expedition reports are developed in collaboration with scientific organizations which are reported and stored in the BAM storage system. Notes with the most relevant results from the organizations are also shared and published online (e.g. [Blog](#)).

The physical files are stored in the project's administrative office located in the town of Pucallpa, while the digital files are stored in an electronic folder called "THE LAST HABITAT REDD PROJECT - BAM" located on the BAM server. In addition, the company has external disks for copying documents.

a) Handling of internal auditing data

Financial: BAM's corporate financial planning and budgeting area follows up on the implementation of activities carried out in accordance with the established budget. The company's EEFF are reported and audited (externally) on a quarterly basis.

Legal/compliance: BAM's corporate legal area, led by an expert advisor, is in charge of monitoring and ensuring the highest standards of good corporate governance, following the policies implemented by the company (e.g., sustainability policies, fair labor, etc.).

The results of the company's activities, including those of the project, are reported at board meetings, which in turn are publicly disclosed to the market.

The organizational structure of the project (3 different areas, a general coordination and a department manager) ensures a permanently controlled and evaluated work. Furthermore, the involvement of an

independent company (e.g., PASKAY) for the monitoring of the activities promotes a permanent and impartial evaluation of the project activity.

During the monitoring process, process flowcharts have been established for the correct monitoring of operations e.g., monitoring, control and surveillance system, attention to complaints and suggestions from the community.

b) Sampling approaches and QA/QC procedures

The monitoring of the climate section includes the generation of annual deforestation maps that allow quantifying the loss of forest cover in the monitoring period. Considering that the geospatial information provided by GEOBOSQUES was used as the baseline activity data, being the official information of the Peruvian State, it was necessary to carry out an accuracy evaluation to comply with the requirements of the VMD0015 tool. For this, control points distributed in a completely random and stratified manner were established (according to the strata defined by GEOBOSQUES). This procedure is explained in Section 3.2.2. (Accuracy assessment), having reached a Kappa index of 0.92, which exceeds the threshold value of 0.9 Proposed by the VMD0015 methodology. The frequency of evaluation of deforestation is annual. As quality control measures, many more evaluation points (150) were selected per class than the minimum required, as well as the validation focused on a reduced extension that included the project area and surrounding areas, reducing the noise generated by a map made on a national scale.

The monitoring of the degradation was an evaluation in the field that considered the sampling criteria of 1% of the area potentially subject to degradation, the distribution of the points was carried out by means of a systematic distribution of the transects. It was found that the emissions were significant, as they exceed the 5% threshold of the T-SIG tool, as described in Section 3.2.2. (Monitoring Degradation). This monitoring responds to the frequency of establishment of the PRA (every 2 years). As quality control measures, there was a technical team of forest engineers who carried out the evaluation in the field, and which were monitored, trained, and supervised by PASKAY SAC personnel, the complete results and description of the details of the field trip is detailed in degradation report (see folder PROJECT ACTIVITIES_CLIMATE_MONITOREO DEGRADACIÓN) .

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

The results of the biodiversity assessment expeditions carried out as part of the BAM Science Program are published in social networks and on the company's website: [First expedition](#); [Second expedition](#); [videos](#)

As part of the socialization process, project information brochures were distributed to all participating members of the different communities visited as part of The Last Habitat REDD+ interest group. In addition, printed information leaflets were distributed to the participants of the workshop on pest control and the use of trichoderma in seeds or soil, carried out in collaboration with SENASA.

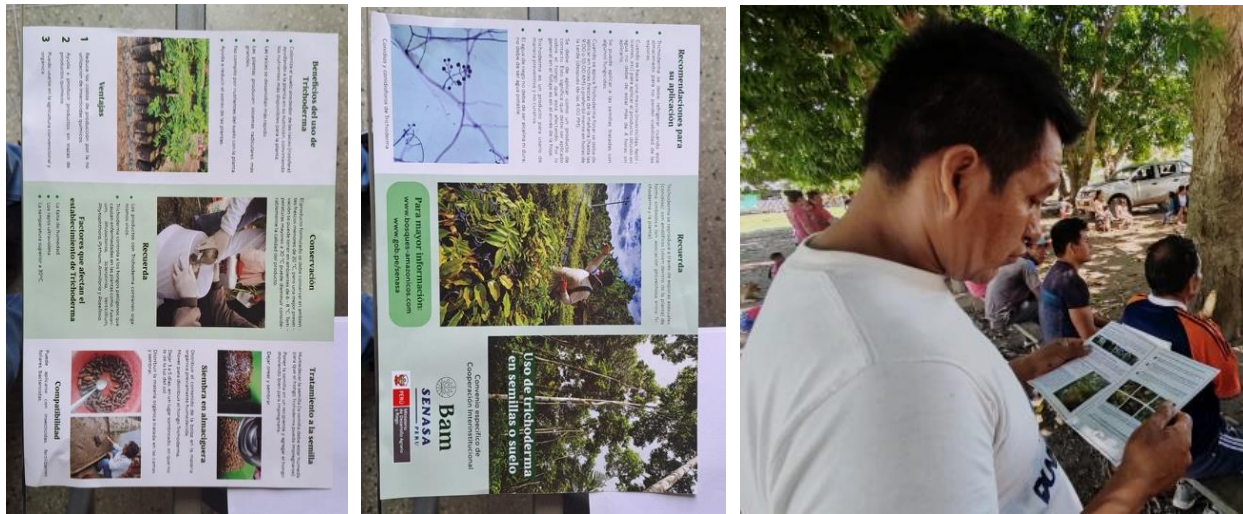


Figure 3.5. Brochures

On the other hand, the different activities and progress of the project were published in local media, such as the print media in Diario Ahora and Diario Ímpetu, and on television in UTV Noticias. In line with this, press articles are periodically published in local media such as Inforegión and Caretas.



Figure 3.6. Publications in local media

Additionally, the progress and results of the project are communicated annually in the Annual Reports, quarterly and/or semi-annually to the company's shareholders and investors through a digital newsletter and mailing, and periodically on the social networks: Instagram and Facebook.



Figure 3.7. Annual reports and information shared in social media

3.2 Quantification of GHG Emission Reductions and Removals

3.2.1 Baseline Emissions

The baseline emissions calculated in the project are based on the conversion of forest to croplands (oil palm, *Myrciaria dubia* “Camu camu”, and *Ricinus communis* “Higuerilla” or “Castor oil plant”).

Considering the total legal area of the two land parcels (20,779 ha), the permitted and planned conversion area is 14,507 ha. Accordingly, the planned deforestation methodology (APD) is applied to the conversion area. The ex-ante stratification is based on ancillary data as described in VMD0016 (X-STR) v 1.2. The areas of strata delineated prior to the allocation of inventory plots using stratified sampling are known exactly and require no accuracy assessment.

The stratification was based on forest inventories conducted in 2006 and 2012 for the two project areas, these inventories worked with multiple representations of ecozones, depending on the existing vegetation. However, given that the carbon values to be worked on (Table 3.6) represent the Peruvian lowland forest in general (which includes a large part of the ecozones of the Peruvian Amazon), it was only necessary to highlight two different zones of this large group, the ecozones belonging to characteristic wetlands of the Peruvian jungle, the “aguajales”. It was necessary to highlight this class to detriment of the others, due to its high carbon levels (especially in the SOC compartment), and the dominance of a palm tree (*Mauritia flexuosa*) above the presence of trees. In this way, the ecozones were regrouped according to three defined classes, described in Table 3.2.

Table 3.2. Ecozone stratification of the properties that comprise the Project Area.

PAI name	Stratum	Ecozone/stratum description	Area (ha)	Percentage (%)
JCC - Nuestro Señor Jesucristo	1	Lowland Tropical Rainforest	4,722.07	58.66
	2	Palm and Mixed Palm Swamp Forest	704.13	8.75
	3	<i>Mauritia flexuosa</i> dominated palm swamp	2,449.86	30.43
	4	Other lands (non-forest)	173.65	2.16
	Total		8,049.87	100.00
Selva Maestra	1	Lowland Tropical Rainforest	10,442.02	84.12
	2	Palm and Mixed Palm Swamp Forest	698.19	5.62
	3	<i>Mauritia flexuosa</i> dominated palm swamp	18.38	0.15
	4	Other lands (non-forest)	1,254.94	10.11
	Total		12,413.53	100.00

On the 2006/2012 ecozone map, the forest/non-forest map was intersected in order to eliminate the non-forest areas existing at the end of 2019. In this way, the remaining forest area per ecozone can be calculated and shown in Figure 3.8.

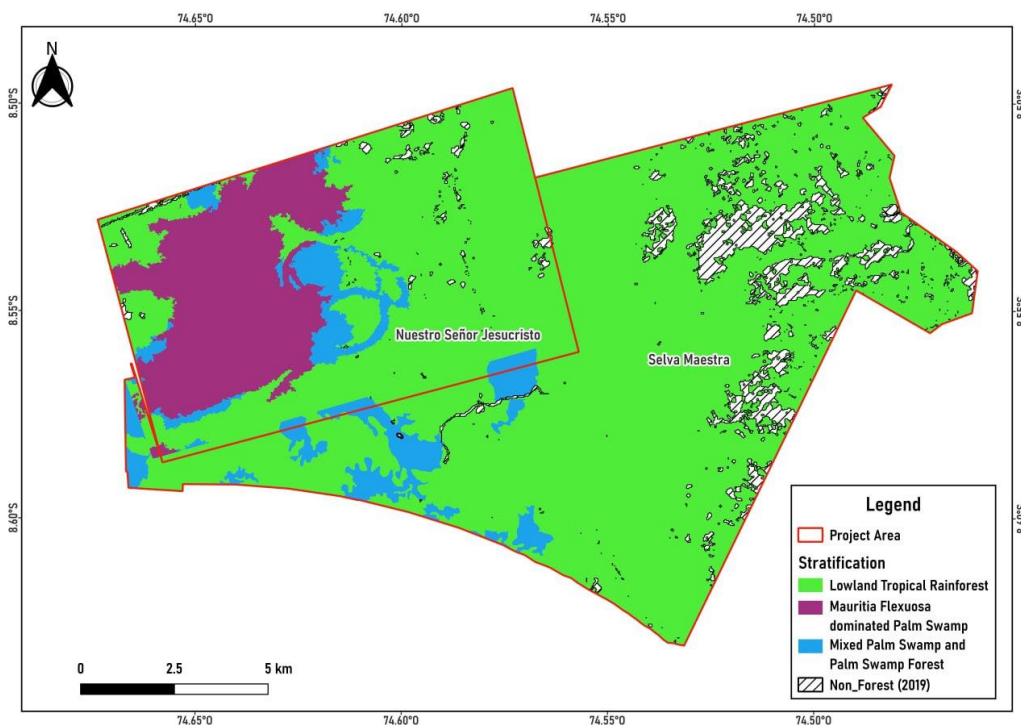


Figure 3.8. Ecozone stratification and deforested areas by 2019

A. Projected annual proportion of land that will be deforested

The deforestation rate for each property in the baseline scenario was calculated based on the values given by the “Technical Economic Feasibility Study Agro-industrial Exploitation” and “File 7698 of the Special Project for Land Titling and Rural Cadaster” revised (see folder Property Rights Evidence). The annual area of baseline planned deforestation ($AA_{planned,i,t}$) is calculated according to module VMD0006 (BL-PL) v1.3 Equation 5.

Equation 3.1. Annual area of baseline planned deforestation

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

Where:

$AA_{planned,i,t}$	Annual area of baseline planned deforestation for stratum i at time t; ha.
$D\%_{planned,i,t}$	Projected annual proportion of land that will be deforested in stratum i during year t.
$A_{planned,i}$	Total area of planned deforestation over the baseline period for stratum i; ha.
$L - D_i$	Likelihood of deforestation for stratum i; %
i	1, 2, 3, ... M strata

The total area of planned deforestation over the baseline period ($A_{planned,i,t}$), in each property (Table 3.3), is determined according to what is recognized as an immediate site-specific threat of deforestation, which, in its turn, is a function of the legal permissibility for deforestation, the suitability of the project area for conversion to alternative non-forest land use, the government approval for deforestation and a management

plan for deforesting the project area. The projected annual proportion of land that will be deforested in stratum i during year t , ($D_{planned,i,t}$) is determined according to the provisions of the land title granted by the Ministry of Agriculture for “Selva Maestra” and by the Technical Economic Feasibility Study Agro-industrial Exploitation for “Nuestro Señor Jesucristo”. These authorizations should be understood as verifiable plans where the actual annual deforestation proportion is known and documented. As only private areas are under this project’s scope, L-Di is set to be 100%, according to the VMD0006 v1.3 requirements.

Table 3.3. Projected areas to be deforested in each PA, per year

Property Conversion to:	Selva Maestra (ha)	JCC - Nuestro Señor Jesucristo (ha)				
	Pastures	Oil palm	Camu camu	Higuerilla	Infraestructure	Total JCC
2020	600	-	-	-	1,000	1,000
2021	600	-	-	-	1,000	1,000
Total	1,200	-	-	-	2,000	2,000

Because the deforestation plans do not detail the distribution of hectares to be deforested by stratum, a conservative solution was chosen to allocate the area to be deforested in proportion to the percentage of forest per ecozone. In this way, the 600 hectares per year in the Selva Maestra sector were distributed proportionally over the 3 ecozones, until the planned hectares were reached (Table 3.4). The same was done for the “Nuestro Señor Jesucristo” sector, where the planned areas were distributed proportionally by stratum (Table 3.5).

Table 3.4. Planned area to be deforested by stratum (Selva Maestra)

Year	Selva Maestra			Total
	$AA_{planned,1,t}$ (ha) (Stratum 1)	$AA_{planned,2,t}$ (ha) (Stratum 2)	$AA_{planned,3,t}$ (ha) (Stratum 3)	$AA_{planned,i,t}$ (ha)
Year 1	561.47	37.54	0.99	600.00
Year 2	561.47	37.54	0.99	600.00
Total	1,122.94	75.08	1.98	1,200.00

Table 3.5. Planned area to be deforested by stratum (Nuestro Señor Jesucristo)

Year	JCC - Nuestro Señor Jesucristo			Total
	$AA_{planned,1,t}$ (ha) (Stratum 1)	$AA_{planned,2,t}$ (ha) (Stratum 2)	$AA_{planned,3,t}$ (ha) (Stratum 3)	$AA_{planned,i,t}$ (ha)
2020	599.55	89.40	311.05	1,000.00
2021	599.55	89.40	311.05	1,000.00
Total	1,199.09	178.80	6,22.10	2,000.00

B. Estimation of carbon stocks by carbon pools

To calculate baseline emissions, three carbon pools were considered: aboveground biomass (stems, branches, and foliage - AGB), belowground biomass (roots - BGB), as well as the organic carbon from the

soil (SOC). Litter and deadwood pools were conservatively excluded, as allowed by methodology. The harvested wood products pool is not applicable since there are no predicted forest management activities related to logging and wood milling in the project.

Forest (pre-deforestation land use) carbon values were extracted from literature sources, which involved documents prepared with data at the national level (Forest Reference Emission Levels, FREL), as well as institutional studies carried out for the study area (department of Ucayali). In the case of the strata containing palm swamps, it was decided that the SOC deposits should be treated conservatively as "shallow peat strata", and therefore considered as "mineral soil" according to module VMD0016. In this way, overestimations are avoided since the true depth of the organic layer of the soil is unknown. The SOC values were taken from studies carried out in similar wetlands of Ucayali.

Also, for estimating the BGB of the dominant specie (*Mauritia flexuosa*) of the palm swamps strata, a regional root-shoot expression was used, developed from studies in the Pacaya Samiria National Reserve located in the Peruvian Amazon.

The carbon values for each pool and strata are presented in the following table.

Table 3.6. Carbon pools considered for calculation of the baseline scenario (pre-deforestation)

Parameter	Carbon pool	Mean Value (tCO ₂ e ha ⁻¹)	CI (95%)	Source
Forest: Lowland Tropical Rainforest				
$C_{AB. pre,i}$	Aboveground carbon (AGC)	427.07	15.21	FREL 2021 ¹⁸
$C_{BB. pre,i}$	Belowground biomass (BGC)	195.44	6.39	FREL 2021
$C_{SOC. pre,i}$	Soil organic carbon (SOC)	262.03	35.31	Cuellar & Salazar 2016 ¹⁹
Total		884.54	38.97	
Forest: Mixed Palm Swamp and Palm Swamp				
$C_{AB. pre,i}$	Aboveground carbon (AGC)	188.03	59.73	Garcia, Honorio & Del Castillo 2012 ²⁰
$C_{BB. pre,i}$	Belowground biomass (BGC)	76.07	6.35	Freitas <i>et al.</i> 2006
$C_{SOC. pre,i}$	Soil organic carbon (SOC)	725.49	327.51	Garcia, Honorio & Del Castillo 2012
Total		989.59	332.40	
Forest: <i>Mauritia flexuosa</i> dominated palm swamp				
$C_{AB. pre,i}$	Aboveground carbon (AGC)	353.21	55.59	Garcia, Honorio & Del Castillo 2012
$C_{BB. pre,i}$	Belowground biomass (BGC)	142.90	11.94	Freitas <i>et al.</i> 2006

¹⁸ https://redd.unfccc.int/files/nref_peru_final.pdf

¹⁹ <http://repositorio.inia.gob.pe/handle/20.500.12955/490>

²⁰ <http://revistas.iiap.org.pe/index.php/foiaamazonica/article/view/43/80>

Parameter	Carbon pool	Mean Value (tCO ₂ e ha ⁻¹)	CI (95%)	Source
$C_{SOC, pre,i}$	Soil organic carbon (SOC)	725.49	327.51	Garcia, Honorio & Del Castillo 2012
Total		1,221.60	332.40	

Similarly, the carbon stocks for the post-deforestation land-uses (crops and pastures) were taken from national sources. These are presented in Table 3.7.

Table 3.7. Carbon pools considered for calculation of the post-deforestation use

Parameter	Carbon pool	Mean Value (tCO ₂ e ha ⁻¹)	CI (95%)	Source
Pastures				
$C_{AB, post,i}$	Aboveground carbon (AGC)	78.41	75.48	Cuellar & Salazar 2016
$C_{BB, post,i}$	Belowground biomass (BGC)	13.04	10.44	Cuellar & Salazar 2016
$C_{SOC, post,i}$	Soil organic carbon (SOC)	260.35	55.50	Cuellar & Salazar 2016
Total		95.95	33.38	
Croplands: Oil palm				
$C_{AB, post,i}$	Aboveground carbon (AGC)	52.74	11.98	Cuellar & Salazar 2016
$C_{BB, post,i}$	Belowground biomass (BGC)	17.47	9.45	Cuellar & Salazar 2016
$C_{SOC, post,i}$	Soil organic carbon (SOC)	263.53	40.86	Cuellar & Salazar 2016
Total		91.02	11.89	
Croplands: Camu camu				
$C_{AB, post,i}$	Aboveground carbon (AGC)	59.58	25.90	Díaz-Córdova et al. 2015 ²¹
$C_{BB, post,i}$	Belowground biomass (BGC)	9.32	3.29	Díaz-Córdova et al. 2015
$C_{SOC, post,i}$	Soil organic carbon (SOC)	261.95	41.12	Cuellar & Salazar 2016
Total		330.85	48.71	
Croplands: Castor oil plant				
$C_{AB, post,i}$	Aboveground carbon (AGC)	12.42	5.19	Valdez-Rodriguez et al. 2018 ²²
$C_{BB, post,i}$	Belowground biomass (BGC)	3.20	1.10	Valdez-Rodriguez et al. 2018

²¹ https://www.researchgate.net/publication/316711165_ALMACENAMIENTO_DE_CARBONO_EN_INDIVIDUOS_DE_CAMU_CAMU_ARBUSTIVO_Myrctaria_dubia_HBK_Mc_Vaugh_PLANTADOS_EN_EL_CENTRO_EXPERIMENTAL_SAN_MIGUEL_IQUITOS_PERU

²² <http://cienciasagricolas.inifap.gob.mx/index.php/agricolas/article/view/734/1807>

Parameter	Carbon pool	Mean Value (tCO ₂ e ha ⁻¹)	CI (95%)	Source
$C_{SOC, post,i}$	Soil organic carbon (SOC)	261.95	41.12	Cuellar & Salazar 2016
Total		277.57	41.46	

The differences between the pre and post deforestation land uses, which define the emission factors, are presented in Table 3.8. It was decided to conservatively omit SOC changes in the transitions from lowland forest to crops and infrastructure, because the difference was spurious, only for the cases of conversion of wetlands to other uses was the change considered. For the transition from wetlands to infrastructure, a factor of 0.8 (IPCC 2006) for SOC was used, where the remaining carbon in infrastructure areas was conservatively estimated to be 80% of the Lowland Tropical Rainforest SOC pool ($262.03 \times 0.8 = 209.624$).

