

MONITORING REPORT “THE JAGUAR AMAZON REDD+ PROJECT”



Document Prepared by Greenoxx - Paskay

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GHG Accounting/ Crediting Period	01 January 2018 - 31 December 2057; 40-year total period
Monitoring Period of this Report	01 January 2021 - 31 December 2021
History of CCB Status	CCB verification approved
Gold Level Criteria	Biodiversity Gold Level. Key flora and fauna species (as <i>Atheles chamek</i>, jaguars and Brazil nut trees) are being protected by the project activities. Boundaries

surveillance and supporting sustainable activities within local communities are expected to help to preserve those species.

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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) Jaguar Conservation	43 individuals	5.1	43 individuals
2) Brazil Nut Conservation	11,882 trees	5.1.3	11,882 trees
3) Eco-tourism Initiative	12 visitors	5.1.3	37 visitors

1.2 Standardized Benefit Metrics

Category	Metric	Achievements during Monitoring Period	Section Reference	Achievements during the Project Lifetime
GHG emission reductions & removals	Net estimated emission removals in the project area, measured against the without-project scenario	0	-	0
	Net estimated emission reductions in the project area, measured against the without-project scenario	1,301,683.56 tCO ₂ e	3.2.4	4,407,603.56 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	2,817.01 ha	3.2.4	9,765.16 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
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	183,015 ha	3.2.1	183,015 ha
	Number of hectares of non-forest land in which improved land management			

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

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

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

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

Category	Metric	Achievements during Monitoring Period	Section Reference	Achievements during the Project Lifetime
	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	315	4.3.1	579
	Number of female community members who have improved skills and/or knowledge resulting from training provided as part of project activities	104	4.3.1	141
Employment	Total number of people employed in of project activities, ⁵ expressed as number of full time employees ⁶	240	2.3.14	240
	Number of women employed in project activities, expressed as number of full time employees	36	2.3.14	37
Livelihoods	Total number of people with improved livelihoods ⁷ or income generated as a result of project activities	266	2.3.14	266

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

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

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

Category	Metric	Achievements during Monitoring Period	Section Reference	Achievements during the Project Lifetime
	Number of women with improved livelihoods or income generated as a result of project activities	44	2.3.14	44
Health	Total number of people for whom health services were improved as a result of project activities, measured against the without-project scenario	240	2.3.14	264
	Number of women for whom health services were improved as a result of project activities, measured against the without-project scenario	36	2.3.14	37
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	315	4.3.1	546
	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	104	4.3.1	217
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	240	2.3.14	6795
	Number of women who experienced increased water quality and/or improved access to drinking water as	36	2.3.14	3148

Category	Metric	Achievements during Monitoring Period	Section Reference	Achievements during the Project Lifetime
	a result of project activities, measured against the without-project scenario			
Well-being	Total number of community members whose well-being ⁸ was improved as a result of project activities	266	2.3.14	266
	Number of women whose well-being was improved as a result of project activities	44	2.3.14	44
Biodiversity conservation	Change in the number of hectares significantly better managed by the project for biodiversity conservation, ⁹ measured against the without-project scenario	183,015 ha	5.1	183,015 ha
	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	IUCN Red List: Fauna: EN (2 species), VU (5 species) Flora: EN (2 species); VU (4 species)	5.1 5.3.1	IUCN Red List: Fauna: EN (2 species), VU (5 species) Flora: EN (2 species); VU (4 species)

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

⁹ Biodiversity conservation in this context means areas where specific management measures are being implemented as a part of project activities with an objective of enhancing biodiversity conservation.

¹⁰ Per IUCN's Red List of Threatened Species

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

2 GENERAL

2.1 Project Description

2.1.1 Implementation Description

The Jaguar Amazon REDD+ Project comprises a total of 183,015 hectares that are sustainably managed by the certified timber concessions "Inversiones Forestales Chullachaqui SAC" (Chullachaqui) and "Forestal Otorongo SAC" (Otorongo) in the province of Tahuamanu, department of Madre de Dios, in the southeast of Peru. It is certified by FSC for sustainable forest management.

The general objective of the project is to manage the forest extension granted by the Peruvian State, improving the production of forest goods and services in a continuous and sustainable manner with an adequate long-term strategy for its implementation. The specific objectives are:

- Climate objective: Reduce the rate of deforestation.
- Community Objective: promote and consolidate sustainable use of agricultural land by increasing family income without the need to expand to new areas.
- Biodiversity objective: protect the rich ecosystem that is home to many important species of fauna and flora in danger of extinction.

In the current monitoring period, the project continues to avoid unplanned deforestation of forests, through the conservation of the forest and its resources through sustainable forest management, working together with families to increase their income without the need to expand into new forest areas, and protecting the valuable ecosystem that is home to many important species of fauna and flora in danger of extinction. The following activities were carried out:

- Strengthening the capacities of interested organizations.
- Promotion of sustainable productive projects.
- Current agreement with the Iberia Technological Institute (Training in new technologies and sustainable economic activities).
- Training for surrounding communities in the sustainable use of non-timber resources.
- Incorporation of a new community, called "Alerta", as a beneficiary of the project.
- Conservation of the entire study area through low-impact logging and the design and construction of infrastructure to reduce the impact on habitats and trees important for fauna, as well as the prohibition of hunting and raising awareness among workers about the importance of fauna in the forest ecosystem; and FSC certification.
- Fauna monitoring through surveillance personnel and camera traps and flora monitoring through the forest census of the annual cutting areas.
- Monitoring of open area, remaining vegetation, trees for future harvest, etc.

The emissions avoided for year 2021 are 1,301,683 tCO₂e.

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 Unplanned Deforestation
- The Amazon Jaguar REDD+ Project is not a grouped project.

2.1.3 Project Proponent(s)

Organization name	Forestal Otorongo SAC
Contact person	Eng. Vittorio De Dea Peña
Title	Legal Representant
Address	Road to La Cachuela Km. 1.8, Tambopata, Madre de Dios, Peru
Telephone	+51 989 067 284
Email	vdedea@bozovich.com

Organization name	Greenoxx Sociedad Civil
Contact person	Eng. Rocco Cheirasco & Eng. Silvia Gómez Caviglia
Title	Chairman CEO & Executive Vice-President
Address	Costa Rica 1661 of. 7; CP 11500; Montevideo, Uruguay
Telephone	+598 2604 08 69
Email	rocco@greenoxx.com; ngo@greenoxx.com; silvia@greenoxx.com

2.1.4 Other Entities Involved in the Project

No other entity directly involved in the project.

2.1.5 Project Start Date (G1.9)

November 8th, 2017, is the project start date in order to meet with a new forest cycle and to be comparable with official forest loss maps provided by MINAM, through GEOBOSQUES platform. The FSC certificate obtained by the Otorongo concession started on 8 November 2017, while the transfer of the two smaller forest concessions to Otorongo also occurred in 2017. With both achievements, the forest area has consolidated in a contiguous managed area and with the FSC

certification, the guarantee of sustainable management has been confirmed by an independent audit team. Forest certification is considered the milestone for the project start date not only because it ensures that the forest is being well managed environmental and socially, under independent international recognized standards (in a contiguous area that facilitates the logging and transportation stages and the patrolling of borders) but also because, with the extra incomes of carbon sales, it ensures financially the operations as certified timber allows the access to more attractive market niche.

2.1.6 Project Crediting Period (G1.9)

01 January 2018 - 31 December 2041; 24-year total period.

2.1.7 Project Location

The project is in Peru, in the south-east area of the Department of Madre de Dios, in the province of Tahuamanu (districts of Iñapari, Iberia and Tahuamanu). The project area (PA) comprises the consolidated Otorongo and Chullachaqui areas covering a total of 183,015 hectares. The coordinates of each forest concession that make up these consolidated projects are shown in Evidence 2.01.

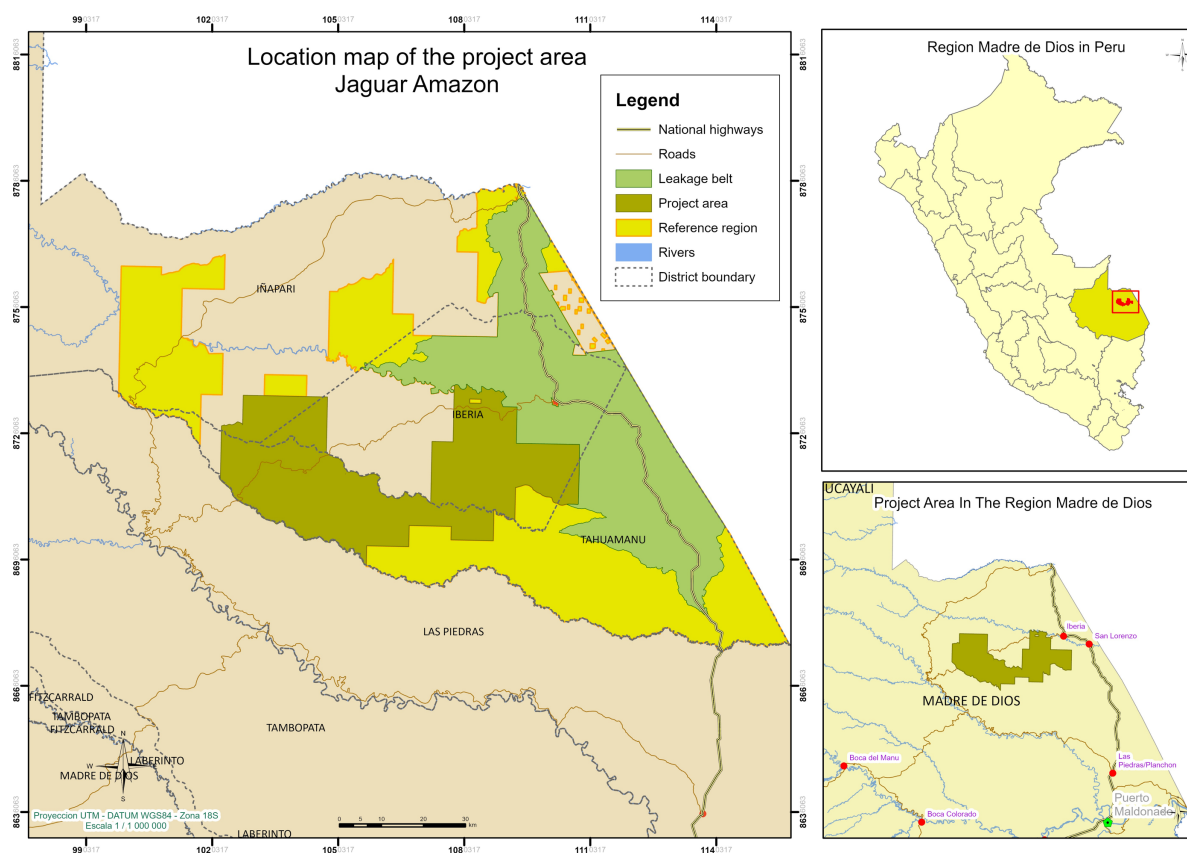


Figure 2.1. Reference Region, Leakage Belt and Project Area

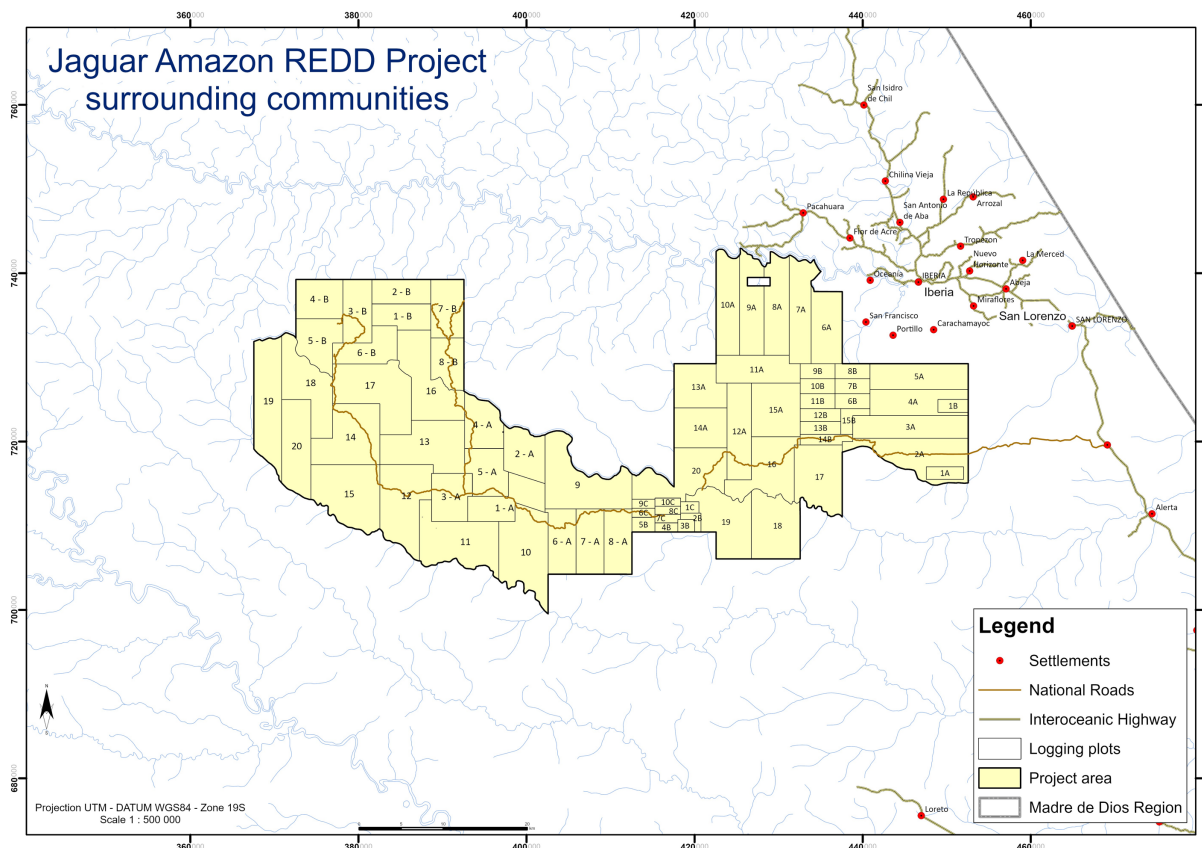


Figure 2.2. Project Area and Surrounding Communities

A table with the geodetic characteristics of each one of the key areas: reference region, leakage belt and project area is also presented below:

Table 2.1. Geodetic Characteristics of PA, RR and LB

Entity	Project Area	Reference Region	Leakage Belt
Centroid X	407287	447623	452331
Centroid Y	8721397	8702255	8736370
Latitude	11° 33' 54.165" S	11° 29' 13.894" S	11° 25' 50.560" S
Longitude	69° 51' 1.011" W	69° 35' 48.212" W	69° 26' 12.552" W
Area (ha)	183,015.29	516,554.22	232,114.34
Tenure	Forest concessions	Forest concessions, agrarian plots, Brazil nut concessions	Forest concessions, agrarian plots, Brazil nut concessions

Entity	Project Area	Reference Region	Leakage Belt
Department	Madre de Dios	Madre de Dios	Madre de Dios
Province	Tahuamanu	Tahuamanu	Tahuamanu
District	Iñapari – Tahuamanu - Iberia	Iñapari – Tahuamanu - Iberia	Iñapari – Tahuamanu - Iberia

2.1.8 Title and Reference of Methodology

VM0006. Methodology for Carbon Accounting for Mosaic and Landscape-scale REDD Projects. Version 2.2 - 17 March 2017 - Sectoral Scope 14.

<https://verra.org/methodologies/vm0006-methodology-for-carbon-accounting-for-mosaic-and-landscape-scale-redd-projects-v2-2/>

VT0001: Tool for the Demonstration and Assessment of Additionality in VCS Agriculture, Forestry and Other Land Use (AFOLU) Project Activities. Version 3.0 - 1 February 2012 - Sectoral Scope 14.

[VT0001 Tool for the Demonstration and Assessment of Additionality in VCS Agriculture, Forestry and Other Land Use \(AFOLU\) Project Activities, v3.0 - Verra](#)

2.1.9 Other Programs (G5.9)

The project is not registered, nor is seeking registration under any other GHG programs. It is not discarded that in the future, this will be evaluated as an alternative. The project expects to be registered in the Peruvian National GHG Registry.

2.1.10 Sustainable Development

The project contributes to many international and nationally stated sustainable development priorities as:

- SDG. The current project contributes to 15 of the Sustainable Development Goals (Details see Evidence 2.02.).

Table 2.2. Project activities related to SDGs

Sustainable Development Goals		Project activities related
1	No Poverty	Increase the family's income of Alerta (see the results in section 4.3.1).
2	Zero Hunger	
3	Good Health and Well-Being	

Sustainable Development Goals		Project activities related
4	Quality education	We promote learning opportunities through an agreement with the Instituto de Educación Superior Tecnológico Público (Public Technological Higher Education Institute) of Iberia to make possible virtual education for our personnel and for the members of the nearby communities, in an inclusive way and without genre distinction (see Evidence 2.04). Also 70 Internal trainings and 20 Communities trainings are reported in this period.
5	Gender Equality	Institutional policies (equal opportunities for the recruiting of workers without genre distinction).
6	Clean Water and Sanitation	Continuous monitoring of precipitation, discharge, and erosion in strategic sites to allow the dynamic management (see Evidence 2.19).
8	Decent Work and Economic Growth	Institutional policies that ensure optimal work conditions (see Evidence 2.09).
9	Industry Innovation and Infrastructure	Constant and inclusive capacity building opportunities in harvesting technics, management, and post-harvest of Brazil nuts to the group of collectors from the Alerta locality, providing innovative technics that allows us to obtain new quality products and 100% organic (see Section 4.3.1 results Community Alerta).
10	Reduced Inequalities	The project generates local economic growth (see section 4.3.1 results Community Alerta).
11	Sustainable Cities and Communities	Learning opportunities are promoted through an agreement signed with the Instituto de Educación Superior Tecnológico Público (Public Technological Higher Education Institute) of Iberia (see Evidence 2.04).
12	Responsible Consumption and Production	Forest Management Certification and Chain of Custody, which guarantees the project's sustainability in the economic, ecologic and social aspects.
13	Climate Action	Permanent capacity building and awareness to collaborators and nearby communities in Climate Change, Global Warming, Carbon Footprint, Adequate Waste Management, and Importance of Natural Resources.
15	Life on Land	Sustainable management of the forest through certified forest Management and Permanent capacity building and awareness to collaborators and nearby communities.
16	Peace, Justice, and Strong Institutions	Dissemination of the project's institutional policies, manual for resolution of conflicts and system of complaints and suggestions, management plan, monitoring procedures, results of the management plan, both with local and regional authorities.
17	Partnership for the goals	The project constitutes an example of sustainable forest management friendly with the environment, of social fairness and economic viability, which turns to be an example of success that results attractive for international investment.

- Forest and Wildlife Law: Approved in 2011, has the goal to promote the conservation, protection, increase and sustainable use of forest and wildlife heritage within national territory,

integrating the management with the maintenance and enhancement of forest ecosystem services and other ecosystems. Clearly, The Jaguar Amazon REDD+ Project is in line that this law.

- **National Strategy on Forest and Climate Change (ENBCC):** The ENBCC is the Peruvian REDD+ Strategy. It includes eight strategic lines. One of them refers to the “increment of the value of natural forests” including the sustainable forest management (as is the case of The Jaguar REDD+ Project).
- **Nationally Determined Contributions (NDC):** Peru has updated its NDC as the country's contribution to the climate targets in the Paris Agreement. One of the Mitigation Measures in the LULUCF sector is also the “Sustainable Forestry Management” with a target of 4.1 million of hectares that the government commits to promote to achieve the management of the area.

2.2 Project Implementation Status

2.2.1 Implementation Schedule (G1.9)

The project start date is November 8th, 2017, as this is the date when the project proponent obtained the FSC certificate for the project area.

Table 2.3. Project implementation milestones

Date	Milestone(s) in the project's development and implementation
04/07/2002 (Chullachaqui) 15/07/2022 (Otorongo)	Issuing of forest concession contract granted by the Peruvian Government to the project proponent.
03/02/2017	Otorongo FSC Certification for sustainable forest management
08/11/2017	Chullachaqui FSC Certification for sustainable forest management
26/04/2017	Agreement between projects proponents (Otorongo and Greenoxx) for the development and implementation of the project
01/01/2018	Starting Date of GHG accounting period, the first immediate year after the project start date
08/10/2020	Socialization of REDD project with surrounding communities
17/03/2021	Signing agreement with IIAP, a public research entity that will provide productive research support
22/01/21 to 10/10/21	10 Trainings in REDD+ Project
31/03/2022	First verification audit for the 2018-2020 period.
Undefined by MINAM	Nesting year (not occurred) as announced by the Peruvian Government for REDD early initiatives to ensure carbon accounting integrity
20/10/2023	Identification and design of productive projects to offer to surrounding communities
2023	Second verification for the 2021 period.
24/05/2024	Start of promotion of productive projects for surrounding communities
19/08/2024	Monitoring of productive projects for surrounding communities
22/11/2025	Evaluation and feedback of productive projects above mentioned

Date	Milestone(s) in the project's development and implementation
30/12/2022-2056	Annual carbon verifications
31/12/2057	Ending date of REDD+ project

2.2.2 Methodology Deviations

No methodology deviations have been proposed in this monitoring period. The ones introduced in the first Monitoring Report (2018-2020 period) where ex-ante estimates were validated are maintained.

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

There are no changes reported in the project design in this period. However, it is important to say that in this monitoring period, the Alerta community has been included as a new beneficiary of the project. The inclusion of a new community in the stakeholders' universe does not have any impact on the applicability of the without project scenario nor the additionality, as the without project scenario is characterized by the expansion of agrarian frontier by surrounding communities and new migrants, which was already covered by stakeholders identified since the project design. Similarly, the additionality analysis is based on the comparison of economic profitability of the agricultural activity with the forest activity. In that sense, this deviation does not have any relationship with these concepts.

The inclusion of Alerta enhances the impact of project activities over the rural families of the surrounding communities.

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

No project description deviations have been proposed in this monitoring period. The ones introduced in the first Monitoring Report (2018-2020 period) where ex-ante estimates were validated are maintained.

2.2.5 Grouped Projects

This is not a grouped project.

2.2.6 Risks to the Project (*G1.10*)

In this period, no communities involved in risk actions that threaten the project have been reported. In the table below the potential risks that remain and the strategies that continue as part of the development of the project in this period.

Table 2.4. Project risks and mitigation measures

Identified Risk	Actions needed and implemented to mitigate the risk
Productive activities are not enough attractive to change the pattern of land use of agrarian neighbors	Design feasibility study and provide continuous technical assistance including accompanying commercial activities to access to improved and specialized markets with premium prices 01 training in agroforestry project was done in this monitoring period (Evidence 2.03 productive projects training)
New migrants that are not part of the original beneficiaries of the REDD+ project will become new deforestation drivers as they do not participate in the project activities	Work jointly with authorities and institutions to a planning process of settlements of new migrants. (The agreements with Insitituto de Investigación de la Amazonía Peruana (IIAP), Instituto Tecnológico Iberia (Evidence 2.04)
Internal conflicts within local settlements	Work jointly with local leaders and social specialists to understand the expectations, interests and power groups and networks inside local communities Training and implementation of the conflict resolution mechanism be developed in this period (Evidence 2.05 communities Trainings in 2021).
Fires cannot season be controlled because of dry	Incorporate scientific and research information in the forest fires patrolling strategy (Evidence 2.06 reporting of forest patrolling)

2.2.7 Benefit Permanence (G1.11)

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) as indicated in section 3.1, which includes prevention activities promoted amongst the different groups located in areas of influence (communities, hamlets) such as training on fire prevention and control and the promotion of sustainable forest management, of 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 recourses in an appropriate manner (Evidence 2.05 communities trainings 2021).
- In this monitoring period, the project incorporates communities (Alerta) 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 Brazil nuts collectors. The project is also designed so that the communities can participate in monitoring processes and the development of productive pilots, among other proposed activities (there is a lot of interest in planting and producing cocoa). 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.

2.3 Stakeholder Engagement

2.3.1 Stakeholder Access to Project Documents (G3.1)

All the documentation referred to the REDD+ project, except sensitivity information (internal financial information as production costs, prices, clients, among others) are available for public review, including communities and authorities, through two ways:

Link with all the information about the REDD+ Project are created and stored (<https://aldoagain21.wixsite.com/cultura-forestal>).

The available information includes the project document and periodical monitoring reports, including biodiversity, community, and climate reports.

In the following table, a summary of engagement process is briefly described with the evidence of these meetings (Evidence 2.05 communities' trainings 2021).

Table 2.5. Engagement process with stakeholders

Stakeholder	Feedback received from stakeholder	How it was incorporated in the design	Evidence
Carachamayoc Community	Leaders and community families attended different meetings and workshops, where they had the opportunity to express their concerns and needs. Specifically, they requested for support in legal issues, tax framework, land titling and productive activities (especially agroforestry with cocoa)	After an explanation about the REDD+ project, the project proponent and community leaders agreed to install a Grievance and Redress Mechanism and conflict resolution. Also, the project proponent committed to support the community with the promotion of agroforestry initiatives in the community	August and October (Evidence 2.05 Community – trainings)
San Francisco Community	Leaders and community families attended different meetings and workshops, where they had the opportunity to express their concerns and needs.	After an explanation about the REDD+ project, the project proponent and community leaders agreed to install a Grievance and Redress Mechanism and conflict resolution.	August and October

Stakeholder	Feedback received from stakeholder	How it was incorporated in the design	Evidence
Alerta Community	Leaders and community families attended different meetings and workshops, where they had the opportunity to express their concerns and needs. Specifically, they requested for support in Post Zafra and Environment Crimes (Forestal Law).	After an explanation about the REDD+ project, the project proponent and community leaders agreed to install a Grievance and Redress Mechanism and conflict resolution.	January, June, August, and October
Monte Sion Community	Leaders and community families attended different meetings and workshops, where they had the opportunity to express their concerns and needs. Specifically, they requested for support in crop management, agroforestry, forest conservation, forestry law, land titling, vicinal road.	After an explanation about the REDD+ project, the project proponent and community leaders agreed to install a Grievance and Redress Mechanism and conflict resolution.	October
Research entities (IIAP, Iberia Institute)	Potential synergies were searched and established with educative and research entities for the implementation of mitigation actions to prevent or reduce the impact on deforestation	Coordination meetings to schedule trainings about controlled fires, cocoa production, and others to local population Workshops were carried out about agroforestry and conflicts resolution and environmental crimes	Cooperation Agreement

2.3.2 Dissemination of Summary Project Documents (G3.1)

In addition to previously described in 2.3.1, the project has applied additional strategies to disseminate the information in a didactic manner:

- Periodical meetings with families from surrounding settlements

Publishing materials (Evidence 2.07 conflict resolution manual and complaints and suggestions manual) for the dissemination of the REDD+ project, the control posts have played an important role in the relationship with the stakeholders, during all the monitoring periods. For example, the Portillo control post has become an important source of information dissemination within the northeast area of the project. Through this control post, it was possible to establish verbal contact

with many of the neighbors, being able to register their telephone numbers and addresses and maintain a two-way open communication.

The control posts were also used to distribute flyers and posters to the stakeholders with the objective of raising awareness on the importance of the breeding calendar of the different fauna species, precautions to take into consideration within the forest, among others.

Invitations to gatherings were done, since the beginning of the project, via telephonic calls and/or face to face invitations in the case of community members that had either a telephone number or address registered, requesting a multiplying effect of those communications through a person-to-person dissemination for those who do not have a telephone.

At the same time, WhatsApp groups were created to disseminate information and send invitations to meetings to the stakeholders.

Communication channels have been currently extended with the emission of a radio program, which is in the air every weekend in a local radio from Iberia (Tahuamanu Radio) and it is dedicated to raising awareness on the importance of respecting the environment, the importance of the forest and the ecosystem services that it offers to us.

During 2021, the communities were visited, and various trainings were provided. Specifically, about the project, its operation, and results, 11 workshops were held.

The most relevant aspects of the project were shared at community meetings presentations.

2.3.3 Informational Meetings with Stakeholders (G3.1)

As described in point 2.3.1 all the project information is published on the website and as described in point 2.3.2, 11 workshops were given in the communities distributed in this way:

Table 2.6. Number of workshops for communities

Communities	Number of workshops
Alerta	4
Carachamayoc	3
Monte Sión	2
Iberia (For families interested in learning and participating in the project)	2
Total	11

Considering that rural families work in their agrarian parcels, and they only go back home in the evening; the protocol prioritizes using telephone calls and voice messages for calls to meetings. This is especially useful in rainy season when travelling to field areas is difficult because roads are

closed.

These phone calls are done directly to each one of the attendants with at least 5 days before the meeting. The previous day, a new reminder call is done and, finally, the same day, a third call is done.

When needed, materials are shared during the meetings. In the case of authorities, the invitations are done through letters or emails.

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

A summary of risks, costs, and benefits were designed with meanings and words that are understandable to the rural communities that live around the project, it has been disseminated in each of the workshops on the project carried out in this monitoring period. (Evidence 2.08 Risk, costs, and benefits and annex 2.26 PPT presentation in Community trainings 2021).

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

The strategy to inform stakeholders for the first verification process (2019-2020), done in June 2022, used a local radio program that broadcasted the information during two months with a weekly frequency. The program was broadcasted on Saturdays during two hours through Radio Television Solar.

The program was focused on explaining about climate change, REDD+ and this REDD+ project, and the main activities of the project as avoiding forest fires, among others. The program included invitation to forest authorities as the ARFFS and calls from the audience.

