MONITORING REPORT 2017-2019

Document Prepared By

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GHG Accounting/ Crediting Period	19 April 2017 – 18 April 2047; 30-year lifetime
Monitoring Period of this Report	19 April 2017 – 31 December 2019
History of CCB Status	Under validation
Gold Level Criteria	Biodiversity

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1 SUMMARY OF PROJECT BENEFITS

1.1 Unique Project Benefits

Table 1. 1. Outcome or Impact estimated by the end of project lifetime

Outcome or Impact	Achievements during the Monitoring Period	Section Reference	Achievements during the Project Lifetime
Number of beneficiaries in health of indigenous peoples as a result of project activities.	114	4	114
Number of beneficiaries in education of indigenous peoples as a result of project activities.	41	4	41
Number of women of indigenous peoples benefiting through project activities.	45	4	45
Number of promotional activities for the protection of indigenous peoples in isolation, PIACI.	7	4	7

1.2 Standardized Benefit Metrics

Table 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	3	0
	Net estimated emission reductions in the project area, measured against the without-project scenario	3,850,755	3	3,850,755

Category	Metric	Achievements during Monitoring Period	Section Reference	Achievements during the Project Lifetime
Forest[1] cover	For REDD[2] projects: Number of hectares of reduced forest loss in the project area measured against the without-project scenario	7,084.91	3	7,084.91
Forest[1] cover	For ARR[3] projects: Number of hectares of forest cover increased in the project area measured against the without-project scenario	N. A.		N. A.
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	171,584.07	3	171,584.07
Improved land management	Number of hectares of non-forest land in which improved land management has occurred as a result of the project's activities, measured against the without-project scenario	N. A.		N. A.
Training	Total number of community members who have improved skills and/or knowledge resulting from training provided as part of project activities	98 on average over the whole period	4	98 on average over the whole period

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

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

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

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

Category	Metric	Achievements during Monitoring Period	Section Reference	Achievements during the Project Lifetime
Employment	Number of female community members who have improved skills and/or knowledge resulting from training provided as part of project activities of project activities	9 on average over the whole period	4	9 on average over the whole period
	Total number of people employed in of project activities,[5] expressed as number of full-time employees[6]	122 on average over the whole period	4	122 on average over the whole period
	Number of women employed in project activities, expressed as number of full-time employees	5 on average over the whole period	4	5 on average over the whole period
Livelihoods	Total number of people with improved livelihoods[7] or income generated as a result of project activities	253	4	253
	Number of women with improved livelihoods or income generated as a result of project activities	59	4	59
Health	Total number of people for whom health services were improved as a result of project activities, measured against the without-project scenario	2 046 on average	4	2 046 on average
	Number of women for whom health services were improved as a result of project activities,	881 on average	4	881 on average

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

[6] Full time equivalency is calculated as the total number of hours worked (by full-time, part-time, temporary and/or seasonal staff) divided by the average number of hours worked in full-time jobs within the country, region or economic territory (adapted from 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
	measured against the without-project scenario			
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	285 during the three years of the current monitoring period	4	285 during the three years of the current monitoring period
	Number of women and girls for whom access to, or quality of, education was improved as a result of project activities, measured against the without-project scenario	Information not available for all activities supported by the project	4	Information not available for all activities supported by the project
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	3256[8] per year	4	3256[9] per year
	Number of women who experienced increased water quality and/or improved access to drinking water as a result of project activities, measured against the without-project scenario	1 388 per year	4	1 388 per year
Well-bein	Total number of community members whose well-being[10] was	208	4	208

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[8] Population located near and in the lowlands where the project is located. It is important to note that the indicator corresponds to an indirect impact on the ecosystem services to which the local population has access. The presence of the project contributes to the conservation of natural resources linked to the forest, including the water resources of the main bodies of water such as rivers that are a source for human use.

[9] Population located near and in the lowlands where the project is located. It is important to note that the indicator corresponds to an indirect impact on the ecosystem services to which the local population has access. The presence of the project contributes to the conservation of natural resources linked to the forest, including the water resources of the main bodies of water such as rivers that are a source for human use.