Table 3.8. Calculation of the differences between pre and post deforestation uses

Parameter	Carbon pool	Value (tCO ₂ e ha ⁻¹)
Forest: Lowland Tropical Rainforest to Pastures		
$\Delta C_{AB,i} = C_{AB, pre,i} - C_{AB, post,i}$	Aboveground carbon (AGC)	348.66
$\Delta C_{BB,i} = C_{BB, pre,i} - C_{BB, post,i}$	Belowground biomass (BGC)	182.40
$\Delta C_{SOC,i} = C_{SOC, pre,i} - C_{SOC, post,i}$	Soil organic carbon (SOC)	Set to 0
Total		531.06
Forest: Mixed Palm Swamp and Palm Swamp to Pastures		
$\Delta C_{AB,i} = C_{AB, pre,i} - C_{AB, post,i}$	Aboveground carbon (AGC)	109.62
$\Delta C_{BB,i} = C_{BB, pre,i} - C_{BB, post,i}$	Belowground biomass (BGC)	63.03
$\Delta C_{SOC,i} = C_{SOC, pre,i} - C_{SOC, post,i}$	Soil organic carbon (SOC)	465.14
Total		637.79
Forest: <i>Mauritia flexuosa</i> dominated palm swamp to Pastures		
$\Delta C_{AB,i} = C_{AB, pre,i} - C_{AB, post,i}$	Aboveground carbon (AGC)	274.8
$\Delta C_{BB,i} = C_{BB, pre,i} - C_{BB, post,i}$	Belowground biomass (BGC)	129.86
$\Delta C_{SOC,i} = C_{SOC, pre,i} - C_{SOC, post,i}$	Soil organic carbon (SOC)	465.14
Total		869.80
Forest: Lowland Tropical Rainforest to Oil Palm		
$\Delta C_{AB,i} = C_{AB, pre,i} - C_{AB, post,i}$	Aboveground carbon (AGC)	374.33
$\Delta C_{BB,i} = C_{BB, pre,i} - C_{BB, post,i}$	Belowground biomass (BGC)	177.97
$\Delta C_{SOC,i} = C_{SOC, pre,i} - C_{SOC, post,i}$	Soil organic carbon (SOC)	Set to 0
Total		522.30
Forest: Mixed Palm Swamp and Palm Swamp to Oil Palm		

Parameter	Carbon pool	Value (tCO ₂ e ha ⁻¹)
$\Delta C_{AB,i} = C_{AB.pre,i} - C_{AB.post,i}$	Aboveground carbon (AGC)	135.29
$\Delta C_{BB,i} = C_{BB.pre,i} - C_{BB.post,i}$	Belowground biomass (BGC)	58.6
$\Delta C_{SOC,i} = C_{SOC.pre,i} - C_{SOC.post,i}$	Soil organic carbon (SOC)	461.96
Total		655.85
Forest: <i>Mauritia flexuosa</i> dominated palm swamp to Oil Palm		
$\Delta C_{AB,i} = C_{AB.pre,i} - C_{AB.post,i}$	Aboveground carbon (AGC)	300.47
$\Delta C_{BB,i} = C_{BB.pre,i} - C_{BB.post,i}$	Belowground biomass (BGC)	125.43
$\Delta C_{SOC,i} = C_{SOC.pre,i} - C_{SOC.post,i}$	Soil organic carbon (SOC)	461.96
Total		887.86
Forest: Lowland Tropical Rainforest to Camu Camu		
$\Delta C_{AB,i} = C_{AB.pre,i} - C_{AB.post,i}$	Aboveground carbon (AGC)	367.49
$\Delta C_{BB,i} = C_{BB.pre,i} - C_{BB.post,i}$	Belowground biomass (BGC)	186.12
$\Delta C_{SOC,i} = C_{SOC.pre,i} - C_{SOC.post,i}$	Soil organic carbon (SOC)	Set to 0
Total		553.61
Forest: Mixed Palm Swamp and Palm Swamp to Camu Camu		
$\Delta C_{AB,i} = C_{AB.pre,i} - C_{AB.post,i}$	Aboveground carbon (AGC)	128.45
$\Delta C_{BB,i} = C_{BB.pre,i} - C_{BB.post,i}$	Belowground biomass (BGC)	66.75
$\Delta C_{SOC,i} = C_{SOC.pre,i} - C_{SOC.post,i}$	Soil organic carbon (SOC)	463.54
Total		658.74
Forest: <i>Mauritia flexuosa</i> dominated palm swamp to Camu Camu		
$\Delta C_{AB,i} = C_{AB.pre,i} - C_{AB.post,i}$	Aboveground carbon (AGC)	293.63
$\Delta C_{BB,i} = C_{BB.pre,i} - C_{BB.post,i}$	Belowground biomass (BGC)	133.58
$\Delta C_{SOC,i} = C_{SOC.pre,i} - C_{SOC.post,i}$	Soil organic carbon (SOC)	463.54
Total		890.75
Forest: Lowland Tropical Rainforest to Castor Oil Plant		
$\Delta C_{AB,i} = C_{AB.pre,i} - C_{AB.post,i}$	Aboveground carbon (AGC)	414.65
$\Delta C_{BB,i} = C_{BB.pre,i} - C_{BB.post,i}$	Belowground biomass (BGC)	192.24
$\Delta C_{SOC,i} = C_{SOC.pre,i} - C_{SOC.post,i}$	Soil organic carbon (SOC)	Set to 0
Total		606.89
Forest: Mixed Palm Swamp and Palm Swamp to Castor Oil Plant		
$\Delta C_{AB,i} = C_{AB.pre,i} - C_{AB.post,i}$	Aboveground carbon (AGC)	175.61
$\Delta C_{BB,i} = C_{BB.pre,i} - C_{BB.post,i}$	Belowground biomass (BGC)	72.87

Parameter	Carbon pool	Value (tCO ₂ e ha ⁻¹)
$\Delta C_{SOC,i} = C_{SOC.pre,i} - C_{SOC.post,i}$	Soil organic carbon (SOC)	463.54
Total		712.02
Forest: <i>Mauritia flexuosa</i> dominated palm swamp to Castor Oil Plant		
$\Delta C_{AB,i} = C_{AB.pre,i} - C_{AB.post,i}$	Aboveground carbon (AGC)	340.79
$\Delta C_{BB,i} = C_{BB.pre,i} - C_{BB.post,i}$	Belowground biomass (BGC)	139.7
$\Delta C_{SOC,i} = C_{SOC.pre,i} - C_{SOC.post,i}$	Soil organic carbon (SOC)	463.54
Total		944.03
Forest: Lowland Tropical Rainforest to Infrastructure		
$\Delta C_{AB,i} = C_{AB.pre,i} - C_{AB.post,i}$	Aboveground carbon (AGC)	427.07
$\Delta C_{BB,i} = C_{BB.pre,i} - C_{BB.post,i}$	Belowground biomass (BGC)	195.44
$\Delta C_{SOC,i} = C_{SOC.pre,i} - C_{SOC.post,i}$	Soil organic carbon (SOC)	Set to 0
Total		622.51
Forest: Mixed Palm Swamp and Palm Swamp to Infrastructure		
$\Delta C_{AB,i} = C_{AB.pre,i} - C_{AB.post,i}$	Aboveground carbon (AGC)	188.03
$\Delta C_{BB,i} = C_{BB.pre,i} - C_{BB.post,i}$	Belowground biomass (BGC)	76.07
$\Delta C_{SOC,i} = C_{SOC.pre,i} - C_{SOC.post,i}$	Soil organic carbon (SOC)	518.49
Total		779.97
Forest: <i>Mauritia flexuosa</i> dominated palm swamp to Infrastructure		
$\Delta C_{AB,i} = C_{AB.pre,i} - C_{AB.post,i}$	Aboveground carbon (AGC)	353.21
$\Delta C_{BB,i} = C_{BB.pre,i} - C_{BB.post,i}$	Belowground biomass (BGC)	142.9
$\Delta C_{SOC,i} = C_{SOC.pre,i} - C_{SOC.post,i}$	Soil organic carbon (SOC)	515.87
Total		1,011.98

C. Estimation of carbon stocks changes and GHG emissions

Equation 3.2 is applied to calculate the carbon stock changes and GHG emissions in the baseline scenario ($\Delta C_{BSL,i,t}$).

Equation 3.2. Equation for estimating carbon stock changes in the baseline scenario

$$\Delta C_{BSL,i,t} = AA_{planned,i,t} * (\Delta C_{ABtree,i}) + \sum_{t=10}^t (AA_{planned,i,t} * (\Delta C_{BBtree,i}) * \frac{1}{10}) + \sum_{t=20}^t (AA_{planned,i,t} * (\Delta C_{SOC,i}) * \frac{1}{20})$$

CCB Version 3, VCS Version 3

The first part of Equation 3.2 corresponds to the carbon stock changes of AGC from replacing forest to pasture/crops (baseline). In turn, the second refers to the emissions from root decomposition in a 10-year lifespan. The third refers to emissions from soil organic carbon in a 20-year lifespan. Carbon stock changes, distributed by year and by carbon pool, are presented in Table 3.9.

Table 3.9. Carbon stock changes, distributed by year and by carbon pool

Year	Selva Maestra				Nuestro Señor Jesucristo				$\Delta\text{CBSL}_{i,t}$
	AGC	BGC	SOC	Subtotal (tCO ₂)	AGC	BGC	SOC	Subtotal (tCO ₂)	
2020	200,154.00	10,490.47	896.08	211,540.56	382,727.51	16,842.50	10,328.98	409,898.99	621,439.55
2021	200,154.00	20,980.93	1,792.17	222,927.11	382,727.51	33,685.01	20,657.97	437,070.48	659,997.59
Total	400,308.01	31,471.40	2,688.25	434,467.66	765,455.01	50,527.51	30,986.95	846,969.47	1,281,437.14

Furthermore, since fire after deforestation is a common practice, the emissions from biomass burning shall be calculated. Following module VMD0006, the Equation 3.3 is applied using parameters and values cited in Table 3.10, and the calculations are displayed in Table 3.11.

Equation 3.3. Equation to estimate emissions from biomass burning in the baseline scenario

$$GHG_{BSL-E,i,t} = E_{BiomassBurn,i,t} = \sum_{g=1}^G (((A_{Burn,i,t} * B_{i,t} * COMF_i * G_{g,i}) * 10^{-3}) * GWP_g)$$

Where:

$E_{BiomassBurn,i,t}$	Greenhouse emissions due to biomass burning as part of deforestation activities in stratum i in year t; tCO ₂ e of each GHG (CO ₂ , CH ₄ , N ₂ O);
$A_{Burn,i,t}$	Area burnt for stratum i at time t (ha);
$B_{i,t}$	Average aboveground biomass stock before burning stratum i, time t; tons d.m. ha ⁻¹ ;
$COMF_i$	Combustion factor for stratum i; dimensionless (default value derived from Table 2.6 of IPCC, 2006);
$G_{g,i}$	Emission factor for stratum i for gas g; kg t ⁻¹ dry matter burnt (default values derived from Table 2.5 of IPCC, 2006);
GWP_g	Global warming potential for gas g; t CO ₂ /t gas g (default values from IPCC AR5 – IPCC (2013): CO ₂ = 1; CH ₄ = 25; N ₂ O = 298);
g	1, 2, 3 ... g greenhouse gases;
i	1, 2, 3, ... M strata
t	1, 2, 3, ... t* years elapsed since the start of the REDD

Table 3.10. Parameters for estimation of emissions from biomass burning

AGC	Mean Value (tCO ₂ e ha ⁻¹)	Biomass	COMF _i	Gas	G _{g,i}	GWP _g
Stratum 1	427.07	247.82	0.5	CO ₂	1580	1
Stratum 2	188.03	109.11	0.5	N ₂ O	0.2	265
Stratum 3	353.21	204.96	0.5	CH ₄	6.8	28

Table 3.11. Emissions calculations from biomass burning

Year	Total A _{Burn,i,t}			Emissions N ₂ O	Emissions CH ₄	E _{Biomassburn}
	Stratum 1	Stratum 2	Stratum 3			
2020	1,161.02	126.94	312.04	9,686.47	34,798.17	44,484.63
2021	1,161.02	126.94	312.04	9,686.47	34,798.17	44,484.63

D. Baseline net GHG emissions for planned deforestation

The calculation of net emissions for planned deforestation is performed with Equation 3.4, which accounts for the emissions generated by changes in carbon stocks and emissions from biomass burning.

Equation 3.4. Baseline net GHG emissions for planned deforestation

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

Table 3.12. Net and accumulated baseline GHG emissions from planned deforestation

Year	$\Delta C_{BSL,i,t}$	GHGBSL-E	$\Delta C_{BSL,planned}$	$\Delta C_{BSL,planned, accum}$
	tCO ₂ e/year			tCO ₂ e
2020	621,439.55	44,484.63	665,924.18	665,924.18
2021	659,997.59	44,484.63	704,482.22	1,370,406.40
Total	1,281,437.14	88,969.27	1,370,406.40	

3.2.2 Project Emissions

Project emissions were estimated ex-post, using Equation 1 (Equation 3.5 in this document) of module VMD0015 (M-REDD) v.2.2. Values for individual parameters are explained in Table 3.13 and Table 3.14.

Equation 3.5. Equation to estimate net GHG emissions in the REDD project scenario

$$\Delta C_{WPS-REDD} = \sum_{t=1}^{t^*} \sum_{i=1}^M (\Delta C_{P,DefPA,i,t} + \Delta C_{P,Deg,i,t} + \Delta C_{P,DistPA,i,t} + GHG_{P-E,i,t} - \Delta C_{P,Enh,i,t})$$

Where:

$\Delta C_{WPS-REDD}$	Net GHG emissions in the REDD project scenario up to year t*; tCO ₂ e;
$\Delta C_{P,DefPA,i,t}$	Net carbon stock change as a result of deforestation in the project area in the project case in stratum i within the project area in year t; tCO ₂ e;
$\Delta C_{P,Deg,i,t}$	Net carbon stock change as a result of degradation in the project area in the project case in stratum i within the project area in year t; tCO ₂ e;
$\Delta C_{P,DistPA,i,t}$	Net carbon stock change as a result of natural disturbance in the project area in the project case in stratum i within the project area in year t; tCO ₂ e;
$GHG_{P-E,i,t}$	Greenhouse gas emissions as a result of deforestation and degradation activities within the project area in the project case in stratum i in year t; tCO ₂ e;
$\Delta C_{P,Enh,i,t}$	Net carbon stock change as a result of forest growth and sequestration during the project in areas projected to be deforested in the baseline ² in stratum i in year t; tCO ₂ e;
i	1, 2, 3, ... M strata
t	1, 2, 3, ... t* years elapsed since the start of the REDD VCS project activity

Equation 3.6. Equation to estimate GHG emissions in the project scenario

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

Where:

$GHG_{P,E,i,t}$	Greenhouse gas emissions as a result of deforestation activities within the project area in the project case in stratum i in year t; t CO ₂ -e
$E_{BiomassBurn,i,t}$	Emission from fossil fuel combustion in stratum i within the project area in year t; t CO ₂ -e
$N_2O_{direct-N,i,t}$	Direct NO ₂ emission as a result of nitrogen application on the alternative land use in stratum i within the project area in year t; t CO ₂ -e
i	1, 2, 3, ... M strata
t	1, 2, 3, ... t* years elapsed since the start of the REDD VCS project activity

Table 3.13. Parameters and values used to calculate net GHG emissions in the REDD project scenario

Parameter	Description	Value	Justification
$\Delta C_{WPS-REDD}$	Net GHG emissions in the REDD project scenario; tCO ₂ e	76,776.91	Calculated below in 3.19
$\Delta C_{P,DefPA,i,t}$	Net carbon stock changes as a result of deforestation in the project area in the project case in stratum i at time t; t CO ₂ e	12,574.19	Calculated below in Table 3.17
$\Delta C_{P,DegPA,i,t}$	Net carbon stock changes as a result of degradation in the project area in the project case in stratum i at time t; t CO ₂ e	63,192.14	Calculated below in Table 3.17
$\Delta C_{BSL,i}$	Net carbon stock changes in all pools in baseline stratum i; tCO ₂ e ha ⁻¹	1,370,406.40	Calculated below in Table 3.12

Table 3.14. Parameters and values used to calculate annual ex-post GHG emissions

Parameter	Description	Value	Justification
$GHG_{P,E,i,t}$	Greenhouse gas emissions as a result of deforestation activities within the project area in the	1,010.58	Calculated below in ¡Error! No se encuentra el origen de la referencia. Table 3.27

Parameter	Description	Value	Justification
	project case in stratum i in year t ; $t\text{CO}_{2e}$		
$E_{BiomassBurn,i,t}$	Non- CO_2 emissions due to Biomass burning in stratum i in year t ; $t\text{CO}_{2e}$	1,010.58	Calculated below in Table 3.27
$E_{FC,i,t}$	Net carbon stock changes in all pools in baseline stratum i ; $t\text{CO}_{2e} \text{ ha}^{-1}$	Set to 0	GHG emissions from fossil fuel combustion are not significant.
$N_2O_{direct-N,i,t}$	Direct N_2O emission as a result of nitrogen application on the alternative land use in stratum i within the project area in year t ; $t\text{CO}_{2e}$	Set to 0	No N-fertilizers were applied in the project scenario.