For the next verification process (the auditor's site visit), a similar strategy will be used considering the current context of the communities for better dissemination.

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

For the field visit for VCS-CCB verification of period 2021, an audit plan will be designed including independent meetings with the stakeholders and other stakeholders. The project proponent will organize each one of these meetings with anticipation to ensure that audit team will have enough time to a deep dialogue with each one.

After receiving the auditor's visit final schedule, a letter from the General Project Coordinator will be 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 process.

2.3.7 Stakeholder Consultation (G3.4)

Communities' opinions are permanent feedback for the project design and implementation. In this period, 11 trainings were done with communities to build and strong the project activities (Evidence 2.05 Trainings communities).

Also, 17 requests have been reported through the project's complaints and suggestions mechanism (see table 2.7) and all were resolved and responded to by the social responsibility manager. Likewise, we can indicate that every year a satisfaction survey is carried out on the perception of the project among the communities, with a significant 60% seeing the project as positive and satisfactory. It is expected that each year it will continue to improve and receive suggestions from the communities involved.

Communities' opinions are permanent feedback for project design and implementation. As an example, in the Internal Report the main recommendations from local families are to provide training in cocoa production under agroforestry systems and with the technical support of IIAP. This has been reflected in the project design with activities as 1.1 (identification of productive projects) and 1.3 (promotion of sustainable productive projects), among others.

2.3.8 Continued Consultation and Adaptive Management (G3.4)

FORESTAL OTORONGO has developed a feedback and grievance redress mechanism (see in the PD Chart 2: Process flow for feedback and grievance redress mechanism section 2.3.12) which allows attending claims and suggestions. This system has been socialized between the surrounding communities and interested parties and, additionally, it has a permanent channel of communication with the company. The system ensures that any claim or suggestion is answered timely. Below is the summary table of complaints and suggestions made within the framework of the project in 2021:

Table 2.7. Summary of Complaints and suggestions (Evidence 2.17. All de complaints and suggestions 2021)

N°	Complaint or suggestion	Group involved	Amount	Zone	Date	Status
1	Solar panel	worker(s)	2	P.V Titimani Otorongo SAC	29-Jun	Closed
2	varied menus of meals in the camp for workers	worker(s)	1	Otorongo SAC	4-Nov	Closed
3	improve delivery service	worker(s)	1	Montenegro - Otorongo SAC	13-Jul	Closed
4	Improve staff equipment	worker(s)	1	Montenegro - Otorongo SAC	26-Ene	Closed

N°	Complaint or suggestion	Group involved	Amount	Zone	Date	Status
5	A kitchen and utensils are needed due to increased staff	worker(s)	1	Montenegro - Otorongo SAC	25-Ene	Closed
6	Improve Water and light in company camp	worker(s)	2	Portillo - Otorongo SAC	29-Jun	Closed
7	Spare parts for transporting workers	worker(s)	1	Mayta - Otorongo SAC	15-Jul	Closed
8	Suggestion to buy a TV	worker(s)	1	Otorongo SAC	15-Jul	Closed
9	Prohibit drinking alcohol in the camp	worker(s)	1	Otorongo SAC	15-Jul	Closed
10	Complete equipment for workers	worker(s)	2	Otorongo SAC	7-Set	Closed
11	Supplies and personal medical	worker(s)	2	Otorongo SAC	3-Ago	Closed
12	Adequate means of transportation for workers	worker(s)	2	Otorongo SAC	22-Jul	Closed
Total		worker(s)	17			Closed

As seen in the table, 17 complaints or suggestions have been received in this period, all of them were attended to and resulted under the protocol proposed by the project. This showed the efficiency and transparency of the process.

2.3.9 Stakeholder Consultation Channels (G3.5)

Meetings organized with communities have been recorded through the application of an attendance list, signed by the participants, including communal authorities and members. Lists may be found in Trainings 2021 (Evidence 2.05 Community Trainings 2021).

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

Meetings with and trainings to local communities have been done periodically during the current period and the opinions of the attendants are taken in consideration in the adaptive design of the project activities.

The meetings have an intercultural and gender-sensitive approach, which is reflected in many ways as, for instance, the days and hours of the meetings. As most of the attendants are rural families, who work every day since early hours, meetings are preferably done on Sundays. As some of the families are evangelic, meetings on Saturdays are avoided too.

The intercultural and gender equity approach is incorporated into the whole project activities. Regarding workers, there is a corporate policy of the prohibition of any type of discrimination during labor operations with positive actions for women as lactarians, health campaigns, among others

(Evidence 2.09 Institutional Policy).

Regarding other stakeholders, especially surrounding communities, there are many measures to ensure equal participation and understanding of men, women, and communities. Some of them are:

- Avoidance of collision between project meeting hours with domestic tasks for men and women
- Avoidance of collision between project meeting days with religious faith of local communities

Preferred use of most common communication channels (radio, WhatsApp, etc.) instead of written letters because of that, the participation of men and women are close to be very similar .(Annex 2.25 Dissemination of training in communities via WhatsApp)

2.3.11 Anti-Discrimination Assurance (G3.7)

As indicated in the PD, the project proponent has developed its institutional policy (Evidence 2.09 Institutional Policy), where, specifically in Section IV: Social Monitoring Policies, openly expresses respect for the rights of the communities, inhabitants and local third parties that could be affected by the development of Project activities or that are in influence. Likewise, Section VI: Personnel selection, hiring, promotion and training policies emphasizes the hiring of both qualified and unqualified local labor that meets the requirements of the position, in the same direction as regards the acquisition of goods and services (Section VIII). This instrument is socialized both to workers, providers of goods and services, and to our clients.

During the current monitoring period, no incidents related to any type of discrimination have been reported and recorded to activate this policy.

2.3.12 Grievances (G3.8)

The project proponent, as described in the PD, designed, and has operational a Grievance and Redress Mechanism.

During 2021, 17 forms were sent through this mechanism (see table 2.7).

All cases were submitted by the workers of the company and were solved as we explain in 2.3.8. In each case, the social responsibility manager submits a letter of response in the next days after the filled form was received indicating that the final response will be communicated within the next 30 days.

2.3.13 Worker Training (G3.9)

A permanent training to workers according to the annual training plan has been implemented. It must be highlighted the following trainings (Evidence 2.11 internal trainings 2021):

- About their labor rights: economic benefits, permissions, paychecks, incentives, health insurance, discharges, among others.
- Psychological support: labor harassment, anxiety, depression, burnout syndrome, among others.
- Technician training related with their forest operations. Workers are constantly trained, in this monitoring period there was 70 trainings in total, and the quality of their performance is evaluated through our operations quality monitoring system. Regarding training in the surrounding communities, the strengthening of their capacities is taken into consideration precisely because it prepares them for the development of the productive projects that are proposed to be carried out with them; therefore, training is not lost, but is constantly reinforced and strengthened.

2.3.14 Community Employment Opportunities (G3.10)

The Company Guideline for hiring personnel states that local families are prioritized as a form of empowerment and also as a contingency measure to avoid social conflicts. This will include training in harvesting operations and organization of hired population. We recognize the importance of hiring family groups from surrounding areas for Brazil nut collecting, for instance, as this non-timber forest product is present in FORESTAL OTORONGO concession and its harvesting is allowed by the Intermediate Forestry Management Plan, approved by the forest authority.

The project proponent starts publishing job opportunities in local radios and community offices. Only after that, they amplify their call to regional scope and to national scope. Based on that, around 12% of workers are local families (29 of 240) but considering supplier of services to the project (transportation services, Brazil nut collection, food preparation), the local families represent 92%. As an average, the job opportunities created by the project proponent is (Evidence 2.18):

Table 2.8. Origin of personnel involved in the project.

Origin	Workers	Suppliers & BN collectors	Total
Local	29 (12%)	26 (92%)	55 (2.5%)
Foreign	211 (88%)	2 (8%)	213 (79.5%)
Total	240	28	268

Table 2.9. Workers by gender

Workers 2021	
N° Men	204
N° Women	36
Total	240

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

Table 2.10. Legal framework on labor issues

Norm	Effective Date	Relevant articles demonstrating compatibility with the layout / implementation of the Project
LEGISLATIVE DECREE 728 (TUO SUPREME DECREE 003-97-TR) PRODUCTIVITY AND COMPETITIVENESS LAW	March 28th ,1997	100% of the workers are on the payroll. (Evidence 2.10. employee payroll) Evidence of constant training to our workers is included (Evidence 2.11. Work - internal training Evidence: payment slips, internship agreements, agreements with the IST. (Evidence 2.10. employee payroll)
SUPREME DECREE 001-96- TR PRODUCTIVITY AND COMPETITIVENESS REGULATION	January 26th, 1996	
LAW 29245 THIRD-PARTY SERVICES PROVIDER LAW	June 26th, 2008	
SUPREME DECREE 006-2008- TR THIRD-PARTY SERVICES PROVIDER REGULATIONS	September 12th, 2008	Outsourcing the execution of any activity imply that the project proponent does it through specific contracts such as: Brazil nut harvesting, forest inventories, measurement of sampling plots, updating of the study of Forests of High Conservation Value, etc. Evidence of contracts with third parties (Evidence 2.12. work - personal hiring)
TUO SUPREME DECREE 001- 97-TR SENIORITY BENEFITS LAW	March 1st, 1997	CTS provision and deposit have been paid to all workers, which complies with current regulations when making the liquidation of personnel. Evidence: Evidence 2.10. employee payroll
SUPREME DECREE 004-97- TR SENIORITY BENEFITS REGULATION	April 15th, 1997	
LEGISLATIVE DECREE 713 VACATION LAW	November 8th, 1991	It is fulfilled to provision and grant vacations of 30 days per year worked.
SUPREME DECREE 012-92- TR VACATION REGULATION	December 3rd, 1992	
LAW 27735 HALF/END-OF- YEAR HOLIDAY BONUSES LAW	May 8th, 2002	It is fulfilled to provision and grant two gratuities per year to our workers. Evidence 2.10. employee payroll
SUPREME DECREE 005-2002- TR HALF/END-OF-YEAR HOLIDAY BONUSES REGULATION	July 4th, 2002	
LEGISLATIVE DECREE 892 PROFIT SHARING LAW	November 8th, 1996	It complies with current regulations.
SUPREME DECREE 009-98- TR PROFIT SHARING REGULATION	November 6th, 1998	
LEGISLATIVE DECREE 688 SOCIAL BENEFITS CONSOLIDATION LAW	5th, 1991	It complies with current regulations by granting the Life Insurance Law, the SCTR when the position merits it. Evidence 2.10. employee payroll
SUPREME DECREE 024-2001- TR SOCIAL BENEFITS CONSOLIDATION REGULATION	July 22nd, 2001	

Norm	Effective Date	Relevant articles demonstrating compatibility with the layout / implementation of the Project
SUPREME DECREE 007-2002- TR LAW ON DAYS OF WORK, HOURS AND OVERTIME	July 4th, 2002	A work schedule of 48 hours per week is met. Overtime is voluntary and if it occurs, it is remunerated according to law. Evidence 2.10. employee payroll
SUPREME DECREE 008-2002- TR REGULATION ON DAYS OF WORK HOURS AND OVERTIME	July 4th, 2002	A work schedule of 48 hours per week is met. Workers are free to form trade unions.
LEGISLATIVE DECREE 25593 (TUO SUPREME DECREE 010-2003-TR) LAW ON COLLECTIVE LABOR RELATIONS	October 5th, 2003	
SUPREME DECREE 011-92- TR REGULATION ON COLLECTIVE LABOR RELATIONS	October 14th, 1992	Workers are free to form unions.
LAW 28806 LABOR INSPECTION LAW	July 22nd, 2006	
SUPREME DECREE 019-2006- TR REGULATION OF LABOR INSPECTION SYSTEM	September 1st, 2007	There are occupied positions for workers with disabilities. The regulations are complied with in the event of occupational accidents. Evidence 2.10. employee payroll
LAW 26636 PROCEDURAL LABOR LAW	June 21st, 1996	
SUPREME DECREE 039-91- TR INTERNAL REGULATION	December 30th, 1991	The regulations are accomplished through the elaboration, structure and publication and personal induction of the Internal Labor Regulations to each worker.

Table 2.11. Legal framework on health and safety issues

Norm	Effective Date	Relevant articles demonstrating compatibility with the layout/ implementation of the Project
LAW 29783 HEALTH AND SAFETY LAW		Compliance with the regulations through the election of safety committees, constant training, and risk assessments.
SUPREME DECREE 009-2005-TR HEALTH AND SAFETY REGULATION	September 28th, 2005	It has all the records indicated by the DS. There is a committee on safety at work, constituted in accordance with the DS. There is a regulation of Safety and Health at Work. Third-party service personnel and company personnel have the same treatment once they enter the company's facilities
MINISTERIAL DECREE 148- 2007-TR REGULATION OF COMMITTEE FOR SUPERVISION OF SECURITY AND HEALTH AT WORK	May 25th, 2005	
LAW 26842 GENERAL HEALTH LAW	July 20th, 1997	
LAW 26790 SOCIAL SECURITY MODERNIZATION LAW	May 17th, 1997	All workers have social health insurance and are regular ESSALUD insured including their family members. Evidence: Evidence 2.10. employee payroll
SUPREME DECREE 009-97- SA SOCIAL SECURITY MODERNIZATION REGULATION	September 8th, 1997	The affiliation to health insurance of all workers is met. The payments of the Complementary Insurance of risk work and life insurance are fulfilled from the first day of income of the worker. Evidence 2.10. employee payroll
SUPREME DECREE 003-98- SA INSURANCE RISK WORK	April 14th, 1998	

2.3.16 Occupational Safety Assessment (G3.12)

The risks of the Project are limited to the forest harvesting carried out in each consolidated. In this regard, the internal regulations on occupational safety and health are in place.

This document serves to inform about the rules of conduct and procedures established to protect the physical and mental well-being of each worker, in accordance with the Safety Policy adopted by the Consolidated. It emphasizes the shared responsibility of both the employer and the workers to defend the life, health, and physical integrity of the worker for his or her own interest and that of his or her family.

In 2017, the Occupational Safety and Health Committee (OSH) approved the internal regulations for Occupational Safety and Health. These regulations establish occupational safety and health standards for proper application and mandatory compliance by all company workers, third-party personnel, contractors, subcontractors, and visitors at any of the company's facilities.

This document is in accordance with Peruvian law as indicated in its legal framework and addresses relevant issues such as fire prevention and protection, protection of electrical machinery, equipment and engines, compressors and on security measures in the process of production, handling and transport of storage materials, security measures for the use of hoists, maintenance and repair, safety and health standards in operations, use of vehicles and the timely preparation of emergency responses.

On the latter, a contingency plan is made according to the nature of the risk, which is applied by the staff and conducted at the management level by the OSH committee and at the operational level by the brigade, such as: first aid, fire, and evacuation. Staff selection and training for these brigades is carried out by the human resources (HR) team in collaboration with other organizational units that facilitate the participation of workers from their respective areas. For example, if a fire occurs, the brigade leader collects information on injuries and damages to open an investigation and propose corrective actions.

2.4 Management Capacity

2.4.1 Required Technical Skills (G4.2)

FORESTAL OTORONGO, and their partners, have a multidisciplinary technical team that includes profiles for required skills for the REDD+ project, including community engagement, biodiversity assessment, carbon measurement and monitoring.

The project team has been updated as follows:

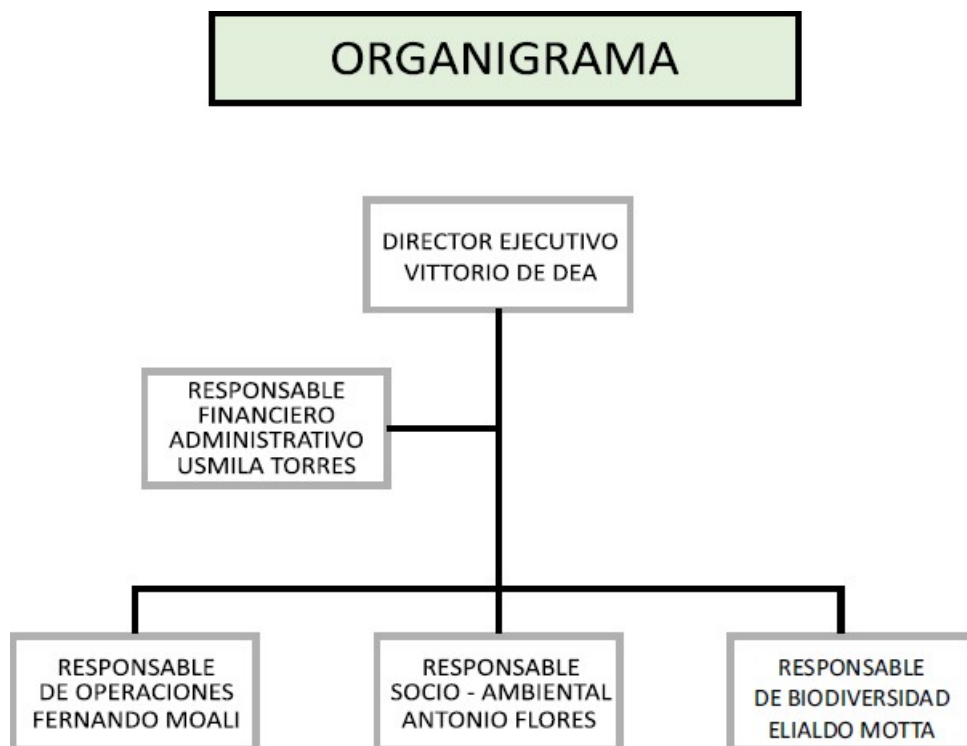


Figure 2.3. Project Organigram

Table 2.12. Summary of technical skills

Job	Description
Chief executive officer	Conducted the initiation, planning, execution, project monitoring and completion.
Socio-environmental manager	Prepare and enforce the project's social intervention strategy. Determine and classify project interest groups in the project area. Analyze the perception of interest groups and Identification of institutions that can be considered allies for the project.
Administrative Financial Manager	Responsible for controlling the budget assigned to the project, maintaining the relevant expense levels according to the approved budget and established deadlines. Advisor in the compliance with the functions of administration of Financial Resources.
Operations manager	Responsible for the execution of field operations. Monitors and controls the work of project activities.
Socio-environment Assistant	Assists in the goals of the Socio-environment area.
Field staff	Intended to conduct tasks in the field, such as placing signs, establishing signage, conducting boundary maintenance, collecting field information

2.4.2 Management Team Experience (G4.2)

FORESTAL OTORONGO has a considerable experience in the timber sector as they have been producing and exporting timber products for decades. It implies the implementation of Corporate

Social Relationship activities, especially with the surrounding population. As indicated in the FSC report, the high social standards are part of the permanent work of FORESTAL OTORONGO, which includes specific rules about labor conditions, training for the local population in logging operations, ethical restrictions in the relationships of workers with the local population, among others. The CVs of core personnel is described in Evidence 2.13.

In 2002, the Peruvian Government granted these concessions, but the company group has nearly 50 years in the forest sector: https://issuu.com/bozovich/docs/reportaje_mundo_empresarial_-40_a_os

Table 2.13. Summary of staff expertise

Project staff	Expertise
Vittorio De Dea	Professional with more than 25 years in project management and since 2015 he has been the general manager of Forestal Otorongo SAC
Antonio Flores León	Psychologist specializing in public management with experience in public and private institutions. In the project since 2020.
Fernando Moali Huertas	Engineer specializing in mechanics and systems. With experience in field work and with more than 15 years in the company Forestal Otorongo SAC
Usmila Torres Valdez	Accounting manager with more than 30 years of experience in private fund administration.
Brigitte Díaz Ayala	Forest engineering student with experience in field work and conducting surveys.

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

On the other side, FORESTAL OTORONGO is new in the carbon business and has no experience developing carbon projects, calculating GHG reductions and trading VCUs. For this reason, a partnership with GREENOXX, a Uruguayan company with more than 16 years of experience in the carbon market and has developed previously this type of projects in REDD+ in Peru with FSC certified forest concessions, has been signed. GREENOXX is the project proponent of MADRE DE DIOS AMAZON REDD+ PROJECT (<https://registry.verra.org/app/projectDetail/VCS/844>).

Another partnership established by FORESTAL OTORONGO is with the “Instituto de Educación Superior Tecnológico Público Iberia-Tahuamanu”. Through this partnership, students can work in the forest concession and can develop research that is useful to increase the value of forests, by finding new species, new uses of known species, new technologies among others but also supporting the biodiversity monitoring plan.

Finally, the partnership with IIAP is also key to receive the scientific support for the safe promotion of species to be used for crop production or for forest restoration.

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

The cash flow, included in Evidence 2.14., shows that the project is supported by logging operations. As can be seen in Evidence 2.14., the 2021 annual gross income from wood sales is US\$ 9 million, while the expected income from carbon sales is US\$ 1 million, which represents an additional 11.11% of current income, considering the time horizon.

During the audit visit, auditors will have access to internal financial information that can demonstrate the financial health of Forestal Otorongo, including annual reports, sales history, and commercial contracts.

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

With the support of the United Nations Office on Drugs and Crime (UNODC), Forestal Otorongo developed and approved its guidelines for anti-corruption policy (Evidence 2.09), which have been in force since 2020. These guidelines started identifying potential areas of corruption risks (legal, commercial, reputational) and their potential impacts. From this diagnosis, it designs mitigation measures, including annual public reports about how the guidelines were addressed.

2.4.6 Commercially Sensitive Information (Rules 3.5.13 – 3.5.14)

Commercial Information as prices and clients for timber and carbon components for the updated cash flow must be considered sensitive and confidential.

2.5 Legal Status and Property Rights

2.5.1 Recognition of Property Rights (G5.1)

The Forestry and Wildlife Law No. 27308 and its regulations indicate that the management and use of forest resources in permanent production forests are carried out under public tender (40,000 ha) or public auction (10,000 ha) and that this award is for a period of 40 years, renewable. Likewise, it specifies that the Concessionaire is directly responsible for the area but not for the subsoil. The timber forest concessions that make up each concession (Otorongo and Chullachaqui) were awarded under the public tender modality and for their approval the General Forest Management Plans (PGMF) and the Annual Operating Plans (POA) were presented; as well as the payment for the right to use that is made to the State. It should be noted that each concession works as a large Concession, that is, it has only one PGMF and additionally can carry out the harvesting of other forest products, in this case Brazil nuts (*Bertholletia excelsa*) through a Complementary Plan (PC) presented to the competent authority. The contracts of each Consolidated with the State are detailed below and can be viewed in Evidence 2.15:

Consolidated Otorongo:

- 17-TAH/C-J-042-02
- 17-TAH/C-J-043-02
- 17-TAH/C-J-044-02
- 17-TAH/C-J-017-02
- 17-TAH/C-J-009-03
- 17-TAH/C-J-003-03

Consolidated Chullachaqui:

- 17-TAH/C-J-040-02
- 17-TAH/C-J-041-02
- 17-TAH/C-J-045-02 17-TAH/C-J-028-02

Based on that, no third-party traditional property rights are affected by the implementation of the REDD project.

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

The most important issue to consider is that there has not been, neither in the past nor currently, any type of community with property rights (either legal or customary or any other type) over the project area.

As already documented during FSC certification and other independent audits, in the first place, there are no and have never been indigenous communities neither in the project area nor in influence of the project.

In second place, there are no rural communities or traditional uses of forest resources by any community (rural or indigenous) that have been limited with the assignment of the forest concession or the development of the REDD+ project. For all the above reasons, no FPIC is needed.

Another aspect which is very important to consider is that the rural communities surrounding the project area are 100% migrants, which means that have established themselves in the area in the recent years. This is ratified by the fact that Madre de Dios is the Amazonian region with the highest rate of internal migration in Peru. Migrants are not, in any case, communities as defined by CCB, with an ancient tradition of use and access to natural resources from surrounding forests.

Based on all the concepts, which are also consistent with Peruvian legal framework and the CCB Standard v3.1 (the project proponent must demonstrate that the project does not invade, among

others, community property (including lands traditionally used for local communities and the FPIC is obtained, through a transparent and agreed process, from persons whose property rights have been affected), it is clearly demonstrated that FPIC is not applicable for the current project. Therefore, only citizen participation is applied.

In the specific case of the religious group Arca Pacahuara, they are interested in continuing to expand their agricultural frontier. They do not have any traditional use of the forests from the area since they have migrated from the Andres in the recent years. According to this study: <https://www.inforegion.pe/299445/madre-de-dios-los-israelitas-deforestan-en-nombre-de-la-tierra-prometida/>, the first 46 families of this religious belief arrived from Cusco only in 1995, occupying forest lands that belonged to the Peruvian State.

Specifically, they have never used the project area for anything neither in the past or the present and therefore their property rights have never been affected by the project.

Additionally, information was gathered which demonstrates that even organizations that defend indigenous causes consider this community as a danger for indigenous people and forests as can be seen in their webpage¹².

2.5.3 Property Right Protection (G5.3)

Concessions of timber products in forests of permanent production are contracts between the concession holder and the State. This contract defines UTM coordinates (Zone 19L WGS 84) each concession belonging to the consolidated Otorongo and Chullachaqui, thus protecting the right to use the surface within the area. This implies that any type of relocation was required for the implementation of the current REDD project. The contest of the forest concessions guarantees us that these have been given over areas free of property and the letter 036-2017 from DGFFS (Evidence 2.16) guarantees us that this is free of native communities.

The coordinates of the Consolidated are detailed below:

Table 2.14. Consolidated Otorongo

Point	X	Y	Reference
V1	452,557	8,715,097	
V2	437,563	8,718,743	From V1 to V2: Cocama River or Sta Cruz
V3	437,561	8,711,044	
V4	432,534	8,712,939	From V3 to V4: Muymanu River

¹² <https://www.servindi.org/actualidad-opinion/20/09/2022/los-israelitas-deforestan-en-nombre-de-la-tierra-prometida>

Point	X	Y	Reference
V5	432,558	8,706,061	
V6	422,557	8,706,061	
V7	422,557	8,709,251	
V8	412,548	8,709,253	
V9	412,547	8,714,619	
V10	417,557	8,714,619	From V9 to V10: Muymanu River
V11	417,557	8,729,249	
V12	422,557	8,729,249	
V13	422,557	8,742,595	
V14	428,591	8,741,203	From V13 to V14: Tahuamanu River
V15	429,002	8,741,203	
V16	429,010	8,742,538	
V17	435,037	8,740,215	From V16 to V17: Tahuamanu River
V18	434,216	8,737,823	From V17 to V18: Gorge N. N
V19	437,568	8,737,804	
V20	426,279	8,738,490	
V21	426,279	8,739,490	
V22	428,979	8,739,491	
V23	428,979	8,738,491	
V24	437,566	8,729,249	
V25	452,557	8,729,249	

Source: PGMF Otorongo (2018)

Table 2.15. Consolidated Chullachaqui

Point	X	Y	Reference
V1	412548	8704241	
V2	402569	8704242	
V3	402569	8699534	From V3 to V4: Manuripe River
V4	382557	8709608	From V4 to V5: Manuripe River
V5	367557	8719141	
V6	367557	8731899	From V6 to V7: Muymanu River

Point	X	Y	Reference
V7	372557	8732250	
V8	372557	8739249	
V9	392557	8739249	
V10	392557	8725980	From V10 to V11: Muymanu River
V11	412547	8716142	

Source: PGMF Chullachaqui (2018).

2.5.4 Identification of Illegal Activity (G5.4)

Many illegal activities, not implemented by the project proponent but for third parties and invaders, could affect project objectives. They are described in the following table:

Table 2.16. Illegal activities to be monitored and mitigation measures considered.

Illegal Activities	Mitigation Measures Taken
Illegal logging	An enhanced surveillance plan, including periodical patrolling and new control sites in rivers and access roads
Illegal hunting	An enhanced surveillance plan, including periodical patrolling
Illegal harvesting of non-timber forest products	Agreements with local families so they can provide an organized and sustainable harvesting of Brazil nuts
Invasion	An enhanced surveillance plan, including periodical patrolling and denounces to the authorities
Forest fires / clearance of areas	Control sites, monitoring and patrolling actions

Therefore, the number of events of illegal activities has reduced since the start of the project as shown in Table 2.17 and the project proponent implements intensive actions to reduce these risks even more (see Evidence 2.24. Forest patrolling 2021). Project incomes are not originated in any case from illegal sources as may be seen in the Project cash Flow, where is clear that the whole incomes come from legal logging and now, carbon sales.

Table 2.17. Illegal activities reported by project proponent within the REDD project area

Illegal Activities Reported Within the Project Area					
Variable	2017	2018	2019	2020	2021
Invasions	0	0	0	0	0
Illegal hunting	1	0	0	0	0
Forest fires	0	0	1	0	0

Illegal harvesting of NWFP	1	0	0	0	0
Illegal logging	1	0	0	1	0
TOTAL	3	0	1	1	0

2.5.5 Ongoing Disputes (G5.5)

The concessions have been legally assigned to FORESTAL OTORONGO in forest areas that were being previously exploited by the same group based on previous forestry laws. The concession was granted in 2002 under the umbrella of the recently approved forestry law (in 2000), that changed completely how the forest was managed. With that law, the contract period extended to 40 years; the area was at least five thousand hectares, and the forest holder had the rights over all the resources existing in the granted territory. With the previous law, the right was only over a unique resource (in this case, the timber, while other people could have the right on other resources such as nuts, for example). The period was shorter, and the area was smaller. The changes were key to ensure the sustainability of forest management. However, FORESTAL OTORONGO has a presence in the zone since many decades before the different changes in legal framework, so no disputes are on the forest area.