[10] 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

Category	Metric	Achievements during Monitoring Period	Section Reference	Achievements during the Project Lifetime
	improved as a result of project activities			
	Number of women whose well-being was improved as a result of project activities	62	4	62
Biodiversity conservation	Change in the number of hectares significantly better managed by the project for biodiversity conservation,[11] measured against the without-project scenario	171,584.08	5	171,584.08
	Number of globally Critically Endangered or Endangered species[12] benefiting from reduced threats as a result of project activities,[13] measured against the without-project scenario	2 fauna and 1 flora species are in IUCN list	5	2 fauna and 1 flora species are in IUCN list

2   GENERAL

2.1   Project Description

2.1.1   Implementation Description

As described in the PD, some activities are going to be implemented at a large scale with secured incomes since the project generates and sell carbon units. Activities as support sustainable productive initiatives (2%), strengthen protected areas including PIACI lands (1%), conserve biodiversity (1%), are associated to carbon incomes.

Notwithstanding, the Consultative Committee is already operative many years ago and has agreed and supported different actions with neighboring communities in topics as health, employment and education.

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benefits such as empowerment of community groups, strengthened legal rights to resources, conservation of access to areas of cultural significance, etc.

[11] 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.

[12] Per IUCN's Red List of Threatened Species

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

Health and education are the indicators most in need of support, information that local stakeholders have expressed in the dialogue with stakeholders and the community.

In addition, the project has implemented actions regarding biodiversity and borders protection. Also, project proponent participates actively in inter institutional task force to consolidate forestry sector in Tahuamanu province.

All those activities will be described below:

Education

A partnership with Belgica Indigenous Community. MADERACRE transfers 200 soles (US$55) monthly to every teacher of kinder garden and primary level of school. The evidence is made up of reports and acts that were presented in the verification process.

Number of beneficiaries	2017	2018	2019
	20	23	28

- Grant of a high-pressure stove to School N° 52055 of CN Belgica in 2018. The stove will be used for food preparation of students

- Partnership with School N° 53003 Elena Bertha to provide training to students about the importance of environmental education, sustainable forest management and forest conservation for local and global communities. 213 of beneficiaries in 2018.

- Grant of 15 futsal balls for school anniversary and 100 pieces of wood for building new facilities to School Elena Bertha. 224 beneficiaries.

- Different types of support to Secondary School Iñapari, where there were 116 beneficiaries in 2017 and 125 beneficiaries in 2019.

    o It includes a training to students about the importance of environmental education, sustainable forest management and forest conservation for local and global communities in 2017 (30 beneficiaries, 10 women and 20 men) and 2019 (59 beneficiaries, 24 women and 35 men).

    o Grant of 35 seedlings for the school gardens in 2017 and a new lot in 2019.

    o Grant of 1000 soles (US$ 277) for sportswear for national sports games in 2019.

    o Grant of 1825 pieces of wood for the construction of garden fences in 2019.

- Partnership with CEBA Dos de Mayo in the peripheral area of CN Belgica, supporting the management, monitoring and transportation of teachers to the school during 2018 and 2019, with 22 beneficiaries in 2019 (16 females and 6 males).

- Partnership with CEBA Dos de Mayo to ensure the continuity of School Alberto Cardozo Rivera, in 2018 and 2019, with 33 beneficiaries in 2019 (23 females and 10 males).

- Grant of 02 brooms and 01 dustpan for CEBA Alberto Cardozo Rivera, during 2018.

- Guided visits to MADERACRE facilities and concession to students from Amazonian University (13 students, 4 females in 2017 and 20 students, 7 females in 2019), Center National University (42 students, 24 females in 2017) and IST Iberia (with 25 students in 2019).

- Donation to School N° 52144 in Community Villa Primavera of 02 tables, 04 chairs, six dozen of painting, 01 board, 01 stand, 29 seedlings in 2017, with 15 beneficiaries.

- In 2018, to the same school, donation of 1054 pieces of wood for building of facilities in two lots.