A. Monitoring deforestation

Equation 3.7. Net carbon stock changes as a result of deforestation in the project case

$$\Delta C_{P,DefPA,i,t} = \sum_{u=1}^U (A_{DefPA,u,i,t} * \Delta C_{pools,P,Def,u,i,t})$$

$$\Delta C_{P,DefLB,i,t} = \sum_{u=1}^U (A_{DefLB,u,i,t} * \Delta C_{pools,P,Def,u,i,t})$$

Where:

$\Delta C_{P,DefPA,i,t}$	Net carbon stock change as a result of deforestation in the project case in the project area in stratum i in year t ; $t \text{ CO}_{2e}$
$\Delta C_{P,DefLB,i,t}$	Net carbon stock change as a result of deforestation in the project case in the leakage belt in stratum i in year t ; $t \text{ CO}_{2e}$
$A_{DefPA,u,i,t}$	Area of recorded deforestation in the project area stratum i converted to land use u in year t ; ha
$A_{DefLB,u,i,t}$	Area of recorded deforestation in the leakage belt stratum i converted to land use u in year t ; ha
$\Delta C_{pools,Def,u,i,t}$	Net carbon stock changes in all pools in the project case in land use u in stratum i in year t ; $t \text{ CO}_{2e} \text{ ha}^{-1}$
u	1, 2, 3, ... U post-deforestation land uses
i	1, 2, 3, ... M strata
t	1, 2, 3, ... t^* years elapsed since the start of the project activity

Equation 3.8. Net carbon stock changes as a result of degradation

$$\Delta C_{pools,Def,u,i,t} = C_{BSL,i} - C_{P,post,i} - C_{WP,i}$$

Where:

$\Delta C_{pools,Def,u,i,t}$	Net carbon stock change in all pools as a result of deforestation in the project case in land use u in stratum i in year t; t CO ₂ e ha ⁻¹
$C_{BSL,i}$	Carbon stock in all pools in the baseline case in stratum i; t CO ₂ e ha ⁻¹
$C_{P,post,u,i}$	Carbon stock in all pools in post-deforestation land use u in stratum i; t CO ₂ e ha ⁻¹
$C_{WP,i}$	Carbon stock sequestered in wood products from harvests in stratum i; t CO ₂ e ha ⁻¹
u	1, 2, 3, ... U post-deforestation land uses
i	1, 2, 3, ... M strata
t	1, 2, 3, ... t* years elapsed since the start of the project activity

Table 3.15. Areas of recorded deforestation in the project area in the monitoring period

Property	$A_{DefPA,u,1,t}$	$A_{DefPA,u,2,t}$	$A_{DefPA,u,3,t}$	$A_{DefPA,,t,t}$
	(Stratum 1) (ha)	(Stratum 2)	(Stratum 3)	
Selva Maestra	23.31	0.00	0.00	23.31
JCC- Nuestro Señor Jesucristo	9.99	0.47	0.00	10.46
Total	33.30	0.47	0.00	33.77

Table 3.16. Carbon stock changes in all pools in the monitoring period

Carbon pools	Carbon content (tCO ₂ e/ha)				Emission Factor (tCO ₂ e/ha)		
	$C_{BSL,i}$			$C_{P,post,i}$	$\Delta C_{pools,Def,u,i,t}$		
	Stratum 1	Stratum 2	Stratum 3	New Land Use (Pastures)	Δ Strat 1 to Pastures:	Δ Strat 2 to Pastures:	Δ Strat 3 to Pastures:
AGC	427.07	188.03	353.21	78.41	348.67	109.62	274.80
BGC	195.44	76.07	142.9	13.04	182.40	63.03	129.86
SOC	262.03	725.49	725.49	260.35	-	465.14	465.14

Table 3.17. Annual distribution of project emissions in the monitoring period

Year	SELVA MAESTRA				NUESTRO SEÑOR JESUCRISTO				$\Delta CP,DefPA,i,t$
	AGC	BGC	SOC	Subtotal (tCO ₂)	AGC	BGC	SOC	Subtotal (tCO ₂)	
2020	4,048.05	211.76	0.00	4,259.81	1,379.19	72.30	6.26	1,457.74	5,717.55
2021	4,079.43	425.17	0.00	4,504.59	2,156.04	185.20	10.81	2,352.05	6,856.64

Year	SELVA MAESTRA				NUESTRO SEÑOR JESUCRISTO				ΔCP,DefPA,i,t
	AGC	BGC	SOC	Subtotal (tCO ₂)	AGC	BGC	SOC	Subtotal (tCO ₂)	
Total	8,127.47	636.93	0.00	8,764.40	3,535.22	257.50	17.07	3,809.79	12,574.19

Accuracy assessment

We used the Peruvian government's national deforestation data, the GEOBOSQUES Platform, which performs an annual assessment of forest loss. The current monitoring period evaluated the deforestation in the Project area for the period 2020 - 2021. This product is derived from Landsat images of medium spatial resolution (30 m), being the same source of information used to make the calculations in the baseline. In this way, the Forest Benchmark Map is updated for the year 2021 (Figure 3.9), considering the end of the current monitoring period.

In order to meet the requirements of the methodology, the image had to be validated for the section comprising the Project area. The Geobosques image comprises four classes (Forest loss, Non-Forest, Forest, and Water), each of which was analyzed as a stratum. A stratified sampling was performed taking 150 reference points per class. These points were randomly distributed for each of the four strata, generating a total of 600 evaluation points. The distribution of strata and points are shown in Figure 3.10.

Table 3.18. Analysis of error matrix

	Forest Loss (2001 – 2021)	Non-Forest (2000)	Forest 2021	Water	Total	Commission error
Forest Loss (2001 – 2021)	143	0	7	0	150	0.047
Non-Forest (2000)	0	140	10	0	150	0.067
Forest 2021	0	10	140	0	150	0.067
Water	0	8	2	140	150	0.067
Total	143	158	159	140	600	
Omission error	0	0.114	0.119	0		0.062

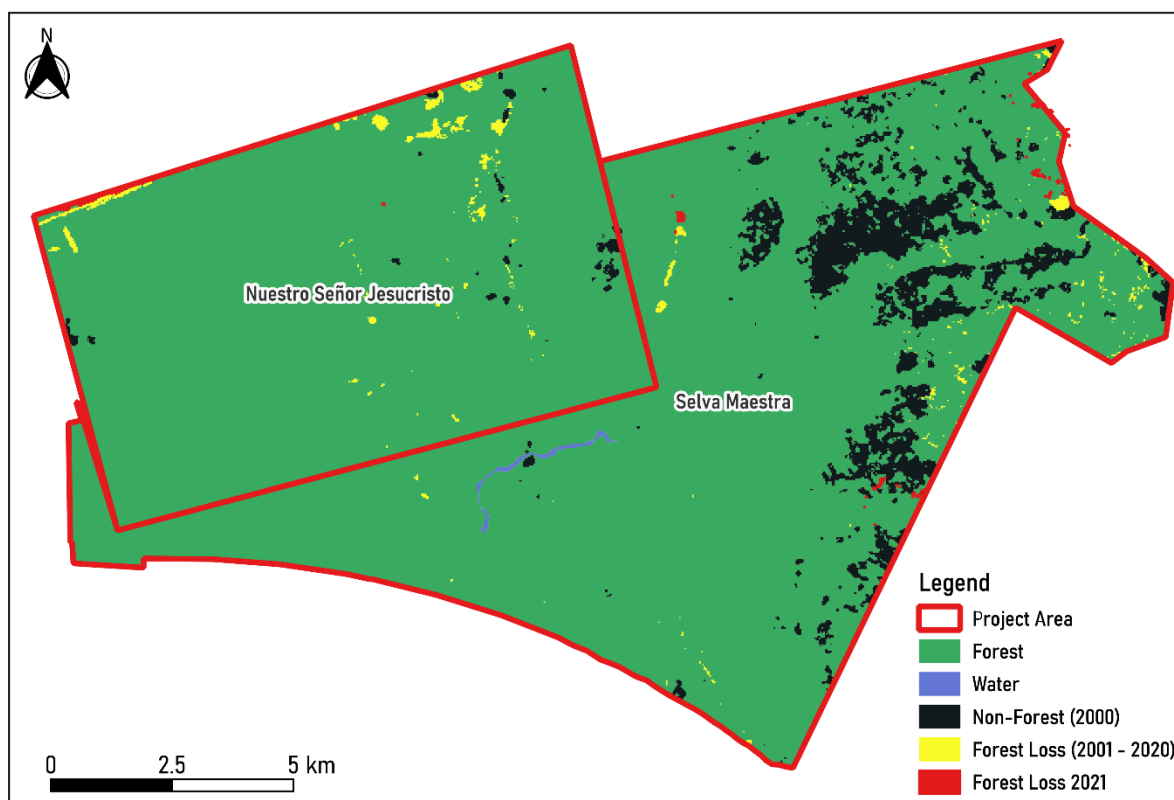


Figure 3.9. Forest Benchmark Map 2021

The points were contrasted with the Planet-NICFI mosaics, made for the month of December 2021, which have a spatial resolution of 4.77 m. The results of the contrast can be observed in Table 3.18. and the subsequent analysis of the Kappa index in Table 3.19.

Table 3.19. Kappa index

Category	KIA
Forest Loss (2001 – 2021)	0.938731
Non-Forest (2000)	0.909502
Forest 2021	0.909297
Water	0.913043
Overall	0.917778

As the Kappa index value exceeded the threshold of 0.9, the images of the 2020 - 2021 monitoring period became validated.

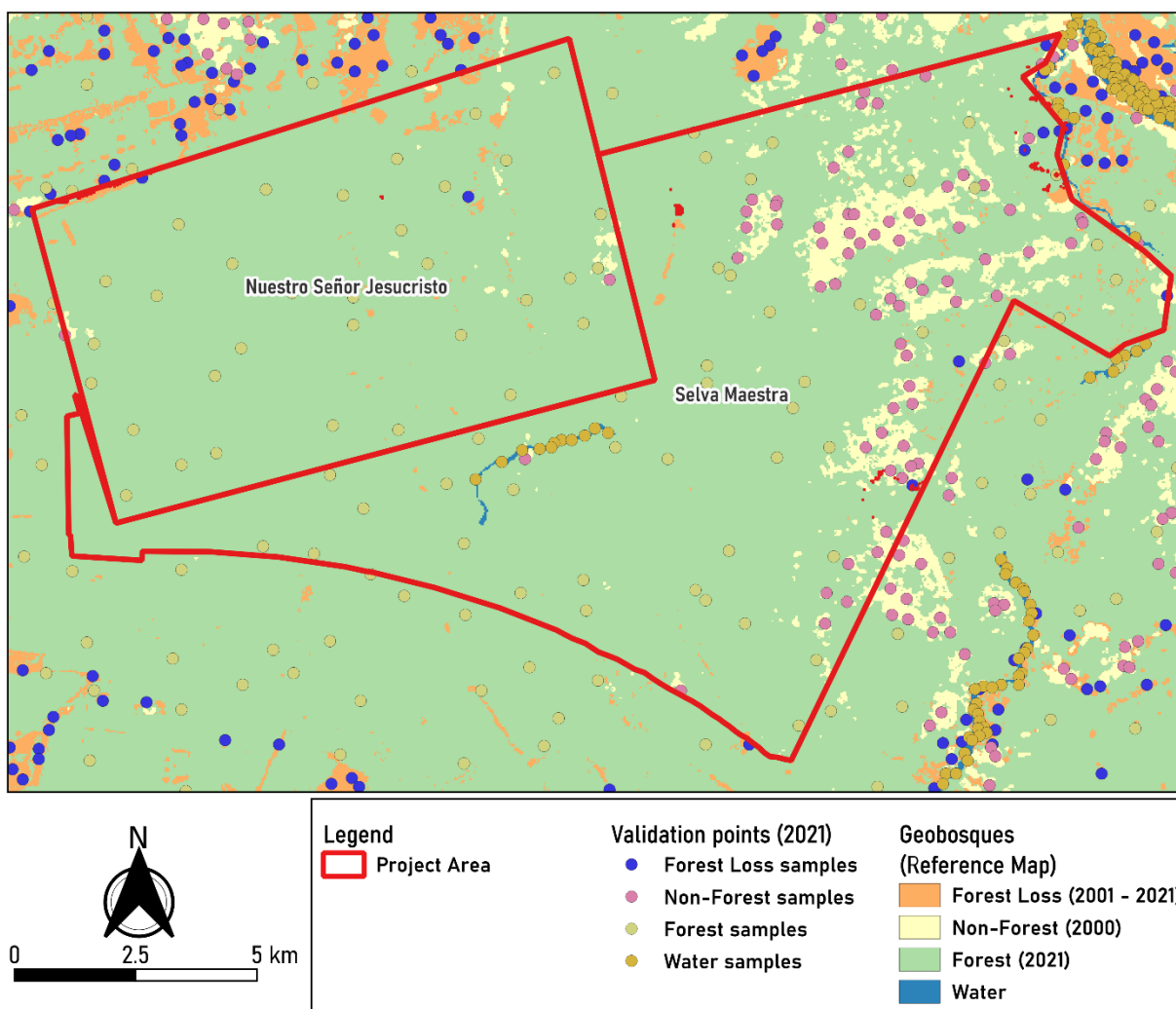


Figure 3.10. Validation points distribution

B. Monitoring degradation

Degradation through extraction of trees for illegal timber or fuelwood and charcoal

A participatory rural appraisal (PRA) was carried out in the city of Pucallpa in September 2021 (see folder PROJECT ACTIVITIES_CLIMATE_MONITOREO DEGRADACIÓN). As a result, it was observed that the project areas were subject to some potential degradation. Since the PRA concluded that degradation events did occur, a limited inventory to 1% was carried out, following the steps of module VMD0015.

In the project area there are three large camps ("Milagros", "Quinillal" and "Palmeras") and five access routes, the "Río Blanco" stream, near the Milagros camp; the "Río Negro" stream, which crosses in half the entire "Nuestro Señor Jesucristo" area; the "Quinillal" camp trail; the "Shiquihual" stream, which crosses the "Selva Maestra" property diagonally; and lastly, an access trail to the "Palmeras" camp. In all cases, the streams had a negligible width (less than 3 meters) and a depth of 1-2 m, in the dry season. Due to the

small size, it was necessary to carry out a track survey to define the routes, since geospatial information could not recognize the paths.

Transects 1 km long and 10 meters wide were established, generating an area of 1 ha at each evaluation point. In certain cases, where the kilometer length could not be reached, plots 500 m long and 20 meters wide were established, keeping the minimum evaluation area at 1 ha.

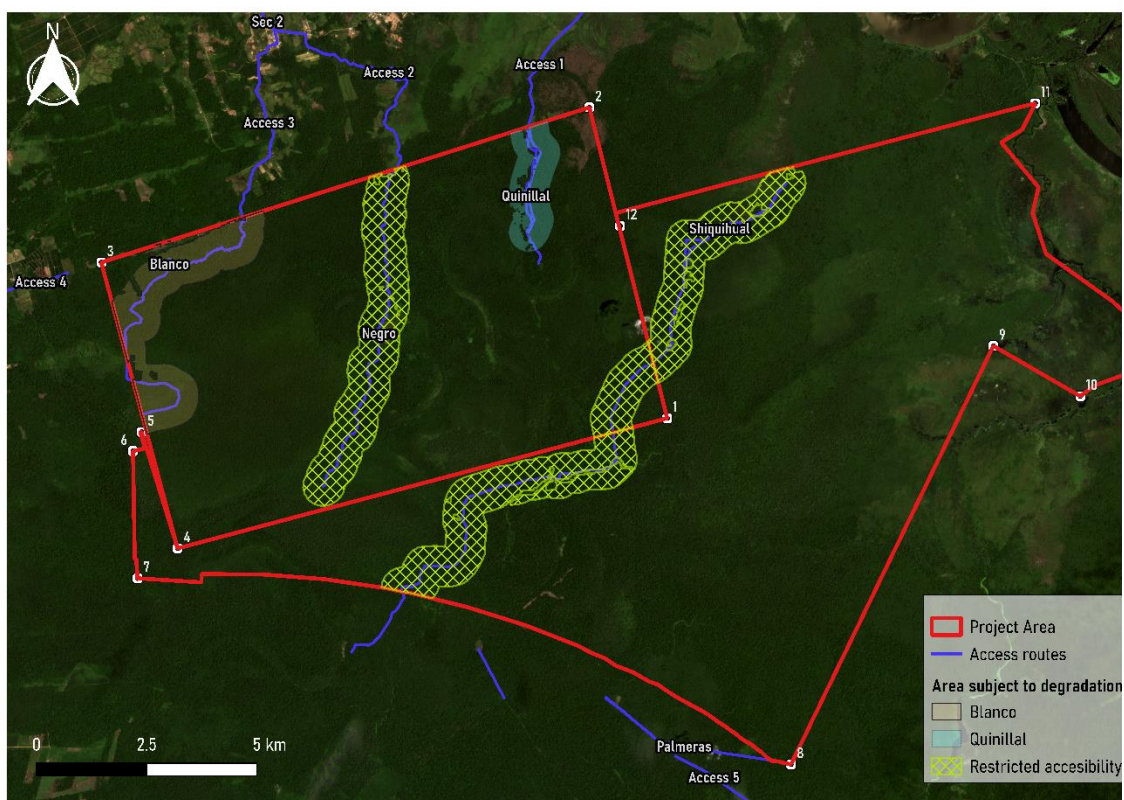


Figure 3.11. Access routes and area subject to degradation (buffer of 450 m)

This survey was carried out in the "Probable area subject to degradation", which was originally designed using a 1 km wide buffer (on both sides), whose value was obtained during the PRA (maximum distance an individual would be willing to travel from the access point). Nevertheless, this distance was proved to be not representative, so a reanalysis was derived using the information collected. Using a boxplot (Figure 3.12) it was possible to observe that stumps that have been harvested only were present in the initial 500 meters of the transects. Therefore, it was decided to use the Q3 value of the boxplot (450 m) to construct a new area subject to degradation.

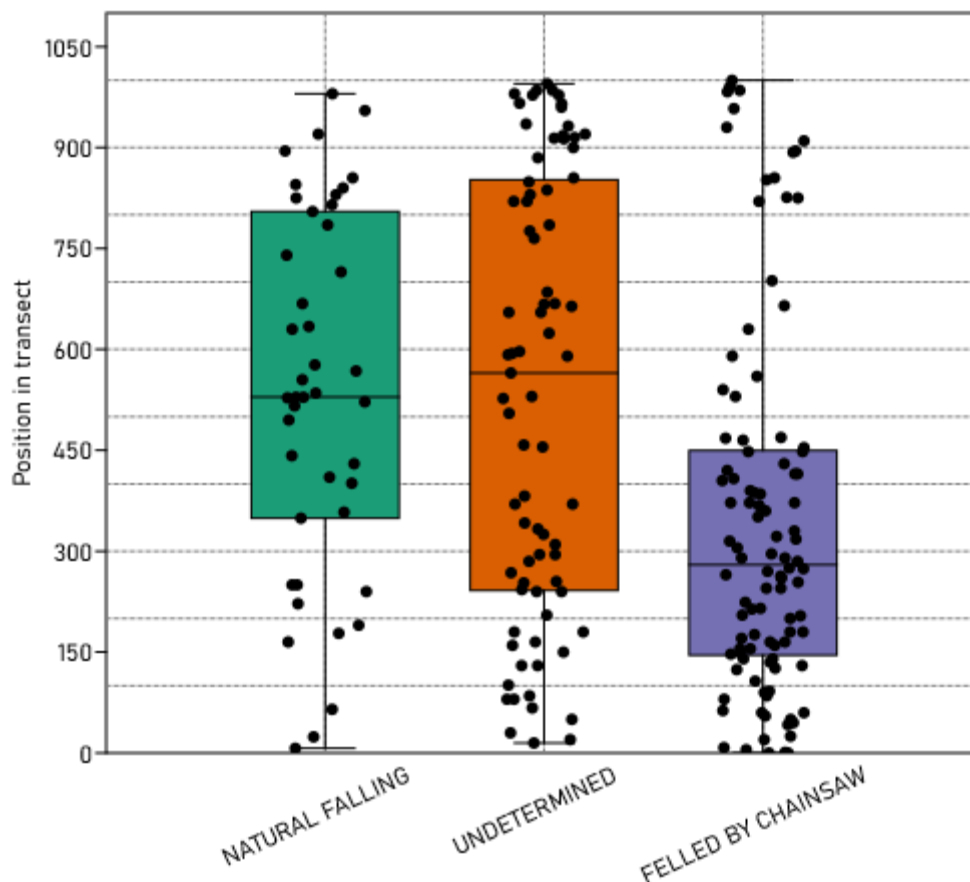


Figure 3.12 Distribution of stumps in the longitudinal axis of the transects

Given a new Area subject to degradation was derived, the number of transects required to fulfill the requirements of the 1% limited sampling was reduced to a minimum of 8 ha.

Equation 8 of module VMD00015 v.2.2 (here *Equation 3.9*) is used to calculate the effect of degradation.