2.5.6 National and Local Laws (G5.6)

The following is the current Peruvian legal framework applicable to the project. This legal framework comes from various levels of government and sectors, such as the central and regional government, the environmental and agricultural sectors, among others. The regulations included have been organized according to their subject matter (from general to specific) and scope (from national to regional).

Table 2.18. Relevant national legal framework

Laws	Term	Content	Compliance
The Constitution	October 31st 1993	It has a chapter that establishes the State's policy with respect to the environment and natural resources. Thus, it provides in article 66 that natural resources, both renewable and non-renewable, are the heritage of the Nation, and that an organic law establishes the conditions for their use and their granting to individuals. The concession grants its holder a right in them, subject to that legal rule. With respect to environmental policy, article 67 of the Constitution recognizes the role of promoting the use of natural resources, affirming the State's commitment to developing possible mechanisms for the conservation and sustainable use of its biological diversity. Likewise, article 69 emphasizes the role of the State in promoting the sustainable development of the Amazon.	Accessing goods and services from the forest through forestry concession agreements. Evidence: concession agreements (Evidence 2.20).
Law No. 28611	October 15th, 2005	In Article VI of this Law, it stipulates that environmental management has as priority objectives to prevent, watch and avoid	Implementing the General Forestry Management Plan

Laws	Term	Content	Compliance
"General Environment Law		environmental degradation, and that when it is not possible to eliminate the causes that generate it, the corresponding measures of mitigation, recovery, restoration, or eventual compensation are adopted. Likewise, article XI mentions that the design and application of environmental public policies are governed by the principle of environmental governance, which leads to the harmonization of policies, institutions, regulations, procedures, tools and information in such a way that it is possible for the effective and integrated participation of public and private actors in decision making, conflict management and consensus building, based on clearly defined responsibilities, legal security and transparency. On the other hand, Article 150 of the Law stipulates that those measures or processes that, on the initiative of the owner of the activity, are implemented and executed with the purpose of reducing and/or preventing environmental pollution and the degradation of natural resources, constitute conducts that can be rewarded with incentives. Article 92 of the law states that the State promotes the sustainable use of forest and wildlife resources, as well as the conservation of natural forests, emphasizing the principles of management and zoning of the national forest area, the management of forest resources, legal security in the granting of rights and the fight against illegal logging and hunting. It also promotes and supports the sustainable management of wild fauna and flora, prioritizing the protection of endemic and endangered species and varieties, based on technical, scientific, and economic information and traditional knowledge. Article 94 of this Act states that environmental services include the protection of water resources, the protection of biodiversity, the mitigation of greenhouse gas emissions and scenic beauty, among others. In addition, while they generate benefits that are used without retribution or compensation, it establishes the need for the State to establish mechanisms to value, compensate and maintain the provision of these environmental services, seeking to achieve the conservation of ecosystems, biological diversity, and other natural resources. This article ends by mentioning that the National Environmental Authority (Ministry of the Environment) promotes the creation of financing, payment, and supervision mechanisms for environmental services.	that contemplates in charter 7 the measures to consider regarding the environment, the environmental impact evaluation, and the Environmental Management Plan. Said management instrument is approved by the forestry authority. Evidence: General Forestry Management Resolution of approval of said plan2 (Evidence 2.21).
DL No. 1013	May 15th, 2008	The elaboration of the National Environmental Policy is a mandate that comes mainly from the	

Laws	Term	Content	Compliance
"Law for the Creation of the Ministry of the Environment"		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.	
DS No. 12-2009- MINAM "National Environment Policy	May 23rd, 2009	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.	
DS No. 006-2009-MINAM "Accurate denomination	March 29th, 2009	The general function of the National Commission on Climate Change is to monitor the various public and private sectors involved in the issue, through the implementation of the United Nations	

Laws	Term	Content	Compliance
and proper functioning of the National Commission for Climate Change in accordance with Legislative Decree No. 1013"		Framework Convention on Climate Change, as well as the design and promotion of the National Climate Change Strategy, whose content should guide and inform national, sectoral, and regional development strategies, plans and projects.	
RM 104-2009-MINAM "Approves procedure for the assessment and authorization of Greenhouse Gas (GHG) emissions and carbon sequestration projects"	May 24th, 2009	With the approval of this procedure, the Ministry of the Environment proposes to promote the conservation of the environment, guaranteeing the sustainable use of natural resources in the framework of projects developed under the Clean Development Mechanism provided for in the Kyoto Protocol, forestry projects, projects to reduce emissions from deforestation and degradation (REDD) and programmatic CDM. The General Directorate of Climate Change, Desertification and Water Resources of the Ministry of the Environment is responsible for responding to project conformity.	
DS No. 014-2011-MINAM "National Plan of Environmental Action" PLANAA - PERU 2011-2021	July 2011 9th,	It is an instrument of long term national environmental planning, which is formulated from a situational environmental diagnosis and from the management of natural resources, as well as from the potentialities of the country for the use and sustainable use of such resources; in the same way, it is based on the legal and institutional framework of the National System of Environmental Management. The fulfillment of the priority goals will contribute with the conservation and the sustainable use of the natural resources, the improvement in the environmental quality; and therefore, to improve the quality of life of our population. Goals are presented in the areas of water, solid waste, air, forest and climate change, biological diversity, mining and energy, and environmental governance. The goal in Forests and Climate Change is that by 2021 the rate of deforestation in 54 million hectares of primary forests under various categories of land management will be reduced to zero, contributing, together with other initiatives, to reducing 47.5% of GHG emissions in the country, generated by changes in land use; as well as reducing vulnerability to climate change.	
DS No. 011-2015-MINAM "National Strategy on Climate Change" update of DS No 086-	September 23rd, 2015	It is based on adaptation to the adverse effects and takes advantage of the opportunities imposed by climate change, laying the foundations for low-carbon sustainable development. The main objectives are for the population, economic agents and the state to increase awareness and adaptive capacity for action against the adverse effects and	

Laws	Term	Content	Compliance
2003-PCM		opportunities of climate change and for the population, economic agents and the state to conserve carbon reserves and contribute to the reduction of GHG emissions. The means necessary for implementation are based on institutional and governance, public awareness and capacity building, scientific knowledge and technology, and financing.	
Law 26839 "Law on the Conservation and Sustainable Use of Biological Diversity"	July 17th, 1997	It regulates the general framework for the conservation of biological diversity and the sustainable use of its components. It includes provisions for planning, inventory and monitoring, conservation mechanisms, rural and indigenous communities, and scientific and technological research. The Act establishes that the principles and definitions of the Convention on Biological Diversity govern its implementation and contains a title on protected natural areas, which is consistent with the provisions of Act No. 26834.	
Law 26821 "Organic Law for the Sustainable Use of Natural Resources"	June 27th, 1997	It regulates the general framework for the sustainable use of natural resources, as they are part of the Nation's heritage. This law establishes that the natural resources maintained at their source, whether they are renewable or nonrenewable, are part of the Nation's heritage. The fruits and products of the natural resources, obtained in the manner established in this Act, are the property of the holders of the rights granted over them. The rights over natural resources are granted to individuals through concessions, permits, and authorizations in accordance with the conditions established by the special rules for each resource. The special rules include the mechanisms for financial compensation to the State for the granting thereof, the maintenance of the right in force, the conditions for registration in the appropriate registry, and the possibility of assignment between individuals. This means that ownership, i.e., the ownership of the fruits and products obtained in accordance with this organic law, belongs to the holders of the rights granted over the areas where the natural resources providing them are located. The regulation for the grant of rights to private individuals for the use of natural resources, renewable and non-renewable, varies according to the nature of such resources.	Accessing goods and services from the forest through forestry concession agreements. Evidence: Concession agreements (Evidence 2.20).
DL No. 997 "Law on the Organization and Functions of the Ministry of Agriculture"	March 13th, 2008	The Ministry of Agriculture is the governing body of the agricultural sector and establishes the National Agricultural Policy, which is mandatory at all levels. Likewise, the Agrarian Sector includes the lands of agricultural use, of shepherding, the forest lands, the deserted lands with agrarian aptitude, the forest resources and their use; the flora and fauna; the hydric resources; the agrarian	

Laws	Term	Content	Compliance
		infrastructure; the activities of production, transformation and commercialization of crops and of breeding; and the services and activities linked to the agrarian activity such as the health, the investigation, the training, the extension and the transference of agrarian technology.	
DL No. 1085 Establishes the Forest and Wildlife Resources Monitoring Agency"	June 28th, 2008	It created OSINFOR, which is responsible for supervising and overseeing the sustainable use and conservation of forest and wildlife resources, as well as the environmental services provided by the State through the various forms of use recognized in the Forestry and Wildlife Law and its regulations.	Participating of the inspection that OSINFOR conducts in the Management Unit according to their planification program of surveillance. Evidence: SIGO - OSINFOR Website ¹³
DS No. 030-2005-AG "Approve regulations for the Implementation of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) in Peru"	July 10th, 2005	This standard is intended to regulate CITES provisions and establish the conditions and requirements for trade, trafficking and possession of species included in them CITES Appendices I, II and III. Its provisions are intended to ensure compliance with all the precepts of the Convention, with the purpose and to protect the species of wild fauna and flora threatened due to their intense trade. It was modified and updated by Supreme Decree No. 001- 2008-MINAM where the Ministry of Agriculture (through SERFOR) and the Ministry of Production are designated as CITES Administrative Authorities Peru, to the Ministry of Environment as CITES Peru Scientific Authority.	Respecting the regulations established on CITES species (Evidence 2.22). Evidence: Approved resolutions in management of CITES species
DS No. 009-2013-MINAGRI "National Forest and Wildlife Policy"	August 14th, 2013	The National Forest and Wildlife Policy is a state policy that involves all levels of government and public and private actors, being mandatory for regional governments. The purpose is to contribute to the sustainable development of the country, through an adequate management of the National Forest and Wildlife Heritage, which ensures its sustainable use, conservation, protection and increase, for the provision of ecosystem goods and services, forestry, other ecosystems of wild vegetation and wildlife, in harmony with the social, cultural, economic and environmental interest of the Nation through five political axes: institutionalism and governance; sustainability; competitiveness; social inclusion and intercultural and knowledge, science and technology.	Accessing to the goods and services of the forest through the forestry concession contracts Implementing the General Forestry Management Plan and the operatives' plans, both approved by the forestry authority.
Law No. 29763	September 30th, 2015	Aims to promote the conservation, protection, increase and sustainable use of forest and wildlife	Participating of the inspections that OSINFOR

¹³ <https://sigosfc.osinfor.gob.pe/>

Laws	Term	Content	Compliance
"Forestry and Wildlife Law" and its four Regulations		heritage within the national territory, integrating its management with the maintenance and improvement of forest and other wild vegetation ecosystem services, in harmony with the social, economic and environmental interest of the Nation; as well as to promote forest development, improve its competitiveness, generate and increase forest and wildlife resources and their value to society. The purpose of this Law is to establish the legal framework to regulate, promote and supervise forestry and wildlife activities in order to achieve their purpose. Article 13 creates the Forestry and Wildlife Service (SERFOR) as a specialized technical public body, being the National Forestry and Wildlife Authority. Likewise, the SERFOR is the governing body of the National System of Forestry and Wildlife Management (SINAFOR) and is constituted as its technical-normative authority at the national level, in charge of dictating the rules and establishing the procedures related to its scope. It coordinates its technical operation and is responsible for its proper functioning. With regard to its functions, Article 14 highlights paragraph e) To monitor compliance with the obligations of the rights granted under its jurisdiction and to sanction violations arising from its failure to comply, respecting the powers of the Forestry and Wildlife Resources Oversight Agency (OSINFOR), the Environmental Assessment and Monitoring Agency (OEFA), regional and local governments and other public bodies; paragraph g) Exercise the function of Authority of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) in Peru for the specimens of the species of wild flora and fauna that reproduce on land, including all kinds of amphibians and emerging aquatic flora. Article 18 of the Forestry and Wildlife Resources Oversight Agency (OSINFOR) is responsible for supervising and monitoring the sustainable use and conservation of forest and wildlife resources and the services provided by forest and other wild vegetation ecosystems, granted by the State through enabling titles regulated by this Act. The SERFOR and the regional and local governments, through their corresponding officials, compulsorily inform OSINFOR about the forest and wildlife management, the scope and status of the enabling titles granted, under administrative responsibility and without prejudice to civil and criminal liabilities. OSINFOR reaches in a timely manner all information that may be useful for the administration and control of forest and wildlife	conducts in the Management Unit according to their program for surveillance planification. Hiring a Forestry Administrator for the elaboration, subscription, and implementation of the management instruments of the UMF (Forestry Management Unit). Evidence: Concession Agreements Resolution of approval of the General Forestry Management Plans and Operative Plans. SIGO – OSINFOR Website Contracts with the Administrator (Evidence 2.23).

Laws	Term	Content	Compliance
		resources to the corresponding entity. In article 19, the regional government is the regional forestry and wildlife authority (ARFFS). Article 23. Forest and wildlife manager is the natural person with training and professional experience in the area that requires being managed and registered in the National Registry of Forest and Wildlife Regents, who formulates and subscribes to forest management or wildlife. He is responsible for directing the activities in application of the approved management plan, to guarantee the sustainability of the forest resource. It is jointly and severally responsible with the holder or holder of the enabling title of the veracity of the content of the management plan and its implementation, as well as the correct issuance of the forest transport guides. Article 29. Permanent production forests are established by ministerial resolution of the Ministry of the Environment, at the proposal of SERFOR, in category I and II forests, for the purpose of permanent production of wood and other forest products other than wood, as well as wildlife and the provision of ecosystem services. The State promotes the integrated management of these forests. To this end, the regional forestry and wildlife authority prepares, directly or through third parties, and approves the Master Management Plan containing, at a minimum, the identification of sites requiring special treatment to ensure the sustainability of harvesting, access routes, common roads and control points. Prior to its establishment, the State carries out the environmental impact assessment and consults the population that may be affected by its establishment.	
DL No. 1085 "Law that creates the agency for the Supervision of Forest and Wildlife Resources"	June 28th, 2008	OSINFOR is attached to the Presidency of the Council of Ministers and constitutes a budgetary statement. It is the entity in charge, at the national level, of supervising and monitoring the use and conservation of forest and wildlife resources, as well as environmental services from the forest, for their sustainability, in accordance with the national policy and strategy for integrated management of natural resources and the policies on environmental services established by the Ministry of the Environment, within the scope of its competence. OSINFOR's competencies do not involve Natural Protected Areas, which are governed by their own Law.	Participating of the inspections that Osinfor carries out in the Management Unit according to their program for planification of surveillances. Evidence: SIGO – OSINFOR website (Evidence 2.22).
DS No. 007-2013-MINAGRI "Regulation of Organization"	July 18th, 2013	It is the national forestry and wildlife authority, which exercises its powers and functions at the national, regional and local levels, is subject to the regulatory framework on the subject and acts in	Implementing the General Forestry Management Plan and the

Laws	Term	Content	Compliance
and Functions of the National Forest and Wildlife Service - SERFOR		accordance with national policies, plans and objectives, constituting the governing body of the National System of Forestry and Wildlife Management, hereinafter SINAFOR, and its technical-normative authority, responsible for issuing regulations and establishing procedures related to the area of its competence.	Operative Plans, both approved by the regional forestry authority. Evidence: Resolutions of approval of General Plan for Forestry Management and Operative Plans (Evidence 2.21).
DS No. 018-2015-MINAGRI "Regulation for Forest Management"	September 30th, 2015	The regulation aims to promote the conservation, protection, enhancement, and sustainable use of the forest heritage, integrating its management with the maintenance and improvement of forest and other wild vegetation ecosystem services. This applies to the different natural or legal persons, of public or private law, linked to the management of forests and wildlife, to the sustainable use of forest resources, to the services of the ecosystems of wild vegetation and to the forest and other forestry and related activities, throughout the national territory.	
Law No. 29263 "Law on Ecological Crimes"	October 2nd, 2008	Law that modifies the penal types of ecological and environmental crimes and typifies their aggravated figures, such as illegal trafficking of protected wild flora and fauna species, illegal trafficking of aquatic species of protected wild flora and fauna, illegal extraction of aquatic species, depredation of protected flora and fauna, illegal trafficking of genetic resources, crimes against forests and forest formations, among other related crimes.	Participating of the inspections that Osinfor carries out in the Management Unit according to their program for the planification of surveillances. Evidence: SIGO OSINFOR website ¹⁴ -

3 CLIMATE

3.1 Monitoring GHG Emission Reductions and Removals

3.1.1 Data and Parameters Available at Validation

Data / parameter [EA1]:	CF
Data unit:	Mg C (Mg DM) ⁻¹
Description:	Carbon fraction of dry matter in wood

¹⁴ <https://sigosfc.osinfor.gob.pe/>

Sources of data:	REPORT OF THE NATIONAL FOREST AND WILDLIFE INVENTORY OF PERU (https://www.serfor.gob.pe/portal/wp-content/uploads/2020/03/INFORME-DEL-INFFS-PANEL-1.pdf)
Value applied:	0.47
Justification of choice of data or description of measurement methods and procedures applied:	To convert biomass units to carbon, the conversion factor proposed by the REPORT OF THE NATIONAL FOREST AND WILDLIFE INVENTORY OF PERU was used, which indicates that for any plant structure 0.47 of the dry weight (biomass or necromass) is carbon.
Purpose of data:	Calculation of baseline emissions.
Comments:	1 Mg C (Mg DM) ⁻¹ <> 1 t C (t DM) ⁻¹

Data / Parameter [EA6]:	SC ₁
Data unit	[-]
Description	First shape factor for the forest scarcity equation; steepness of the decrease in deforestation rate (greater is steeper).
Source of data	Statistical fitting procedure. Using remotely sensed forest cover data in heavily deforested areas close to the project area such as neighboring provinces, states, or countries
Value applied	N/A
Justification of choice of data or description of measurement methods and procedures applied	N/A
Purpose of the data	N/A
Comments	N/A

Data / Parameter [EA7]:	SC ₂
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Data unit	[-]
Description	Second shape factor for the forest scarcity equation; relative deforested area at which the deforestation rate will be 50% of the initial deforestation rate.
Source of data	Statistical fitting procedure. Using remotely sensed forest cover data in heavily deforested areas close to the project area such as neighboring provinces, states, or countries
Value applied	N/A
Justification of choice of data or description of measurement methods and procedures applied	N/A
Purpose of the data	N/A
Comments	N/A

Data / Parameter [EA8]:	$wwf(ty)$
Data unit	[-]
Description	Fraction of carbon in harvested wood products that are emitted immediately because of mill inefficiency for wood class <i>ssee</i> . This can be estimated by multiplying the applicable fraction to the total amount of carbon in different harvested wood product category.
Source of data	The default applicable fraction is 24% and 19% respectively for developing and developed countries (Winjum et al. 1998).
Value applied	24% for being a developing country.
Justification of choice of data or description of measurement methods and procedures applied	Winjum et al. 1998 states that the default fraction is 24% for developing countries.

Purpose of the data	Calculation of project emissions
Comments	Any new updates from locally generated results can be used instead of the default values.

Data / Parameter [EA9]:	slp(ty)
Data unit	[-]
Description	Proportion of short-lived products
Source of data	Default values are 0.2, 0.1, 0.4 and 0.3 respectively for wood class <i>ssee</i> , i.e., sawn wood, wood-based panel, paper and paper boards and other industrial round woods as described in Winjum et al. (1998).
Value applied	0.2 for being sawn wood
Justification of choice of data or description of measurement methods and procedures applied	Winjum et al. (1998) provides the above values for sawn wood, wood-based panel, paper/paper boards and industrial roundwood
Purpose of the data	Calculation of project emissions
Comments	Any new updates from locally generated results can be used instead of the default values. The methodology assumes that all other classes of wood products are emitted within 5 years.

Data / Parameter [EA10]:	fo(ty)
Data unit	[-]
Description	Fraction of carbon that will be emitted to the atmosphere between 5 and 100 years of harvest for wood class <i>ssee</i> .
Source of data	See Table 19 (Winjum et al. 1998)
Value applied	

Justification of choice of data or description of measurement methods and procedures applied	0.85 for being Sawn wood from a tropical forest region
Purpose of the data	Winjum et al. (1998) provides these values for the fraction of carbon that will be emitted into the atmosphere between 5 and 100 years after harvest for tropical wood classes.
Comments	Calculation of project emissions

Data / Parameter [EA11]:	$\rho_{\text{wood},j}$																						
Data unit	[Mg DM m ⁻³]																						
Description	Average basic wood density of species or species group <i>RR</i>																						
Source of data	GPG-LULUCF Table 3A.1.9 and Woods of Peru from the Research Institute of the Peruvian Amazon (IIAP) http://www.iiap.org.pe/Upload/Publicacion/CDinvestigacion/inia/inia-p4/inia-p4-02.htm																						
Value applied	Value per specie: <table> <tr> <td><i>Apuleia leiocarpa</i> (Vogel) J.F. Macbr.</td><td>0.7</td></tr> <tr> <td><i>Hymenaea oblongifolia</i> Huber</td><td>0.8</td></tr> <tr> <td><i>Copaifera reticulata</i> Ducke</td><td>0.61</td></tr> <tr> <td><i>Myroxylon balsamum</i> (L.) Harms</td><td>0.78</td></tr> <tr> <td><i>Amburana cearensis</i> (Allemão) A.C. Sm.</td><td>0.43</td></tr> <tr> <td><i>Mezilaurus itauba</i> (Meisn.) Taub. Ex Mez</td><td>0.71</td></tr> <tr> <td><i>Clarisia racemosa</i> Ruiz & Pav.</td><td>0.59</td></tr> <tr> <td><i>Couratari guianensis</i> Aubl.</td><td>0.54</td></tr> <tr> <td><i>Aspidosperma macrocarpon</i> Mart.</td><td>0.67</td></tr> <tr> <td><i>Manilkara bidentata</i> (A. DC.) A. Chev.</td><td>0.87</td></tr> <tr> <td><i>Dipteryx odorata</i> (Aubl.) Willd.</td><td>0.91</td></tr> </table>	<i>Apuleia leiocarpa</i> (Vogel) J.F. Macbr.	0.7	<i>Hymenaea oblongifolia</i> Huber	0.8	<i>Copaifera reticulata</i> Ducke	0.61	<i>Myroxylon balsamum</i> (L.) Harms	0.78	<i>Amburana cearensis</i> (Allemão) A.C. Sm.	0.43	<i>Mezilaurus itauba</i> (Meisn.) Taub. Ex Mez	0.71	<i>Clarisia racemosa</i> Ruiz & Pav.	0.59	<i>Couratari guianensis</i> Aubl.	0.54	<i>Aspidosperma macrocarpon</i> Mart.	0.67	<i>Manilkara bidentata</i> (A. DC.) A. Chev.	0.87	<i>Dipteryx odorata</i> (Aubl.) Willd.	0.91
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<i>Dipteryx odorata</i> (Aubl.) Willd.	0.91																						

		<i>Handroanthus serratifolius (Vahl) S.O. Grose</i>	0.92	
Justification of choice of data or description of measurement methods and procedures applied	IPCC table 3A. 1.9-2 provides average basic wood densities for multiple species in Tropical America. In the same way that Research Institute of the Peruvian Amazon			
Purpose of the data	Calculation of project emissions			
Comments	When no species-specific or species-group specific densities are available, an average representative density may be used for all species or species groups.			

3.1.2 Data and Parameters Monitored

Data / Parameter	Size _{projectArea} , Size _{leakageArea} , Size _{ReferenceRegion} , Size _{ReferenceForest} .			
Data unit	[ha]			
Description	Size of project area, leakage area, reference region.			
Source of data	Geobosques platform			
Description of measurement methods and procedures to be applied	Coverage and demarcations will be monitored and created using satellite imagery.			
Frequency of monitoring/recording	size _{projectArea} and size _{leakageArea} may be adjusted during crediting period per the rules for grouped projects and updated at verification, but only for the additional instances that were added after the project start date Permanent verification of the area of the project surfaces.			
Value monitored	Size _{projectArea}	Size _{leakageArea}	Size _{ReferenceRegion}	Size _{ReferenceForest} .
	183,015.29	232,114.34	516,554.22	424,223.27
Monitoring equipment	Satellite imagery			
QA/QC procedures to be applied	Raster files were converted to vectors. Area was calculated for each vector and compared to calculations based on raster file.			

Purpose of the data	Calculation of baseline emissions, Calculation of project emissions; Determination of baseline scenario, Calculation of leakage emissions
Calculation method	Multiplication of number of pixels (30m by 30m) in each region by 0.09 hectares pixel-1 for area in hectares.
Comments	-

Data/parameter [MN2]:	$\Delta area_{projectAreaEAH,projectScenario}(t, i)$
Data unit	[ha yr ⁻¹]
Description	Hectares undergoing transition <i>ii</i> within the project area, excluding ANR and harvest areas, under the project scenario during year <i>ss</i> . [ha yr ⁻¹]. Section 8.2.3
Source of data	Remote sensing analysis
Description of measurement methods and procedures to be applied	Follow the procedures described in Section 3.2.2
Frequency of monitoring/recording	At least once before verification
Value monitored	192.13 ha for the year 2021.
Monitoring equipment	Software GIS, images Landsat,
QA/QC procedures to be applied	Field work or high-resolution images will be used to assess accuracy of results initially obtained. The application will be based on statistically robust parameters.
Purpose of data	Calculation of project emissions
Calculation method	Multiplication of number of pixels (30m by 30m) in each region by 0.09 hectares pixel-1 for area in hectares.
Comments	Data on the area of the felling plots can be found in the general forest management plan.

Data/parameter [MN3]:	$\Delta area_{projectAreaEAH,BaselineScenario}(t, i)$
Data unit	[ha yr ⁻¹]

Description	Hectares undergoing transition <i>ii</i> within the project area, excluding the ANR area, and harvest areas, under the baseline scenario for year <i>ss</i> .				
Source of data	Land-use change for Geobosques (MINAM)				
Description of measurement methods and procedures to be applied	Follow the procedures described in Section 3.2.1				
Frequency of monitoring/recording	At least once before every baseline. For added instances, may be recalculated at verification.				
Value monitored	$(D_{\text{projectAreabaselineScenario}, DF^{(t)}} - \text{area}_{\text{projectArea, Withharvest, baselineScenario}}(t, i))$ <table border="1"> <tr> <th>Year</th><th>$\Delta \text{area}_{\text{projectAreaEAH, BaselineScenario}}(t, i)$</th></tr> <tr> <td>2021</td><td>3,084.38 ha</td></tr> </table>	Year	$\Delta \text{area}_{\text{projectAreaEAH, BaselineScenario}}(t, i)$	2021	3,084.38 ha
Year	$\Delta \text{area}_{\text{projectAreaEAH, BaselineScenario}}(t, i)$				
2021	3,084.38 ha				
Monitoring equipment	Software GIS, Landsat images				
QA/QC procedures to be applied	Baseline scenario is defined once at validation. As this is not a grouped project, no new instances may be added.				
Purpose of data	Calculation of baseline emissions; Determination of baseline scenario				
Calculation method	Multiplication of number of pixels (30m by 30m) in each region by 0.09 hectares pixel ⁻¹ for area in hectares.				
Comments	Data on the area of the felling plots can be found in the general forest management plan.				

Data/parameter [MN4]:	$\Delta \text{area}_{\text{projectAreaWithANR, baselineScenario}}(t, i)$
Data unit	[ha yr ⁻¹]
Description	Hectares undergoing transition <i>i</i> within the leakage area under the project scenario for year <i>t</i>
Source of data	Land-use change modeling

Description of measurement methods and procedures to be applied	Follow the procedures described in Section 8.1.5.4
Frequency of monitoring/recording	At least once before every baseline. For added instances, may be recalculated at verification.
Value monitored	There is no value to report
QA/QC procedures to be applied	N/A
Comments	Not applicable because ANR not included in project activity

Data/parameter [MN5]:	$\Delta area_{leakageArea,projectScenario}(t, i)$								
Data unit	[ha yr ⁻¹]								
Description	Hectares undergoing transition <i>ii</i> within the leakage area under the project scenario for year <i>ss</i>								
Source of data	Remote sensing analysis								
Description of measurement methods and procedures to be applied	Coverage and demarcations will be monitored and created using satellite imagery.								
Frequency of monitoring/recording	At least once before verification								
Value monitored	<table><tr><td>Year</td><td>$D_{leakageArea,projectScenario}(t,i)$</td><td>$\Delta area_{leakageArea,projectScenario}(t, i)$</td></tr><tr><td>2021</td><td>4,163.46</td><td>4,163.46</td></tr></table>			Year	$D_{leakageArea,projectScenario}(t,i)$	$\Delta area_{leakageArea,projectScenario}(t, i)$	2021	4,163.46	4,163.46
Year	$D_{leakageArea,projectScenario}(t,i)$	$\Delta area_{leakageArea,projectScenario}(t, i)$							
2021	4,163.46	4,163.46							
Monitoring equipment	Software GIS, images Landsat								
QA/QC procedures to be applied	Field work or high-resolution images will be used to assess accuracy of results initially obtained. The application will be based on statistically robust parameters.								

Purpose of data	Calculation of project emissions
Calculation method	Multiplication of number of pixels (30m by 30m) in each region by 0.09 hectares pixel-1 for area in hectares.
Comments	No comment.