- In 2019, donation of T-shirts, prizes and furniture for the library with 17 beneficiaries of the same school in Villa Primavera.

- With the school N° 52056 located in the Community of Noaya, a donation of 2033 pieces of wood for the perimeter of the school in 2019, with 5 beneficiaries.

- A grant of 0.778 cubic meters of wooden slat for School Santa Rosa in the city of Puerto Maldonado for the construction of the school facilities in 2018, with 800 students as beneficiaries.

Some of these benefits are not accounted in the table of section 1.2.

Health:

- A partnership with the CN Belgica to provide a monthly bonus of 300 soles (US$ 83) to the nurse and with the purchase of medicines valued in 200 soles (US$55) every month. Beneficiaries are as follows:

2017	2018	2019
110 (54 female, 56 males)	114	119

- A special grant of 100 soles (US$27) in 2017 for health campaign.

- Partnership with Community Medical Center in Tres Fronteras, benefiting 1 890 inhabitants since 2017. Thanks to this partnership, in the first year, the project granted 129 pieces of wood for nutrition area, 150 soles (US$40) for activities during the AIDS World Day, collection of garbage that may be a focus of diseases (in 2017 and 2019), grant of 180 soles (US$48) for ambulance fuel (in 2018) and fumigate against dengue (2019).

- Collection of garbage that may be a focus of diseases in the Secondary School Iñapari (in 2019).

Water quality:

- The project helps to preserve the basins heads benefiting to 6,013 inhabitants that live downstream, with 57% (3,427) are women. The main rivers that are protected by the project are Tahuamanu, Yaveryja, Acre, among others

Because of these activities, the project has contributed to reduce 4,086,281.58 tCO2e during the current monitoring period.

- Leakage has been monitored also by calculating the forest loss according to GEOBOSQUES in leakage belt and these data are used for calculations to leakage emissions used in Climate Section.
- Regarding non permanence risk factors used in non-permanence risk score, as indicated by the tool, data are permanently updated for each monitoring report.

2.1.2 Project Category and Activity Type

This is an AFOLU REDD Project. This is not a grouped project.

2.1.3 Project Proponent(s)

Table 2. 1. Project Proponent

Organization name	MADERACRE SAC
Contact person	José Luis Canchaya / Nelson Kroll
Title	Commercial Manager / Regional Manager
Address	Carretera Interoceánica Sur Puerto Maldonado-Iñapari Km. 227
Telephone	+51 954 688 869 / +51 982 798 120
Email	jcanchaya@matim.pe / nkroll@maderacre.com

2.1.4 Other Entities Involved in the Project

No other entities are involved in the project.

2.1.5 Project Start Date (G1.9)

April 19th, 2017.

2.1.6 Project Crediting Period (G1.9)

April 19th, 2017, is the project crediting period start date and it lasts until April 18th, 2047, providing a total of 30 years of project life, even though the forest concession contract states that it is renewable automatically every 5 years, so it never ends.