Equation 3.9. Net carbon stock changes as a result of degradation

$$\Delta C_{P,DegW,i,t} = A_{DegW,i} * \frac{C_{DegW,i,t}}{AP_i}$$

Where:

$\Delta C_{P,DegW,i,t}$	Net carbon stock changes as a result of degradation in stratum i in the project area in year t; t CO ₂ e
$A_{DegW,i}$	Area potentially impacted by degradation processes in stratum i; ha
$C_{DegW,i,t}$	Biomass carbon of trees cut and removed through degradation process from plots measured in stratum i in year t; t CO ₂ e
AP_i	Total area of degradation sample plots in stratum i; ha
i	1, 2, 3, ... M strata
t	1, 2, 3, ... t* years elapsed since the start of the project activity

Given that the carbon values previously used (Table 3.6) were taken from the literature, it was necessary to apply the VMD0001 module in order to calculate the individual carbon of each stump evaluated. Allometric equations described in Table 3.20 were used. The density of the individuals that were identified (at the genus level) was obtained from the Global Wood Density Database of Zanne et al. (2009)²³. For tree individuals that could not be identified in the field, the density value of the most demanded forest species in the area that was identified in the PRA, the "Cumala" (*Virola sp.*), was used.

Table 3.20. Allometric equations

Compartment	Allometric equation	Variables	DBH	Reference
Trees in tropical rainforest (BA)	$BA = 0,0673 \times (\rho \times dap^2 \times H)^{0,976}$	dbh (1,3 m); Total height (m) and density (g/cm ³)	dbh ≥ 5 cm	(Chave et al. 2014) ²⁴
Amazon Palms (PA)	$PA^{0,25} = 0,55512 \times (0,37 \times dap^2 \times H_{stipe})^{0,25}$	dbh (1,3 m); Stipe height (m)	dbh ≥ 10 cm	(Goodman et al. 2013) ²⁵
Root biomass (BR)	$BR = \exp [-1,0587 + 0,8836 \times \ln (TAB)]$	Total Aboveground biomass (TAB) (Tn/ha)	-	(Cairns et al. 1997) ²⁶

*dbh: Diameter at breast height (cm)

Table 3.21. Results from the 1% limited sampling

Plot	Effective evaluated area (ha)	AGC (tCO ₂)	BGC (tCO ₂)	Total (tCO ₂)
Q1	1.000	66.87	10.18	77.05
Q3	1.000	35.39	5.52	40.92
Q5	1.000	79.84	11.80	91.64
B1	1.000	59.38	9.22	68.59
B3	1.000	20.40	3.41	23.81
B5	1.000	1.22	0.23	1.45
B6	1.000	12.50	1.85	14.35
P1_5	1.000	47.68	5.77	53.45
N11	0.350	32.21	5.16	37.37
N12	0.425	15.96	2.78	18.75
Total	8.78	371.45	55.93	427.39

²³ Zanne, Amy E. et al. (2009), Data from: Towards a worldwide wood economics spectrum, Dryad, Dataset, <https://doi.org/10.5061/dryad.234>

²⁴ Chave, Jérôme et al. (2024). Improved allometric models to estimate the aboveground biomass of tropical trees. <https://doi.org/10.1111/gcb.12629>

²⁵ Goodman, Rosa C. et al. (2013). Amazon palm biomass and allometry. <https://doi.org/10.1016/j.foreco.2013.09.045>

²⁶ Cairns, Michael A. et al. (1997). Root biomass allocation in the world's upland forests. <https://doi.org/10.1007/s004420050201>

Plot	Effective evaluated area (ha)	AGC (tCO ₂)	BGC (tCO ₂)	Total (tCO ₂)
Average (tCO₂e *ha⁻¹)		42.33	6.37	48.71

It was possible to fully evaluate the plots defined in the path of the "Río Blanco" stream, the "Quinilla" trail, and the access to the "Palmeras" camp (although this access point was removed given the update version of the project area). However, it was not possible to evaluate the plots in "Río Negro" and "Shiquihual", so they were removed from the calculations of the number of plots, although they were included in the final calculation of potential degradation emissions to follow the principle of conservativeness. The complete development of the field evaluation can be found in degradation report (see folder PROJECT ACTIVITIES_CLIMATE_MONITOREO DEGRADACIÓN).

Table 3.22. Potential emissions of degradation resulting from the 1% limited sampling

Sector	A _{DegW,i} (ha)	ΔAGC _{P,DegW,i,t} (tCO ₂ e)	ΔBGC _{P,DegW,i,t} (tCO ₂ e)	ΔC _{P,DegW,i,t} (tCO ₂ e)
Blanco	588.36	24,905.81	3,749.96	28,656.44
Quinilla	234.99	9,947.37	1,497.73	11,445.37
Negro	729.78	30,892.43	4,651.34	35,544.60
Shiquihual	1,326.51	56,152.34	8,454.61	64,608.46
Total	2,879.64	121,897.95	18,353.65	140,254.87

Table 3.23. Evaluation of the significance of emissions due to degradation, using T-SIG tool

Variable	Ei	RC_Ei	Accumulated
ΔC _{P,DegW,i,t}	140,254.87	91%	91%
ΔC _{P,DefPA,i,t}	12,574.19	8%	99%
GHG _{P-e,i,t}	1,010.58	1%	100%

Based on the results of Table 3.23, it is observed emissions are significant, so a sampling of 3% intensity is necessary. That involves a minimum of 24 ha for evaluation.

Table 3.24. Evaluated transects and compartment separation (AGC and BGC), from the 3% sampling

Transect	AP _i (ha)	AGC _{DegW,i,t} (tCO ₂ e)	BGC _{DegW,i,t} (tCO ₂ e)	C _{DegW,i,t} (tCO ₂ e)
P1_1	1.000	-	-	-
P1_2	1.000	-	-	-
P1_3	1.000	1.24	0.23	1.47
P1_4	1.000	-	-	-
P1_5	1.000	47.68	5.77	53.45
P1_6	1.000	2.42	0.41	2.84

Transect	AP_i (ha)	AGC_{DegW,i,t} (tCO₂e)	BGC_{DegW,i,t} (tCO₂e)	C_{DegW,i,t} (tCO₂e)
P2_1	1.000	-	-	-
P2_2	1.000	-	-	-
P2_3	1.000	-	-	-
Q1	1.000	66.87	10.18	77.05
Q2	1.000	11.29	1.73	13.02
Q3	1.000	35.39	5.52	40.92
Q4	1.000	33.91	4.78	38.69
Q5	1.000	79.84	11.80	91.64
B1	1.000	59.38	9.22	68.59
B2	1.000	47.75	7.47	55.23
B3	1.000	20.40	3.41	23.81
B4	1.000	6.44	1.22	7.66
B5	1.000	1.22	0.23	1.45
B5*	1.000	4.93	0.89	5.82
B6	1.000	12.50	1.85	14.35
B6b	1.000	2.48	0.50	2.97
B7	1.000	5.11	0.80	5.92
B8	1.000	-	-	-
B9	1.000	3.87	0.74	4.61
N11	0.350	32.21	5.16	37.37
N12	0.425	15.96	2.78	18.75
Total	25.775	490.90	74.70	565.62
Average (tCO₂e *ha⁻¹)		24.011	19.05	2.90

Table 3.25. Potential emissions of degradation resulting from the 3% sampling

Sector	A_{DegW,i} (ha)	ΔAGC_{P,DegW,i,t} (tCO₂e)	ΔBGC_{P,DegW,i,t} (tCO₂e)	ΔC_{P,DegW,i,t} (tCO₂e)
Blanco	588.36	11,205.74	1,705.25	12,911.22
Negro	729.78	13,899.27	2,115.15	16,014.70
Quinillal	234.99	4,475.57	681.08	5,156.74
Shiquihual	1,326.51	25,264.32	3,844.65	29,109.48
Total	2,879.64	54,844.89	8,346.13	63,192.14

The results of degradation must be divided equally by the years in the monitoring period. Therefore, the annual values are presented in Table 3.26.

Table 3.26. Annual net carbon stock changes as a result of degradation

Year	$\Delta C_{P,DegW,i,t}$ (tCO _{2e})
2020	31,596.07
2021	31,596.07

C. Other GHG emissions in the project scenario

The emissions from biomass burning were also estimated, as it is assumed in baseline and project scenario that non-planned deforestation happens along with the burning of the biomass, a common practice of the slash-and-burn activities carried by local people. For this purpose, Equation 1 of module VMD0013 (E-BPB) v1.2 was used (Eq. 3.10 in this report).

Equation 3.10. Equation to estimate GHG emissions in the project scenario

$$GHG_{P-E,i,t} = E_{BiomassBurn,i,t} = \sum_{g=1}^G (((A_{Burn,i,t} * B_{i,t} * COMF_i * G_{g,i}) * 10^{-3}) * GWP_g)$$

Where:

$$GHG_{P-E,i,t} = E_{BiomassBurn,i,t} = \sum_{g=1}^G (((A_{Burn,i,t} * B_{i,t} * COMF_i * G_{g,i}) * 10^{-3}) * GWP_g)$$

$E_{BiomassBurn,i,t}$	Greenhouse emissions due to biomass burning as part of deforestation activities in stratum I in year t; tCO _{2e} of each GHG (CO ₂ , CH ₄ , N ₂ O);
$A_{Burn,i,t}$	Area burnt for stratum I at time t (ha);
$B_{i,t}$	Average aboveground biomass stock before burning stratum I, time t; tons d.m. ha ⁻¹ ;
$COMF_i$	Combustion factor for stratum I; dimensionless (default value derived from Table 2.6 of IPCC, 2006);
$G_{g,i}$	Emission factor for stratum I for gas g; kg t ⁻¹ dry matter burnt (default values derived from Table 2.5 of IPCC, 2006);
GWP_g	Global warming potential for gas g; t CO ₂ /t gas g (default values from IPCC AR5 – IPCC (2013): CO ₂ = 1; CH ₄ = 25; N ₂ O = 298);
g	1, 2, 3 ... g greenhouse gases;

Table 3.27. Emissions calculations from biomass burning in the monitoring period

Year	Total A _{Burn,i,t} (ha)			N ₂ O Emissions	CH ₄ Emissions	E _{Biomassburn}
	Stratum 1	Stratum 2	Stratum 3			
	(tCO _{2e})					
2020	15.48	0.27	-	102.44	368.03	470.47

Year	Total A _{Burn,i,t} (ha)			N ₂ O Emissions	CH ₄ Emissions	E _{Biomassburn}
	Stratum 1	Stratum 2	Stratum 3			
				(tCO ₂ e)		
2021	17.82	0.20	-	117.61	422.50	540.11

D. Project Scenario net GHG emissions

The total emissions in the project scenario are obtained by adding the emissions from deforestation, degradation and burning of biomass. The results are shown in the following table.

Table 3.28. Net GHG emissions in the REDD project scenario in the monitoring period

Year	$\Delta CP, DefPA, i, t$	GHGP-e, i, t	$\Delta CP, Deg, i, t$	$\Delta CWPS-REDD$
	(tCO ₂ e)			
2020	5,717.55	470.47	31,596.07	37,784.09
2021	6,856.64	540.11	31,596.07	38,992.82
Total	12,574.19	1,010.58	63,192.14	76,776.91
Average	6,287.10	505.29	31,596.07	38,388.45

3.2.3 Leakage

Leakage emissions from the displacement of planned deforestation are estimated in compliance with the module VMD0009 (LK-ASP) v1.3. The parameters, values used, and the justification are given in Table 3.29.

Table 3.29. Parameters and values used to estimate activity shifting leakage of the project

Parameter	Description	Value	Justification
$\Delta C_{LK-AS,planned}$	Net greenhouse gas emissions due to activity shifting leakage for projects preventing planned deforestation; tCO ₂ e	Set to 0	No activity shifting will be caused by the REDD project since no economical/ commercial activity or deforestation/ degradation has been carried out so far in the project area and elsewhere by the agent of deforestation.
$LKA_{planned,i,t}$	The area of activity shifting leakage in stratum i at time t; ha	Set to 0	
$\Delta C_{BSL,i}$	Net carbon stock changes in all pools in baseline stratum i; tCO ₂ e ha ⁻¹	Calculated in Table 3.16	
$GHG_{LK,E,i,t}$	Greenhouse gas emissions as a result of leakage of avoided deforestation	Set to 0	According to Section 3.7.16 of the VCS Methodology Requirements, v4.4 and the VMD0009, "Where the specific

Parameter	Description	Value	Justification
	activities in stratum i in year t; t CO ₂		deforestation agent can be identified, leakage does not need to be considered where it can be demonstrated that the management plans and/or land-use designations of the deforestation agent's other lands (which shall be identified by location) have not materially changed as a result of the project (e.g., the deforestation agent has not designated new lands as timber concessions, increased harvest rates in lands already managed for timber, cleared intact forests for agricultural production or increased fertilizer use to enhance agricultural yields). In this sense, the purpose of BAM is the establishment of projects that help to avoid deforestation, as well as reforestation projects with the purpose of restoring degraded areas, consequently, they do not own any other property destined to deforestation, the corporate purpose of the company can be verified in the corporate name and in the Peruvian Registries
LK_{peat}	Net greenhouse gas emissions due to leakage to peatlands as a result of implementation of a planned deforestation project at time t; t CO ₂ e		

3.2.4 Net GHG Emission Reductions and Removals

The net emissions reductions achieved during the first monitoring period are presented in the next table.

Table 3.30. Ex-Ante Estimated of Net Emission Reduction Credits

Year	Estimated baseline emissions or removals (tCO ₂ e)	Estimated project emissions or removals (tCO ₂ e)	Estimated leakage emissions (tCO ₂ e)	Estimated net GHG emission reductions or removals (tCO ₂ e)
2020	665,924.18	37,784.09	0.00	628,140
2021	704,482.22	38,992.82	0.00	665,489
Total	1,370,406.40	76,776.91	0.00	1,293,629
Average	685,203.20	38,388.45	0.00	646,814

A. Uncertainty of Emissions and Removals in Project Area in Baseline and Project Scenario

Table 3.31 shows the combined uncertainty from activity data (UncertaintyBSL,RATE,t* = 0%) and emission factor (Uncertainty REDD_BSL,SS = 5.17%). Total uncertainty in the baseline scenario is therefore 5.17%.

Table 3.31. Total error in REDD+ project activity baseline scenario

Variables	Value
URED-BSL,SS	5.17%
URED-BSL,RATE,t*	0.00%
URED-BSL,t*	5.17%
ΔC _{BSL,REDD}	1,370,406.40
URED-WPS	0,00%

As the total uncertainty for the project baseline is below the threshold of 15%, no deduction to the net emission reductions should be operated. On the other side, in this monitoring period, there is no ex-post changes in the values of the monitoring parameters, the uncertainty of these sources is already included in the uncertainty of the baseline scenario, therefore the value is set to zero, following the Part 3 of the module VMD0017 v2.2 (X-UNC).

Table 3.32. Cumulative uncertainty for the REDD+ project activities

Year	ΔC _{BSL,REDD}	ΔC _{WPS-REDD}	URED-BSL,t*	URED-WPS	NER _{REDD+ERROR}
2020	665,924.18	37,784.09	5.17%	0.00%	4.89%
2021	704,482.22	38,992.82	5.17%	0.00%	4.89%

B. Estimation of VCS buffer

To account for non-permanence risks associated with an AFOLU project, VCS registration requires to set aside in a buffer a fraction of the total carbon stock benefits. According to the VM0007 methodology, leakage emissions do not factor in this calculation. To calculate the buffer, the VCS AFOLU Non-Permanence Risk Tool (v4.0) was used, obtaining a rating of 10% (see folder NON PERFORMANCE RISK AND SUPPORTING EVIDENCE).

C. Calculation of Verified Carbon Units

Expected VCUs correspond to the net emission reductions according to the baseline, minus the non-permanence risk buffer (10% in the present case) and minus the uncertainty buffer (0% in the present case). The ex-ante estimation of VCUs to be generated during the first 10 years is presented in Table 3.33.

Table 3.33. Ex-post calculation of the Verified Carbon Units during the monitoring period

Year	NER _{REDD}	Buffer _{planned} (10%)	Adjusted_NER _{REDD+}	VCU
	(tCO ₂ e)			
2020	628,140	58,413	628,140	569,727
2021	665,489	62,155	665,489	603,334
Total	1,293,629	120,568	1,293,629	1,173,061

CCB Version 3, VCS Version 3

Year	NER _{REDD}	Buffer _{planned} (10%)	Adjusted_NER _{REDD+}	VCU
	(tCO ₂ e)			
Average	646,814	60,284	646,815	586,530

Optional Criterion: Climate Change Adaptation Benefits

Not Applicable. The project does not plan to get the Gold Climate Level.

3.2.5 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)

There are no local communities, hamlets or families living within the project area. However, as part of the community development process proposed by the project, the value proposition / theory of change includes the communities surrounding the project area (rural settlements)).

The following community impacts have been defined based on the participatory processes and informational meetings explained above. It is important to mention that no unplanned impacts have been identified during period 2020-2021.

As part of the first monitoring period of the project, initial community activities have focused on reaching out to the community to engage in collaborative discussions and understanding of priority needs. Likewise, for the socialization of the project. It should be noted that the monitoring period falls on the global pandemic due to COVID-19, thus many of the activities planned have been compromised by the respective health restrictions such as social gatherings.

Community group	Rural settlements (Nuevo Belén, Pucallpillo, San Antonio de Honoria, Nuevo San Juan)
Impacts	a. Conservation of the forests in the project area benefits the surrounding community's well-being by conserving key ecosystem services in the region. b. Improvement in the quality of life of the communities by strengthening their socioeconomic situation and their access to basic services. In this regard a social diagnosis was developed to identify and prioritize their needs as well as the informational meetings to gather their interests.
Type of benefit, cost, or risk	a. Direct and predicted social-environmental benefits in the project area by the conservation of ecosystems through the activities implemented: - o Informational meetings about the relevance of conservation and the value of the ecosystem services of the project area. - o Monitoring, control, and surveillance system implemented to reduce deforestation and protect biodiversity. - o Biodiversity assessments 2020 and 2021 whose results contribute to raise awareness of the importance of the area and the need to develop environmentally sustainable activities (see file: Supporting evidence of Biodiversity section – BAM's science program). b. Direct and predicted socio-economic benefits in the identified communities through project activities that aim to improve their well-being and local livelihoods: - o Social assessment to identify unsatisfied needs and access to basic services.

Community group	Rural settlements (Nuevo Belén, Pucallpillo, San Antonio de Honoría, Nuevo San Juan)
	- Health campaign in Nuevo Belén: 102 people benefited/ 68 women (see file: Supporting evidence of community section – Health community). - Donation of materials for community health post in Nuevo Belén: approx. 102 families benefited and 68 women (see file: Supporting evidence of community section – Health community). - Donations for the Christmas celebrations in Nuevo Belén, Pucallpillo and Nuevo San Juan: approx. 310 people benefited/ 139 boys and 171 girls (see file: Supporting evidence of community section – Sociocultural needs).
Change in well-being	- Positive change in well-being of the communities thanks to the conservation of the ecosystem services provided by the maintenance of the forest in the project area and the improvement of their capacities in sustainable activities. By increasing the awareness on environmental values and transferring knowledge about conservation and sustainable activities, communities are prone to engage in activities that are not based in unsustainable land uses. 04 trainings with around 105 people and 14 female assistance (see files: Project diffusion and dissemination and Meetings with stakeholders). - Positive change in well-being in the communities identified in the surroundings of the project who voluntarily accept and benefit from the project's activities which during 2020-2021 was focused on identifying needs and specific health interventions because of Covid-19.