Data/parameter [MN6]:	$\Delta \text{area}_{\text{leakageArea, baselineScenario}}(t, i)$		
Data unit	[ha yr ⁻¹]		
Description	Hectares undergoing transition ii within the leakage area under the baseline scenario during year ss		
Source of data	Land use change for GEOBOSQUES (MINAM)		
Description of measurement methods and procedures to be applied	Coverage and demarcations will be monitored and created using satellite imagery.		
Frequency of monitoring/recording	Once every baseline update. May also be updated at the time of instance inclusion that requires new leakage area.		
Value monitored	$D_{\text{leakageArea, baselineScenario}}(t, i)$		
	Year	$D_{\text{leakageArea, baselineScenario}}(t, i)$	$\Delta \text{area}_{\text{leakageArea, baselineScenario}}(t, i)$
	2021	4,102.79	4,102.79
Monitoring equipment	Software GIS, Landsat images		
QA/QC procedures to be applied	Baseline scenario is defined once at validation. As this is not a grouped project, no new instances may be added		
Purpose of data	Calculation of project emissions		
Calculation method	Multiplication of number of pixels (30m by 30m) in each region by 0.09 hectares pixel-1 for area in hectares.		
Comments	No comment.		

Data/parameter [MN7]:	$\Delta \text{area}_{\text{historical}} (\text{CS}_1 \rightarrow \text{CS}_2, t_1 \rightarrow t_2)$
Data unit	[ha yr ⁻¹]
Description	Area of transition from LULC class or forest stratum 1 to 2 from time 1 to 2 during the historical reference period
Source of data	Remote sensing analysis for Geobosques (MINAM)
Description of measurement methods and procedures to be applied	Calculate based on the remote sensing-based classification and stratification procedures detailed in Section 3.2.2
Frequency of monitoring/recording	At least once before every baseline update
Value monitored	N/A
Monitoring equipment	Software GIS, Landsat images
QA/QC procedures to be applied	75 pixels in forest stratum and 75 pixels in non-forest stratum will be analyzed with high resolution images
Purpose of data	Calculation of project emissions
Calculation method	Multiplication of number of pixels (30m by 30m) in each region by 0.09 hectares pixel ⁻¹ for area in hectares.
Comments	N/A

Data/parameter [MN9]:	$\text{area}_{\text{historical}} (\text{CS}_1, t_1)$
Data unit	[ha]
Description	Total area of LULC class or forest stratum 1 at time 1
Source of data	Remote sensing analysis for Geobosques (MINAM)
Description of measurement methods and procedures to be applied	Calculate based on the remote sensing-based classification and stratification procedures detailed in Section 3.2.2
Frequency of monitoring/recording	At least once before every baseline update

Value monitored	N/A
Monitoring equipment	Software GIS, Landsat images
QA/QC procedures to be applied	75 pixels in forest stratum and 75 pixels in non-forest stratum will be analyzed with high resolution images
Purpose of data	Calculation of project emissions
Calculation method	Multiplication of number of pixels (30m by 30m) in each region by 0.09 hectares pixel-1 for area in hectares.
Comments	N/A

Data/parameter [MN10]:	Area _{biomassloss} (i)
Data unit	[ha yr ⁻¹]
Description	Total annual area of LULC class <i>i</i> that was cleared for creating firebreaks
Source of data	Records of implemented activities or management plan
Description of measurement methods and procedures to be applied	No firebreaks created.
Frequency of monitoring/recording	At least once before verification
Value monitored	N/A
QA/QC procedures to be applied	N/A
Comments	Not applicable because biomass loss for creating firebreaks not included in project activity

Data/parameter [MN11]:	Area _{firebiomassloss} (i)
Data unit	[ha yr ⁻¹]

Description	Annual area of forest stratum i that was cleared by using prescribed burning
Source of data	Records of implemented activities or management plan
Description of measurement methods and procedures to be applied	N/A
Frequency of monitoring/recording	At least once before verification
Value monitored	N/A
QA/QC procedures to be applied	N/A
Comments	Not applicable because biomass loss for creating firebreaks not included in project activity

Data/parameter [MN12]:	$area_{fireBiomassLoss,ANR}(t, i)$
Data unit	[ha]
Description	Area of biomass removed by prescribed burning within ANR stratum i during year t
Source of data	Records of implemented activities or management plan
Description of measurement methods and procedures to be applied	N/A
Frequency of monitoring/recording	At least once before verification
Value monitored	There is no value to report
QA/QC procedures to be applied	N/A

Comments	Not applicability because ANR not included in project activity
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Data/parameter [MN13]:	<i>areaprojectAreaWithANR,projectScenario(t, i)</i>
Data unit	[ha]
Description	Amount of land on which ANR activities are planned under the project scenario for year <i>t</i> and in stratum <i>i</i>
Source of data	Records of implemented activities or management plan
Description of measurement methods and procedures to be applied	N/A
Frequency of monitoring/recording	At least once before verification
Value monitored	There is no value to report
QA/QC procedures to be applied	N/A
Comments	Not applicability because ANR not included in project activity

Data/parameter [MN14]:	<i>Area_{harvest}(t, i)</i>
Data unit	[ha]
Description	Area of forest in harvest stratum <i>ii</i> that is harvested at time <i>ss</i> .
Source of data	Project Description or Forest/Harvest Management Plan
Description of measurement methods and procedures to be applied	Forest analysis described in FMP

Frequency of monitoring/recording	At least once before verification
Value monitored	12,773.83
Monitoring equipment	GPS
QA/QC procedures to be applied	Direct Spectral Unmixing Method (DSU), in the MINAM PDF document "Protocolo_Metodologico_Detection_Perdida_de_Bosque.
Purpose of data	Calculation of baseline emissions, Calculation of project emissions; Determination of baseline scenario
Calculation method	Multiplication of number of pixels (30m by 30m) in each region by 0.09 hectares pixel-1 for area in hectares.
Comments	No comment.

Data/parameter [MN15]:	$Area_{projectAreaWithHarvest,ProjectScenario}(t, i)$
Data unit	[ha yr ⁻¹]
Description	Size of strata ii within the project area with harvest activities during year ss under the project scenario.
Source of data	Forest/Harvest Management Plan
Description of measurement methods and procedures to be applied	Forest analysis described in FMP
Frequency of monitoring/recording	At least once before verification
Value monitored	12,773.83
Monitoring equipment	GPS
QA/QC procedures to be applied	Direct Spectral Unmixing Method (DSU), in the MINAM PDF document "Protocolo_Metodologico_Detection_Perdida_

	de_Bosque. And the general forest management plan (PGMF)
Purpose of data	Calculation of project emissions
Calculation method	Multiplication of number of pixels (30m by 30m) in each region by 0.09 hectares pixel-1 for area in hectares.
Comments	No comment.

Data/parameter [MN16]:	$Area_{projectAreaWithHarvest,BaselineScenario}(t, i)$
Data unit	[ha yr ⁻¹]
Description	Hectares undergoing transition <i>ii</i> within the harvest areas under the baseline scenario during year <i>ss</i> .
Source of data	Own Forest Management Plan
Description of measurement methods and procedures to be applied	Through an exploratory inventory
Frequency of monitoring/recording	At least once before every baseline update
Value monitored	$(Area_{projectAreaWithHarvest,projectScenario}(t, i) / Project\ area) * D_{projectArea,baselineScenario,DF}^{(t,i)}$ $Area_{projectAreaWithHarvest,BaselineScenario}(t, i): 225.79\ ha$
Monitoring equipment	GPS, software & hardware, laptop, compass
QA/QC procedures to be applied	Direct Spectral Unmixing Method (DSU), in the MINAM PDF document "Protocolo_Metodologico_Detection_Perdida_de_Bosque. And the general forest management plan (PGMF)
Purpose of data	Calculation of baseline emissions; Determination of baseline scenario
Calculation method	N/A

Comments	No comment.
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Data/parameter [MN17]:	BetaReg _{DF} (t) and BetaReg _{DG} (t)		
Data unit	[ha yr ⁻¹]		
Description	Beta regression model describing the relationship between time and deforestation/degradation rate in the reference region during the historical reference period.		
Source of data	Historic forest degradation and deforestation modeling		
Description of measurement methods and procedures to be applied	Procedure described in Section 8.1.5.1 or similar approach from peer-reviewed scientific literature.		
Frequency of monitoring/recording	At least once every baseline update		
Value monitored	2007	614.76	
	2008	781.81	
	2009	989.50	
	2010	1,245.87	
	2011	1,559.07	
	2012	1,935.23	
	2013	2,374.39	
	2014	2,866.50	
	2015	3,397.49	
	2016	3,963.36	
	2017	4,570.12	
	2018	5,224.81	
	2019	5,931.44	
	2020	6,690.42	
	2021	7,498.45	
	2022	8,348.24	
	2023	9,227.92	
	2024	10,120.37	
	2025	11,002.50	

		2026	11,844.62	
		2027	12,609.92	
Monitoring equipment	Statistical Software R-STUDIO			
QA/QC procedures to be applied	Development of the beta regression with its different types of links with the consecutive selection of the best model.			
Purpose of data	Calculation of baseline emissions, Determination of baseline scenario			
Calculation method	Applying a Beta Regression to historical values			
Comments	No comment.			

Locations, Descriptions, Qualitative and Social Data

Data/parameter [MN18]:	Area under agricultural intensification
Data unit	[ha]
Description	Size of the area of agricultural intensification separated for each agricultural intensification measure
Source of data	Participatory rural appraisals
Description of measurement methods and procedures to be applied	Calculate based on areas of cropland in the leakage and project areas
Frequency of monitoring/recording	At least once before verification
Value monitored	There is no value to report
QA/QC procedures to be applied	N/A
Comments	Not applicability because agricultural intensification activities not included in project activity

Data on Drivers and Actions

Data/parameter [MN27]:	CT _{baseline} (h, j, ty, t)
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Data unit	[m ³ yr ⁻¹]
Description	Annually extracted volume of harvested timber roundwood for commercial on-sale under the baseline scenario during harvest t by species j and wood product class ty during year t
Source of data	1. Participatory rural appraisals conducted by the project proponent. 2. Recent (<10 yr) literature in the reference region 3. Recent (<10 yr) literature in an area like the reference region 4. Recent (<10 yr) non-peer-reviewed reports by local organizations
Description of measurement methods and procedures to be applied	Cabinet work based on census results and legal minimum allowed DBH
Frequency of monitoring/recording	At least once before every baseline update
Value monitored	See Workbook "RM CCB VCS 2021" sheet 7
Monitoring equipment	Computers, software, diametric ribbon, hypsometer, others
QA/QC procedures to be applied	A field brigade re-measures a percentage of measured trees
Purpose of data	Calculation of baseline emissions, Determination of baseline scenario
Calculation method	$\Sigma ((\pi * DBH^2)/4) * h$ for commercial species with DBH > minimum allowed
Comments	N/A.

Data/parameter [MN29]:	$CT_{project}(h, j, ty, t)$
Data unit	[m ³ yr ⁻¹]

Description	Annually extracted volume of harvested timber round-wood for commercial on-sale inside the project area under the project scenario during harvest h by species j and wood product class ty during year t .
Source of data	Project design, surveys, statistical records.
Description of measurement methods and procedures to be applied	Cabinet work based on census results and legal minimum allowed DBH
Frequency of monitoring/recording	At least once before verification
Value monitored	See Workbook "RM CCB VCS 2021" sheet 7
Monitoring equipment	Computers, software, diametric ribbon, hypsometer, others
QA/QC procedures to be applied	A field brigade re-measures a percentage of measured trees
Purpose of data	Calculation of project emissions
Calculation method	$\Sigma ((\pi * DBH^2)/4) * h$ for commercial species with DBH > minimum allowed
Comments	N.A.

Data/parameter [MN33]:	Contribution _{DF} (d) and Contribution _{DG} (d)
Data unit	[-]
Description	Relative contribution of driver i respectively to total deforestation and forest degradation.
Source of data	LULC maps and statistics from GEOBOSQUES combined with Beta Regression. Methodology
Description of measurement methods and procedures to be applied	Application of the methodology based on GEOBOSQUES Data

Frequency of monitoring/recording	At least once before baseline update.
Value monitored	See Workbook "RM CCB VCS 2021" sheet Contribution.
Monitoring equipment	Computer.
QA/QC procedures to be applied	Constant and complete revisions in each update of the spreadsheets.
Purpose of data	Calculation of baseline emissions, Determination of baseline scenario
Calculation method	$contribution_{DF}(i) = \frac{proportion_{DF}(d) \cdot L(d)}{\Delta C_{DF}}$
Comments	No comment.

Data/parameter [MN34]:	RelativeDriverImpact _{DF} (t,d) and RelativeDriverImpact _{DG} (t,d)
Data unit	[-]
Description	Relative impact of the geographically unconstrained driver <i>cc</i> at time <i>ss</i> of the crediting period respectively on deforestation and forest degradation.
Source of data	Not applicable as no geographically unconstrained driver has been identified in the baseline scenario
Description of measurement methods and procedures to be applied	N/A
Frequency of monitoring/recording	At least once before baseline update.
Value monitored	There is no value to report
QA/QC procedures to be applied	N/A

Comments	Not applicable.
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Data/parameter [MN35]:	leakageunconstrained (d)
Data unit	[-]
Description	Leakage cancellation rate for avoiding deforestation/degradation from geographically unconstrained drivers.
Source of data	Valid sources to substantiate a smaller leakage rate include social assessments, scientific literature, and reports from civil society or governments. Sources have to be reliable and based on scientific methods and a good statistical design.
Description of measurement methods and procedures to be applied	N/A
Frequency of monitoring/recording	At least once before baseline update.
Value monitored	A default rate of 100% was used as recommended by the methodology.
QA/QC procedures to be applied	N/A
Comments	N/A.

Data/parameter [MN36]:	effectiveness (a, d)
Data unit	[-]
Description	Effectiveness of every project activity <i>a</i> in decreasing any driver of deforestation <i>d</i> relative to that driver's contribution to deforestation and forest degradation,
Source of data	Relevant academic literature or documented expert opinion.

Description of measurement methods and procedures to be applied	- In the table 10 of the methodology for the effectiveness of the legal recognition of the land tenure status, Effectiveness < 5 % [EQ43] - In the table 12 of the methodology for the effectiveness of the demarcation and forest protection, Effectiveness = 100 % [EQ54]. - In the table 17 of the methodology for the effectiveness of the alternative livelihoods, Effectiveness = 0.75 * $\left(\frac{\sum \text{income through alternative livelihood}}{\sum \text{Total value of forest products}} \right)$ [EQ63].
Frequency of monitoring/recording	At least once before baseline update.
Value monitored	Legal recognition of the land tenure status: 0.040 Demarcation and forest protection: 1.000 Alternative livelihoods: 0.31
Monitoring equipment	The effectiveness(a,d) factor represents the maximal effectiveness during the crediting period.
QA/QC procedures to be applied	Within the annual social evaluations, this effectiveness will be evaluated.
Purpose of data	Calculation of baseline emissions, Calculation of project emissions; Determination of baseline scenario
Comments	No comment.

Data/parameter [MN48]:	Efforest
Data unit	[t CO ₂ e]
Description	Emission factor related to leakage.
Source of data	1. If comprehensive national-level statistics on biomass densities are available, Efforest must be calculated based on the average biomass of the country.

	2. If local data is not available. Sources of the data allowed are academic research papers and (2) studies and reports published by the forestry administration or other organizations, including the FAO's Forest Resource Assessment reports, (3) the upper range of biomass in the GPG-LULUCF (2003) Table 3A.1.2.
Description of measurement methods and procedures to be applied	N/A
Frequency of monitoring/recording	At least once before verification
Value applied	There is no value to report
QA/QC procedures to be applied	N/A
Comments	N/A.

Data on Organic Matter and Carbon Densities

Data/parameter [MN49]:	$OM_o(i)$
Data unit	[Mg DM ha ⁻¹]
Description	Plant-derived organic matter of LULC class or forest stratum i in pool o. [Mg DM ha ⁻¹]
Source of data	Field measurements using sampling plots in forest strata or LULC classes.
Description of measurement methods and procedures to be applied	The average biomass stock density in applicable organic matter pools: aboveground tree – $OM_{AGT}(i)$, aboveground non-tree – $OM_{AGNT}(i)$, lying dead wood – $OM_{LDW}(i)$, standing dead wood $OM_{SDW}(i)$, belowground $OM_{BG}(i)$, and soil organic matter $OM_{SOM}(i)$
Frequency of monitoring/recording	At least once before every baseline update

Value monitored	Follow uncertainty deduction procedures described in methodology.
Monitoring equipment	Re-measure plots by independent teams.
QA/QC procedures to be applied	Summed across multiple pools and divided into $OM_{\text{plant}}(i)$ and $OM_{\text{soil}}(i)$
Purpose of data	Calculation of baseline emissions, Calculation of project emissions; Determination of baseline scenario
Comments	N/A.

Data/parameter [MN50]:	Proportion _{DF} (d) and Proportion _{DG} (d)						
Data unit	[-]						
Description	Proportion of the gradual carbon loss that leads to deforestation or forest degradation, respectively, due to driver d						
Source of data	Estimate using the procedure detailed in Table 9.						
Frequency of monitoring/recording	At least once before every baseline update						
Value monitored	<table><tr><th>Driver</th><th><i>proportion_{DF}(i)</i></th><th><i>proportion_{DG}(i)</i></th></tr><tr><td>1. Conversion of forest land to cropland</td><td>100%</td><td>0%</td></tr></table>	Driver	<i>proportion_{DF}(i)</i>	<i>proportion_{DG}(i)</i>	1. Conversion of forest land to cropland	100%	0%
Driver	<i>proportion_{DF}(i)</i>	<i>proportion_{DG}(i)</i>					
1. Conversion of forest land to cropland	100%	0%					
Purpose of data	Calculation of baseline emissions, Calculation of project emissions; Determination of baseline scenario						
Comments	N/A						

Data/parameter [MN51]:	$C(t, i)$
Data unit	[Mg C ha ⁻¹ yr ⁻¹]
Description	Carbon stock density at time in stratum (AGL + BG)
Source of data	Estimate within the biomass inventory plots.

Description of measurement methods and procedures to be applied	For the forest class: <table><tr><th>Equation or Factor</th><th>Application in Peru</th><th>IPCC climatic zone</th><th>Reference</th></tr><tr><td colspan="4">Above-ground biomass in trees (AGB.t)</td></tr><tr><td>$p \cdot \text{Exp}(-1.499+2.148 \cdot \ln(\text{dbh})+0.207 \cdot \ln(\text{dbh})^2-0.0281 \cdot \ln(\text{dbh})^3)$</td><td>Selva Baja</td><td>Moist forest</td><td>Chave <i>et al.</i>, 2005</td></tr><tr><td colspan="4">Below-ground biomass in trees (BGB.t)</td></tr><tr><td>$\text{BGB.t}=0.489 \cdot \text{AGB.t}^{0.890}$</td><td>All</td><td></td><td>Mokany <i>et al.</i>, 2006</td></tr></table> For the Pasture class: Ignition method at an average temperature of 550 ° C for 3 hours. https://www.scielo.sa.cr/scielo.php?script=sci_arttext&pid=S0034-77442020000200440	Equation or Factor	Application in Peru	IPCC climatic zone	Reference	Above-ground biomass in trees (AGB.t)				$p \cdot \text{Exp}(-1.499+2.148 \cdot \ln(\text{dbh})+0.207 \cdot \ln(\text{dbh})^2-0.0281 \cdot \ln(\text{dbh})^3)$	Selva Baja	Moist forest	Chave <i>et al.</i> , 2005	Below-ground biomass in trees (BGB.t)				$\text{BGB.t}=0.489 \cdot \text{AGB.t}^{0.890}$	All		Mokany <i>et al.</i> , 2006
Equation or Factor	Application in Peru	IPCC climatic zone	Reference																		
Above-ground biomass in trees (AGB.t)																					
$p \cdot \text{Exp}(-1.499+2.148 \cdot \ln(\text{dbh})+0.207 \cdot \ln(\text{dbh})^2-0.0281 \cdot \ln(\text{dbh})^3)$	Selva Baja	Moist forest	Chave <i>et al.</i> , 2005																		
Below-ground biomass in trees (BGB.t)																					
$\text{BGB.t}=0.489 \cdot \text{AGB.t}^{0.890}$	All		Mokany <i>et al.</i> , 2006																		
Frequency of monitoring/recording	At least once before verification																				
Value monitored	Forest: 169.78 Pasture: 31.24																				
Purpose of data	Calculation of baseline emissions, Calculation of project emissions; Determination of baseline scenario																				
Comments	No comment.																				

Data/parameter [MN52]:	$f_{allometric}(y)$
Data unit	Equation
Description	Allometric relationship to convert a tree metric such as DBH or tree height into biomass
Source of data	Forest National Inventory (2019)
Frequency of monitoring/recording	At least once before every baseline update
Purpose of data	Calculation of baseline emissions, Calculation of project emissions; Determination of baseline scenario
Calculation method	Allometric equations were used to calculate aboveground biomass by ecozone:

	$AGB.t = \rho * \text{Exp}(-1.499 + 2.148 * \text{Ln}(dap) + 0.207 * \text{Ln}(dap)^2 - 0.0281 * \text{Ln}(dap)^3)$ and to estimate necromasa of standing dead wood Vol = $(\pi \sum (dn)^2) / (8 * L)$. (INFFS 2019)
Comments	No comment.

Data/parameter [MN53]:	$f_{belowground}(y)$
Data unit	Equation
Description	Relationship between aboveground and belowground biomass, such as a root-to-shoot ratio
Source of data	National Forest and Wildlife Inventory (2019)
Description of measurement methods and procedures to be applied	$BGB.t = 0.489 * AGB.t^{0.890}$
Frequency of monitoring/recording	At least once before every baseline update
Purpose of data	Calculation of baseline emissions, Calculation of project emissions; Determination of baseline scenario
Comments	No comment.

Data/parameter [MN54]:	$Charvest(t, i)$
Data unit	Mg C ha ⁻¹
Description	Biomass carbon stock density at time t in stratum i in harvested areas.
Source of data	Field inventory
Description of measurement methods and procedures to be applied	Generic procedure is described in Section 8.1.4.4. Estimate must be made from plots located areas where harvesting takes place.

Frequency of monitoring/recording	At least once before verification
Value monitored	See Workbook "RM CCB VCS 2021" sheet 10.
Monitoring equipment	Carbon stocks in harvested strata must come from sampling. It may be necessary to include additional plots in harvested strata for a precise estimation of carbon stocks. The exact measurement of aboveground and below tree carbon must follow international standards and follow IPCC GPG LULUCF 2003. These measurements are explained in detail in CDM approved methodology AR-AM0002 Restoration of degraded lands through afforestation/reforestation.
QA/QC procedures to be applied	Every year when updating, the spreadsheets will be completely revised
Purpose of data	Calculation of baseline emissions, Calculation of project emissions; Determination of baseline scenario
Calculation method	Carbon Stock – (carbon content in timber harvested / harvested area)
Comments	No comment.

Data/parameter [MN55]:	$CE_{inventory, harvest}(t,i)$
Data unit	[-]
Description	Combined error in estimate of average biomass stock density in harvest areas in stratum i at time t.
Source of data	Field inventory
Description of measurement methods and procedures to be applied	Generic procedure is described in Section 8.1.4.4. Estimate must be made from plot located in areas where harvesting takes place.
Frequency of monitoring/recording	At least once before verification

Value monitored	0.003
Monitoring equipment	Uncertainty estimate in carbon stocks in harvested strata must come from sampling of plots in harvested areas.
Purpose of data	Calculation of baseline emissions, Calculation of project emissions; Determination of baseline scenario
Calculation method	$CE_{inventory}(i) = \frac{\sqrt{\sum_o HWCI(OM_o(i))^2}}{\sum_o OM_o(i)}$
Comments	No comment.

Data/parameter [MN56]:	CE _{inventory,ANR(t,i)}
Data unit	[-]
Description	Combined error in estimate of average biomass stock density in ANR areas in stratum I at time t
Source of data	N/A
Description of measurement methods and procedures to be applied	N/A
Frequency of monitoring/recording	N/A
Value monitored	There is no value to report
QA/QC procedures to be applied	N/A
Comments	N/A.

Data/parameter [MN57]:	U _{classification}
Data unit	[-]

Description	Discounting factor for NERs from avoided deforestation, based on the accuracy of classification, i.e. dividing land into broad land use types.
Source of data	"Methodological Protocol for the Detection of Forest Loss" (MINAM)
Measurement procedures:	Section 8.1.2.7
Frequency of monitoring/recording	At least once before verification
Value monitored	0.962
QA/QC procedures to be applied	This procedure is carried out by MINAM with GEOBOSQUES.
Purpose of data	Calculation of baseline emissions, Calculation of project emissions; Determination of baseline scenario
Comments	No comment.

Data/parameter [MN58]:	$U_{stratification}$
Data unit	[-]
Description	Discounting factor for NERs from avoided degradation, based on the accuracy of stratification, i.e. dividing forest into individual forest biomass classes. Section 8.1.2.7
Source of data	VM0006-REDD- Methodology for Carbon Accounting for Mosaic and Landscape-scale REDD Projects.
Measurement procedures:	Section 8.1.2.7
Frequency of monitoring/recording	N/A
Value monitored	N/A
Purpose of data	Calculation of baseline emissions, Calculation of project emissions; Determination of baseline scenario

Comments	Not Applicable (only one stratum)
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Data/parameter [MN59]:	$u_{transition}(i)$
Data unit	[-]
Description	Discounting factor for the emission factor for the transition from LULC class or forest stratum 1 to class 2 according to the uncertainty of the biomass inventory.
Source of data	Eder Ramos-Hernández & José Luis Martínez-Sánchez in “Almacenes de biomasa y carbono aéreo y radicular en pastizales de <i>Urochloa decumbens</i> y <i>Paspalum notatum</i> (Poaceae) en el sureste de México ¹⁵
Measurement procedures:	Section 8.1.2.4.3
Frequency of monitoring/recording	At least once before verification
Value monitored	1
Purpose of data	Calculation of baseline emissions, Calculation of project emissions; Determination of baseline scenario
Calculation method	$u_{transition}(CS1 \rightarrow CS2) = \begin{cases} 1 & \text{if } CE_{transition}(CS1 \rightarrow CS2) \leq 0.15, \\ 1 - CE_{transition}(CS1 \rightarrow CS2) & \text{if } 0.15 < CE_{transition}(CS1 \rightarrow CS2) < 1, \\ 0 & \text{if } CE_{transition}(CS1 \rightarrow CS2) \geq 1 \end{cases}$
Comments	No comment.

3.1.3 Monitoring Plan

The monitoring plan considers the following issues:

- Drivers of deforestation, project activities and emissions sources related to REDD+ project activities inside and outside of the project area.
- LULC class and forest strata transitions in the project area, leakage area, and reference region using remote-sensing technologies, and validated with ground-truthing data.

¹⁵ <https://www.scielo.sa.cr/pdf/rbt/v68n2/0034-7744-rbt-68-02-440.pdf>

- Carbon stock densities in LULC classes and forest strata.
- Carbon stock in long-lived wood products.
- Natural disturbances.
- Monitoring of harvesting *activities*.

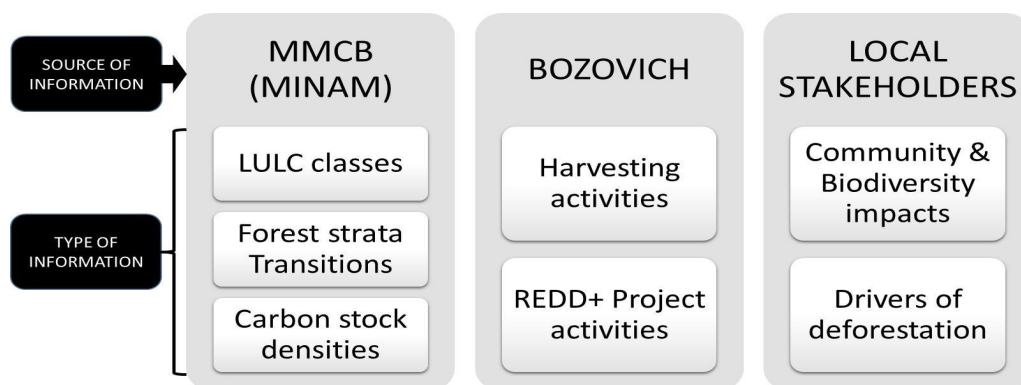


Figure 3.1. Sources of Information by Type

A. Organizational Structure

i. Executive Director:

The Executive Director is responsible for the project initiation, planning, execution, monitoring and closure processes to successfully achieve the project objectives.

They ensured that the overall processes associated with the project structure and project management. They are also responsible for ensuring that projects are organized and executed in a consistent manner and in compliance with the objectives outlined. They progressively develop high-level information regarding the specific plans corresponding to each of the stages throughout the project life cycle. The Executive Director manages the project team to meet the objectives.

The Executive Director's achievements are measured by the degree to which, the project meets the needs and benefits for which it was developed.

ii. Socio-environmental Officer:

The Socio-environmental Officer is responsible for developing and enforcing the project's social intervention strategy.

He/she must determine and classify the project's stakeholders in his/her sphere of influence. Measure the perception of the stakeholders found about the project and their activity in the area, use a possible and practical strategy to address the main problems affecting or influencing the

forest, in the most efficient and least costly way possible in terms of time and logistics, to achieve the fundamental objectives of the project. The social responsible oversees the identification of institutions that can be considered allies for the project, to strengthen the intervention and construction of the scheme under which to develop the activities in an articulated way; he is responsible for maintaining permanent communication and coordination with the Allied Institutions and stakeholders.

iii. Assistant to the Socio-environmental Responsible:

Assists in the tasks of the Social Responsible.

iv. Financial and Administrative Manager

The Financial and Administrative Manager oversees budget management and is also responsible for the administrative area of the project.