2.1.7 Project Location

Map 2. 1. Project Location
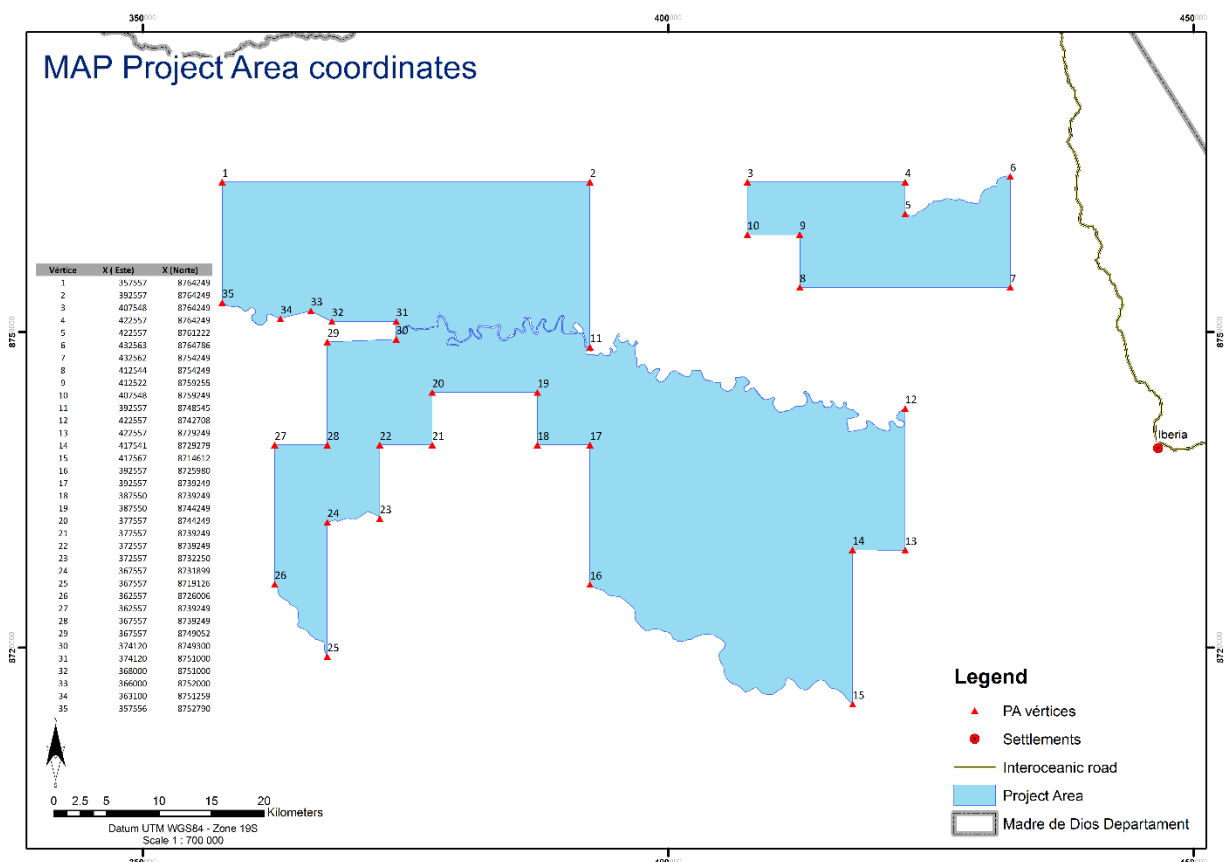
Table 2. 2. Coordinates of Project Area

Vertex	X (East)	X (North)
1	357,557	8,764,249
2	392,557	8,764,249
3	407,548	8,764,249
4	422,557	8,764,249
5	422,557	8,761,222
6	432,563	8,764,786
7	432,562	8,754,249
8	412,544	8,754,249
9	412,522	8,759,255
10	407,548	8,759,249
11	392,557	8,748,545
12	422,557	8,742,708
13	422,557	8,729,249

Vertex	X (East)	X (North)
14	417,541	8,729,279
15	417,567	8,714,612
16	392,557	8,725,980
17	392,557	8,739,249
18	387,550	8,739,249
19	387,550	8,744,249
20	377,557	8,744,249
21	377,557	8,739,249
22	372,557	8,739,249
23	372,557	8,732,250
24	367,557	8,731,899
25	367,557	8,719,126
26	362,557	8,726,006
27	362,557	8,739,249
28	367,557	8,739,249
29	367,557	8,749,052
30	374,120	8,749,300
31	374,120	8,751,000
32	368,000	8,751,000
33	366,000	8,752,000
34	363,100	8,751,259
35	357,556	8,752,790

2.1.8   Title and Reference of Methodology

- VM006: Methodology for Carbon Accounting for Mosaic and Landscape-scale REDD Projects. Version 2.2 - 17 March 2017 - Sectoral Scope 14.
- 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.

2.1.9   Other Programs (G5.9)

No other emission trading programs and other binding limits or other forms of environmental credits are applicable, neither the project is participating under other GHG programs.