Community group	Native community (see section 4.1.1 list of the communities)
Impacts	- Forest ecosystems in the community's territory are less vulnerable to risks of deforestation and environmental crimes. - Conservation of the forests in the project area will benefit the surrounding community's well-being by conserving key ecosystem services in the region. - Improvement in the quality of life of the communities by strengthening their socioeconomic situation and their access to basic services.
Type of benefit, cost or risk	- Monitoring and control strategies implemented in the project area produce indirect social and environmental benefit in territory of the native community of Nuevo Paraíso, which is adjacent to the project, preventing risks of deforestation and environmental crimes in the borders of both territories through cooperation and constant communication. During the 2020-2021 period the following activities were carried out: - Monitoring control and surveillance system implemented. - Regular patrols near the borders of the community's territory have been carried out in the surroundings of one

Community group	Native community (see section 4.1.1 list of the communities)
	of the control points (see file: Milestone evidence – Territorial security 2020). b. Direct and predicted social-environmental benefits in the HCVs in the project area are obtained through the activities of the project, strengthened by the transfer of information, increased capacities, and the promotion of knowledge regarding conservation and the sustainable management of resources in the communities. ○ During the 2020-2021 period two biodiversity assessments were developed in areas near the community's territory. This helps to increase the awareness and knowledge of the flora and fauna of the area (see file: Supporting evidence of biodiversity section – BAM'S Science program). ○ 3 informational meetings that addressed, among other topics, conservation, and forest ecosystem services. c. Direct and predicted socio-economic benefits in the native community of Nuevo Paraiso through project activities that aim to improve their well-being and local livelihoods. Due to Covid-19, activities were restricted, nonetheless the following activity was developed: ○ Donation for Christmas celebration in the Native Community Nuevo Paraiso: approx. 400 benefited of which 185 boys and 215 girls (see file: Supporting evidence of community section – Intercultural development).
Change in well-being	- Positive change in well-being thanks to the protection of the territories through cooperation and constant communication between the native community and BAM. - Positive change in well-being of the communities thanks to the conservation of the ecosystem services provided by the maintenance of the forest in the project area and the improvement of their capacities in sustainable activities. - Positive change in well-being in the communities identified in the surroundings of the project who voluntarily accept and benefit from the project's activities.

4.1.2 Negative Community Impact Mitigation (CM2.2)

As previously mentioned, communities have been informed that their participation in the project's activities is completely voluntary, as they are indirect beneficiaries. No significant negative impacts were identified, and their participation doesn't include limiting their current land use or important opportunity costs. Nonetheless, for this section some possible negative impacts are described and the respective mitigation strategies in line with the precautionary.

The unidentified High Conservation Value that is the territory of the Nuevo Paraiso native community has been maintained and conserved as indicated in the table described in point 4.1.1 (Regular patrols near the borders of the community's territory have been carried out in the surroundings of one of the control points (see file: Milestone evidence – Territorial security 2020).

In this monitoring period, no negative impacts have been reported, however the precautionary principles are maintained as described in the following table.

Table 4.1. Negative Community Impact Mitigation

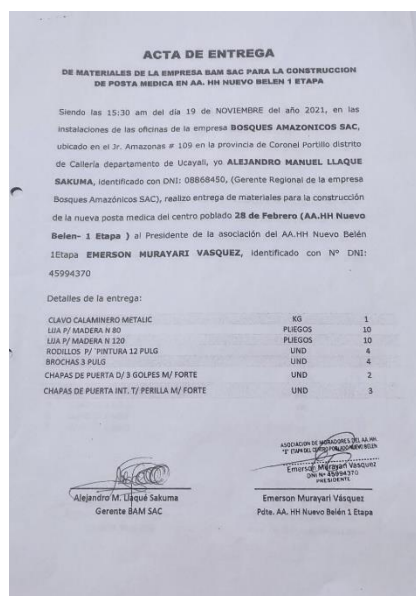
Negative impacts	Mitigation strategy
Institutional problems and conflicts involving communities or community groups	<u>Mechanism for dealing with complaints and suggestions.</u> Within the mechanism, the project will be responsible for receiving all requests related to problems and/or conflicts between communities, community groups or the population in general associated with the project or impacted by it. <u>Constant dialogue and consultation through informational meetings with communities and communication with the legitimate representatives</u> The constant meetings with communities and the identification of the legitimate representatives allow to collect the relevant inputs and interests to avoid possible social problems and manage adequately any emerging conflict. <u>Clear communication of project area and limits</u> To prevent territorial or land conflicts related to the project, information about the area and limits is constantly shared and disclosed. In case of any doubt or concern, the project staff will program a field visit to confirm the exact location of the boundaries with the participation of the community and their leaders.

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

No significant negative impacts have been identified for the communities that are involved in the project activities. Their participation is completely voluntary, without this meaning a commitment or obligation that could represent an important opportunity cost for them. Saying so, from the activities proposed to achieve the climate, biodiversity and community objectives that involve their participation, only positive impacts to well-being are anticipated.

In this sense, communities are predicted to increase their awareness and knowledge through workshops that promote conservation practices and sustainable forest management, among other topics. Moreover, project activities will be developed to improve their access to services and increase their income by supporting sustainable production chains, as opposed to the without project scenario in which communities remain in social and economic dynamics that push them to engagement in deforestation by change of land use activities while maintaining low quality of life levels.

Although the project is in early stages and the Covid-19 pandemic imposed restrictions that affected the development of activities, we can affirm that during 2020-2021 period the project had net positive community well-being impacts due to specific activities implemented such as medical campaigns and donations for community infrastructure, support in cultural activities, and particularly due to the project area monitoring that conserve ecosystem services that are important for the well-being of the surrounding communities and their future generations.



Donation Act



Medical Campaign Nuevo Belén 2011

Figure 4.1. Example of donations and campaigns made in favor of local communities

Table 4.2. Net Positive Community Well-Being

Communities	Actions 2020 – 2021	Net positive Well-Being 2020 – 2021
San Antonio de Honoria	Limited project activities due to Covid-19.	Limited project activities due to Covid-19.
Nuevo Paraiso	Collection of information for the elaboration of the baseline of the project and to know the sectoral problems. Informative meeting with the entire community to explain what a REDD+ project means, and the responsibilities involved. Participatory community coordination meetings. Social support for families: In December 2021, family baskets and gifts for children were donated.	Dissemination of the project and strengthening of the Community Territorial Surveillance Committee.
Pucallpillo	Social support for families: family baskets and gifts for children were donated.	Strengthening community relations and promotion of inter cultural events contributing to their well-being.
AA.HH Nuevo Belen	Support in the construction of a health and post Health campaigns Social support for families: In December 2021, family baskets and gifts for children were donated.	Provide the community with immediate solutions to deal with the state of emergency decreed due to covid-19 and raise awareness of measures to safeguard health in the context of the global pandemic.

Communities	Actions 2020 – 2021	Net positive Well-Being 2020 – 2021
		Strengthening community relations and promotion of inter cultural events.
Nuevo San Juan	Limited project activities due to Covid-19.	Limited project activities due to Covid-19.

4.1.4 Protection of High Conservation Values (CM2.4)

As mentioned in the Project Description document, none of the project's activities will negatively affect the HCV identified (territory of the native community of Nuevo Paraiso), by the contrary, due to its location next to the project, they have benefited from the monitoring and control strategies, such as the permanent satellite monitoring of the area, control points and periodic patrols that alert us and the neighbouring communities, including Nuevo Paraiso, from any deforestation threat by third party actors.

In addition, during the 2020-2021 period, two biodiversity assessments have been developed in areas near the HCV (see file: supporting evidence of biodiversity section). The knowledge generated and the dissemination of the findings promote an increase of environmental awareness, sustainable activities opportunities, and even contribute to strengthen the local identities that are strongly linked to the biodiversity of the area.

During the 2020-2021 period the project has built a positive relationship with the community through the informational meetings, social diagnosis, and constant communication with their leaders that allow to work jointly for the safeguard of the environment and the improvement of their well-being. In total 3 participative and informative meetings were carried out with the Native Community of Nuevo Paraíso.

4.2 Other Stakeholder Impacts

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

The proposed activities and results of the project during the monitoring period does not present negative impacts on Other Stakeholders.

In the period 2020 and 2021, the project's intervention strategy has centered in generating positive relationships with stakeholders in the area of influence through specific social support and communication. Furthermore, the project implementation strategy has focused on consolidating collaboration agreements with other organizations (e.g. scientific institutions such as CORBIDI) and local authorities to strengthen the capacity of the project for positive impact (forest protection and community development). The other stakeholders involved pursue the same objectives of biodiversity protection and community development, so the activities implemented by the project do not have a negative impact in that regard.

4.2.2 Net Impacts on Other Stakeholders (CM3.3)

The Other Stakeholders identified in the project description are environmental institutions and regional authorities that aim to safeguard the forest and the communities in the region, therefore they are completely aligned with the project objectives and purpose, meaning no negative impacts or risks for them.

The net impacts on Other Stakeholders during the 2020-2021 is positive due to the coordination meetings with them, the monitoring and control strategies for the conservation of the project area, and other actions, for example, the science program that included two biodiversity expeditions which provide important information for authorities and institutions related to environmental topics. As a consequence of the positive relationships, agreements with important regional and national institutions were in process of being signed (see file: Inter-institutional cooperation agreements).

Read more about the biodiversity expeditions at: <https://www.bosques-amazonicos.com/blog/notas-desde-el-campo-expedicion-a-quinillal-2020/>

Additionally, during the 2020-2021 period because of Covid-19 and good relationships with other communities, further health and social activities were developed (see files: supporting evidence of community section – Donation and basic services, and Sociocultural needs).

Table 4.3. Activities developed with other stakeholders

Other Stakeholders	Actions 2020 – 2021	Net positive Well-Being 2020 – 2021
Lupuna de Manantay	Visits and coordination meetings as part of the project's socialization process.	In process to be built.
Pijuayal	Visits and coordination meetings as part of the project's socialization process.	In process to be built.
Nuevo Amanecer	Social action for families: In December 2020 and 2021 family baskets and gifts for children were donated. Health campaigns. A training course on health and COVID-19 was held for 43 people in the hamlet.	Provide the community with immediate solutions to deal with the state of emergency decreed due to Covid-19 and raise awareness of measures to safeguard health in the context of the global pandemic. Cultural events: BAM seeks to strengthen the internal relations of the communities and with the company, providing them with an adequate recreational space for the development of different intercultural activities.
Nuevo Alianza	Collection of information for the elaboration of the baseline of the project and to know the sectoral problems.	In process to be built.
Soledad	Health campaigns	Provide the community with immediate solutions to deal with the state of emergency decreed due to covid-19 and raise awareness of measures to safeguard health in the context of the global pandemic.
Manco Capac	Social support for families: In December 2020 and 2021, family baskets and gifts for children were donated.	Cultural events: BAM seeks to strengthen the internal relations of the communities and with the company, providing them with an adequate recreational space for

Other Stakeholders	Actions 2020 – 2021	Net positive Well-Being 2020 – 2021
		the development of different intercultural activities.
Agua Blanca	A framework cooperation agreement was signed between BAM and Agua Blanca. A theoretical and practical workshop on the prevention and control of forest fires was held in the Agua Blanca hamlet with 43 participants from 7 different hamlets and 1 Agroforestry Producers Association of Campo Verde. Support for the purchase of food tickets for the anniversary of the Agua Blanca hamlet. Social support for families: In December 2020 and 2021, family baskets and gifts for children were donated.	Capacity building in sustainable forestry management. Further collaboration with BAM for the management of forest and community development (cooperation agreements) Support in basic needs Support in the promotion of inter cultural events.
Nueva Esperanza	Food donation Social support for families: In December 2020 and 2021, family baskets and gifts for children were donated.	Due to the state of emergency decreed and the limited access to mobility and transportation for food supply, BAM saw it as a priority to support communities in basic access to goods.
Santa Teresita de Agua Blanca	Health campaigns Social support for families: In December 2020 and 2021, family baskets and gifts for children were donated. A framework cooperation agreement was signed between BAM and Santa Teresita de Agua Blanca. Fuel (20 gallons of oil) was delivered to the lieutenant governor of the Santa Teresita de Agua Blanca hamlet for cleaning the main entrance to the community and the Agua Blanca camp. A training course on fire prevention and health was held with 19 participants in the hamlet.	Provide the community with immediate solutions to deal with the state of emergency decreed due to covid-19 and raise awareness of measures to safeguard health in the context of the global pandemic. Due to the state of emergency decreed and the limited access to mobility and transportation for food supply, BAM saw it as a priority to support communities in basic access to goods.
El Pimental	Social support for families: In December 2020 and 2021, family baskets and gifts for children were donated.	Strengthening community relations and promotion of inter cultural events.
Tierra Roja	Collection of information for the elaboration of the baseline of the project and to know the sectoral problems. A coordination meeting was held with the participation of 27 people from the Tierra Roja hamlet to coordinate issues related to the celebration of the Forest Week and forest fire prevention. Social support for families: In December 2020 and 2021, family baskets and gifts for children were donated.	Capacity building in sustainable forestry management. Strengthening community relations and promotion of inter cultural events.
Ampliación Lupuna	Health campaigns Social support for families: In December 2021, family baskets and gifts for children were donated.	Provide the community with immediate solutions to deal with the state of emergency decreed due to covid-19 and raise

Other Stakeholders	Actions 2020 – 2021	Net positive Well-Being 2020 – 2021
		awareness of measures to safeguard health in the context of the global pandemic. Strengthening community relations and promotion of intercultural events.
Ampliación Túpac Amaru	Health campaigns Social support for families: In December 2021, family baskets and gifts for children were donated.	Provide the community with immediate solutions to deal with the state of emergency decreed due to covid-19 and raise awareness of measures to safeguard health in the context of the global pandemic. Strengthening community relations and promotion of intercultural events.

4.3 Community Impact Monitoring

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

The main community objective of the project is to contribute to the well-being of the identified communities in the surroundings of the Project by improving their access to basic services and promoting sustainable productive activities. (For evidence see file: Supporting evidence of community section).

Table 4.4. Monitoring results of the impacts in community's well-being

Variables	Community groups	Results	
		2020	2021
Access to basic services and basic needs	Rural settlements and Native Community	Due to Covid-19 lock-down and isolation measures issued by the government, no activities could be implemented.	Activities implemented: - Social diagnosis of socioeconomic conditions, access to basic services and unsatisfied basic needs of the identified communities: - Medical campaign in Nuevo Belén. - Donation of materials, medicines and supplies for health center in Nuevo Belén.

Variables	Community groups	Results																	
		2020	2021																
			Diagnosis in services and basic needs by families (%): <table><tr><th>Indicator</th><th>Unsatisfi ed</th><th>Satisfie d</th></tr><tr><td>Type of fuel used</td><td>30%</td><td>70%</td></tr><tr><td>Access to electricity</td><td>30%</td><td>70%</td></tr><tr><td>Drinking water</td><td>65%</td><td>35%</td></tr><tr><td>Hygienic services</td><td>90%</td><td>10%</td></tr></table> The improve to access to basic services and basic needs by gender will be in the next monitoring report.		Indicator	Unsatisfi ed	Satisfie d	Type of fuel used	30%	70%	Access to electricity	30%	70%	Drinking water	65%	35%	Hygienic services	90%	10%
Indicator	Unsatisfi ed	Satisfie d																	
Type of fuel used	30%	70%																	
Access to electricity	30%	70%																	
Drinking water	65%	35%																	
Hygienic services	90%	10%																	
Sociocultural needs	Rural Settlements and Native Community	• 01 activity implemented: Christmas celebration and food donations	• 02 activities implemented: - Christmas celebration and food donations. - Donation of family food basket for Mother´s day in Nuevo Belén.																
		• 7 rural communities' benefits near BAM´s areas.																	
			• 14 rural communities benefited in these 02 activities.																
			• Total number of benefited families: 450 proportionally (1654 persons benefited included kids). • Total number of women benefited: 225 proportionally (1654 persons benefited included kids).																
Well - being	Rural Settlements and Native Community		<u>Social diagnosis survey perceptions:</u> • Rural settlements: 71% of the families in the rural settlements considers that the economic activities they carry out are not enough to cover their basic living needs. • Native community Nuevo Paraiso: 72% of the families considers that the economic activities they carry out are not enough to cover their basic living needs.																

Variables	Community groups	Results	
		2020	2021
Livelihood from sustainable activities promoted by the project	Rural Settlements and Native Community	01 Training in forest fires prevention.	01 activity implemented: Social diagnosis to identify the main economic activities, practices, and interests from the communities.
		The participation (01 training) of villagers from 07 surrounding communities.	11 rural communities involved in de social diagnosis.
			Income per month by families: - Less than 350 soles: 42.2% 350-500 soles: 13.3% 500-930 soles: 19.3% 930 soles: 16.9% 930-1500 soles: 8.4% Income per month by gender(women): - Less than 350 soles: 43.9% 350-500 soles: 14.6% 500-930 soles: 9.8% 930 soles: 24.4% 930-1500 soles: 7.3%
Protection of indigenous people's land and territory (HCV)	Native Community		Social diagnosis survey: 19% of the families consider that there is an improvement in the protection of the territory. 44% of the families can't specify. 37% of the families do not perceive improvements in the protection of the territory.
			02 Activities implemented: - Monitoring, control, and surveillance system implemented, including patrols in camps near the HCV, satellite monitoring of the area, joint interventions with authorities. 2 biodiversity assessments in areas near the HCV.
Project support	Other stakeholders	4 activities implemented: - Family baskets and gifts for Christmas celebration with other communities. - Training in forest fires prevention with the	3 activities implemented: - Family baskets and donations for Christmas celebrations. - Training in forest fires prevention in Nuevo Amanecer.

Variables	Community groups	Results	
		2020	2021
		participation of villagers from 07 surrounding communities. • Food donation in Nueva Esperanza. • 2 health trainings and medical check-ups with participation of BAM's workers from surrounding communities.	• Cooperation agreements with regional institutions (see file: inter-institutional cooperation agreements).

4.3.2 Monitoring Plan Dissemination (CM4.3)

In line with the section 2.3.2, summary documents of the monitoring plan results have been shared with community representatives and it is uploaded to BAM's website www.bosques-amazonicos.com for public access.

4.4 Optional Criterion: Exceptional Community Benefits

The project does not plan to apply to Community Gold Level.

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

The project does not plan to apply to Community Gold Level.

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

The project does not plan to apply to Community Gold Level.

4.4.3 Net Impacts on Women (GL2.5)

The project does not plan to apply to Community Gold Level.

4.4.4 Benefit Sharing Mechanisms (GL2.6)

The project does not plan to apply to Community Gold Level.

4.4.5 Governance and Implementation Structures (GL2.8)

The project does not plan to apply to Community Gold Level.

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

The project does not plan to apply to Community Gold Level.

5 BIODIVERSITY

5.1 Net Positive Biodiversity Impacts

5.1.1 Biodiversity Changes (B2.1)

The changes produced in biodiversity as a result of project activities during the monitoring period are described. These changes are monitored and measured through indicators defined in the respective monitoring plan of the project, through field evaluations of biodiversity, which have allowed data collection in three different sites in the project area. This monitoring report includes the results of biodiversity assessments in 2020 and 2021 (year of biodiversity baseline), and new evaluation carried out in the year 2022.

Change in Biodiversity	Conservation of richness of flora species in the Project Area
Monitored Change	Direct positive change during the monitoring period, in the way that native flora species were conserved by avoiding the planned deforestation of 3,166.3 ha. 63 forest species have been evaluated in the same plots that were surveyed for the baseline, having identified: 1 EN species (<i>Handroanthus serratifloius</i>), 46 LC species (IUCN), 1 VU species (<i>Manilkara bidentata</i>), according to the national classification (Supreme Decree N°043-2006-AG).
Justification of Change	The protection and conservation of the forest is carried out mainly through the implementation of a system of territorial security and early warning of fire hotspots, and the implementation of the Program Science in the project area, Consequently, it is possible to maintain the forest cover, habitats, and biological diversity of wild flora and fauna in the natural ecosystems of the project area, and wildlife can continue fulfilling its ecological role. The identification of the flora species was carried out in the dry season (between the end of September and the beginning of October) applying the methodology proposed by the Rapid Assessment Program - RAP of Conservation International, for the assessment of biodiversity using different methods and techniques, such as the survey of Modified Gentry Plots of 0.1 ha. (See folders: 13. Supporting evidence for Biodiversity section >>> Monitoreo Biodiversidad 2022 (1er RM) >>> <i>Estado conservacion.xlsx</i> file).