He/she oversees controlling the budget allocated to the project, maintaining the relevant expenditure levels in accordance with the approved budget and established deadlines. Advises in the fulfillment of the functions of administration of the Financial Resources, ensures the delivery of information on budgetary financial matters to be used for decision making. Prepares requests for materials from cost centers (in budgetary matters), to meet the requirements requested. Propose and prepare the annual budget, to determine the expenditure that can be made during the following year.

v. Operations Manager:

Responsible for the execution of field operations. Monitors and controls the execution work of the different project activities. Monitors the progress of the components and tasks necessary to ensure the overall goals. Oversees managing to achieve a balance between effectiveness and efficiency. Establishes strategic criteria for the administration of human resources at the operator level. Follows up on processes agreed and established by the project.

vi. Field personnel:

It is the personnel destined to execute field work, such as placing signs, establishing signage, executing boundary maintenance, collecting field information, etc.

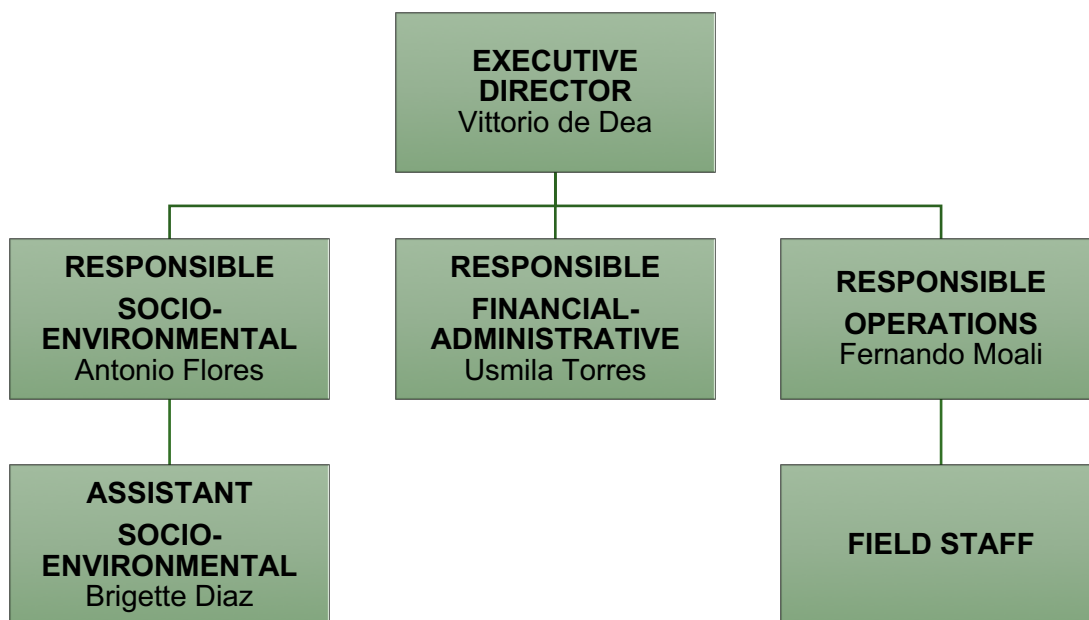


Figure 3.2. Project Governance

B. Data Management

The information was recorded, sees that some operation on the land was planned, during and after them, that is, at the end of each campaign the basic information was arranged to make the respective reports. Except for the internal audits that are held throughout the year. These reports that are taken from the field were systematized in the company's office in Puerto Maldonado and stored on the company's server. The reports were submitted to the monitoring manager for the preparation of reports relevant to the project. Additionally, as a safety measure in the risk of loss of information, a backup copy was saved in physical storage (CD-USB) and a cloud copy. In turn, each area manager presented reports every time these activities were produced.

In short, the distribution of responsibilities and sources of information are detailed below for each of the key data required.

Table 3.1. Data to be collected by sources

Data	Responsible	Source
Drivers of deforestation	Technical team	To be defined
Project activities	Project proponent	Project proponent reports
Emissions sources	Technical team	Project proponent reports
LULC class and forest strata transitions.	Technical team	MINAM
Carbon stock densities	Technical team	MINAM

Data	Responsible	Source
Carbon stock in long-lived wood products	Technical team	Project proponent reports
Natural disturbances.	Technical team	Diverse sources
Monitoring of harvesting activities.	Project proponent	Own reports

Forestry Team assured that the data is collected, stored, and reported properly in the "Summary of Monitoring Results of the General Forest Management Plan" of each consolidated (see Evidence 3.01). Similarly, the person responsible assured that all manuals are fulfilled by the chiefs of each team.

C. Quality Guarantee and Control

Forestry Team responsible for the creation and adoption of quality assurance and control protocols, as necessary, and any technical direction of experts or equipment in the sector. It also assured that the QA/QC protocols are carried out by experts in the sector.

The Forestry team verified and corrected the errors working as a team to verify the identification of the tree species and the diameter measurements, as well as the community and biodiversity data collected. These teams verified the readings of others. To reduce and eliminate transcription errors, the spreadsheets were corroborated by rereading the field notebooks and comparing them with the data entered.

All people who participated in the measurement work on the field would receive a complete training on the current measurement manual before proceeding to the measurements (see Evidence 3.02 "Training"). The dates of the training sessions and the formed people were recorded and conserved.

The names of the team members and the team leader who made the measurements were registered for each plot measurement.

All data communicated to the proponents of the project and to the local stakeholders and any discrepancy or disagreement will be rectified by an explanation or a joint visit to the activities in question. All public access satellite data used in monitoring, validation, verification, and certification will be made available to auditors.

Includes the following steps:

1) Training

The training was provided to the general staff in the different roles that must be carried out within the framework of the project, the activities, and the methodologies to follow, as well as the attention

they must take in those critical points of the information management in their different stages: Collection of field data, digitalizing and processing.

2) Verification on the site

It basically consisted of monitoring in the field that the security coordinator must carry out the work of the technical team, always taking care that the procedures established in the methodological guidelines of the guides and manuals are implemented and that the staff have disseminated in the process. training.

An error in the implementation of the procedures is corrected in the field during the execution of each evaluation.

3) Review of the data collected before and after digitalization.

This consists in:

- Field data collection: Review of the form header, complete fields, data consistency (values within the parameters).
- Types of writing: Once 100% of the information contained in the form has been entered in the database, an indication of "typing" must be entered in the corresponding form and once the consistency of the digitalization, an indicative of "reviewed" must be entered.
- Processing: It is the responsibility of the Security Coordinator. They must consider the methodological guidelines defined in the guides or monitoring manuals developed by the project.

If an inconsistency of information is identified at the field form level, this information will be verified in the field. If the inconsistency is in the digitized information, it is corroborated in the field forms and if the inconsistency persists, it is corroborated in the field.

4) Review of monitoring reports before the publication.

The monitoring reports are reviewed before the publication to confirm that the calculations, the analysis, and the conclusions are correct and if they have been obtained following the corresponding guidelines. This work is supervised by the forest specialist.

If there are no conformities during internal or external audit processes, the data is reviewed and the non -conformities are addressed.

D. Information management: collection, treatment, and reports

The project is based on the premise of "adaptive management", in this sense, the entire intervention in the forest is based on previous information collected in the field as a knowledge base. According

to this knowledge, the management plans, the operational plans, and other management instructions necessary for the implementation of the project, the interventions in the forest and the treatment of the social component are defined.

The permanent implementation of the monitoring plan allows to identify the trends of the different indicators, which are oriented to measure the fulfillment or impact of project activities. The knowledge that is generated allows to validate or adapt the system, and if necessary, make changes in management tools or project activities.

The information collected in the field by the technical personnel is entered, reviewed, and systematized by the head of monitoring and evaluation of the environmental component and by the Social Responsibility (RS) Coordinator for the community component, both at the end of the period (annually) present the Monitoring reports corresponding to the forest specialist and the social specialist for review and validation. The relevant information is incorporated into the process of reviewing the management tools and in the preparation of the new operational plan for the project.

The flow of information within the framework of the adaptive management of the project is presented below:

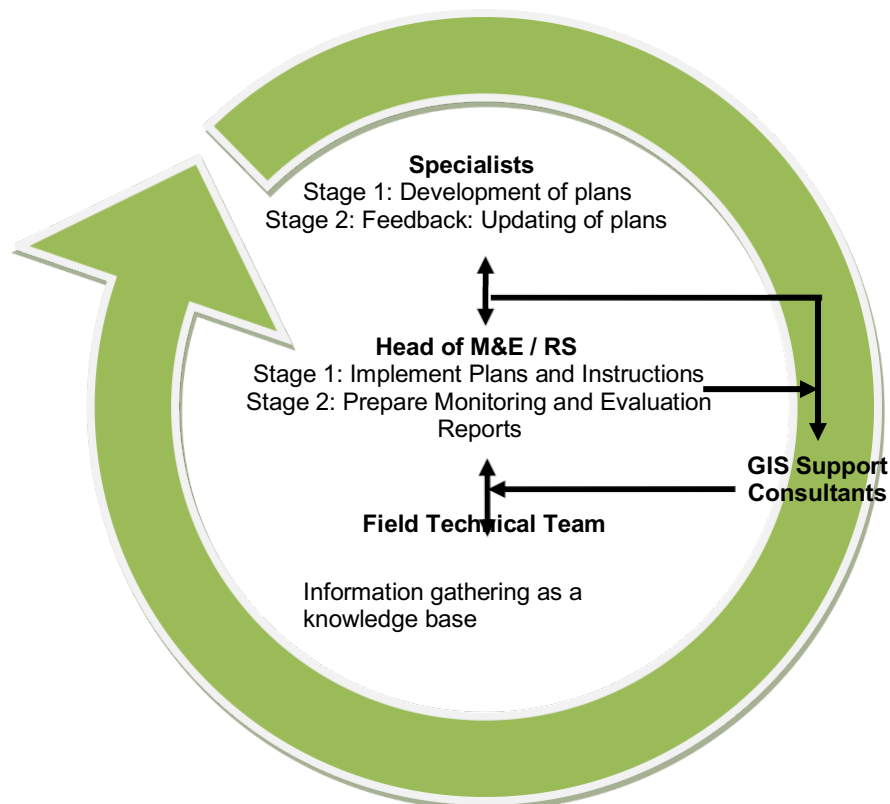


Figure 3.3. Adaptive Management

Forms have been developed to collect field data for those variables to be monitored. The data collected is digitized, reviewed, and incorporated into a database in Excel-type spreadsheets, also designed according to the information requirements. The calculations are made in said spreadsheets using the corresponding formulas and they are the ones that allow calculating the monitoring plan indicators that are then presented in the monitoring reports for the period.

All field monitoring processes must be documented, all sampling units or established plots must be georeferenced and systematized within the GIS.

The physical files are stored in the project's administrative office located in the town of Iñapari, while the digital files are stored in an electronic folder called "JAGUAR PROJECT" located on the BOZOVICH server, which is managed by the Forest Specialist. These files will be kept throughout the useful life of the project and for at least two years after the end of their crediting period.

E. Analysis of Deforestation

For this monitoring component, information management comprises the following steps or processes:

Step 1: Selecting and analyzing the source of land use change

1.1. For the 5-year monitoring period, the following actions will be taken:

- a) The data collected and analyzed should cover the entire project area and the leakage belt. The data must correspond to the year in which the verification occurs.
- b) For the calculation of each category of land use change:
 - The area of each category will be calculated within the project area and, when necessary, within the leakage belt.
 - The reference forest cover maps for the project area and leakage belt will be updated.
 - The remaining forest area within the project area will be updated.

1.2. For the 10-year monitoring period, a review of the baseline corresponds:

- a) Use of medium resolution images (30 mx 30 m or less, if available) at the end of the period in which the baseline will be renewed.
- b) The data collected and analyzed must cover:
 - Entire reference region: data available for the baseline renewal year or no less than one year earlier.

- For the processing of Land Use Capacity data, geometric corrections will be georeferenced and made, as well as cloud and shadow detection.
- The area of each category will be calculated within the reference region, the project area and, when necessary, within the leakage belt.
- The reference forest cover maps will be updated for the reference area, the project area, and the leakage belt.
- The total deforested areas will be estimated during the first 10 years to adjust the baseline and the deforestation rate if necessary.

Note: The indications of the corresponding Module of the REDD Methodology Modules regarding clouds will be considered for the determination of maps. A classification accuracy of 90% or more will be sought.

Step 2: Interpretation and Analysis

2.1. Monitoring Deforestation

- a) Deforested area within the Project Area (PA) by stratum.
- b) Deforested area within the leakage belt (LB) by stratum.

In both cases, it must be specified to which type of Land Use (LU) the deforested areas have been changed. For the recalculation of the baseline, it must be established or indicated whether the percentages of change in land use remain the same as in the initial baseline.

- c) Carbon stocks in carbon pools:
 - The carbon stock is maintained in each stratum defined in the baseline. It will be re-evaluated for the baseline review (in 10 years).
 - The carbon stock of each land use is maintained. It will be re-evaluated for the baseline review (in 10 years).
- d) Volume of wood harvested in each concession, by stratum and by year.
- e) Deforested area within the Reference Region (for baseline review).

2.2. Monitoring of Areas with Higher Carbon Stocks

The increase in carbon stocks is assumed to be zero and therefore does not require monitoring.

2.3. Monitoring of project emissions

Non-CO2 GHG emissions will be calculated:

- a) N₂O and CH₄ from the burning of agricultural and forestry biomass. It is carried out in those areas of land where the change of use occurred. For ex ante calculations of the biomass burned within the forest, it was estimated (through expert consultation) that 50% of the deforested forest was burned. If deforestation occurs within the project area, a new percentage will be established (based on actual measurements to be made or supported by literature). It will indicate what was done for the new calculation of the baseline (every 10 years).
- b) N₂O emissions from fertilizer use within deforested areas. If deforestation and the use of N₂O occur during the life of the project, the amount of nitrogen fertilizer used per hectare deforested will be determined.

F. Analysis and Interpretation of Satellite Images

The analysis of deforestation and the source of the change in land use was carried out using satellite images and field verification. The procedures to be considered are the following:

1) Selection of satellite images:

The image must be obtained from image servers, its technical characteristics such as: source, type of image, path, row, date, sensor, and percentage of cloud cover must be known. This information must be detailed in the "Image Acquisition Form" and incorporated into the corresponding monitoring reports.

Images with a cloud cover that exceeds 10% of the total image area should not be used, this to ensure their correct analysis.

2) Processing of Satellite Images:

For the processing of the selected satellite images, software such as Erdas Imagine and ArcGis should be used. This activity should include the following steps:

a) Band composition:

As the image is acquired in TIFF format (raw format), it must be unzipped and exported to the Erdas Imagine array (*.img). Then all the bands are grouped into a 543-RGB combination, which is the most optimal combination for visual interpretation of deforestation and land use change.

b) Geometric correction

This process is applied to transform images by removing geometric distortions from the sensor, which means that they must be georeferenced. It is a very important step because it ensures that the image is in the same geographic space as the historical images.

c) Radiometric improvement

This is done to get a better visual appearance of the image.

d) Visual classification

The IIAP methodology can be used to classify satellite images. An appropriate scale must be defined and the classes to be identified are:

- Forest
- Non-forest land, which was divided into subcategories:
 - grasses
 - farming
 - Infrastructure
 - Secondary forest, included here to avoid considering positive changes in the forest (natural regeneration).

The project executed citizen participation workshops (at the beginning and closing of registration operations) twice a year to disseminate the main results and conclusions of its multidimensional monitoring system (see Evidence 3.02. “Training”).

G. Internal Audit Procedures

For internal audit procedures, the project followed the flow diagram represented in Figure 3.4. With this procedure, the project validated the appropriate use of satellite images to identify deforestation areas because it indicates the steps to follow in case of threat within the project. In addition, this procedure contemplated a comparison between satellite image monitoring and field verification.

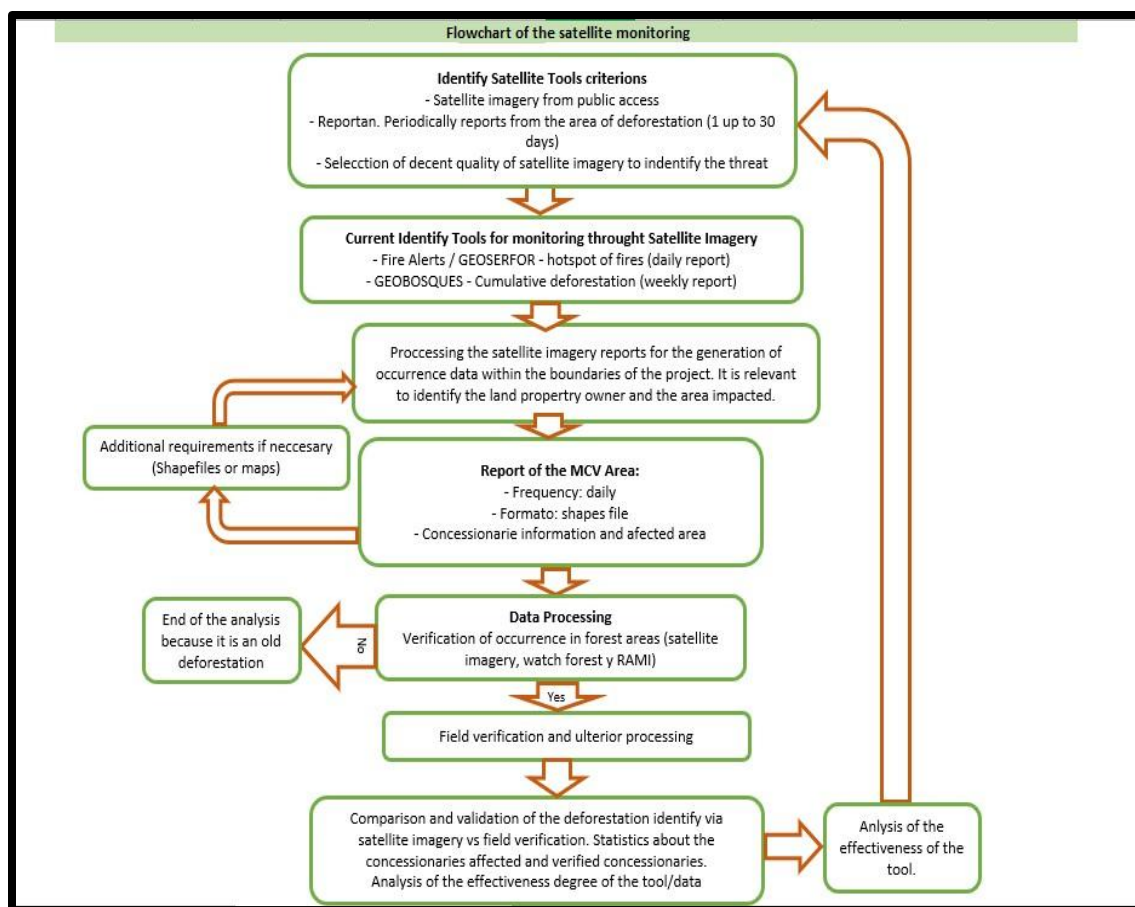


Figure 3.4. Flowchart of the internal procedure to analyze the satellite monitoring.

H. National Forestry and Wildlife Inventory Report - INFFS

The application of the sampling approaches, including target precision levels, sample sizes, location of sampling sites, can be found in the following document: https://redd.unfccc.int/files/nref_peru_final.pdf.

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

The dissemination of monitoring results is available to the public on the Internet through the following website: <https://aldoagain21.wixsite.com/cultura-forestal>



Figure 3.5. Dissemination website

On the above website we can find the executive summary of the REDD+ Amazonia Jaguar project in 2021, where the objectives and activities appear in favor of forests and surrounding communities.

Also, on the platform we find the historical and current documents of the granting forest concession and the concession of Chullachaqui forest investment, among them are:

- Summary of the monitoring results of each general forest management plan
- Forest adhesion statement
- Forest Bava Report
- Conflict Resolution Manual
- Institutional policies
- BAVC monitoring procedure
- Summary of BAVC monitoring results

The different stakeholders were also shared (See Evidence 3.03. "Charges of accession cards.") such as the district municipalities of Tahuamanu, Iberia and San Lorenzo, San Francisco Sector, Carachamayoc sector, Colonel Portillo, Institute of Higher Education Iberia Public Technique, regional Government Madre de Dios, Minsa, Aider, Osinfor, National University of San Antonio de Abad de Cusco, FENAMAD, UNAMAD, ACCA, and to the PNP Tambopata police station; The

Adhesion Declaration to the Principles and Criteria of Voluntary Forest Certification, Institutional Policy, Summary of the General Forest Management Plan, a conflict resolution manual, results of the study of high conservation value forests (BAVC), monitoring procedure and results obtained from BAVC.

Complementing these channels, the project issues a local radio program every weekend on Radio Tahuamanu (109.4 FM) (before on Radio Solar, 99.3 FM) to communicate the activities, developments, and results of the project.

3.2 Quantification of GHG Emission Reductions and Removals

3.2.1 Baseline Emissions

The reference data has not changed since the validation, the same updated carbon source is still used for each class and the methodology deviations set out in Section 3.1.6 of the PD (Climate Section Update) continue to be respected.

The emissions of the baseline are found in the following table. These baseline emissions are derived from Equation 105 of the Section 8.4.4 of the methodology, from which three equations containing the actual baseline emissions and removals are derived: EQ107 (1) + EQ113 (7) + EQ117 (10).

Where:

- EQ107: Δ GHG from avoided deforestation excluding ANR and harvest areas (1)
- EQ113: Δ GHG from changes in long-lived wood products (7)
- EQ117: Δ GHG from avoided deforestation from areas under harvest (10)

A. Baseline emissions derived from (1)

The Equation 107 is:

$$(1): u_{classification}(i) * u_{transition}(i) * \Delta area_{projectAreaEAH,baselineScenario(i)} * EF_{AGL}(i) + EF_{BG}(i, t - tt)$$

Where:

$u_{classification}(i)$: Discounting factor for NERs from avoided deforestation, based on the accuracy of classification, i.e. dividing land into broad land use types.

$u_{transition}(i)$: Discounting factor for all emission reductions, based on the uncertainty of biomass inventory related to transition i .

$\Delta area_{projectAreaEAH,baselineScenario}(i)$: Hectares undergoing transition i within the project area, excluding the ANR area and harvest areas, under the baseline scenario during year t . [ha yr⁻¹].

$EF_{AGL}(i) + EF_{BG}(i, t - tt)$: Aboveground live, and belowground emission factor for transition i , and time after transition $t - tt$.

For the monitored year 2021:

Table 3.2. Baseline emissions derived from avoided deforestation excluding ANR and harvest areas

$u_{classification}(i)$	$u_{transition}(i)$	$\Delta area_{projectAreaEAH,baselineScenario}$	$EF_{AGL}(i) + EF_{BG}(i, t - tt)$	(1)
Discounting factor for NERs from avoided deforestation, based on the accuracy of classification	Discounting factor for all emission reductions, based on the uncertainty of biomass inventory related to transition ii .	Hectares in transition ii within the project area, excluding ANR and harvest areas, in the baseline scenario during year t (ha).	Emission Factor (tCO ₂ /ha)	Δ GHG from avoided deforestation excluding ANR and harvest areas (tCO ₂)
0.962	1.00	3009.14	-453.74	-1,313,475.1

B. Baseline removals derived from (7)

The Equation 113 is:

$$(7): \frac{44}{12} * C_{LWP,baseline}(t) * C_{LWP,project}(t)$$

Where:

$C_{LWP,project}(t)$: GHG sink in long-lived wood product in project scenario at year t [Mg C]

$C_{LWP,baseline}(t)$: GHG sink in long-lived wood product in baseline scenario at year t [Mg C]

For the monitored year 2021:

Table 3.3. Baseline emissions derived from changes in long-lived wood products

$C_{LWP,baseline}(t)$	(7)
carbon in long-lived wood products within the reference scenario. [tC]	Δ GHG from changes in long-lived wood products (tCO ₂)
1386.9	5,085.3

C. Baseline emissions derived from (10)

The Equation 117 is:

$$(10): u_{classification}(i) * u_{transition}(i) * area_{projectAreaWithharvest,baselineScenario}(t,i) * (EF_{AGL}(i) + EF_{BG}(i, t - tt))$$

For the monitored year 2021:

Table 3.4. Baseline emissions derived from avoided deforestation excluding ANR and harvest areas

$u_{classification}(i)$	$u_{transition}(i)$	$\Delta area_{projectAreaWithharvest,baselineScenario}(t,i)$	$EF_{AGL}(i) + EF_{BG}(i, t - tt)$	(10)
Discounting factor for NERs from avoided deforestation, based on the accuracy of classification	Discounting factor for all emission reductions, based on the uncertainty of biomass inventory related to transition ii	Hectares in transition ii within the project area, excluding ANR and harvest areas, in the baseline scenario during year t (ha)	Emission Factor (tCO ₂ /ha)	Δ GHG from avoided deforestation excluding ANR and harvest areas (tCO ₂)
0.962	1.00	225.79	-453.74	-98,554.8

D. Total baseline emissions for the monitored period

Table 3.5. Baseline emissions or removals (tCO₂e)

Year	(1) Δ GHG from avoided deforestation excluding ANR and harvest areas (tCO ₂)	(7) Δ GHG from changes in long-lived wood products (tCO ₂)	(10) Δ GHG from avoided deforestation excluding ANR and harvest areas (tCO ₂)	Total
2021	-1,313,475.1	5,085.3	-98,554.8	-1,406,944.6

For more details on the calculations of baseline emissions or removals, see excel "RM 2021 Calculations".

3.2.2 Project Emissions

Project emissions are estimated applying the VM0006 methodology "Methodology for Carbon Accounting for Mosaic and Landscape-scale REDD Projects".

Project ex-post emissions for this verification period were calculated using emissions from deforestation observed during this monitoring period.

The calculation of the project's emissions has been made with the most recent data on carbon stocks, together with the country's official tool GEOBOSQUES to spatially determine deforestation in this monitoring period.

Project deforestation emissions were calculated following the guidelines in section 9.3.2 of the VM0006 methodology. These guidelines require that an annual rate of change, $\Delta area_{projectAreaEAH}(t,i)$, be calculated for each transition. This rate is then used in the calculations of the final NERs. The map (GEOBOSQUES) of transition from Forest Lands to Pastures (respecting the methodological deviation of PD 3.1.6) for this monitoring period has been used to generate the results of this rate of change for the transition throughout the follow-up period.

The monitoring verified the following deforestation in the project area by 2021: 192.13 ha.

Project emissions or removals are derived from Equation 105 of the Section 8.4.4 of the methodology, from which three equations containing the actual project emissions and removals are derived: EQ107 (1) + EQ113 (7) + EQ117 (10).

Where:

- EQ107: ΔGHG from avoided deforestation excluding ANR and harvest areas (1)
- EQ113: ΔGHG from changes in long-lived wood products (7)
- EQ117: ΔGHG from avoided deforestation from areas under harvest (10)

A. Project emissions derived from (1)

Following Equation 107:

$$(1): u_{classification}(i) * u_{transition}(i) * \Delta area_{projectAreaEAH,projectScenario}(i) * EF_{AGL}(i) + EF_{BG}(i, t - tt)$$

Where:

$u_{classification}(i)$: Discounting factor for NERs from avoided deforestation, based on the accuracy of classification, i.e. dividing land into broad land use types.

$u_{transition}(i)$: Discounting factor for all emission reductions, based on the uncertainty of biomass inventory related to transition i .

$\Delta area_{projectAreaEAH,baselineScenario}(i)$: Hectares undergoing transition i within the project area, excluding the ANR area and harvest areas, under the baseline scenario during year t . [ha yr⁻¹].

$EF_{AGL}(i) + EF_{BG}(i, t - tt)$: Aboveground live, and belowground emission factor for transition i , and time after transition $t-tt$.

For the monitored year 2021:

Table 3.6. Project emissions derived from avoided deforestation excluding ANR and harvest areas

$u_{classification}(i)$	$u_{transition}(i)$	$\Delta area_{projectAreaEAH,projectScenario}(i)$	$\frac{EF_{AGL}(i)+EF_{BG}(i, t - tt)}{EF_{BG}(i, t - tt)}$	(1)
Discounting factor for NERs from avoided deforestation, based on the accuracy of classification	Discounting factor for all emission reductions, based on the uncertainty of biomass inventory related to transition ii .	Hectares in transition ii within the project area, excluding ANR and harvest areas, in the project scenario during year t (ha).	Emission Factor (tCO ₂ /ha)	Δ GHG from avoided deforestation excluding ANR and harvest areas (tCO ₂)
0.962	1.00	192.13	-453.74	-83,863.8

B. Project removals derived from (7)

Following Equation 113:

$$(7): \frac{44}{12} * C_{LWP,baseline}(t) * C_{LWP,project}(t):$$

Where:

$C_{LWP,project}(t)$: GHG sink in long-lived wood product in project scenario at year t [Mg C]

$C_{LWP,baseline}(t)$: GHG sink in long-lived wood product in baseline scenario at year t [Mg C]

For the monitored year 2021:

Table 3.7. Project emissions derived from changes in long-lived wood products (7)

$C_{LWP,project}(t)$	(7)
carbon in long-lived wood products within the reference scenario. [tC]	Δ GHG from changes in long-lived wood products (tCO ₂)
1386.9	5,085.3

C. Project emissions derived from (10)

Following Equation 117

$$(10): u_{classification}(i) * u_{transition}(i) * area_{projectAreaWithharvest,projectScenario}(t,i) * (EF_{AGL}(i) + EF_{BG}(i, t - tt))$$

For the monitored year 2021:

Table 3.8. Project emissions derived from avoided deforestation excluding ANR and harvest areas (10)

$u_{classification}(i)$	$u_{transition}(i)$	$\Delta area_{projectAreaWithharvest,project}(i)$	$\frac{EF_{AGL}(i)+EF_{BG}(i, t - tt)}{}$	(10)
Discounting factor for NERs from avoided deforestation, based on the accuracy of classification	Discounting factor for all emission reductions, based on the uncertainty of biomass inventory related to transition <i>ii</i> .	Hectares in transition <i>ii</i> within the project area, excluding ANR and harvest areas, in the project scenario during year <i>t</i> (ha).	Emission Factor (tCO ₂ /ha)	ΔGHG from avoided deforestation excluding ANR and harvest areas (tCO ₂)
0.962	1.00	225.79	-453.74	0.0

D. Total project emissions for the monitored period

Table 3.9. Project emissions or removals (tCO₂e)

Year	(1) ΔGHG from avoided deforestation excluding ANR and harvest areas (tCO ₂)	(7) ΔGHG from changes in long-lived wood products (tCO ₂)	(10) ΔGHG from avoided deforestation excluding ANR and harvest areas (tCO ₂)	Total
2021	-83,863.8	5,085.3	0.0	-78,778.5

For more details on the calculations of project emissions or removals, see excel "RM 2021 Calculations".

3.2.3 Leakage

The calculation of the project's leakage emissions has been made with the most recent data on carbon reserves, together with the official tool of the country "geobosques" to spatially determine deforestation in this monitoring period.

Ex Post emissions outside the project area (leakage) by deforestation were calculated following the guidelines of section 9.3.3 of the VM0006 methodology. These guidelines require that an annual exchange rate, apart from the fact that this rate is used in the final calculations. The map (geobosques) of transition from forest to pastures (respecting the methodological deviation of PD 3.1.6) for this monitoring period has been used to generate the results of this type of change for the transition during the monitoring period.

The monitoring verified the following deforestation in the project area by 2021: 4,163.46 ha (see Evidence 3.04 "Leakage").

Leakage emissions or removals are derived from equation 105 of the section 8.4.4 of the methodology, from which an equation is derived containing the actual leakage emissions: EQ108 (2).

Where:

EQ108: ΔGHG from deforestation due to leakage (2)

$$(2): u_{classification}(i) * u_{transition}(i) * (+\Delta area_{leakageArea,projectScenario(t,i)} - \Delta area_{leakageArea,baselineScenario(t,i)}) * EF_{AGL}(i) + EF_{BG}(i, t - tt)$$

Where:

$u_{classification}(i)$: Discounting factor for NERs from avoided deforestation, based on the accuracy of classification, i.e. dividing land into broad land use types.

$u_{transition}(i)$: Discounting factor for all emission reductions, based on the uncertainty of biomass inventory related to transition i .

$\Delta area_{leakageArea,projectScenario(t,i)}$: Hectares undergoing transition ii within the leakage area under the project scenario during year ss . [ha yr⁻¹].

$\Delta area_{leakageArea,baselineScenario(t,i)}$: Hectares undergoing transition ii within the leakage area under the baseline scenario during year ss . [ha yr⁻¹].

$EF_{AGL}(i) + EF_{BG}(i, t - tt)$: Aboveground live, and belowground emission factor for transition i , and time after transition $t-tt$.

For the monitored year 2021:

Table 3.10. Discounting factors and Emission Factor

$u_{classification}(i)$	$u_{transition}(i)$	$EF_{AGL}(i) + EF_{BG}(i, t - tt)$
Discounting factor for NERs from avoided deforestation, based on the accuracy of classification	Discounting factor for all emission reductions, based on the uncertainty of biomass inventory related to transition ii .	Emission Factor (tCO ₂ /ha)
0.962	1.00	-453.74

Table 3.11. Emissions from deforestation due to leakage (tCO₂)

$\Delta area_{leakageArea,projectScenario}^{(i)}$	$\Delta area_{leakageArea,projectScenario}^{(i)}$	(2)
Hectares in transition ii within the leakage area in the project scenario during year t. [ha yr ⁻¹]	Hectares in transition ii within the leakage area in the baseline scenario during year t. [ha yr ⁻¹].	Δ GHG from deforestation due to leakage (tCO ₂)
4,163.46	4,102.79	-26,482.5

Table 3.12. Leakage emissions or removals (tCO₂e)

Year	(2) Δ GHG from deforestation due to leakage
2021	-83,863.8

For more details on the calculations of leakage emissions or removals, see excel "RM 2021 Calculations".

3.2.4 Net GHG Emission Reductions and Removals

Net GHG emission reductions and removals are calculated using Equation 105 of the methodology.

Table 3.13. Sources of emissions

[EQ105]: Net Emission Reductions (NERs)	=	EQ	Used in
Δ GHG from avoided deforestation excluding ANR and harvest areas	1 +	107	Section 3.2.1 and 3.2.2
+ Δ GHG from deforestation due to leakage	2 +	108	Section 3.2.3
+ Δ GHG from avoided degradation	3 +	109	N/A
+ Δ GHG from degradation due to leakage	4 +	110	N/A
+ Δ GHG from leakage by unconstrained geographic drivers	5 +	111	N/A
+ Δ GHG from assisted natural regeneration	6 +	112	N/A
+ Δ GHG from changes in long-lived wood products	7 +	113	Section 3.2.1 and 3.2.2
+ Δ GHG from improved cook stoves	8 +	114	N/A
+ Δ GHG from other and secondary sources	9 +	115	N/A
+ Δ GHG from avoided deforestation from areas under harvest	10	116 & 117	Section 3.2.1 and 3.2.2

*N/A: Not applicable

EQ105 (NERs) is divided into ten equations, of which those labeled as "Not Applicable" are from activities or assessments not intended for this project, the project presents emissions and/or

removals in the four equations highlighted in bold in the table above, described in Sections 3.2.1, 3.2.2, and 3.2.3.

The following tables show the Net GHG emission reductions or removals:

Although not required by the methodology, baseline, project, and leakage emissions have been separated out from each other and included in the below table, as included in the monitoring report template required by VCS.

Table 3.14. Net GHG emission reductions or removals (tCO₂e)

Year	Baseline emissions or removals (tCO ₂ e)	Project emissions or removals (tCO ₂ e)	Leakage emissions (tCO ₂ e)	Net GHG emission reductions or removals (tCO ₂ e)
2021	-1,406,944.6	-78,778.5	-26,482.5	1,301,683

Estimated net reductions in the project area are the result of 2,817.01 hectares of reduced forest loss in the project area compared to the without-project scenario.

Finally, after calculating NERs, VCUs are calculated by removing the buffer credits. Per equation 106 of the methodology, applied to this project:

$VCUs = NERs - buffer * (\Delta GHG \text{ from avoided deforestation excluding ANR and harvest areas} + \Delta GHG \text{ from changes in long-lived wood products} + \Delta GHG \text{ from avoided deforestation from areas under harvest})$

The non-permanence risk score (as determined in the AFOLU non-permanence risk report) is 10% and the calculation of the total number of buffer credits to be deposited into the AFOLU pooled buffer account is 132,816.61.

Table 3.15. NERs, buffer credit allocation and VCUs generated by the project

Year	Net Emission Reductions (NERs)	Buffer credits (tCO ₂ e)	Verified Carbon Units (tCO ₂ e)
2021	1,301,683.56	132,816.61	1,168,866.95

3.3 Optional Criterion: Climate Change Adaptation Benefits

Not applicable.

4 COMMUNITY

4.1 Net Positive Community Impacts

4.1.1 Community Impacts (CM2.1)

A new community has been identified and added to the scope of intervention of the project:

Alerta is a rural Population Center located in the district of Tahuamanu and is made up of a total population of 1,143 inhabitants like to 243 families (INEI 2017). Within the framework of the project, the connection with the community is associated with productive work and the opportunity to improve the quality of life (well-being and livelihood) of 26 families of Brazilian nuts collectors. The Otorongo Forest Concession gives them the opportunity for work and economic development every year (Evidence 4.01 list of Brazilian Nuts collectors 2021).

A. Social Characteristics

Alerta has been made up of the migrant and native population of the region. Currently, 46% of the population (INEI 2017) continues to come from other regions of Peru (Cusco, San Martín, and Ucayali mainly). The population growth has been from 2007 to 2017 from 986 inhabitants to 1,143 inhabitants. that is, an annual growth of 1.6% of the population.

It has a Delegate Mayor who is the political representative towards national authorities. The current Mayor is Mr. Yoth Lider Corrales Guamuro.

B. Income and Economic activities

The main economic activities are related to the collection and extraction of natural resources from the area where Brazilian nuts and timber concessions are located. In addition, trade and service activities (own businesses) are identified.

The family income is around 1 252 soles per month (INEI 2017) in the zone (Tahuamanu district).

C. Education

It has educational centers (03) for the three basic levels of education required by the Peruvian state (initial, primary, and secondary)

D. Health infrastructure

There is one (01) Health post for patient care in Alerta

This 2021 monitoring period, given the global context of the Covid 19 pandemic, has been a transition process from the perspective of community relations. To carry out the expected activities within the framework of the project, the focus has been based on training and being able to strengthen communications with the communities in a more fluid way. Being able to include one more community as part of the benefits of the project shows the interest that exists in the area towards the REDD+ project, highlighting the field work that has been carried out for some years now.

There have been different contexts for each community, however the interest in continuing to learn and having opportunities to develop sustainable economic activities and take care of the forest continue to be the goals of the project with the communities.

Below is the table of impacts, costs, risks, benefits, and well-being generated in this period.

Table 4.1. Community impacts of the project

Community Group	Surrounding communities (San Francisco, Carachamayoc, Portillo, Monte Sion and Alerta)
Impact	Trainings in REDD+ Project (objectives, benefits, and opportunities) (10) and value of the forest (13) (Evidence 4.02 Community trainings 2021). Job opportunities (Evidence 4.03 Community work) Economic benefits (Evidence 4.04 Payment Brazilian Nuts Collector)
Type of Benefit/Cost/Risk	Planned impact on the project. Direct benefits that will go directly to the families of the communities involved.
Change in Well-being	Positive in economic benefits and knowledge of the families

4.1.2 Negative Community Impact Mitigation (CM2.2)

During 2021, the project has monitored and dialogued with communities about conflicts associated with land use and access to natural resources, resulting in no conflicts identified or reported (Evidence 4.05. Summary of monitoring results Chullachaqui Consolidated Forest Management Plan).

The HCV identified within the project area is the Brazil nut forests, because of its importance in being one of the few and the main source of sustainable incomes to local families, as explained above, but because of its unique conditions, it grows only in this region of the Peruvian Amazon being emblematic and key for the ecosystem and the biodiversity.

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

During 2021, the project has maintained the work, activities, and awareness about the project with the communities near the forestry concessions that make up the project area. The communities are allies but also potential drivers of deforestation (they are located outside the project area and in some cases, they do not have property titles to work their lands but have been positioned for years in the area). This is the main case of Arca Pacahuara, which, as described in the PD, is a community with a religious identity (the Israelite Mission of the New Universal Covenant). They have been developing a practice of migratory agriculture (for more than 20 years) in the Iberia area and are a permanent threat to all the concessions that are close to the Arca Pacahuara town center in the Iberia district of the province of Tahuamanu. The REDD+ project maintains permanent dialogue with its leaders and supports the Iberia Technological Institute with the objective of improving its agricultural practices with special emphasis on the youth of the community. For the year 2022, several awareness-raising activities and maintaining dialogue with Pacahuara are planned to mitigate negative impacts and have good surveillance and management control in the Project area.

With the other communities, this 2021 has been one of dialogue and an opportunity to work and train on what the REDD+ Project means and the opportunities it provides. Additionally, with the families of Alerta, the links of labor support for the chestnut harvesting within the Project area have been maintained and strengthened.

Based on raw data collected during the monitored period 2021, we can obtain the following results for each community:

Table 4.2. Communities

Wellbeing indicators	Communities involved
Incomes	○ Alerta
Skills and Trainings	○ San Francisco ○ Carachamayoc ○ Monte Sion ○ Alerta ○ Portillo
Access to Natural resources	○ Alerta

4.1.4 Protection of High Conservation Values (CM2.4)

The HCV identified within the project area is the Brazil nut forests, because of its importance of being one of the few and the main source of sustainable incomes to local families, but because of its unique conditions, it grows only in this region of the Peruvian Amazon being emblematic and key for the ecosystem and the biodiversity. For this reason, it is an HCV that may be classified in

both sections (community and biodiversity). The area covered by this type of ecosystem (Brazil nut forests) is 33,191 hectares, representing 18.1% of the total project area and this area has not only been protected and sustainably managed but assisted natural regeneration has been helped with the activities of the project proponent. Therefore, the HCV has been improved during the current monitoring period. (Evidence 4.06 PMFI Forest Management Plan Brazilian Nuts Otorongo).

To sustain and care for The Brazil nut forest, harvesting service that is conducted through individual contracts in the company's concession is a strategic of the project to contribute to the sustainable use of forest resources and improve the living conditions of local families involved. In this period 26 families from Alerta were supported and worked with the project (See in section 4.3.1 Income Families).

4.2 Other Stakeholder Impacts

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

Research entities (IIAP, Iberia Institute) Potential synergies were searched and established with educative and research entities for the implementation of mitigation actions to prevent or reduce the impact on deforestation. Coordination meetings to schedule trainings about controlled fires and others to local population were carried out in the 2021. Workshops were carried out about agroforestry and conflicts resolution and environmental crimes.

One of the main mitigation measures has been the agreement reached with the Iberia Technological Institute. The partnership with IST Iberia will help by means of the strengthen applied and professional capacities in students to promote a sustainable use of forest resources. It is key as many young students from Arca Pacahuara (the religious group which has had less interaction with the project so far) study in IST Iberia. This is key as they will be the new generations of leaders in these communities, and it is important that they understand the importance of an environmentally friendly agrarian production (The cooperation agreement is valid until 2023 see in the Evidence 4.07. Agreement IST).

4.2.2 Net Impacts on Other Stakeholders (CM3.3)

The Other Stakeholders identified in the project description are environmental institutions (IIAP - Peruvian Amazon Research Institute and IST - Instituto Tecnológico de Iberia) 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. (Evidence 4.8. Minutes signed with other stakeholders)

4.3 Community Impact Monitoring

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

Table 4.3. Community monitoring plan

Variable	Communities	Method	Results for community	Total
Family incomes	- Portillo - Carachamayoc - San Francisco - Monte Sion - Alerta	Report of the project (Evidence 4.04)	- Portillo No reported. - Carachamayoc: Not reported. - San Francisco: Not reported. - Monte Sion: Not Reported. - Alerta: Recollect families benefited in the period 2021 26 families, 21 families more than 2020 year.	Increase the family's income of Alerta.
Trainings received	- Portillo - Carachamayoc - San Francisco - Monte Sion - Alerta	List of trainings (Evidence 4.06)	- Portillo: 01 Training (27 part.) - Carachamayoc: 06 (96 part.) - San Francisco: 04 (36 part.) - Monte Sion: 03 (46 part.) - Alerta: 09 (198 part.)	23 trainings in 2021 (409 part.)
Basket of forest goods harvested	- Portillo - Alerta - Carachamayoc - San Francisco - Monte Sion - Alerta	Report of the project	The study could not be reported and carried out due to the pandemic context experienced in 2020 and ending in this period.	Not reported.
HVC – Brazilian Nuts Forest	- Portillo - Carachamayoc - San Francisco - Monte Sion - Alerta	Report of the project	It Keeps and protects (see section 4.1.4)	It keeps and protects

Detail by variables of the monitoring plan:

1. Income per family 2021 by community:

For the analysis of this variable of improvement in family income, due to the context of the global pandemic, the studies will be resumed in the following monitoring periods. In the case of Alerta and the 26 chestnut harvesting families, it was possible to analyze the improvement in income, which is presented below:

Table 4.4. Indicators of forestry incomes

INDICATORS OF FORESTRY INCOMES		2019	2020	2021
Brazil Nut Production	Kg (in shell)	322,598	60,322	197,692
	Bags	4,609	862	2824
Unit price (soles per bag)		200	142	570
Total incomes		921,709	122,367	1,609,680
% for collectors	70%	645,196	85,657	1,126,776
Beneficiaries (collectors)		33	7	26
Income per beneficiary (soles per capita)		19,551	12,237	43,338

In 2021, the income for Brazilian harvesting families (Alerta) has been very positive and has increased by more than 100% of what it meant in the last 2 years. Brazil nut prices are very diverse each year, however the production and harvesting of 2021 was very positive and it is expected to continue in that line in the following years.

2. Trainings by theme and communities:

Table 4.5. Trainings

Trainings	Number of trains	Total number of community members	Females
Training in the REDD+ project	10	149	44
Fire prevention and property rights	4	58	22
Productive economic activities	5	82	29
Covid-19 Contingency Plan at Home	1	26	9
Total	20	315	104

As can be seen in the table, in 2021, 20 training sessions were carried out (despite the difficult pandemic context) that contributed to strengthening the learning process and involvement with the communities around the project area. With the Brazil nut collectors (Alerta) greater consistency has been achieved due to the direct benefit represented by the economic opportunity that the project offers them. In the following years, this path will be followed and with other groups continue to strengthen and improve social ties and contribute to improvements in community well-being as indicated by the project objectives.

On average we can also indicate that there was a 30% female participation in the training and in the coming years their participation will continue to be promoted and opportunities will be developed based on the needs of the families involved.

3. Access to forest resources:

The protection of project boundaries has maintained stable, so the impact of this variable is neutral (zero).

4.3.2 Monitoring Plan Dissemination (CM4.3)

The monitoring plan and the annual monitoring reports is accessible in the webpage of the company Group so any interested may access not only to processed results but also to raw data that was the basis to establish the results, only protecting the confidentiality of the families that have participated in the focus groups.

All the monitoring results may be found in the following links:

- Forestal Otorongo: <https://aldoagain21.wixsite.com/cultura-forestal/otorongo-hist%C3%B3ricos>
<https://aldoagain21.wixsite.com/cultura-forestal/otorongo-actuales>
- Forestal Chullachaqui: <https://aldoagain21.wixsite.com/cultura-forestal/chullachaqui-hist%C3%B3ricos> <https://aldoagain21.wixsite.com/cultura-forestal/chullachaqui-actuales>

4.4 Optional Criterion: Exceptional Community Benefits

Not applicable.

5 BIODIVERSITY

5.1 Net Positive Biodiversity Impacts

5.1.1 Biodiversity Changes (B2.1)

Change in Biodiversity	Otorongo or wild jaguar (<i>Panthera onca</i>)
Monitored Change	Maintenance and increase of the jaguar population
Justification of Change	The sustainable forest management of the concession forest and the control and surveillance actions implemented by the project (which also benefit the maintenance of forest cover in adjacent areas) are the main factors influencing this change. The forest management implemented seeks to control the ecological

	processes and functionality of the forest by applying a polycyclic silvicultural system that involves harvesting trees in cutting cycles with selective harvesting, applying low-impact techniques and silvicultural treatments in order to produce timber, and complementarily, take advantage of other forest products (chestnut) and conserve biodiversity, which maintains and enhances habitats suitable for preserving countless species of flora and fauna associated, including the Otorongo, an umbrella species at the top of the food pyramid. Also, according to the Operational Plans formulated (2020 - 2023) for timber harvesting, the planned cutting intensity does not reach one tree / ha (0.6 trees / ha and 4.8 m³ /ha for the consolidated Otorongo; 0.8 trees / ha and 7. 6 m³ / ha for the consolidated Chullachaqui), which ensures the maintenance of the remaining vegetation and forest structure, with a minimum impact on the forest cover, which also allows maintaining the habitats of mammal populations in these areas. The forest thus maintains its rhythms and cycles in a similar way to how it was developed thousands of years ago, maintaining its processes, and where the species that indicate the health of the ecosystems register healthy and growing populations (as is the case of top predators such as the Otorongo, the harpy eagle or the giant otter) and where other species that are very sensitive to human presence (tapirs, deer, mountain pigs, curassows and turkeys) maintain healthy populations. In the concession area, wildlife monitoring is being carried out as a complementary activity for the sustainable management of the forest, through the "Jaguar Project", implemented by PhD, Mathias Tobler of the San Diego Zoo, evaluating wild jaguar populations, using a set of camera trap stations (Bushnell TrophyCam HD and Aggressor models) and through the development of Spatial Capture-Recapture Models (SCR), is used to estimate jaguar densities, which has allowed to identify in a beginning, (89 camera trap stations installed in 645 km²) about 43 different specimens of wild jaguars, showing a density of 4.54 ± 0.83 individuals / 100 km², a value only surpassed by that recorded in the Pantanal area of Brazil, demonstrating that well-managed forests can provide an important habitat for biodiversity and connectivity between protected areas (Evidence 5.01). One of the factors behind this high population density of jaguars is probably related to the proliferation of prey (deer, capybaras, sachavaca and wild boars, among others) in forest areas not affected by human disturbance. FSC-certified forest management activities under the strict supervision of the Forestry and Wildlife Authority ensure that cutting cycles are respected, that low-impact harvesting practices are followed, that hunting is prohibited within the concession, and that control and surveillance actions prevent illegal hunters from accessing the area (forest roads and trails), which is supported, among other documents, by the results of monitoring the PGMF in the respective consolidated reports (Evidence 5.02) and in the evaluation of the quality of operations (Evidence 5.03) (felling, hauling, road infrastructure, log transport, fire prevention, among others). An important reference that demonstrates that the two forest
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consolidations in the project area have complied with the adequate implementation of the respective management plans and their obligations is the Enabling Title Holder Behavior Report published in the OSINFOR's SIGO¹⁶, in which the consolidated Forestal Otorongo SAC obtained a rating of "Very Good" and the consolidated Forestal Chullachaqui SAC obtained a rating of "Good" (Evidence 5.18).

In view of the efficiency of the camera traps and SCR models to evaluate mammal populations, especially jaguars, the project's biodiversity technical team has been successfully using them during field evaluations in the concession area. In this way, the data generated from all the evaluations are being analyzed with artificial intelligence algorithms for the identification of fauna species, as well as the individualization of jaguars, from the 247 camera trap stations installed between 2009 and 2021, with which the density of jaguars will be estimated, and the dynamics of the populations can be studied in the long term. There are 4 published scientific articles confirming that FSC-certified forest concessions protect wildlife species, including jaguars (Evidence 5.04).

As part of the partial results of the analysis of the data from the camera trap stations, a study of the mammal evaluations has been carried out (Evidence 5.05) using data generated between 2019 and 2021 (comprising the area of the Forestal Otorongo and MADERACRE Concessions) using data generated from 209 camera trap stations installed (see table below), applying a multi-species occupancy model (MSOM) to estimate jaguar density and fauna species occupancy, having recorded 6 bird species, 2 reptiles and 35 mammal species in 2019 and 6 bird species, 2 reptiles and 34 mammal species in 2021.

Survey Name	Start	End	Lat	Long	Camera Days	Stations
Tahuamanu 2019	2019-06-14	2019-10-30	-11.46	-69.7	10,716	116
Tahuamanu 2021	2021-06-18	2021-11-11	-11.46	-69.7	7,966	93

Change in Biodiversity	223 species in the Chullachaqui concession and 240 species in the Otorongo concession, inventoried with timber potential.
Monitored Change	Sustainable forest management with FSC certification and Chain of Custody (CoC) certification, maintain the timber production potential in the Chullachaqui and Otorongo concession.
Justification of Change	The project is based on selective, low impact logging management, dividing the area under sustainable forest management into a total of 20 logging plots, which are harvested annually (a part each year) and at a given logging intensity (the design considers a felling cycle every 20 years, this results in less than one tree per Ha harvested every 20 years), allowing natural regeneration and the growth and reproduction of

¹⁶ The SIGO is the Management Information System of OSINFOR (Forestry and Wildlife Resources Oversight Agency) that provides historical information on the supervision, inspection, and training processes, and provides a report on the performance of the enabling titles, based on the implementation of their management plans and/or compliance with their obligations considering the administrative procedures and supervision and/or inspection processes completed: <https://sigosfc.osinfor.gob.pe/>

unharvested individuals. A great diversity of species with timber potential has been recorded in the exploratory inventory of each concession (Evidence 5.02).

The methodology includes the approval of a General Forest Management Plan and the preparation of the I Operational Plan (Evidence 5.06), which begins with a forest inventory, in which the variety and number of potential species to be exploited are recorded. This allows knowing the number of individuals of each species that are suitable to be harvested, and the approximate volume of wood that they will generate, which allows calculating and controlling, among other things, the total volume of wood to be harvested.

This makes it possible to identify the seed trees (approximately 20% of the total number of individuals to be harvested) that remain in the forest, guaranteeing the production of seeds and ensuring the survival of the species and favoring their natural regeneration. The felling is carried out directing the fall and minimizing the damage to the surrounding vegetation, so that the clearings left in the forest are similar in size to those created by the natural fall of the trees. This favors regeneration, since the entry of light into the gaps triggers the growth of seedlings that remained dormant under the shade of the parent tree. All these forest extraction activities during the operations and harvesting period must respect the recovery cycle and the established harvesting areas. At the end of the harvesting period, the report (Evidence 5.06) on the implementation of the activities carried out under the Forest Management Plan must be submitted to the Forestry and Wildlife Authority and OSINFOR. As a result of the impact of forestry operations in 2021 (Evidence 5.02), we can mention the loss of vegetation cover that does not exceed the baseline values for road construction (68.5 m²/ha) and logging (131.1 m²/ha), like the affected trees of interest that do not exceed 0.02 trees / ha. Likewise, the percentage of remaining vegetation tries to maintain a ratio of 50/50 % between individuals of future harvest trees and trees felled during the harvest, and maintaining values greater than 20% of seed trees,

AREA DISCOVERED - Otorongo 2021			
Road construction	Road area (m ²) / POA area (ha)	61.4	m ² /ha
Felling	Total cleared area (m ²) / POA area (ha)	129.7	m ² /ha

AREA DISCOVERED – Chullachaqui 2021			
Road construction	Road area (m ²) / POA area (ha)	60.3	m ² /ha
Felling	Total cleared area (m ²) / POA area (ha)	127.7	m ² /ha

Affected Individuals – Otorongo 2021			
Road construction	# Affected/Area POA	0.01	Individuals /ha
Felling	# Affected/Area POA	0.01	Individuals /ha

Affected Individuals – Chullachaqui 2021			
Road construction	# Affected/Area POA	0.01	Individuals /ha
Felling	# Affected/Area POA	0.01	Individuals /ha

This allows the forest cover to be preserved almost intact, while guaranteeing the conservation of innumerable species of associated flora and fauna.

To do this, the project has trained the staff, created the infrastructure, and adapted the necessary processes to obtain the Sustainable Forest Management Certification - FSC 100% (Evidence 5.07) - guaranteeing an environmentally sustainable, socially inclusive, and economically viable model. In this way, the forest maintains its rhythms and cycles in a similar way to how it developed thousands of years ago, maintaining its processes, and where the species that indicate the health of the ecosystems register healthy and growing populations.

5.1.2 Mitigation Actions (B2.3)

There are no negative impacts on biodiversity because of the implementation of the project activities. The company has implemented several measures to maintain natural patterns and processes and avoid fragmentation, following the guidelines established and described in the General Forest Management Plan and the Silvicultural Plan to meet production objectives. These measures include:

- Voluntarily limit mahogany logging (*Swietenia macrophylla*) because it is endangered.
- Regularly conduct timber and wildlife inventories to better understand the forest ecosystem.
- Implement small impact measures to limit the potential impacts of activities.
- Logging based on scientifically sound reconstitution rates for the main timber species.
- Increasing the minimum diameter of short above the legally required diameter.
- Tree protection seedlings and trees considered important for wildlife.
- The use of reduced impact logging techniques minimizes damage to the soil and remaining vegetation caused by harvesting operations by avoiding large forest clearings or fragmentation of forest resources.

Management activities in forests with high conservation value maintain and/or increase the attributes that define these forests. HCVF decisions are always made within the context of a precautionary approach. Following this approach, the development of an evaluation of forest management, the analysis of the consultative part and the management plan are specified, all of these on the description of what a HCVF is. It also instructs the development of an annual

monitoring to see the application of the measures applied by those who received the certificate, monitoring that must be developed according to the scale and intensity of the forest exploitation areas. The indicators for maintaining this precautionary approach are:

- There is a written evaluation (Evidence 5.19) of the identification of HCVs based on the Guide for the identification and management of High Conservation Value Forests.
- The management plan includes the specific management measures according to the HCV found in the evaluation.
- There is a monitoring plan in accordance with the HCVs (Evidence 5.09) found in the evaluation carried out.
- There is a control system (Evidence 5.09) to ensure compliance with management guidelines, which is expressed in the results of the PGMF Monitoring.

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

In the land use scenario without the project, the project area would be affected by the increasing rate of deforestation, as shown by the modeling with the beta regression made in the Excel spreadsheet “Deforestation rate” of this report. Monitoring, in this monitoring period 6,948.15 hectares would have been lost, this would have affected more than 3000 jaguars, which, due to their status as umbrella species, would trigger an adverse effect on many of the fauna populations around them, not only in the deforested area, but in the entire project area. In this scenario, the two HCVs identified in the project area, the significant concentrations of biodiversity at the global, regional, and national levels, and the globally, regionally, or nationally significant large-scale forests and/or landscapes would also be affected.