Change in Biodiversity	Conservation of wildlife species in the Project Area.
Monitored Change	Direct positive change during the monitoring period. The project activities have the same focus as the one discussed in the flora evaluation, with emphasis on the important habitat for the fauna present in the project area. A total accumulated value of 491 identified

	species of wildlife have been recorded in the dry season, evaluated in three sampling areas: <table><tr><th colspan="4">Species richness (N° species registered)</th></tr><tr><th>Taxonomic Group</th><th>Baseline (2021)</th><th>First monitoring (2022)</th><th>Accumulated</th></tr><tr><td>Birds</td><td>140</td><td>307</td><td>357</td></tr><tr><td>Mammals</td><td>35</td><td>36</td><td>45</td></tr><tr><td>Amphibians</td><td>26</td><td>41</td><td>45</td></tr><tr><td>Reptiles</td><td>27</td><td>29</td><td>44</td></tr></table> Conservation status, by category, of the main species of each taxonomic group: • Birds: 2 endemic sp EBA-66 (<i>Myrmoborus melanurus</i>, <i>Talaphorus chlorocercus</i>), 2 sp.VU (<i>M. melanurus</i>, <i>Tinamus tao</i>), 2 sp NT, 3 sp LC (IUCN), 46 sp (CITES II), 2 sp (CITES III) • Mammals: 3 VU (<i>Tapirus terrestris</i>, <i>Tayassu pecari</i>, <i>Myrmecophaga tridactyla</i>), 2 NT, 6 LC (IUCN), 3 CITES I (<i>Panthera onca</i>, <i>Puma concolor</i>, <i>Leopardus pardalis</i>), 9 (CITES II), 4 NT (MINAGRI 2014, Peru) • Amphibians: 1 CITES I (<i>Allobates femoralis</i>), 2 endemics (<i>Dendropsophus sp</i>, <i>Scinax sp</i>) • Reptiles: 1 CITES II (<i>Caiman crocodilus</i>).	Species richness (N° species registered)				Taxonomic Group	Baseline (2021)	First monitoring (2022)	Accumulated	Birds	140	307	357	Mammals	35	36	45	Amphibians	26	41	45	Reptiles	27	29	44
Species richness (N° species registered)																									
Taxonomic Group	Baseline (2021)	First monitoring (2022)	Accumulated																						
Birds	140	307	357																						
Mammals	35	36	45																						
Amphibians	26	41	45																						
Reptiles	27	29	44																						
Justification of Change	The identification of fauna species was carried out in the dry season, applying the methodology proposed by the Rapid Assessment Program - RAP of Conservation International, using count points, playback and photographic shots, recordings, mist nets for capture (in bird assessment), linear transects, indirect censuses through direct and indirect sightings, camera traps (assessment of medium and large mammals) and mist nets (capture of flying mammals), transects and search for visual encounters (VES), used in amphibian and reptile group assessments. (See folders: 13. Supporting evidence for Biodiversity section >>> Monitoreo Biodiversidad 2022 (1er RM) >>> <i>Estado conservacion.xlsx</i> file).																								

5.1.2 Mitigation Actions (B2.3)

The implementation of various project activities has not generated negative impacts on biodiversity, mainly due to the implemented actions aimed at protecting and conserving the habitats and the surface of the forest cover within the project area, maintaining the integrity and the identified species, some of which are endemic and/or threatened in some category, distributed in HCV areas. Mainly, territorial security actions, as part of the threat and risk reduction process, have promoted the maintenance of the forest in its greatest extension, so that it does not suffer fragmentation processes in various critical areas, and reduce the

pressure of external actors on forest degradation. Similarly, the landscape in the project area did not have significant changes in terms of maintenance of areas with forest cover, maintaining the configuration of land use mosaics.

One of the activities that is carried out continuously is intensive patrolling (see folder: PROJECT ACTIVITIES>>> CLIMATE>>> *Consolidado Actividades realizadas SEG TERR 2020-2021.xlsx*), carried out periodically or in shifts during the day, depending on the information on invasion threats that is obtained, and that has been reported during the period 2020 to 2022 by the personnel who work in the 4 existing camps (Pucallpillo, Quinillal, Milagros and Palmeras) within the project area, installed at strategic points, in addition to another 2 camps (Agua Blanca, Mirianita) installed on properties owned by BAM (called Mirianitas II) that adjoins the two properties in the project area. Likewise, operations have been carried out against the illegal felling of trees and verifications in the field of felled and quartered trees (sawmilling with a chainsaw), and in many cases groups of people who invaded or tried to enter the area had to be intervened on-site.

For the issue of control of the illegal extraction of flora and fauna, an Agreement (Memorandum of Understanding) has been signed with the USAID Prevenir project whose objective is to establish mutual understanding with clear parameters of coordination and effective collaboration in the achievement of the shared objectives established to facilitate the implementation of REDD+ mechanisms, through compensation for avoided deforestation to the private sector, thus promoting the conservation of forests and their sustainable management in the territories of influence of the USAID Prevent Project (see folder: Inter-institutional cooperation agreements>>> *CONVENIO_USAID(PREVENIR)_BAM.pdf*).

On various occasions, assemblies and/or dialogue meetings have been held with representatives of populated centers or hamlets, or their grassroots organizations, to which some groups of invaders belong, to explain the legal consequences of these incursions without proper authorization and solve the problems raised. It is worth mentioning that due to the good relations and reciprocal activities that the BAM company maintains in alliance with the Nuevo Paraíso native community, whose lands border the Selva Maestra property, joint patrol operations have been carried out with groups of patrols, guards of the community forest, in order to monitor the common boundaries and protect the surrounding wooded areas, from the entry of invaders in search of areas for the conversion of the forest into agricultural land and/or illegal extraction and transport of wood.

Once the incursions into the project area were reported, the reports were prepared with the support and evidence to file the respective complaints, to the authorities of the competent state entities in charge of processing the requests for crimes against forests and/or for illegal trafficking of timber forest products, after their review and processing, proceed with the processes of investigations, proceedings, verifications, visual inspections, verifications in the field of deforestation, and illegal logging, interventions and confiscations of illegally extracted wood, if found, with support from the police forces and personnel from the prosecutor's office specializing in environmental crimes.

On the other hand, in order to have the entire perimeter of the boundaries of the project area delimited and marked in the field, so that groups of external people know that it is a privately owned area, cleaning and maintenance activities are carried out the boundaries, roads, patrol trails in the forest, installation and repair of informative signage and perimeter fences of barbed wire arranged in 4 rows. Activities that are complemented with the maintenance and improvement of the infrastructure of said camps.

Regarding the control of forest fires that occur within the project area due to the spread of fire by the wind, from the opening or cleaning of cultivation areas carried out by producers who live outside and close to the limits of the area (in other cases were intentional with different motivations), they could be controlled in time so that they do not spread over a larger area, with the support of the camp staff, mainly in the Quinillal sector where these events frequently occur, in the dry season (called “summer” by the minimum amount or absence of precipitation for long periods).

Other complementary measures that have been implemented, in support of the aforementioned processes, and as part of the Science Program activities, in 2020 the first plane overflight was carried out over the BAM properties in Ucayali, obtaining the first aerial photographic material of the farm, identifying possible sources of deforestation, which allows better planning of territorial security and forest protection activities (see folder: PROJECT ACTIVITIES>>> O.E.1>>> Anexo 1.1). Likewise, quite apart from the dialogue processes with the invading groups to resolve the conflicts, meetings and assemblies are being held with the surrounding local authorities and communities, in order to reach agreements and commitments, aimed at reducing pressure and threats to the forest landscape and project area, and providing them with social support, thus strengthening reciprocal relationships.

Table 5.1. Activities carried out for Specific Objective 1: Identify, monitor, and permanently protect the biological richness (flora and fauna) within the Project Area

Nº	Activities	Date	Supporting documents
1.1	First plane overflight over the BAM properties in Ucayali, obtaining the first aerial photographic material of the farm, identifying possible sources of deforestation	March 2020	Photograph archive
1.2	First biodiversity assessment expedition to Quinillal, Ucayali (wet season)	March 2020	-Scientific reports for each specialty -Article on the blog of the BAM website
1.3	Second biodiversity assessment expedition to Quinillal, Ucayali (dry season). CORBIDI's team of expert scientists recorded 674 different species of wild flora and fauna. Biodiversity assessment expedition to Quinillal, Ucayali (wet season)	August 2021	-Scientific reports for each specialty -Article on the blog of the BAM website -Post in social networks
1.4	First expedition to Agua Blanca, Ucayali (dry season) with the CORBIDI team	August 2022	-Scientific reports for each specialty. -Photographic archive -Reel on BAM's social networks
1.5.	Part of the Campo Verde forests protected by BAM recognized as the Second Private Conservation Area (ACP) in Ucayali, Peru	October 2022	- BAM Social Media Posts -Publication on the website of the Peruvian State
1.6.	The biodiversity baseline was carried out as part of the monitoring of the project together with the PASKAY team	July 2021	-Baseline of biodiversity -Reports of the biological disciplines
1.7.	Ecological characterization of the natural communities of the property (primary, secondary, lowland forests, intervened	March 2020	Botanical report of the expedition to Quinillal 2020

Nº	Activities	Date	Supporting documents
	areas), which will allow zoning with a view to their conservation and eventual sustainable use. As a result of the botanical team efforts in the first expedition to Quinillal.		
1.8.	Installation of 300 camera traps on BAM properties in Ucayali, within the framework of the BAM agreement with the University of San Diego	Aug - Sept 2022	-Photographic archive -Posts on BAM's social networks
1.9.	Solid waste management in the camps	Permanent	Photographic archive

Table 5.2. Activities carried out for Specific Objective 2: Establish alliances with top-level scientific institutions that ensure international prestige and recognition of the information generated

Nº	Activities	Date	Supporting documents
2.1	Mutual cooperation agreement between Bosques Amazónicos SFM S.A. and the Center for Ornithology and Biodiversity (CORBIDI)	15/11/2019	Signed agreement
2.2	Framework agreement for inter-institutional cooperation between AIDER and Bosques Amazónicos	22/07/2020	Signed agreement
2.3	Agreement with the UNMSM Natural History Museum	2021	-Agreements with the UNMSM and the San Marcos Foundation -Signed document
2.4	Framework agreement for inter-institutional cooperation between the La Molina National Agrarian University (UNALM) and Bosques Amazónicos S.A.	2021	Signed agreement
2.5.	Agreement with the San Diego Zoo	2022	Signed agreement
2.6.	Agreement with the NGO Peru Verde	2022	Signed agreement
2.7.	Visit of 8 students from the Forest Plantation Research Circle of the Agrarian University to our Mirianita farm in Campo Verde, Ucayali	12/11/2021	-Photographic archive -Posts on BAM's social networks
2.8.	Agreement with Rainforest Expeditions	October 2022	Signed agreement
2.9.	Group internship of the Forest Plantation Research Circle - CIPLAN Forestal attached to the Faculty of Forest Sciences of the National Agrarian University La Molina - UNALM	March – April 2022	CIPLAN internship report
2.10.	Co-organization together with SENASA in a forest pest control workshop course at the premises of the Instituto Superior Tecnológico Suiza and an internship in the farm of km12 of BAM	15/11/2022	-Triptych - PPT presentation -Event schedule
2.11.	Participation as exhibitors in the virtual workshop on the control of forest pests	2021	PPT presentation

Nº	Activities	Date	Supporting documents
2.12.	Specific inter-institutional cooperation agreement between the National Agrarian Health Service (SENASA) and Bosques Amazónicos S.A.	2022	Signed agreement

Table 5.3. Activities carried out for Specific Objective 3: Control the illegal extraction of flora and fauna in the project area with the support of the authorities and other competent organizations.

Nº	Activities	Date	Supporting documents
3.1	Agreement with the USAID Prevenir project	14/03/2022	Signed agreement
3.2	Establishment of the different Territorial Security camps in the project area	Permanent	Plan of the Territorial Security camps

Table 5.4. Activities carried out for Specific Objective 4: Implement workshops and awareness-raising efforts on the importance of biodiversity protection in the project area.

Nº	Activities	Date	Supporting documents
4.1	Training for the installation and monitoring of camera traps in Quinillal	August 2021	Camera trap report
4.2	Second training for the installation and monitoring of camera traps	2022	Project document on the use and installation of trap cameras by Daniel Blanco
4.3	Training on the identification and handling of reptiles in the pools, carried out by Luis Alberto Garcia, CORBIDI herpetologist, to the Rainforest Aquafarms team, who manage the BAM fish farms.	21/06/2022	-Rainforest Aquafarms Report -Proof of training -Presentation of the training -Photos and video of the training

The supporting documents mentioned within the tables can be found in the folder PROJECT ACTIVITIES_BIODIVERSITY. Here, the evidence are distributed by the Specific Objectives.

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

The net impacts of the project on biodiversity were positive, considering the land use scenario without the project as a reference. The change in land use of 3,200 ha to agro-industrial crops, for the first monitoring period, has been avoided, which will continue throughout the useful life of the project, and which has allowed maintaining and conserving the natural ecosystem such as forest areas and habitats that house a diversity of flora and fauna species, which have been evaluated and recorded to date.

Likewise, in order to identify, protect and monitor biological wealth, through the implementation of the Science Program, two expeditions (2020 - 2021) have been carried out for the evaluation of biodiversity in four taxonomic groups (mammalogy, ornithology, herpetology and insects) to the sampling zone of Quinillal, in the wet season as well as in the dry season, with the team of expert scientists from the CORBIDI Ornithology and Biodiversity Center, recording 674 different species of flora and wildlife in Quinillal and managing to generate relevant information to plan and identify strategies for the conservation of biological

diversity in the project area (see folder: Supporting evidence of Biodiversity section >>> BAM'S SCIENCE PROGRAM >>> Expedition Quinillal – 09 March 2020 / Expedition Quinillal – Agosto 2021).

Regarding the first expedition in Quinillal, (wet season), three groups of mammals (flying, small flightless and medium to large flightless) were evaluated using different techniques, being the most important species detected, the "sachavaca" (*Tapirus terrestris*), a species that is considered Vulnerable by the IUCN, as well as the subspecies of "puffin" (*Saimiri boliviensis peruviansis*) that is endemic to Peru. It was possible to register 226 species of birds belonging to 21 orders and 48 families. A total of 213 species or 94% of the registered birds correspond to species restricted to the biomes of the North Amazon and South Amazon. Of these, *Thamnomanes schistogynus*, *Myrmoborus melanurus*, *Hypocnemoides maculicauda*, *Hylopezus berlepschi*, *Empidonomus aurantioatrocristatus*, and *Pipra fasciicauda* are birds exclusive to the Southern Amazon biome, and only *Fluvicola pica* is exclusive to the Northern Amazon biome. These records complement the fact that the study area is located at the intersection of two biogeographical regions.

Myrmoborus melanurus is reported as Vulnerable by IUCN and Near Threatened in Peru, *Setophaga striata* is classified as Vulnerable by IUCN and has not been categorized in Peru, in addition 36 species are included in CITES appendices, and only *Jabiru mycteria* and *Falco peregrinus* are included in Appendix I, which generally includes the species facing the highest degree of danger, but which means that their trade is heavily regulated. On the other hand, 23 species of amphibians (7 families) and 19 species of reptiles (10 families) were recorded, being the most abundant amphibian species *Leptodactylus leptodactyloides*, *Scinax ruber* and *Dendropsophus triangulum* and in reptiles they were *Gonatodes humeralis*, followed by *Ameiva ameiva*. Through these samplings, it would have been possible to register 68% of the possible species that would be present in the study area.

In the second expedition to Quinillal (dry season), 39 species of mammals were recorded, estimating the presence of more than 55 species (accumulation curve). Likewise, a cumulative total of 286 bird species were registered (considering the two evaluation seasons), distributed in 22 orders and 52 families that represent almost 15% of the birds of Peru in just 12 kilometers traveled. In the wet season, 225 species were recorded and in the dry season, 243 species were recorded, of which 63% were present in both seasons, which indicates that at least 182 species inhabit these forests throughout the year. 19 amphibian species (4 families) and 24 reptile species (13 families) were recorded, where the most abundant amphibian species were *Allobates conspicuus*, followed by *Leptodactylus leptodactyloides*, and in reptiles they were *Gonatodes humeralis*, followed by *Alopoglossus avilapiresae*. It was possible to enrich the list of species for the Quinillal area obtained during the evaluation of the dry season, increasing the richness of species in 1 amphibian and 11 reptile species, reaching a total of 26 amphibian and 31 reptile species, which represents 38.2% and 29.8% respectively of the total known for the department of Ucayali (MINAM, 2018). According to the Clench model, the expected number is 67 herpetozoa, which would be closer to the real richness of the herpetofauna as sampling efforts accumulate. For IUCN *Chelonoides denticulatus* is categorized as Vulnerable (VU).

As part of the first floristic expedition to Quinillal (2020), an ecological characterization of the natural communities (primary, secondary, lowland forests, intervened areas) has been carried out, which will allow improving the zoning for conservation and eventual sustainable use. All trees ≥ 10 cm DBH within Permanent Plot 1 (100 x 100m = 1 ha) have been tagged, corresponding to approximately 100 species, where nearly 90% of the existing trees were identified at Family level, being Legumes (Fabaceae), Palms (Arecaceae), Malvaceae, Sapotaceae and Moraceae the ones with the largest number of recorded individuals, these last two families indicative of an advanced stage of forest succession; clearly indicating that it is a rain forest of the Amazon plain, mature or in an advanced stage of succession, and in a good

state of conservation. The installation of this Permanent Plot is of special importance, since its monitoring over time will produce useful scientific information on taxonomy, floristics, plant-animal interactions, and forest dynamics.

Likewise, within the framework of the BAM agreement with the University of San Diego, 300 camera traps have been installed on BAM properties, for which the camp staff from the Quinillal area were trained to install and monitor the respective cameras. In order to ensure international recognition for the information generated, agreements have been established with top-level scientific institutions, such as the UNMSM Natural History Museum, the La Molina National Agrarian University (UNALM), the San Diego Zoo, among other. BAM staff have also been trained in reptile identification and handling.

Finally, recognition was achieved by the Ministry of the Environment, of the Private Conservation Area, ACP Campo Verde, for a period of 40 years, which includes the area of the JCC - Nuestro Señor Jesucristo property, with an area of 8,049.70 ha, constituting the Technical Sheet of the ACP its Master Plan, which contains a list of obligations and restrictions to which the owner agrees and the zoning of the same, whose general objective is to conserve a representative sample of the mature rain forest of the Amazon plain, in good state of conservation and with sustenance capacity for the wild fauna associated with it; likewise, to preserve the aguajales ecosystems due to the high concentration of carbon stored in the form of peat within the scope of the ACP Campo Verde. In this regard, Annual Reports must be submitted regarding compliance with the commitments established in the Technical Sheet.

5.1.4 High Conservation Values Protected (B2.4)

The development of the components of the territorial supervision system has managed to protect the forest cover that involves maintaining the identified HCV "Aguajales", important for the conservation of biodiversity, as well as the fragile ecosystem called "Honorio Norte" ²⁷ and bodies of water, mainly within the project area, which has allowed maintaining the integrity and functionality of habitats, natural ecosystems and flora and fauna species, protecting them from external pressures and threats.

5.1.5 Invasive Species (B2.5)

Not applicable. Since the project activities have not considered introducing or promoting the use of any exotic species, both plant and animal, in the project area. The deforested areas will be recovered through the installation of forest plantations, under appropriate modalities and arrangements, using native species of ecological and economic interest, in order to rehabilitate degraded soils and improve the biological connectivity of the forest landscape.

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

It does not apply to the project, since the project activities have not considered introducing or promoting the use of any exotic species, both plant and animal, in the project area. The deforested areas will be recovered through the installation of forest plantations, under appropriate modalities and arrangements, using native

²⁷ Technical Record of State of Conservation Department of Huanuco.
[https://cdn.www.gob.pe/uploads/document/file/1721168/FT-HCO-12 Bosque Aluvial Inundable - Honoria Norte.pdf](https://cdn.www.gob.pe/uploads/document/file/1721168/FT-HCO-12_Bosque_Aluvial_Inundable_-_Honoria_Norte.pdf)

species of ecological and economic interest, in order to rehabilitate degraded soils and improve the biological connectivity of the forest landscape.

5.1.7 GMO Exclusion (B2.7)

It does not apply to the project, since the use of GMO genetically modified organisms, under any concept, is not planned within the project activities.

5.1.8 Inputs Justification (B2.8)

Not applicable. Chemical inputs and biological control are not used in any of the project activities. Only its use is in minimal quantities as part of the logistical operations for the maintenance and operation of the camps located within the project area and for which a protocol for the management of inputs and waste generated for storage, use, and disposal will be developed. Transportation and disposal in appropriate places, of said supplies, complemented with preventive and mitigation measures to be implemented by the personnel who carry out both territorial surveillance activities in the camps and research studies. Therefore, some adverse effects that could eventually occur would not be linked to the implementation of project activities.

5.2 Offsite Biodiversity Impacts

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

The implementation of the project activities, in the reported period, has focused on the protection, territorial monitoring and conservation of the forest in order to maintain the forest cover, avoiding deforestation due to change of use and degradation through activities of illegal logging. Therefore, no negative impacts on biodiversity have been generated outside the project area.

5.2.2 Net Offsite Biodiversity Benefits (B3.3)

There have been no negative impacts on biodiversity outside the project area. On the contrary, there has been a significant positive impact on biodiversity in the project area, which can be demonstrated with the approx. 22,226.01 ha of forest cover that remain preserved, in its three types of plant formation that cover the largest area of the project area (Mauritia flexuosa dominated palm swamp, "aguajales", Palm and Mixed Palm Swamp Forest and Lowland Tropical Rainforest), which has allowed to protect and maintain in its natural state, areas identified with high conservation values, such as the fragile ecosystem "Honorio Norte" of 4,596 ha, and bodies of water, with the diversity of flora and fauna that they house. Therefore, the net effect of the project on biodiversity was positive.

5.3 Biodiversity Impact Monitoring

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

The biodiversity variables monitored, the methods used, the dates, the frequency and the results of the evaluations carried out in the three sampling zones, Quinillal, Milagros and Palmeras, located within the project area are presented in the following table. More details of the evaluated zones are presented in folder SUPPORTING EVIDENCE OF BIODIVERSITY SECTION_O.E.1.

Table 5.5. Biodiversity variables (sampling, indicators, and results)

Biodiversity Components	Sampling methods, dates, frequency, locations	Indicators	Results																								
Flora (forest)	Rapid Inventory of woody plants: Modified Gentry Plots (MGP) 0.1 ha, with 10 2m x 50m transects. Red list IUCN / CITES / DS 004 2014 MINAGRI Dates: Baseline: August 6 to 16, 2021 Monitoring Report 1: September 25 to October 07, 2022 Locations (3): Sampling areas: Quinillal (Z1), Milagros (Z2) and Palmeras (Z3) Frequency: Biannual	Species richness (n° of species, families, and genera)	63 registered forest species, belonging to 55 genera, 24 families and 15 orders.																								
		Importance value index (IVI)	See Table 5.5																								
		Biodiversity Index (Shanon-Wiener index and/or Fisher's alfa parameter)	<table><tr><th>Flora</th><th>Z1</th><th>Z2</th><th>Z3</th></tr><tr><td>N° sp: 63</td><td>19</td><td>38</td><td>33</td></tr><tr><td>N° Ind.</td><td>51</td><td>78</td><td>65</td></tr><tr><td>Margalef</td><td>4.57</td><td>8.49</td><td>7.66</td></tr><tr><td>Fisher α</td><td>10.98</td><td>29.24</td><td>26.81</td></tr><tr><td>Shannon_H</td><td>2.528</td><td>3.474</td><td>2.963</td></tr></table>	Flora	Z1	Z2	Z3	N° sp: 63	19	38	33	N° Ind.	51	78	65	Margalef	4.57	8.49	7.66	Fisher α	10.98	29.24	26.81	Shannon_H	2.528	3.474	2.963
			Flora	Z1	Z2	Z3																					
			N° sp: 63	19	38	33																					
N° Ind.	51		78	65																							
Margalef	4.57		8.49	7.66																							
Fisher α	10.98	29.24	26.81																								
Shannon_H	2.528	3.474	2.963																								
Endangered species (presence)	IUCN: (EN) <i>Handroanthus serratifloius</i> (LC) 46 sp. MINAGRI (SD N° N°043-2006-AG) (VU) <i>Manilkara bidentata</i>																										
Mammals	Line transects with indirect records (fresh tracks, feces, hair, burrows, partially consumed fruits/seeds) and complementary methods (camera traps,	Species richness (n° of species, families, and genera)	36 species registered during the monitoring, making 45 species in total (accumulated sum considering baseline results).12 families and 12 orders. <table><tr><th>Mammals</th><th>Z1</th><th>Z2</th><th>Z3</th></tr><tr><td>N° sp: 36</td><td>26</td><td>19</td><td>26</td></tr><tr><td>N° Ind.</td><td>227</td><td>104</td><td>370</td></tr><tr><td>Margalef</td><td>5.12</td><td>5.46</td><td>5.11</td></tr><tr><td>Fisher α</td><td>9.16</td><td>16.47</td><td>9.23</td></tr></table>	Mammals	Z1	Z2	Z3	N° sp: 36	26	19	26	N° Ind.	227	104	370	Margalef	5.12	5.46	5.11	Fisher α	9.16	16.47	9.23				
Mammals	Z1	Z2	Z3																								
N° sp: 36	26	19	26																								
N° Ind.	227	104	370																								
Margalef	5.12	5.46	5.11																								
Fisher α	9.16	16.47	9.23																								

Biodiversity Components	Sampling methods, dates, frequency, locations	Indicators	Results																				
	mist nets, night surveys).	Species accumulation curves	See Figure 5.1																				
	Red list IUCN / CITES / DS 004 2014 MINAGRI Dates: Baseline: August 6 to 16, 2021 Monitoring Report 1: September 25 to October 07, 2022 Locations (3): Sampling areas: Quinillal (Z1), Milagros (Z2) and Palmeras (Z3) Frequency: biannual	Endangered species (presence)	IUCN: (VU) <i>Tapirus terrestris</i> , <i>Tayassu pecari</i> , <i>Myrmecophaga tridactyla</i> (NT) <i>Panthera onca</i> , <i>Puma concolor</i> (LC) <i>Saimiri boliviensis</i> , <i>Aotus nigriceps</i> , <i>Pithecia monachus</i> , <i>Leopardus pardalis</i> , <i>Pecari tajacu</i> , <i>Bradypus variegatus</i> CITES I: <i>Panthera onca</i> , <i>Puma concolor</i> , <i>Leopardus pardalis</i> MINAGRI (SD N° N°043-2006-AG) (NT) <i>Panthera onca</i> , <i>Puma concolor</i> , <i>Tapirus terrestris</i> , <i>Tayassu pecari</i>																				
		Key indicator species (presence)	<i>Tapirus terrestris</i> , <i>Priodontes maximus</i> , <i>Myrmecophaga tridactyla</i> , <i>Panthera onca</i> , <i>Puma concolor</i> , <i>Leopardus pardalis</i>																				
Birds	Count points (every 200 m and for 10 minutes) and complementary methods (play-back, intensive search, photographic technique, mist nets) Red list IUCN / CITES / DS 004 2014 MINAGRI Dates:	Presence/absence Diversity index Species conservation status Species richness (n° of species, families, and genera)	357 identified species (accumulated) and 308 species identified during monitoring. 51 families and 24 orders. <table border="1"><thead><tr><th>Birds</th><th>Z1</th><th>Z2</th><th>Z3</th></tr></thead><tbody><tr><td>N° sp: 307</td><td>191</td><td>184</td><td>199</td></tr><tr><td>N° Ind.</td><td>1214</td><td>1252</td><td>1289</td></tr><tr><td>Margalef</td><td>26.75</td><td>25.66</td><td>27.65</td></tr><tr><td>Simpson_1-D</td><td>0.975</td><td>0.981</td><td>0.985</td></tr></tbody></table>	Birds	Z1	Z2	Z3	N° sp: 307	191	184	199	N° Ind.	1214	1252	1289	Margalef	26.75	25.66	27.65	Simpson_1-D	0.975	0.981	0.985
Birds	Z1	Z2	Z3																				
N° sp: 307	191	184	199																				
N° Ind.	1214	1252	1289																				
Margalef	26.75	25.66	27.65																				
Simpson_1-D	0.975	0.981	0.985																				
		Species accumulation curves	See Figure 5.2																				
		Endangered species (presence)	Endemics EBA-66: <i>Myrmoborus melanurus</i> , <i>Talaphorus chlorocercus</i> IUCN: (VU) <i>Myrmoborus melanurus</i> , <i>Tinamus tao</i> (NT) <i>Celeus torquatus</i> , <i>Spizaetus ornatus</i>																				

Biodiversity Components	Sampling methods, dates, frequency, locations	Indicators	Results																								
	Baseline: August 6 to 16, 2021 Monitoring Report 1: September 25 to October 07, 2022 Locations (3): Sampling areas: Quinillal (Z1), Milagros (Z2) and Palmeras (Z3) Frequency: biannual		CITES I: <i>Jabiru mycteria</i> MINAGRI (SD N° N°043-2006-AG): (NT) <i>Jabiru mycteria</i> , <i>Pteroglossus beauharnaisii</i> , <i>Myrmoborus melanurus</i>																								
		Key indicator species (presence)	<i>Myrmoborus melanurus</i> , <i>Tinamus tao</i> , <i>Celeus torquatus</i> , <i>Spizaetus ornatus</i> , <i>Jabiru mycteria</i> , <i>Talaphorus chlorocercus</i>																								
Herpetology	Herpetofauna Assessment: Visual Encounter Search (VES) Red list IUCN / CITES / DS 004 2014 MINAGRI Dates: Baseline: August 6 to 16, 2021 Monitoring Report 1: September 25 to October 07, 2022 Locations (3): Sampling areas: Quinillal (Z1), Milagros	Species richness (n° of species, families, and genera)	70 species of which 41 sp. amphibians (6 families and 2 orders) and 19 sp. Reptiles (14 families and 3 orders). Considering baseline results, the accumulated number of species identified is 89. <table border="1"><thead><tr><th>Herpetofauna</th><th>Z1</th><th>Z2</th><th>Z3</th></tr></thead><tbody><tr><td>N° sp</td><td>37</td><td>35</td><td>34</td></tr><tr><td>N° Ind.</td><td>149</td><td>116</td><td>130</td></tr><tr><td>Margalef</td><td>7.194</td><td>7.152</td><td>6.78</td></tr><tr><td>Simpson</td><td>0.9095</td><td>0.9386</td><td>0.9056</td></tr><tr><td>Fisher Alpha</td><td>15.77</td><td>17.02</td><td>14.98</td></tr></tbody></table>	Herpetofauna	Z1	Z2	Z3	N° sp	37	35	34	N° Ind.	149	116	130	Margalef	7.194	7.152	6.78	Simpson	0.9095	0.9386	0.9056	Fisher Alpha	15.77	17.02	14.98
Herpetofauna	Z1	Z2	Z3																								
N° sp	37	35	34																								
N° Ind.	149	116	130																								
Margalef	7.194	7.152	6.78																								
Simpson	0.9095	0.9386	0.9056																								
Fisher Alpha	15.77	17.02	14.98																								
		Species accumulation curves	See Figure 5.3																								
		Endangered species (presence)	Endemics: <i>Dendropsophus sp</i> , <i>Scinax sp.</i> (new specie discovered during the monitoring) ²⁸ . CITES: (I) <i>Allobates femoralis</i> (II) <i>Caiman crocodilus</i>																								

²⁸ <https://evolsyst.pensoft.net/article/102425/>

Biodiversity Components	Sampling methods, dates, frequency, locations	Indicators	Results
	(Z2) and Palmeras (Z3) Frequency: biannual	Key indicator species (presence)	<i>Allobates femoralis</i> , <i>Caiman crocodilus</i>

Table 5.6. Importance value index (IVI) results for each monitoring site

Quinillal			Palmeras			Milargros		
Nº	Species	IVI (%)	Nº	Species	IVI (%)	Nº	Species	IVI (%)
1	<i>Virola pavonis</i> (A.DC) A.C. Smith	12.02	1	<i>Iryanthera laevis</i> Markgr.	6.55	1	<i>Eschweilera coriacea</i> (DC.) S.A. Mori	10.56
2	<i>Ceiba pentandra</i> (L.) Gaertn.	11.83	2	<i>Pourouma minor</i> Benoist	6.11	2	<i>Inga pezizifera</i> Benth	9.93
3	<i>Symphonia globulifera</i> ; L.f.	10.95	3	<i>Sapium marmieri</i> Huber	5.46	3	<i>Hura crepitans</i> L.	8.92
4	<i>Hura crepitans</i> L.	9.43	4	<i>Apeiba membranacea</i> Spruce ex Benth	5.38	4	<i>Pachira insignis</i> (Sw.) Sw. ex Savigny	7.65
5	<i>Inga alba</i> (Sw.) Willd.	6.59	5	<i>Terminalia amazonia</i> (J.F. Gmel.) Exell	4.97	5	<i>Inga alba</i> (Sw.) Willd.	7.54
6	<i>Virola calophylla</i> Warb.	5.41	6	<i>Inga alba</i> (Sw.) Willd.	4.71	6	<i>Dialium guianense</i> (Aubl.) Sandwith	5.97
7	<i>Dialium guianense</i> (Aubl.) Sandwith	4.95	7	<i>Hura crepitans</i> L.	4.56	7	<i>Triplaris americana</i> L.	4.7
8	<i>Machaerium acutifolium</i> var.	4.83	8	<i>Tachigali poeppigiana</i> Tul.	4.24	8	<i>Attalea phalerata</i> Mart. ex Spreng.	4.6
9	<i>Amaioua guianensis</i> Aubl.	4.78	9	<i>Symphonia globulifera</i> ; L.f.	3.87	9	<i>Ocotea</i> sp.	4.04
10	<i>Eschweilera coriacea</i> (DC.) S.A. Mori	4.31	10	<i>Theobroma speciosum</i> Willd. ex Spreng.	3.85	10	<i>Terminalia amazonia</i> (J.F. Gmel.) Exell	2.97
	Otras Esppecies	24.9		Otras Especies	50.3		Otras Especies	33.1
Total general		100			100			100

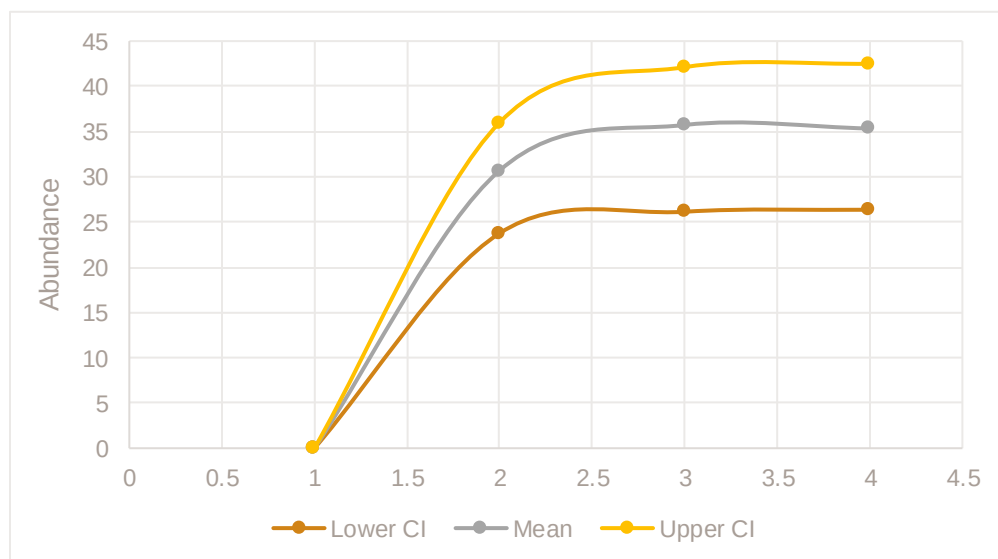


Figure 5.1. Mammal species accumulation curve

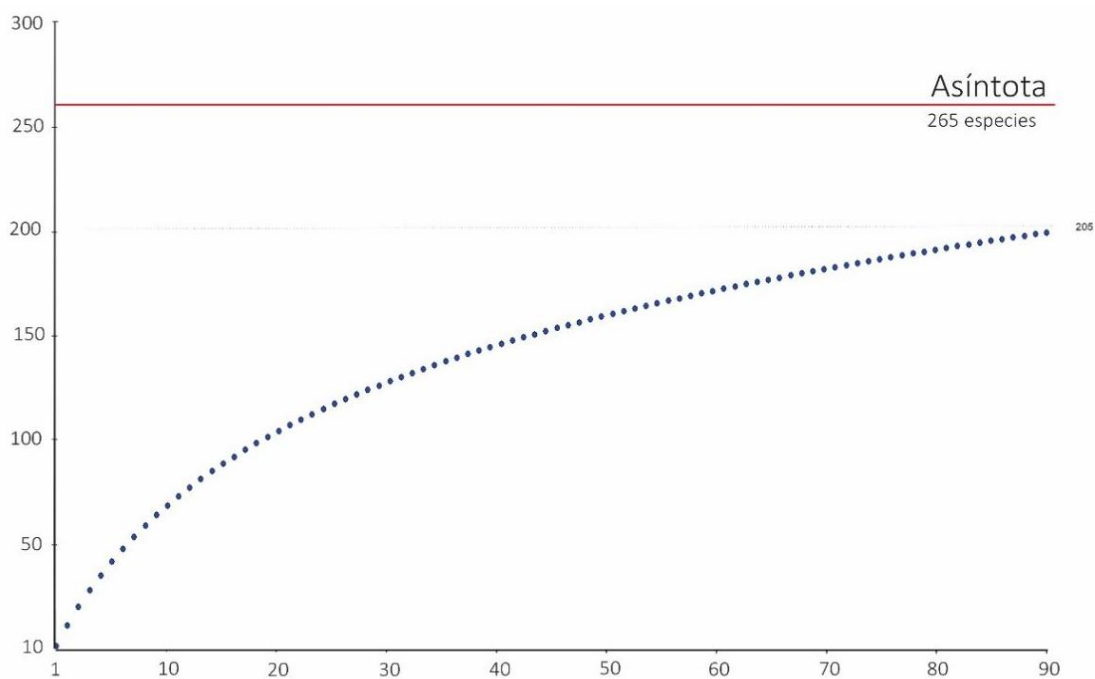


Figure 5.2. Bird species accumulation curve

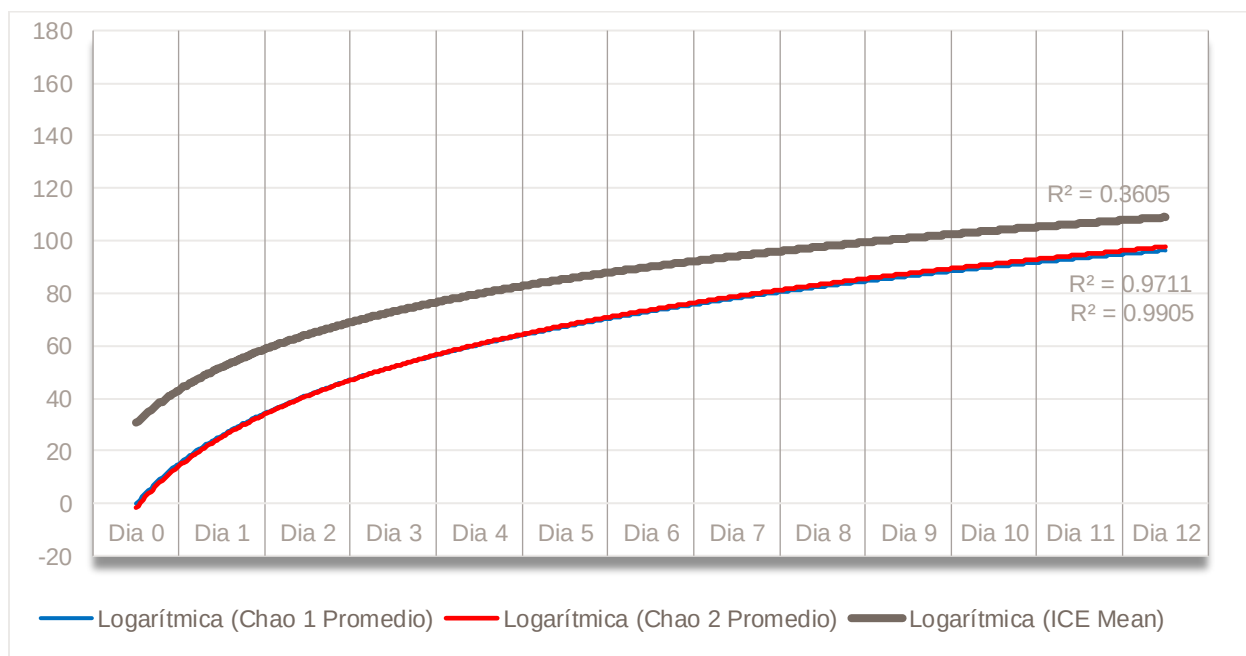


Figure 5.3. Herpetofauna species accumulation curve

Method for assessing flora

In the evaluation of wild flora, the method used was a sampling based on Modified Gentry Plots (MGP), which consists of taking a census, identifying the genus, species and family of the individuals, in an area of 0.1 ha (10 50 m long x 2 m wide transects, randomly distributed, without overlapping and 20 m apart), measuring all tree individuals whose stem has a diameter at breast height (DBH) greater than or equal to 0.10 m.