The expansion of the agricultural frontier would be seen on the increase, accompanied by traditional practices such as slash-and-burn, deforesting forest-covered areas, to carry out clean agriculture or intensive grazing. Likewise, the authorization and maintenance of the IOS brings with it indirect impacts on the surrounding forests; these impacts according to Dourojeanni (2006) (Evidence 5.10) would be:

- Deforestation, due to legal and illegal agriculture on soils without agricultural aptitude.
- Forest degradation, due to the extraction of forests without management and replacement. The exploited species of cedar and mahogany represent 90% of the exploited volume, mostly illegal. Myers (1980) estimates that for every m3/ha logged, farmers who subsequently invade the areas destroy approximately 1/5 ha of forest.
- Increased risk of forest fires (due to natural causes or induced by slash-and-burn practices)
- Illegal hunting, for the trade of meat, skins, and trafficking of live animals.
- Reduction of the environmental services of the forest (water cycle, CO2 fixation, etc.).

- Loss of biodiversity and extinction of species, and the invasion of protected areas. This will result in the reduction of the landscape and tourist value of these ecological niches.

On the other hand, mining in Madre de Dios is carried out with heavy machinery and dredging in the rivers, which produces negative impacts such as the alteration of the quality of surface waters due to the removal of land; the dumping of chemical products, oils, lubricants, and fuels that puts aquatic fauna at risk; the direct destruction of flora and fauna, the alteration of biodiversity and the alteration of habitat by the movement of vehicles and heavy machinery.

However, thanks to the application of measures adopted by the project such as the prohibition of hunting, the application of reduced-impact harvesting techniques, surveillance and control actions, and the monitoring of the process and the continuous training of personnel, the fauna is in good condition.

Even though the hunting pressure is very low or almost non-existent thanks to the control mechanisms carried out by both concessions, the roads and trails used for the extraction of wood within the concession area and the proximity to the IOH will facilitate access of illegal hunters. That is why continuous and permanent patrolling is carried out throughout the area to ensure that no illegal hunting activity takes place within the concession area, this is only possible through carbon financing.

On the other hand, the monitoring of the fauna through the “The Jaguar Amazon REDD+ Project”, which is being carried out to monitor and evaluate the populations of Otorongos or wild jaguars. According to Tobler et al. (2018), 43 different individuals of Otorongo (19 males, 22 females and 2 unidentified) were identified, an unusually high number, one of the largest recorded in the world.

Using data generated from 209 camera trap stations installed, applying a multi-species occupancy model (MSOM) to estimate jaguar density and fauna species occupancy, having recorded 6 bird species, 2 reptiles and 35 mammal species in 2019 and 6 bird species, 2 reptiles and 34 mammal species in 2021.

In 2021, the species with the highest detections were the ocelot (*Leopardus pardalis*, 2685 events), the sachavaca (*Tapirus terrestris*, 2211 events), the rabbit (*Sylvilagus brasiliensis*, 1222 events) and the paujil (*Mitu tuberosum*, 938 events). Species with less than 5 detections were the marsupial *Philander* spp. (1 event), the ronsoco (*Hydrochoerus hydrochaeris*, 2 events), the pacarana (*Dinomys branickii*, 3 events) and the bald-tailed armadillo (*Cabassous unicinctus*, 4 events).

The highest community occupancy values >0.90 were ocelot, sachavaca, red deer (*Mazama americana*), peccary (*Pecari tajacu*), puma (*Puma concolor*), jaguar (*Panthera onca*) and paujil

(*Mitu tuberosum*). In other words, these species are likely to be found in almost all the stations installed in the design.

In these two areas of the concessions mentioned above, all the predator species of the lower Amazon are present, such as the jaguar, puma, ocelot, margay and yaguarundi, the two species of bush dogs (*Atelocynus microtis* and *Speothos venaticus*), among others. Likewise, most species of ungulates and medium and large rodents are found, which reveals healthy populations of predators and their prey. These results reflect the control and surveillance actions and management measures of both concessions, which contribute to the conservation of the mammal and bird community.

It should also be noted that the Project contemplates other complementary activities for the sustainable use of the forest, such as:

- a. Sustainable use of the Brazil nut (Evidence 5.11), through a participatory association scheme with a group of organized residents (around 40 families from the towns in influence) through a low impact harvesting activity, under rules of behavior in accordance with the stewardship of the forest, care for the environment and water flows. By consolidating the collection carried out, and taking charge of marketing, the Project has obtained better dividends that benefit the extractors, a total of 25,830 kg and 218,572 kg of Brazil nuts in shell were mobilized in 2021 in the Otorongo and Chullachaqui consolidations, respectively (Evidence 5.06).
- b. Production of charcoal, using the residues from the sawmill activity, allowing the disposal of residues in the field, and reducing the pressure of cutting standing species to obtain charcoal in other areas.
- c. The acquisition of private land allows the development of an ecotourism project aimed at bird watchers, naturalists, and wildlife lovers, which harmonizes the conservation of the environment with the generation of income for its management and sustainable use. During the current period, 12 tourists visited the project area.

The data generated with the camera traps of all the evaluations is currently being analyzed with artificial intelligence algorithms which will allow a more optimal automation of the determination of species (Evidence 5.04). The data will be later analyzed with occupancy models to see the distribution of species in relation to several covariates (distance to towns, deforestation, land use). Similarly, an evaluation of identification methods for individual jaguars is being carried out, also with the aim of systematizing the data so that they are available for the development of spatial

capture-recapture models with which will estimate jaguar density and study long-term population dynamics

5.1.4 High Conservation Values Protected (B2.4)

Targeted and low-impact logging does not adversely affect any HCV, but sustainable harvesting favors the conservation of almost intact forest cover, while ensuring the conservation of countless species of associated flora and fauna as well as of jaguar and other endangered species (as mentioned in section 5.1.1 on jaguar population maintenance).

The study carried out by Tobler, et al. (2018) within FSC-certified concessions to evaluate the Jaguar population in Guatemala and Peru determined, within the Consolidated Otorongo, a population density of Jaguars of 4.5 individuals per 100 km² and emphasizes that this data is comparable only with protected natural areas. Concluding that the intensity of forest harvesting in the consolidated, the same system used in the consolidated Chullachaqui, adequately protects the Jaguars and thus other species; and that extraction has a positive impact on the diversity and abundance of certain species. Furthermore, states that certified concessions allow connectivity between protected areas and natural forest; this is due to the absence of hunters in concessions as a measure to protect the biodiversity that inhabits them.

In this regard, the high conservation values identified for the project such as the area per se of more than 180 thousand hectares and the jaguars are not affected by the harvesting activities. The project also carries out monitoring to evaluate the quality of forest harvesting operations, based on the procedures indicated in the respective manual, and these have resulted in an average rating of 85.6% (based on a score of 20) in the Otorongo Consolidated area (Evidence 5.03), this reflects the correct execution of operational tasks in accordance with the procedures specified in the operating manuals and code of conduct, as shown in the following table:

Table 5.1. Quality Assessment Monitoring 2021

Quality Assessment Monitoring 2021	Note	Percentage (%)
Chestnut Storage	17.88	89.4
Stump Quality	15	75.0
Haulage Quality	16.5	82.5
Residue Quality	16.24	81.2
Fire Prevention Quality	15.8	79.0
Road Maintenance Const. Quality	16.56	82.8
Log Storage, Loading, Unloading, and Transportation Quality	19.13	95.7
Chain of Custody Evaluation	20	100.0

Quality Assessment Monitoring 2021	Note	Percentage (%)
Quality of First Aid Kits	16.92	84.6
Average	17.11	85.6

Also see section 5.3.1 where the results of the monitoring of the high conservation values (HCV) are shown, these results meet the goals of the measures taken to maintain the HCV.

5.1.5 Invasive Species (B2.5)

The forest management used in both consolidations is of the polycyclic thinning type, that is, it exclusively manages the standing stock, favoring the growth of commercial species without eliminating undesirable species. In addition, this system allows the continuity of the forest dynamics since it allows several rest periods of years in the previously exploited area. Therefore, no known invasive species have been introduced into the project area and no populations of any invasive species have increased because of the project.

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

Not applicable.

5.1.7 GMO Exclusion (B2.7)

Not applicable.

5.1.8 Inputs Justification (B2.8)

Not applicable.

5.2 Offsite Biodiversity Impacts

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

Negative Offsite Impact	Mitigation Measure(s)
Increased deforestation pressure for the purpose of extending the agricultural and livestock frontier in the areas adjacent to the concession.	Workshops on management of crops of interest, controlled burns, agroforestry systems, environmental crimes, etc. to adjacent communities (Evidence 5.12).
Increasing illegal logging of high commercial forest species in areas adjacent to the concession	Greater control on the entry and exit of third parties using the Concessions' transport routes as a transit zone to other areas (Evidence 5.13).
Loss of biodiversity due to increased illegal hunting of wildlife in areas adjacent to the concession	Greater control over the entry and exit of third parties who use the Consolidated transport routes as a transit zone to other areas.

5.2.2 Net Offsite Biodiversity Benefits (B3.3)

No negative impacts on biodiversity have been identified because of the execution of project activities.

The measures adopted outside the project area focus mainly on the continuous training of the local population on the benefits and proper use of forest resources through informative and educational talks. The following is the list of training sessions provided in 2021, aimed at the inhabitants and authorities of the towns near the concession:

Table 5.2. External Training Schedule

EXTERNAL TRAINING SCHEDULE				
ID	TRAINING TOPIC	DATE	PLACE	NUMBER OF PARTICIPANTS
1	Protecting and Giving Value to Our Forests	6/01/2021	Portillo Sector	27
2	Protecting and Adding Value to Our Forests	6/01/2021	Carachamayoc Sector	20
3	Protecting and Adding Value to Our Forests	6/01/2021	San Francisco Sector	15
4	Covid-19 Contingency Plan at Home	22/01/2021	Chestnut Harvesters	26
5	Redd+ Project Training	22/01/2021	Chestnut Harvesters	34
6	Redd+ Project Training	30/04/2021	Chestnut Harvesters	4
7	Agroforestry Systems	4/05/2021	Chestnut Harvesters	7
8	Redd+ Project Training (Greenhouse Gases, Warming, Climate Change, CCB and VCS Standards)	2/06/2021	Chestnut Harvesters	11
9	The Jaguar Training Redd+ Project	4/06/2021	Stakeholders	3
10	Alternative Projects of High Ecological Value Crops	15/06/2021	Stakeholders	13
11	The Jaguar Project Redd+ Training	7/06/2021	Chestnut Harvesters	19
12	Project Redd, Use of the Complaint and Suggestion Book	16/07/2021	Mayor Of Alegria	1
13	Conflict Resolution Manual	16/07/2021	Mayor Of Alegria	1
14	Project Redd, Use of the Complaints and Suggestions Booklet	18/07/2021	San Francisco Sector	1
15	Conflict Resolution Manual	18/07/2021	San Francisco Sector	1
16	Project Redd+ Training	20/08/2021	Chestnut Harvesters	15
17	Project Redd+ Training	29/08/2021	Carachamayoc Sector	13
18	Redd+ Project Training and Socialization of the Complaints and Suggestions Book	1/09/2021	San Francisco Sector	19
19	High Conservation Value Forests and Monitoring Measures	1/10/2021	Chestnut Harvesters	25
20	Forest Fire Prevention	1/10/2021	Chestnut Harvesters	26
21	Post-Harvest Meeting	1/10/2021	Chestnut Harvesters	22

EXTERNAL TRAINING SCHEDULE				
ID	TRAINING TOPIC	DATE	PLACE	NUMBER OF PARTICIPANTS
22	Forest Fire Prevention	2/10/2021	Monte Sion Sector	16
23	Redd+ Project Training and Socialization of The Complaints and Suggestions Book	2/10/2021	Mount Sion Sector	15
24	Conflict Resolution Manual	2/10/2021	Monte Sion Sector	15
25	Legal Physical Sanitation of Rural Properties	10/10/2021	Carachamayoc Sector	16
26	High Conservation Value Forests and Monitoring Measures	10/10/2021	Carachamayoc Sector	15
27	Redd+ Project Training and Socialization of The Complaints and Suggestions Book	10/10/2021	Carachamayoc Sector	16
28	Conflict Resolution Manual	10/10/2021	Carachamayoc Sector	16
29	Environmental Crimes	3/12/2021	Chestnut Harvesters	20

Surveillance and patrolling were also carried out along the different transportation routes of the concessions to improve the control of the entry and exit of third parties to other areas outside the project area.

These activities mentioned outside the project area, added to the benefits of the activities within the project, such as the conservation of the jaguar, the conservation of the Brazil nut, and the ecotourism initiative, the increase in employment for the local area, the conservation of biodiversity, avoiding the average emission of more than 1 million tCO₂, among others, together show that the net effect of the project on biodiversity is positive.

5.3 Biodiversity Impact Monitoring

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

Flora:

Forest cover loss

Forest cover loss is an impact directly caused by activities such as construction of roads, skid trails, storage yards and logging. As part of the measures carried out by the company, a low impact layout is done, both at desk and in the site, with the objective of minimizing the area to be cleared and the length of roads and trails. At the same time, the area and the number of storage yards is reduced through a better distribution and planning. With respect to logging, low impact techniques are applied, such as directional felling to look for the best felling direction of the trees. The aim of the monitoring of forest cover loss is to assure the efficacy of these measures by means of comparing

consecutive years, post-harvesting, of the affected areas, looking to maintain or reduce the present values.

The methodology used consisted of measuring in the field the actual total area cleared by taking partial areas for road construction, the area of 20% of the constructed stockpile yards, the area of the roads present in 10% of the constructed stockpile yards containing 10% of the extracted individuals and the clearings left by 3% of the felled individuals of each species, and then taking these results to the total area of the PCA (Evidence 5.02). The results up to the year 2021 are presented below.

Table 5.3. Logging operations impacts

Activity	Equation for forest cover loss	C Otorongo	C. Chullachaqui
		2021	2021
Construction of roads	Road area (m2) / Area POA (ha)	61.4	60.3
Felling	Total area clears (m2) / Area POA (ha)	129.7	127.7
Storage yards	Total area yards (m2) / Area POA (ha)	8.5	6.9
Skid trails	Trail areas (m2) / Area POA (ha)	155.1	135.6
Total deforested area (m ² /ha)		354.7	330.5

In the consolidated Otorongo, the total loss of vegetation cover during the 2021 harvest, because of the sum of the clearing of the operations, decreased from 356.2 m²/ha. in 2020 to 354.7 m²/ha for 2021. This is because in 2021 we completed the operation of the remaining 2020 harvest, the sum of several factors among which the improvement of harvesting techniques and the lower density found in the PCA 18 plots. According to our monitoring system, in terms of road construction our goal should be less than 68.5 m²/ha, and for 2021 61.4m²/Ha was recorded, less than our baseline. The average deforestation in the grave activity is 129.7m²/Ha. Considering that the goal of loss of forest clearing in the grave is less than or equal to the baseline, which is 131.1m²/Ha, the value of the result for 2021 presents a decrease, which indicates that impact exploitation is being carried out. reduced. In the same way, it happens with the other activities that it was lower than our baseline. This is because, in the activities of road construction, grave, construction of patios and drag roads, low-impact exploitation procedures have been applied with the purpose for this figure to be maintained or decreased. In the consolidated Chullachaqui, the loss of vegetation cover for the 2021 harvest, because of the sum of the operations, rose from 312.1 m²/ha (year 2019) to 330.5 m²/ha for the year 2021. It is worth mentioning that in 2020 there were no operation

since only the logs were moved from the yard to their destination. According to our monitoring system, in terms of road construction our goal should be less than 68.5 m²/ha, having been registered for 2021, 60.3m²/Ha, less than our baseline.

Following, the average relationship of clears left by the logging of the main commercial species extracted during 2021 in comparison with the previous years.

Table 5.4. Cleared area per specie

Specie	Average deforested area per specie (m ² /individual)					
	C. Otorongo			C. Chullachaqui*		
	Year 2019	Year 2020	Year 2021	Year 2018	Year 2019	Year 2021
Ana Caspi	298,3	279,54	269,58	270,6	298,3	281,4
Azúcar Huayo	280,4	228,5	271,38	302,41	280,4	241,8
Cedar	--	--	--	--	--	192,4
Mahogany	--	--	--	--	--	-
Estoraque	163,25	161,3	172,08	194,15	163,25	179,2
Ishpingo	201,52	190,77	193,81	192,21	201,52	-
Mashonaste	312,26	271,2	284,72	308,35	312,26	308,4
Misa (Cachimbo)	272,71	--	274,68	285,68	272,71	268,7
Pumaquiro	260,3	--	--	259,85	260,3	247,7
Shihuahuaco	550,47	537,1	528,94	549,34	550,47	497,2
Tahuari	155,6	--	161,37	153,52	155,6	-
Average per tree	277,20	278,07	269,6	279,57	277,2	277,1

Trees of interest that are affected

Part of the impact on the forest cover is expressed based on the trees of interest that area affected during the harvesting operations, whether by means of their direct extraction for their use, management, or construction of infrastructure or by it being affected indirectly during the operations. Among these trees of interest there are the following:

- Usable trees: trees from commercial species identified during the census as usable because they equal or surpass the minimum diameter for logging established by the project.
- Felled trees: trees from commercial species which are regularly felled because of the extraction activities.

- Trees of importance for the fauna: trees that provide food for wildlife and that due to their abundance and frequency are not massively distributed within the forest.
- Seedling trees: trees that have been selected as seed providers during the census.
- Future harvest trees: trees from commercial species that surpass the minimum diameter for logging established by the project, or that are 10 cm below that minimum diameter, and that are marked for a second rotation of the forest to ensure the sustainability in the management of the specie.
- Non-timber product trees: trees that provide other non-timber products such as Brazil nuts and Shiringa.
- Natural regeneration: those individuals from commercial species with a DBH (Diameter Breast Height) equal or higher than 10 cm that do not qualify as future harvest.

Part of the preventive measures taken by the company, mainly in the field, consist of designing a low impact layout for roads, trails, and storage yards, based on satellite images, avoiding these to go through areas where these types of trees can be found, with the objective of reducing the impact that their extraction or affectation can have on the forest. Low impact directional felling techniques are applied to determine the direction of the trees that are going to be felled to areas where the concentration of these trees of interest is minimum or non-existent. The aim of the monitoring of the affectation of trees of interest is to obtain the maximum efficiency in these measures by means of comparing consecutive years, post-harvest, the types, and individuals that were affected, looking to maintain or reduce present values. Statistics are shown until 2021.

The methodology consisted of measuring in the field the type and number of individuals that were affected by concept of road construction, storage yard construction, skid trails construction and by the logging operation. This procedure is carried out for 3% of the individuals felled by species, and then extrapolate the results to the total of extracted individuals. Following, the results until 2021.

Table 5.5. Area affected by logging operations

Activity		C. Otorongo			C. Chullachaqui		
		Individuals / ha					
		2019	2020	2021	2018	2019	2021
Road construction	N° Total Affected trees / Area POA	0.01	0.01	0.01	0.01	0.01	0.01
Felling		0.01	0.01	0.01	0.01	0.01	0.01
Storage yards		0.01	0.02	0.02	0.03	0.01	0.02
Skid trails		0.02	0.02	0.01	0.02	0.02	0.02
Total of affected individuals		0.05	0.06	0.05	0.07	0.05	0.06

In general terms, the number of trees of interest during the 2021 harvest remained like the previous year, although there was a slight drop in the total, because in 2021 there was not 100% operation in the Otorongo Concession, since only the 2020 harvest was completed. Considering that, in our monitoring system, the goal for road construction is to obtain results less than or equal to 0.02, the result for 2021 is 0.01 ind/Has. Likewise, for the Tomb activity, construction of stockpile yards and haul roads, all results were lower than the goal written in the manual.

In the case of the consolidated Chullachaqui, the impact of trees of interest during the 2021 harvest (0.06 ind/ha), in general remained like that of 2019 (0.05 ind/ha), with only a slight increase in 2021. Considering that the goal for road construction is to obtain results less than or equal to 0.02, the result for 2021 is 0.01 ind/ha. As well as for the Tomb activity, construction of stockpile yards and haul roads, all the results were lower than the goal established in the manual. It should be noted that in 2020 no operations were carried out, only the logs (balance of the 2019 harvest) were transported from the yard to a primary processing center.

The statistics corresponding to the disturbance caused by each operation and type of tree up to the year 2021 are the following:

Table 5.6. Disturbance caused by logging phase

Operation	Relationship	Category	C. Otorongo			C. Chullachaqui		
			Year 2019 (ind/ha)	Year 2020 (ind/ha)	Year 2021 (ind/ha)	Year 2018 (ind/ha)	Year 2019 (ind/ha)	Year 2021 (ind/ha)
Road construction	N° Total affected/Area POA	Total	0,01	0,01	0,01	0,01	0,01	0,01
	N° usable affected/Area POA	Usable	0,00	0,00	0,00	0	0	0,00
	N° Imp. Fauna. affect. /Area POA	Importance for fauna	0,00	0,00	0,00	0	0	0,00
	N° Seedlings affect. /Area POA	Seedlings	0,00	0,00	0,00	0	0	0,00
	N° future harvest affected/Area POA	Future Harvest	0,01	0,01	0,01	0,01	0,01	0,01
	N° non-timber affected/Area POA	Non-timber	0,00	0,00	0,00	0	0	0,00
	N° natural regeneration affect. /Area POA	Natural regeneration	0,00	0,00	0,01	0	0	0,00
	N° Total affected/Area POA	Total	0,01	0,01	0,01	0,01	0,01	0,01
	N° Felled/Area POA	Felled	0,00	0,00	0,00	0	0	0,01

Operation	Relationship	Category	C. Otorongo			C. Chullachaqui		
			Year 2019 (ind/ha)	Year 2020 (ind/ha)	Year 2021 (ind/ha)	Year 2018 (ind/ha)	Year 2019 (ind/ha)	Year 2021 (ind/ha)
Felled	N° Harvestable affect. /Area POA	Usable	0,01	0,01	0,00	0,01	0,01	0,00
	N° Imp. Fauna. affect. /Area POA	Importance for fauna	0,00	0,00	0,00	0	0	0,00
	N° Seedlings affect. /Area POA	Seedlings	0,00	0,00	0,00	0	0	0,00
	N° Future harvest affect. /Area POA	Future harvest	0,00	0,00	0,01	0	0	0,00
	N° Non timber affect. /Area POA	Non -timber	0,00	0,00	0,00	0	0	0,00
	N° natural regeneration/Area POA	Natural regeneration	0,00	0,00	0,00	0	0	0,00
Storage yards	N° Total affected/Area POA	Total	0,01	0,02	0,02	0,03	0,01	0,02
	N° usable affect. /Area POA	Usable	0,00	0,00	0,00	0	0	0,00
	N° Imp. Fauna. affect. /Area POA	Importance for fauna	0,00	0,00	0,00	0	0	0,00
	N° Seedlings affect. /Area POA	Seedlings	0,00	0,00	0,00	0	0	0,00
	N° Future harvest affect. /Area POA	Future harvest	0,01	0,02	0,01	0,02	0,01	0,02
	N° non timber affect. /Area POA	Non-timber	0,00	0,00	0,00	0	0	0,00
	N° natural regeneration affect. /Area POA	Natural regeneration	0,00	0,00	0,01	0,01	0	0,00
Skidding	N° Total Affected/Area POA	Total	0,02	0,02	0,01	0,02	0,02	0,02
	N° harvestable affect/Area POA	Usable	0,00	0,00	0,00	0,00	0,00	0,00
	N° Imp. Fauna. affect. /Area POA	Importance for fauna	0,00	0,00	0,00	0,01	0,00	0,01
	N° Seedlings affect. /Area POA	Seedlings	0,00	0,00	0,00	0,00	0,00	0,00
	N° Future harvest affect. /Area POA	Future harvest	0,01	0,01	0,00	0,00	0,01	0,00
	N° non-timber affect. /Area POA	Non-timber	0,00	0,00	0,00	0,01	0,00	0,00

Operation	Relationship	Category	C. Otorongo			C. Chullachaqui		
			Year 2019 (ind/ha)	Year 2020 (ind/ha)	Year 2021 (ind/ha)	Year 2018 (ind/ha)	Year 2019 (ind/ha)	Year 2021 (ind/ha)
	N° natural regeneration affect. /Area POA	Natural regeneration	0,01	0,01	0,01	0,00	0,01	0,01

Remnant vegetation

Remnant vegetation is an indicator of significant importance to evaluate the impact on the forest based on the vegetation that is left standing to ensure sustainability by means of its regeneration and the viability of future management of commercial species. For that purpose, the company does not only comply with legal requirements but has also established stronger measures. The aim of the monitoring of remnant vegetation is to ensure the compliance of the measures imposed by the company by means of yearly comparisons, post-harvest of the values of remnant vegetation obtained.

Likewise, the various interventions implemented in the forest, respecting and complying with the commitments assumed in the PGMF, the Non-detriment Finding (mahogany) and the FSC certification of both consolidations, ensure that the remaining vegetation maintains the structure, functionality and floristic composition of the forest, which also means that it continues to conserve species that are threatened according to the IUCN Red List, which were registered based on the exploratory inventory carried out for the two consolidations: Endangered (*Amburana cearensis*, *Handroanthus serratifolius*), Vulnerable (*Bertholletia excelsa*, *Cedrela odorata*, *Cedrela fissilis*, *Swietenia macrophylla*).

The employed methodology consisted on determining the percentages of remanence of each category of tree based on the information at the end of the harvest and the individuals affected by the harvesting operations. Following, the results until 2021:

Table 46: Remnant vegetation

Aspect	Relationship	Category	C. Otorongo			C. Chullachaqui		
			2019 (%)	2020 (%)	2021 (%)	2019 (%)	2020 (%)	2021 (%)
Future Harvest Trees	N° Trees. F.C. /(N° Felled trees. + N° Trees F.C.)	Ana Caspi	51%	45%	45%	95%	100%	38%
	N° Trees. F.C. /(N° Felled trees. + N° Trees F.C.)	Azucar Huayo	75%	76%	76%	97%	100%	73%
	N° Trees. F.C. /(N° Felled trees. + N° Trees F.C.)	Mahogany	100%	100%	100%	-	100%	100%

Aspect	Relationship	Category	C. Otorongo			C. Chullachaqui		
			2019 (%)	2020 (%)	2021 (%)	2019 (%)	2020 (%)	2021 (%)
	N° Trees. F.C. /(N° Felled trees. + N° Trees F.C.)	Cedar	100%	100%	100%	90%	100%	68%
	N° Trees. F.C. /(N° Felled trees. + N° Trees F.C.)	Estoraque	60%	46%	46%	100%	100%	53%
	N° Trees. F.C. /(N° Felled trees. + N° Trees F.C.)	Ishpingo	40%	32%	32%	100%	100%	34%
	N° Trees. F.C. /(N° Felled trees. + N° Trees F.C.)	Mashonaste	59%	50%	50%	48%	100%	53%
	N° Trees. F.C. /(N° Felled trees. + N° Trees F.C.)	Misa Colorada	66%	58%	58%	100%	100%	54%
	N° Trees. F.C. /(N° Felled trees. + N° Trees F.C.)	Pumaquiro	51%	52%	52%	-	100%	-
	N° Trees. F.C. /(N° Felled trees. + N° Trees F.C.)	Quinilla	60%	62%	62%	100%	100%	62%
	N° Trees. F.C. /(N° Felled trees. + N° Trees F.C.)	Shihuahuaco	12%	4%	4%	73%	100 %	17%
	N° Trees. F.C. /(N° Felled trees. + N° Trees F.C.)	Tahuari	57%	43%	43%	98%	100%	45%
	N° Trees. F.C. /(N° Felled trees. + N° Trees F.C.)	Tornillo	-	-	-	50%	100%	16%
Seedling trees	N° Seed trees /(N° Felled trees + N° Seed trees	Ana Caspi	33%	31%	31%	69%	100%	28%
	N° Seed trees /(N° Felled trees + N° Seed trees	Azucar Huayo	44%	46%	46%	75%	100%	44%
	N° Seed trees /(N° Felled trees + N° Seed trees	Mahogany	100%	100%	100%	-	100%	100%
	N° Seed trees /(N° Felled trees + N° Seed trees	Cedar	100%	100%	100%	14%	100%	17%
	N° Seed trees /(N° Felled trees + N° Seed trees	Estoraque	35%	30%	30%	100%	100%	32%
	N° Seed trees /(N° Felled trees + N° Seed trees	Ishpingo	22%	22%	22%	100%	100%	22%
	N° Seed trees /(N° Felled trees + N° Seed trees	Mashonaste	34%	32%	32%	38%	100%	33%
	N° Seed trees / (N° Felled trees + N° Seed trees	Misa Colorada	41%	37%	37%	100%	100%	35%
	N° Seed trees / (N° Felled trees + N° Seed trees	Pumaquiro	29%	30%	30%	-	100%	100%
	N° Seed trees / (N° Felled trees + N° Seed trees	Quinilla	36%	39%	39%	100%	100%	38%
	N° Seed trees / (N° Felled trees + N° Seed trees	Shihuahuaco	21%	20%	20%	40%	100%	22%
	N° Seed trees / (N° Felled trees + N° Seed trees	Tahuari	29%	26%	26%	81%	100%	27%
	N° Seed trees / (N° Felled trees + N° Seed trees	Tornillo	-	-	-	23%	100%	21%

Aspect	Relationship	Category	C. Otorongo			C. Chullachaqui		
			2019 (%)	2020 (%)	2021 (%)	2019 (%)	2020 (%)	2021 (%)
Trees of importance for fauna	N° Total trees. imp. for fauna not affected / N° Total trees imp. Fauna	-	99%	98%	98%	99%	99%	99%
Non-timber trees	N° Total non-timber trees not affected / N° Total non-timber trees	-	99%	99%	99%	99%	99%	100%
Trees of key species or in critical state	N° Total trees of key species not affected/ N° Total trees of key species or in critical state	-	100%	100%	100%	100%	100%	100%

In the Otorongo consolidation, for all aspects evaluated, the baseline was exceeded, as established in the monitoring system manual. On the other hand, during the 2021 harvest, 100% of the key or critical species were left standing in both consolidations. As shown in the table above, the company seeks to maintain a ratio of (50%/50%) between the individuals considered for future harvest and the individuals felled during the harvest, to ensure the viability of future harvesting of commercial species. It also seeks to maintain a minimum of 20% of seed trees to ensure forest regeneration.