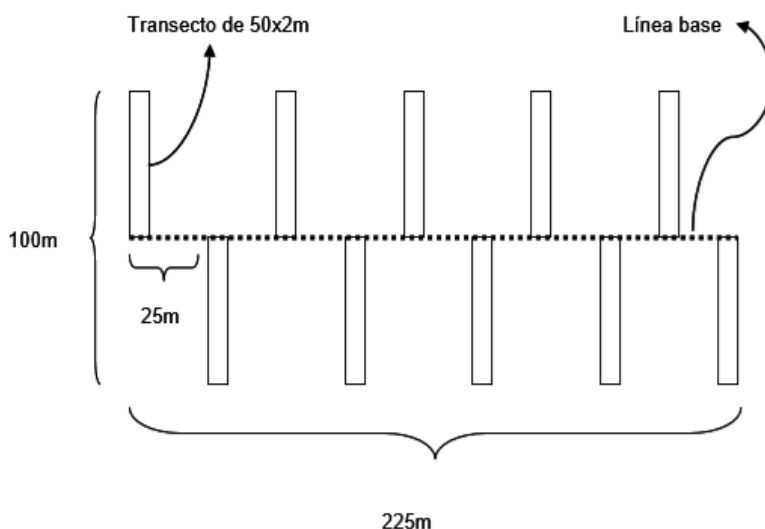


Figure 5.4. Transects distribution

In addition, measurements of stem height, position and crown shape were made. Among other parameters, the IVI (Importance Value Index) was calculated for each species, as the sum in percentages of relative abundance, relative frequency and relative dominance. With this index it is possible to evaluate the "ecological weight" of each species within the corresponding forest type. Obtaining similar IVI for the indicator species, suggest the equality or at least the similarity of the stand in its composition, in its structures, in relation to the site and in its dynamics.

63 species belonging to 24 families were identified, being the Fabaceae with the highest representation in number of individuals found (25.7%), followed by the Myristicaceae (13.4% individuals), Malvaceae (8.7% individuals) and Arecaceae (8.2% individuals). The diameter distribution in the 3 evaluated zones presents the shape of an "inverted J", typical of these types of primary forests.

Method for assessing mammals

For the evaluation of mammals, the same sampling sites from the baseline biological evaluation were selected. The methodology of the Rapid Assessment Program, RAP (Rapid Assessment Program), of Conservation International (CI. 2012) was used, carrying out the field work during four calendar days per study area; that is, twelve days per evaluated area. For the directed sampling, those registered as sites of direct, indirect or photographic sighting of mammals, during the Biological Evaluation for the elaboration of the baseline, were used as reference points.

The methodology for the direct and indirect observation of small non-flying mammals and larger mammals was based on censuses in linear transects, with a minimum bidirectional day and night average of 6.61 km per day, at each sampling station. The capture of digital images by means of heat-sensitive camera traps, active 24 hours a day, was used as a support method. Twelve (12) BUSHNELL (IMA53) automated equipment with external camouflage and water resistance characteristics were used. Its use helped eliminate individual sampling bias and reduced research hours in the field; by operating 24 hours a day, which allowed their camouflaged placement at georeferenced sampling stations, increasing detection rates even for highly elusive species. Mist nets were also used for the non-lethal capture of small flying mammals, only during night tours, using eight 12 m long mist nets, placed at a height of 1.5 m above the ground.

The census of diurnal line transects, as a recognized methodology to study medium and large vertebrates in tropical forests, has the advantage of low cost and allows direct identification of species during the evaluation, without requiring the lethal collection of specimens for processing. The transects had a minimum length of 2 kilometers of cumulative day and night bidirectional route for the determination of the sampling effort for each locality. The trail systems and boundaries of each study area were used as linear transects. The number of sampling sites and the distances between them vary in each sampling site and depending on their accessibility, proximity to bodies of water (clay licks, lakes, ponds and ravines) and the topography of the place. The transects were more than 300 m apart. from the base camp, in order to avoid bias in data collection due to reactive behavior of individuals close to the camp.

Efforts were focused on recording medium and large mammals, including species that are easy to observe, the same ones that are important in the ecosystem, many of them being considered "umbrella species" that, due to their large size and diet (predators), They require large spaces to complete their life cycle. The direct sighting included the animals: Seen (V) and Heard (E); and the indirect recording of the animals: Smelled (O), Tracked (R) and Tracks (H) (Carrillo et al. 2000), which constituted the basis of the observation efforts carried out by the Mammalogy brigade. In addition, the support of digital images, recorded by camera trapping, was used. Sampling days provided twenty (25) 'visits' or detection events in the presence-absence

matrix, an adequate number for site occupancy analyzes in most recorded species. However, for robust density estimates, a minimum of 40 detection events is recommended, although 20 sightings may provide sufficient estimates (Peres, 1999).

Three (03) transects were covered, one in each Study Area, with a total length of 15.42 km in Zone 01 (Quinillal), 36.55 km in Zone 02 (Milagros) and 27.30 km in Zone 03 (Palmeras), adding a total sampling effort of 79.27 km. The Occurrence Index was calculated, which is qualitative and complementary to the use of other detection methods, such as camera traps, to confirm the presence of a kind. It consists of the sum of the direct and indirect records of medium and large mammals, assigning each record to three different categories, each of which is assigned a different value. Confirmation of a species is obtained when the sum of all types of records reaches a score equal to or greater than 10. This technique is suggested to be done in places where there are few direct records and higher indirect records.

The number of species found in the three study areas was 36 identified species. From the results of the richness calculation, it can be deduced that the Monkey Fraile (*Saimiri boliviensis*) species is the one with a much higher value in the three study areas, with 222 individuals, with a Relative Abundance of 75.22, 138.21 and 17.77. for every 10 km of travel in the areas of Quinillal, Milagros and Palmeras respectively. It is followed in order of importance by *Saguinus fuscicollis*. The *Saimiri boliviensis* is an important species as a disperser of fruit tree seeds that make up the majority of its diet, a function that guarantees the stability of the forests in the evaluated area, providing sustenance to many other species that have similar diets.

Method for assessing birds

For the evaluation of the bird community, the Count Points were used as the main method, through which qualitative and quantitative data were obtained. Likewise, complementary methods such as the play-back technique and intensive search were used, which were useful to register or confirm the presence of some during the evaluation. In point surveys, the observer remains at a fixed point and takes note of all birds seen and heard in a limited or unlimited area during a given period of time. To avoid bias in data collection, it was considered that the points were approximately 200 meters apart. The evaluation time was 10 minutes at each point. The main data that were considered were, species and number of individuals, in addition to the start and end time, coordinates, type of vegetation, climatic conditions, among others.

To increase the probability of detection, a variant of the intensive search census was used, which was carried out during the 200 m journey between point and point. The method consists of carrying out a census in an area that the observer covers completely in search of birds. In this way unfamiliar songs or calls are less of a problem as the bird can be searched for and visually identified if necessary.

This method is very important because it allows to follow the species that vocalize far away or that generate doubts at the moment of their identification. The Playback technique is a complementary method to improve the inventory of species. It is a tool widely used by experienced ornithologists for the recognition of inconspicuous or cryptic species, which, due to the similarity of their color patterns, or because they are especially shy, are difficult to detect visually. Basically, it consists of reproducing the vocalizations of a species, attentively waiting for an auditory or visual response that allows an objective record to be made. Photography techniques are used to illustrate and confirm with greater certainty the record of some very elusive and difficult-to-observe species. These techniques are complemented by the playback technique, using vocalization to attract the individual up to a close distance, within the range of a 300mm telephoto lens, for which a Canon EOS 6D Mark II camera with a 400mm EF lens and a NIKON D7000 with a 300mm EF lens.

For the identification of species, the book of the Birds of Peru was available at all times in its digital version (Schulenberg et al. 2010); and Merlin, which is an application developed by the Cornell Lab of Ornithology that contains photos, sounds, distribution maps, and identification tips for more than 6,000 species of birds around the world. In addition, audio players were used with the recordings of all the birds in Peru, which were used as a comparison when necessary. A TASCAN DR05 recorder was also used to record vocalizations. The auditory identification was carried out following as a guide the songs of the Birds of Peru by Peter Boesman and the online song base xeno-canto (<http://www.xeno-canto.org/>). The taxonomic classification was carried out according to the SAAC (Remsen, et al. 2022) and for the common names the list of birds of Peru was used (Plenge, M. A., 2022).

12m long mist nets were placed in different sectors of the forest, trying to cover the entire area. These were placed to capture some rare species, since these complement the visual records, registering visually and auditorily cryptic species with this method. On several occasions the nets had to be redirected to specific places where there were doubtful records of some species, and it was necessary to catch the bird to confirm its presence.

As a result of the evaluation, 308 species of birds distributed in 24 orders and 51 families were registered, which represent almost 17 % of the birds of Peru and 34% of the birds registered in the department of Ucayali (eBird, 2022). Of the total number of species, 205 were recorded at the counting points, while the remaining 103 species were observed incidentally during their stay in the area, either: walking the trails randomly, moving from point to point, or during the night. The accumulated record of species totals 357 (considering the 2021 evaluation), which means that approximately 19% of the birds in all of Peru live in the evaluated forests.

The Clench equation is the most widely used model and has shown a good fit in most real situations and for most taxa, as it successfully describes the trajectory of species accumulation curves in vertebrate community assessments (Soberón and Llorente 1993). Using the data obtained with the 90 count points, Clench's equation estimates the total number of species that could be recorded in the area at 265. This result underestimates the actual size of the bird community that inhabits the area, since it is known that the number of species recorded in this reported assessment is 308 species. As a reference, the results of the evaluations made by Valqui and Novoa, (2021) in the Quinillal area, using the MacKinnon fixed list method, recorded 286 species and estimated that the size of the bird community for the area is 352 species, almost the same number (357) that results from joining the results of the evaluations carried out in 2021 and 2022.

The composition of the bird community is interesting due to its geographical location on the border between two large Biomes, the North and South Amazonia, therefore, the species composition represents both biogeographic regions. Furthermore, it is in an ecotone zone between the large areas of endemism (EBA) of the lowlands of southeastern Peru and the lowlands of the Alto Amazonas-Napo, therefore the zone is very important to understand some patterns of distribution of Amazonian birds in our country.

Method for assessing herpetofauna

In the evaluation of reptiles and amphibians carried out in the period, the search by visual encounter (VES) was used, this methodology was chosen because it can be used for different types of habitats. For this, free searches were used with a standardized effort of 7 hours of work per night on each sampling day. In this way, the results can be compared between the evaluated areas. The searches were intensive and the movement was slow and constant, checking vegetation, bodies of water, trunks and diverse material that serves as a refuge for both amphibians and reptiles. The samplings were carried out from 7:00 p.m. to 2:00

a.m. the following day. Additionally, the species recorded opportunely in the areas surrounding the sampling areas were also counted, such as the search for breeding ponds and other environments where the presence of amphibians and reptiles could exist. The species registered with this method were only considered to complement the richness. The individuals found were photographed, recorded in the field notebook, and determined as soon as possible in the field or in the office with the help of guides, bibliographic material, and comparison with specimens in scientific collections.

The field work was carried out with an effort of 252 man-hours in 12 days of sampling, allowing to cover a sampling area of 8 km² (2 km²/night) in each sampling area, registering a total of 389 individuals belonging to 70 species between amphibians and reptiles. The amphibians were distributed in 6 families and 2 orders; while the reptiles in 14 families and 3 orders. The families that were found to be best represented are Hylidae with 29 species and in reptiles Colubridae with 9, being the most diverse families in the Neotropics (Frost 2022, Uetz et al. 2022). Considering the evaluation of 2021, a total of 89 species registered in the study area are reached, corresponding 45 to amphibians and 44 to reptiles.

The accumulation curves, the variable on which the comparisons will be based, calculate the effectiveness (in terms of species detected by the researchers) of the sampling and do not try to estimate diversities based on the number of species and individuals found in a sampling that it may have had many biases during its field phase. They will be calculated through the EstimateS version 9.1.0 program. using the Chao1 and 2 estimators and the ICE for the comparison of different non-parametric estimators. Efforts were made that the logarithmic trends calculated in each of the curves have a confidence range above 95% to present them. The logarithmic trend for the non-parametric estimators that take into account the abundance of the recorded species (Chao 1 and 2) seems to reach an asymptote much earlier (below 100 species) than the parametric estimator (above 100 species). Likewise, the R² factor reaches between 95%-99% effectiveness in Chao 1 and 2, while it only reaches 30% in ICE, which indicates that under the same sampling conditions and with the same effort, it is probable that, making the sampling as effective as possible, we could have found close to 100 species between amphibians and reptiles. The ICE estimator seems to indicate that during this sampling we were far from reaching a high effectiveness and that numbers above 100 species could be more equivalent to a highly effective sampling effort. Future samplings, both in the rainy season and in the dry season, will be able to elucidate these results, but at the moment it is not possible to assume any of these results as determinative.

5.3.2 Biodiversity Monitoring Plan Dissemination (B4.3)

The dissemination of the summary of the most relevant aspects of the biological monitoring plan implemented in the project area was carried out through information meetings, with the participation of authorities and residents of the surrounding local communities, using a very didactic and easy communication system. to use. In these meetings, the results of the main species of flora and fauna recorded, the importance of conserving HCVs, and bodies of water and wetlands as priority spaces were explained. See also section 2.3.2 on dissemination of project documents.

Likewise, part of the results of the fauna evaluation are available to the public through the BAM website²⁹, where photographs and camera trap videos of the main species of flora and fauna that are being conserved

²⁹ “¡Extraordinarios resultados de cientos de cámaras trampa instaladas en Campo Verde! (en el marco del proyecto REDD+ El Último Hábitat de BAM): <https://www.bosques-amazonicos.com/blog/extraordinarios-resultados-de-cientos-de-camaras-trampa-instaladas-en-campo-verde/>

within the project area are displayed and its importance in the local ecosystem. Once the Monitoring Report for the period 2020 - 2021 are registered under VERRA, the summary of the final documents will be shared with the community through its representatives and made public on the BAM website.

5.4 Optional Criterion: Exceptional Biodiversity Benefits

To date, through biological evaluations, the following species have been registered in some category in a threatened situation according to the IUCN criteria and others as endemic:

- Mammals: (VU) *Tapirus terrestris*, *Tayassu pecari*, *Myrmecophaga tridactyla*
- Birds: (VU) *Myrmoborus melanurus*, *Tinamus tao*. Endemics EBA-66: *Myrmoborus melanurus*, *Talaphorus chlorocercus*
- Amphibians: Endemics *Dendropsophus* sp, *Scinax* sp.
- Flora: (EN) *Handroanthus serratifolius*

5.4.1 Trigger Species Population Trends (GL3.3)

Trigger Species	"Black-tailed antbird" (<i>Myrmoborus melanurus</i>)
With-project Scenario	Endangered (EN) species under the UICN Red List, classified as Vulnerable (VU) according to Peruvian legislation and in Annex II of CITES. This species is one of the most vulnerable to logging in Amazonian forests due to its low natural density and low growth rates. In the flora evaluation carried out in the project area, only one individual with a DBH equal to 10 cm was recorded in the Palmeras sector, with a density of 10 trees/ha in the low terrace forest type. In this reporting period, in order to reduce the threats of illegal extraction of timber species, fire control, patrolling of the boundaries and accesses to the project area, avoiding unwanted events that could harm forest cover and species populations protected especially the "tahuari", a territorial supervision system has been mainly implemented, strengthening the control and surveillance posts in the "Quinillal", "Milagros" and "Palmeras" camps, whose actions have been described in section 5.1. 2
Trigger Species	"Tahuari amarillo" (<i>Handroanthus serratifolius</i>)

"¡Nueva especie de rana descubierta en los bosques conservados bajo REDD+ El Último Hábitat!":

<https://www.bosques-amazonicos.com/blog/nueva-especie-de-rana-descubierta-en-los-bosques-conservados-bajo-redd-el-ultimo-habitat/>

"Área de Conservación Privada Campo Verde: preservando la biodiversidad amazónica en Ucayali":

<https://www.bosques-amazonicos.com/blog/area-de-conservacion-privada-campo-verde-preservando-la-biodiversidad-amazonica-en-ucayali/>

With-project Scenario	Vulnerable (VU) species under UICN Red List. The black-tailed antbird (<i>Myrmoborus melanurus</i>) is a small insectivorous bird which moves in pairs, weighing little more than 20 grams, very little known and of reduced distribution. Its habitat is a type of forest with scrub (varzea) associated with nearby water bodies. Based on the field work carried out within the framework of the Science Program, it can be ensured that there is sufficient habitat within the project area to support a group greater than 10 pairs of individuals of the species. Only in the Quinillal sector, where two biodiversity evaluations were carried out, the species was recorded on 16 occasions in 5 and 7 days of evaluation in the wet and dry season respectively (year 2020 and 2021). Due to the distribution, these apparently represent at least 6 territories, that is, 12 individuals. These data will be confirmed in the following evaluations carried out by the Science Program annually in the project area, in the dry and wet seasons. In the present reporting period, in order to reduce the threats of degradation of the forest cover which are habitats frequented by <i>Myrmoborus melanurus</i>, actions have been carried out such as fire control, patrolling of the boundaries and access to the forest area. project, avoiding unwanted events that could harm and endanger areas of the different habitats, especially those close to bodies of water (seasonally flooded low terraces “bajiales”), activities in general implemented within the framework of a supervision strategy territorial, strengthening the control and surveillance posts in the “Quinillal”, “Milagros” and “Palmeras” camps, whose various actions have been described in section 5.1.2. Likewise, the biological evaluations carried out by the Science Program aimed at protecting the species will allow us to know the characteristics of the reproductive biology and movement of the species, in order to take actions to conserve their habitats.
-----------------------	--

6 ADDITIONAL PROJECT IMPLEMENTATION INFORMATION

All information about the implementation of activities has been described in the corresponding sections.

7 ADDITIONAL PROJECT IMPACT INFORMATION

All information about impacts of the project have been described in the corresponding sections.