Natural regeneration

Table 5.7. Natural regeneration – Abundance of Natural Regeneration by species - Consolidated Otorongo

Abundance of natural regeneration per species (ind/ha)				
Species		Category of regeneration		Total
		Seedling	Brinzal	
		0.3 m – 1.5 m ht	1.5 m ht – 5 cm dbh	
Ana Caspi	<i>Apuleia leiocarpa</i>	0.45	0.00	0.45
Azúcar huayo	<i>Hymenaea oblongifolia</i>	1.60	0.20	1.80
Mahogany	<i>Swietenia macrophylla</i>	0.05	0.00	0.05
Cedar	<i>Cedrela odorata</i>	0.05	0.00	0.05
Copaiba	<i>Copaifera officinalis</i>	0.15	0.00	0.15
Estoraque	<i>Myroxylon balsamum</i>	0.95	0.35	1.30
Manchinga	<i>Brosimum alicastrum</i>	0.60	0.00	0.60
Mashonaste	<i>Clarisia racemosa</i>	0.70	0.10	0.80
Quinilla	<i>Manilkara bidentata</i>	0.05	0.00	0.05
Shihuahuaco	<i>Dipteryx micrantha</i>	0.10	0.00	0.10
Tahuari	<i>Tabebuia serratifolia</i>	0.05	0.00	0.05
Total		4.75	0.65	5.40

Table 5.8. Natural regeneration – Abundance of Natural Regeneration by species - Consolidated Chullachaqui

Regeneration Abundance by Species (ind/ha)			
Species	Regeneration Category		Total
	Brinzal	Latizal	
	0.30 m - 1.50 m Ht	1.5 m - 10.00 m Ht	
Ana Caspi	0.10	0.00	0.10
Azúcar Huayo	1.15	0.00	1.15
Cedro	0.15	0.00	0.15
Copaiba	0.20	0.00	0.20
Estoraque	0.60	0.00	0.60
Ishpingo	0.05	0.00	0.05
Manchinga	2.90	0.00	2.90
Mashonaste	2.65	0.00	2.65
Quinilla	1.35	0.00	1.35
Shihuahuaco	0.55	0.00	0.55
Tahuari	0.10	0.10	0.20
Total	9.80	0.10	9.90

Fauna:

Based on the Wildlife Monitoring Manual, the Wildlife Assessment Guide (Evidence 5.14), An inventory of diurnal and nocturnal animals was carried out using a combination of methods, including visual observations and other secondary clues, such as distinctive smells, vocalizations, nests or burrows and other tracks left by animals, such as footprints, biting marks, holes, urine, and feces. These data were collected walking through transects and paths between 6:30 am and 5:30 pm., for 3 days. The observations outside the days of the census were not included in the calculations.

With respect to footprints, one register per site: roll around place, stream shore or mud hole along a path is considered. If an animal or a group of animals have left footprints in the area, this is accounted for one registry, since there is no way to distinguish between the footprint of one animal or other, or the moment when these footprints were printed. For these reasons, registers are sub-estimated.



Figure 5.1. Trap cameras. Monitoring with trap cameras helped for the registry of species in the area.

Registries by transects

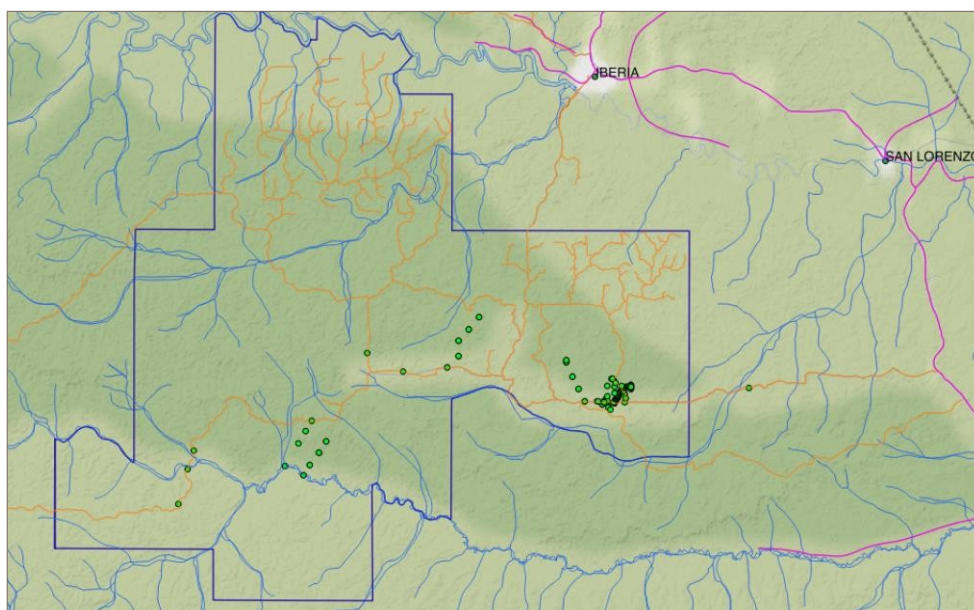


Figure 5.2. Location of the sample points in study

Samplings start at dawn and at sunset depending on the season. Said samplings are abandoned if it rains continually during more than 30 minutes or if wind conditions are so strong that the detection of mammals is seriously affected. During the abovementioned interruptions observers maintain their places. The data are collected applying the transect methodology (Buckland et al 1993), which consists of walking the transects (“trochas”) established in the studied areas with distances of no less than 4 linear kilometers during the day and the night with the objective of achieving direct animal sightings (seen and heard) or by evidence of their presence (footprints, traces, or smells). Encounters with mammals are written down by the observers, who walk slowly

and in silence through the transect at a speed of 1.5 km/hr. stopping periodically to listen and look for the presence of mammals. Once in contact with an individual, or a group of individuals of the same species, the observers stay in place collecting data for a maximum of ten minutes. The data collected in each visual or audible encounter are place, date, transect, start, and end time, distance within the transect, distance observer-animal. The following behaviors are also written down when observed: callings among groups or individuals, cries of alarm, curiosity (when a group gets close to the observer), fast displacement (encounter of less than 1 minute), rest. These data are written down daily in the computerized database, making security copies to guarantee the continuity of the investigation in case of a loss of the database.

Accidental encounters:

Accidental encounters with mammals along the transect before or after the controlled sampling were important and most of the data were collected each time that the opportunity arose.



Figure 5.3. Faeces (from deer), indicate the presence of the specie.

Footprint registration:

Footprints were in collpas, beaches, in the border of ravines, along the penetration roads, which were measured and identified. When mammal footprints are found in transects, only the direction of the footprint is written down (if it crosses or goes along the transect). Also, the morphologic measures of sentinel species were registered (felines and tapir).



Figure 5.4. Mammal footprints. It indicates the presence of jaguars

Audible registries:

The registries were carried out during all the sampling days, taking into consideration the observations of the team.

Photo trap registries:

The sampling took place on paths, sidewalks and gorges which include all the types of vegetation of the area, camera traps were in the different sample stations with the objective of improving the probability of registration of the different species. The camera traps employed are systems of automatic photographic detection which operate with a passive infrared sensor, the circuit was programmed to stay active during the 24 hours of the day and with a minimum delay of 0.3 minutes between shoots. Their location is georeferenced with a GPS. The cameras were active during all the sampling periods. The total sampling effort was the sum of the trap-days that each trap-camera stayed active. The photographed species were identified by comparison with specialized literature (Hall 1981, Emmons & Feer 1990, Reid 1997, Ceballos & Oliva 2005).



Figure 5.5. Puma (*Felis concolor*)

Statistical proofs

With the help of DISTANCE programs, the indexes of richness of species, population density and abundance of species were obtained.

Table 5.9. Summary of the results of BAVC Monitoring

HCV	Measures taken	Indicator	Result	Goal	Frequency	Methodology/intensity *
AVC 1	Measure to maintain the flora					
	Evaluate the state of natural regeneration of the usable species	ind/ha	See Table 5.7 and 5.8	-	Three times a year	See Silvicultural Plan
	Respect the rulings of non-damaging extraction of mahogany	N° of not respected rulings	0 (Evidence 5.15)	0	Annual	See Manual for BAVC Monitoring
	Respect the percentage of seedling trees of the inventoried species established by norm	N° of Operative Plans that do not respect the % of seedling trees	0	0	Annual	See Manual for BAVC Monitoring
	Define silvicultural measures (harvest cycles, harvest intensity, minimum diameters for harvesting) that ensure a sustainable	N° of silvicultural plan that consider the appointed variables	1	1	Annual	See Manual for BAVC Monitoring

HCV	Measures taken	Indicator	Result	Goal	Frequency	Methodology/intensity *
	management based on the silvicultural variables employed to calculate the harvest projection.					
	Implementation of a reduced impact logging system	% of compliance	84%	Higher than 80%	Annual	See Manuals for Monitoring of the Quality of the Operations (Informe de Monitoreo de Calidad de Operaciones)
Measures to maintain the fauna						
	Evaluate the abundance of indicative species	Ind/ha	See Table 5.10 and 5.11	-	Bi-annual	See Manual for BAVC Monitoring
	Evaluate the diversity Alfa of taxas of indicative species	Richness of species per taxa	See Table 5.10 and 5.11	-	Quinquennial	See Manual for BAVC Monitoring
	Forbid hunting and /or capture of wildlife in the whole area	Number of non-desired incidents against the fauna	0	0	Annual	See Manual for BAVC Monitoring
	Identification of sites of interest for the fauna during the inventory work	N° of identified sites	0	-	Annual	See Manual for BAVC Monitoring
	Establish an adequate system for controlling the entrance to the concession	N° of non-desired events	0	0	Annual	See Manual for BAVC Monitoring

*Evidence of the BAVC plans and manuals:

Plan Silvicultural Otorongo y Plan Silvicultural Chullachaqui (Evidence 5.16)

Procedimiento de Monitoreo BAVC (Evidence 5.09)

Manual de Evaluación de Calidad de Operaciones (Evidence 5.03)

Table 5.10. Abundance, Richness, Alpha Diversity and Density - Consolidated Otorongo

Wildlife Sighting Monitoring in the Otorongo Consolidated Area 2021						
ID	Specie	Scientific Name	Absolute abund.	Relative Abun. (Pi)	Pi2	Density ind/ha
1	Añuje	<i>Dasypsecta sp.</i>	4	0.05	0.0025	0.4444
2	Owl	<i>Otus watsonii</i>	1	0.0125	0.0002	0.1111
3	Common tapeti	<i>Sylvilagus brasiliensis</i>	1	0.0125	0.0002	0.1111
4	Macaw	<i>Ara macao</i>	13	0.1625	0.0264	1.4444
5	Pihuicho parrot	<i>Brotogeris versicolurus</i>	9	0.1125	0.0127	1.0000

6	Spider monkey	<i>Ateles chamek</i>	3	0.0375	0.0014	0.3333
7	Huasita monkey	<i>Saimiri sciureus</i>	6	0.075	0.0056	0.6667
8	Motelo	<i>Geochelone denticulata</i>	5	0.0625	0.0039	0.5556
9	Sloth	<i>Bradypus variegatus</i>	1	0.0125	0.0002	0.1111
10	Jaguar	<i>Panthera onca</i>	1	0.0125	0.0002	0.1111
11	Woodpecker	<i>Melaneris cruentatus</i>	3	0.0375	0.0014	0.3333
12	Paujil	<i>Crax tuberosum</i>	6	0.075	0.0056	0.6667
13	Pava	<i>Pipile cumanensis</i>	5	0.0625	0.0039	0.5556
14	Picuro	<i>Agouti paca</i>	3	0.0375	0.0014	0.3333
15	Sachavaca	<i>Tapirus terrestris</i>	4	0.05	0.0025	0.4444
16	Sajino	<i>Pecari tajacu</i>	5	0.0625	0.0039	0.5556
17	Tigrillo	<i>Leopardus pardalis</i>	1	0.0125	0.0002	0.1111
18	Trompetero	<i>Psophia crepitans</i>	3	0.0375	0.0014	0.3333
19	Toucan	<i>Ramphastos tucanus</i>	3	0.0375	0.0014	0.3333
20	Deer	<i>Mazama americana</i>	3	0.0375	0.0014	0.3333
Total individuals			80	Dominance 0.0763		
Number of species - Richness			20	1-D (Div. Alfa) 0.9238		

The total number of sightings was 80 individuals, with the macaw being the most abundant (13 sightings), the pihuichos parrot (9), paujil and huasita monkey (6). Species richness: 20 species have been identified. According to Simpson's Index (1-D) the alpha diversity is 0.9238 and its dominance is 0.0763, which reflects a high diversity.

Table 5.11. Abundance, Richness, Alpha Diversity and Density - Consolidated Chullachaqui

Fauna Sighting Monitoring in Consolidated Chullachaqui 2021						
ID	Specie	Scientific Name	Absolute abund.	Relative Abun. (Pi)	Pi2	Density ind/ha
1	Añuje	<i>Dasyprocta sp.</i>	5	0.0877	0.0077	0.5556
2	Squirrel	<i>Sciurus sp.</i>	5	0.0877	0.0077	0.5556
3	Rabbit	<i>Sylvilagus brasiliensis</i>	1	0.0175	0.0003	0.1111
4	Snake	<i>Boa constrictor</i>	1	0.0175	0.0003	0.1111
5	Macaw	<i>Ara macao</i>	10	0.1754	0.0308	1.1111
6	Lizard	<i>Paleosuchus trigonatus</i>	1	0.0175	0.0003	0.1111
7	Pihuicho parrot	<i>Brotogeris versicolurus</i>	5	0.0877	0.0077	0.5556
8	Spider monkey	<i>Ateles chamek</i>	2	0.0351	0.0012	0.2222
9	Tocon monkey	<i>Callicebus moloh</i>	1	0.0175	0.0003	0.1111
10	coto monkey	<i>Alouatta seniculus</i>	1	0.0175	0.0003	0.1111
11	Huasita monkey	<i>Saimiri sciureus</i>	3	0.0526	0.0028	0.3333
12	Motelo	<i>Geochelone denticulata</i>	1	0.0175	0.0003	0.1111
13	Sloth	<i>Bradypus variegatus</i>	2	0.0351	0.0012	0.2222
14	Woodpecker	<i>Melaneris cruentatus</i>	3	0.0526	0.0028	0.3333
15	Paujil	<i>Crax tuberosum</i>	2	0.0351	0.0012	0.2222
16	Pava	<i>Pipile cumanensis</i>	5	0.0877	0.0077	0.5556
17	Picuro	<i>Agouti paca</i>	1	0.0175	0.0003	0.1111
18	Rat	<i>Apodemus sp.</i>	1	0.0175	0.0003	0.1111
19	Sachavaca	<i>Tapirus terrestris</i>	2	0.0351	0.0012	0.2222
20	Sajino	<i>Pecari tajacu</i>	1	0.0175	0.0003	0.1111

Fauna Sighting Monitoring in Consolidated Chullachaqui 2021						
ID	Specie	Scientific Name	Absolute abund.	Relative Abun. (Pi)	Pi2	Density ind/ha
21	Trompetero	<i>Psophia crepitans</i>	1	0.0175	0.0003	0.1111
22	Toucan	<i>Ramphastos tucanus</i>	1	0.0175	0.0003	0.1111
23	Deer	<i>Mazama america</i>	2	0.0351	0.0012	0.2222
Total individuals			57	Dominance 0.0766		
Number of species - Richness			23	1-D (Div. Alfa) 0.9234		

The total number of fauna sightings was 57 individuals, with the macaw being the most abundant species with a total of 10m sightings, followed by the añuje, añuje, squirrel, pihuicho parrot, and pava with 5 records. The specific richness reaches 23 identified species. According to Simpson's index (1-D) the alpha diversity is 0.9234 and its dominance is 0.0766, which reflects a high diversity. As can be seen from the results of HCVF monitoring, we are meeting and, in some cases, exceeding the targets set for each indicator. The values of natural regeneration abundance will also serve as a baseline to monitor the evolution of this indicator over time. Wildlife abundance and diversity values will also serve as a baseline to monitor the evolution of this indicator.

On the other hand, an evaluation of the fauna was carried out using the data generated by the camera traps for the years 2019 and 2021, which were processed and analyzed (Evidence 5.05). During this period, 116 and 93 stations were installed with a total effort of 10716- and 7966-night days. The photographs were entered into Camera Base, from where daily detection histories were obtained for each species, being 0 if it was absent and 1 if it was present during each day of evaluation.

Survey Name	Start	End	Lat	Long	Camera Days	Stations
Tahuamanu 2019	2019-06-14	2019-10-30	-11.46	-69.7	10,716	116
Tahuamanu 2021	2021-06-18	2021-11-11	-11.46	-69.7	7,966	93

Occupancy is one of the most used status variables, after abundance (or density). Occupancy is the fraction of sampling units in each area where the species of interest is present, or, in other words, the percentage of an area that is occupied by a species. It is the best option if for logistical or practical reasons it is not possible to estimate the size of a population, and if the interest is focused on determining the distribution of species in an area. These occupancy models are useful for understanding and predicting changes in occupancy over time, which is of particular importance for monitoring. To estimate the occupancy of faunal species, a multi-species occupancy model (MSOM) was used with the R Occupancy package. Each camera station is considered a sampling unit.

6 bird species, 2 reptile species and 35 mammal species were recorded in 2019 and 6 bird species, 2 reptile species and 34 mammal species in 2021. Species with the highest detections in 2019 were ocelot (*Leopardus pardalis*, 3104 events), sachavaca (*Tapirus terrestris*, 3015 events), rabbit (*Sylvilagus brasiliensis*, 1763 events) and añuje (*Dasyprocta variegata*, 1557 events). Species with less than 5 detections were the pacarana (*Dinomys branickii*, 1), the ronsoco (*Hydrochoerus hydrochaeris*, 2) and the bald-tailed armadillo (*Cabassous unicinctus*, 3 events). In 2021, the species with the highest detections were ocelot (*Leopardus pardalis*, 2685 events), sachavaca (*Tapirus terrestris*, 2211 events), rabbit (*Sylvilagus brasiliensis*, 1222 events) and paujil (*Mitu tuberosum*, 938 events). Species with less than 5 detections were the marsupial Philander spp. (1 event), the ronsoco (*Hydrochoerus hydrochaeris*, 2 events), the pacarana (*Dinomys branickii*, 3 events) and the bald-tailed armadillo (*Cabassous unicinctus*, 4 events).

The community occupancy model reveals some interesting data about the species and how they occupy the sites that were evaluated. For example, species with occupancy values of >0.90 were ocelot, sachavaca, red brocket deer (*Mazama americana*), peccary (*Pecari tajacu*), puma (*Puma concolor*), jaguar (*Panthera onca*) and paujil (*Mitu tuberosum*). In other words, these species are likely to be found in almost all the stations installed in the design.

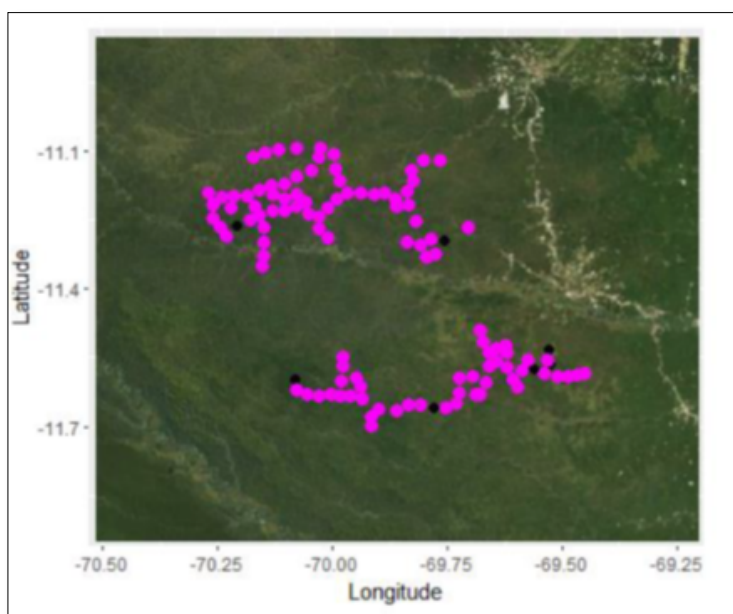


Figure 5.6. Distribution of jaguar detections in the area evaluated

In the area of the concessions evaluated (Otorongo and Maderacre), all the predator species of the lower Amazon were present, such as the jaguar, puma, ocelot, margay and yaguarundi, the two species of bush dogs (*Atelocynus microtis* and *Speothos venaticus*), among others. Likewise, all species of ungulates and medium and large rodents, which reveals healthy populations of predators

and their prey. These results reflect the control and surveillance actions and management measures of both concessions, which contribute to the conservation of the community of medium and large mammals and birds.

Based on the results of the Tobler study (2023), the Fauna Sighting Monitoring (2021) and the evaluations carried out prior to 2020, the following threatened species have been recorded according to the IUCN Red List: Endangered: *Ateles chamek*, *Pteronura brasiliensis*; Vulnerable: *Tapirus terrestres*, *Myrmecophaga tridactyla*, *Tayasu pecari*, *Chelonoides denticulata*, *Priodontes maximus*.

5.3.2 Biodiversity Monitoring Plan Dissemination (B4.3)

The dissemination of the results of the monitoring carried out is available to the public on the internet through the following web page: <https://aldoagain21.wixsite.com/cultura-forestal>.

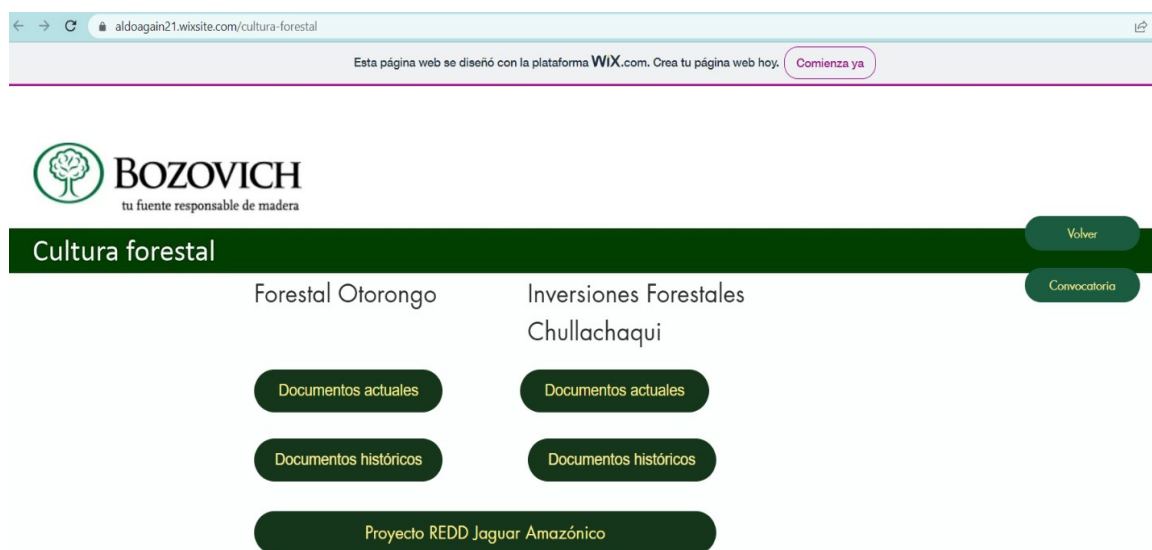


Figure 5.7. Dissemination website

On this website we can find the Executive Summary of The Jaguar Amazon REDD+ Project, where the objectives and activities in favor of the surrounding communities appear.

Likewise, on the platform we find the historical and current documents for the Otorongo Forest concession and the Chullachaqui Forest Investment concession, among them are:

- Summary of the monitoring results of each General Forest Management Plan
- Declaration of Forest Adhesion
- Forest HCVF Report

- Conflict Resolution Manual
- Institutional Policies
- HCVF Monitoring Procedure
- Summary of HCVF Monitoring Results

Complementing these channels, the Project casts a local radio program every weekend in Radio Tahuamanu (109.4 FM) (before in Radio Solar, 99.3 FM) to communicate the activities, developments, and results of the project.

In addition, letters (Evidence 5.17) were sent to the main political and civil authorities, to inform them that the Otorongo and Chullachaqui consolidations adhere to the principles and criteria of Voluntary Forest Certification, in which the HCVF monitoring procedure and results documents are attached.

5.4 Optional Criterion: Exceptional Biodiversity Benefits

5.4.1 Trigger Species Population Trends (GL3.3)

Trigger Species	Jaguar (<i>Panthera onca</i>)
With-project Scenario	The measures adopted to maintain or improve the status of the jaguar population and to reduce threats to them are: • The management plan includes the specific management measures according to the HCV found in the evaluation. • Monitoring of High Conservation Value Attributes (HCV) found in the management unit, through indicator species of flora and fauna. • Control system to ensure compliance with management guidelines. • Patrol system throughout the project area. • Low Impact Harvesting • Maintenance of the Certification of the concession. • Development, implementation, monitoring, and improvement of forest management through general forest management plans. • Work with neighboring communities to raise awareness of the value of the forest, improvement of livelihoods, among others

6 ADDITIONAL PROJECT IMPLEMENTATION INFORMATION

All details about project implementation are described in the appropriate sections and the evidence that were referenced along the document.

7 ADDITIONAL PROJECT IMPACT INFORMATION

All details about project impacts are described in the appropriate sections.

LIST OF EVIDENCE

- Evidence 2.01. Coordinates of forest concessions
- Evidence 2.02. Sustainable Development Goals the Jaguar Amazon REDD+ Project
- Evidence 2.03. Productive projects training
- Evidence 2.04. The agreements with institute
- Evidence 2.06. Reporting of forest patrolling
- Evidence 2.07. conflict resolution manual and complaints and suggestions manual
- Evidence 2.08. Community Costs, Risks, and Benefits
- Evidence 2.09. Institutional Policy
- Evidence 2.10. Employee payroll
- Evidence 2.11. Internal training
- Evidence 2.12. Personal hiring
- Evidence 2.13. Project team
- Evidence 2.14. Cash Flow
- Evidence 2.15. Recognition of Property Rights
- Evidence 2.16. Letter 036-2017 Evidence 3.01
- Evidence 2.17. All de complaints and suggestions 2021
- Evidence 2.18. Employment and families
- Evidence 2.19. Informe de monitoreo de caudal 2021
- Evidence 2.20. Concession agreements
- Evidence 2.21. PGMF Reformulado
- Evidence 2.22. Behavior Osinfor
- Evidence 2.23. Contracts with the Administrator
- Evidence 3.01. Summary of Monitoring Results of the General Forest Management Plan
- Evidence 3.02. Training
- Evidence 3.03. Charges of accession cards
- Evidence 3.04. Leakage
- Evidence 4.01. List of Brazilian Nuts collectors 2021
- Evidence 4.02. Community trainings 2021
- Evidence 4.03. Community work
- Evidence 4.04. Payment collector BN 2021
- Evidence 4.05. Summary of monitoring results Consolidated Forest Management Plan
- Evidence 4.06. PMFI Forest Management Plan Brazilian Nuts Otorongo
- Evidence 4.07. Agreements
- Evidence 4.08. Minutes signed with other stakeholders
- Evidence 5.01. Tobler, M. et al. 2018. Studies (jaguars) Guatemala, Peru.
- Evidence 5.02. Results of monitoring the PGMF.

- Evidence 5.03. Informe de Monitoreo calidad de operaciones 2021.
- Evidence 5.04. Tobler, M. 2022 “Evaluar el valor de las concesiones forestales en Madre de Dios para la conservación del jaguar y de otros mamíferos grandes y medianos”.
- Evidence 5.05. Tobler, M., Mena, J. L. 2023. Evaluación de mamíferos en concesiones forestales FSC en Tahuamanu, Perú. San Diego Zoo Wildlife Alliance.
- Evidence 5.06. Informe de Ejecución Anual del Plan Operativo de los dos Consolidados.
- Evidence 5.07. FSC Certificado.
- Evidence 5.08. Guía para la identificación de BAVC.
- Evidence 5.09. Procedimiento de Monitoreo de BAVC.
- Evidence 5.10. Dourojeanni, M.J. 2006. Estudio de caso sobre la carretera interoceánica en la Amazonia Sur del Perú – SPDA (p.40).
- Evidence 5.11. PMFI Castaña.
- Evidence 5.12. Capacitaciones externas 2021 realizadas con los productores de los centros poblados adyacentes.
- Evidence 5.13. Informes N° 01, 03, 05, sobre actividades de patrullaje, vigilancia, alinderamiento.
- Evidence 5.14. Manual de Monitoreo de Fauna, en base a los procedimientos de la Guía de Fauna Silvestre (MINAM).
- Evidence 5.15. Dictamen de Extracción No Perjudicial de la Autoridad Forestal y de Fauna Silvestre – SERFOR.
- Evidence 5.16. Plan silvicultural
- Evidence 5.17. Cartas de adhesión.
- Evidence 5.18. Comportamiento Osinfor
- Evidence 5.19. Informe BAVC Forestal Otorongo y Chullachaqui