2.1.10   Sustainable Development

The Project constitutes a solution based on nature since it contemplates the sustainable management of an important area of tropical natural forests in order to conserve it from the sustainable use of ecosystem goods and services such as wood, carbon sequestration and conservation. diversity, and, with it, contribute to the sustainable development of rural communities present in its area of influence, localities to which the basic services of the State reach in a deficient manner. In the absence of the project, the forests it manages

would be seriously affected by deforestation, illegal logging and poaching, affecting the landscape and ecosystems responsible for maintaining the microclimate of the area, regulating the quantity and quality of surface waters. and underground, which benefit the localities located in the lower parts of the basins. In turn, it reduces soil loss and the risks of natural disasters such as forest fires and floods.

The project strategy includes direct protection mechanisms for the area it administers, such as the implementation of a Comprehensive Custody Plan of the Management Unit, as well as indirect strategies that seek to reduce pressure on it and that are based on improving the living conditions of the surrounding populations, allocating resources to promote the sustainable development of the surrounding population in accordance with the prioritization determined by the Project's Community Relations Consultative Committee. In turn, it contemplates the identification and financing of pilot productive initiatives of the surrounding population that contemplate a friendlier use of the land, reduce the expansion of the agricultural frontier and at the same time improve their living conditions.

An important stakeholder in the project environment but which is not usually identified and on which there is a very weak execution of activities by the State in the search for their effective protection, are the indigenous peoples in voluntary isolation and initial contact (PIACI) In this case, the project contemplates developing promotional activities in alliance with institutions whose objectives are oriented to the protection of these peoples and their territories, which in turn include natural areas protected by the State (ANP) characterized by their great biodiversity; biodiversity that is key to protect to guarantee the future of the nation.

Specifically, the project contributes to the following key public policies:

Table 2. 3. Project contributions to national policies

General	Specific
SDG	6. Ensure availability and sustainable management of water and sanitation for all 8. Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all 12. Ensure sustainable consumption and production patterns 13. Take urgent actions to combat climate change and its impacts 15. Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss
NDC	Sustainable Forestry Management

General	Specific
ENBCC	AE2. Increase the value of forests, through SFM, including community forest management and other activities, doing it more competitive compared with activities that cause deforestation and degradation

2.2 Project Implementation Status

2.2.1 Implementation Schedule (G1.9)

Table 2. 4. Project milestones

Date	Milestone(s) in the project's development and implementation
2002	Issuing of forest concession contract
2007	FSC Certification
2016	New concessions added to the joint management area covered by Maderacre FSC certificate
2017	FSC re-certification
	Starting Date of GHG accounting period
2021	Expected validation and first verification audit
2021	Nesting year
2022	Start of carbon credit sales. Entrance of new financial resources
	Strengthening of activities funded by incomes obtained from carbon credit sales
2047	Ending date of REDD+ project

2.2.2 Methodology Deviations

No methodology deviations are proposed compared with the validated PD and the methodology used.

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

No minor changes to project descriptions are proposed compared with the validated PD and the methodology used.

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

No project description deviations have been considered nor applied in comparison with previous monitoring reports.

2.2.5 Grouped Projects

The project is not a grouped project.

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

The project is not a grouped project.

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

The project is not a grouped project.

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

The project is not a grouped project.

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

The project is not a grouped project.

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

The project is not a grouped project.

6) **Project Zone Map (G1.13)**

The project is not a grouped project.

7) **Changes to Management (G4.1)**

The project is not a grouped project.

2.2.6 Risks to the Project (G1.10)

Table 2. 5. Identify Risk

Identify Risk	Potential impact of risk on climate, community and/or biodiversity benefits	Actions implemented to mitigate the risk
Productive activities are not enough attractive to change the pattern of land use of agrarian neighbors

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 | Forest areas may be substituted by agrarian areas, reducing the climate benefits of the project | The risk is still threatening the project zone and has deepened with newcomers and increasing corn demand from local chicken farms. Project still does not access to carbon incomes to implement mitigation activities. Meanwhile, the project is focused on ensure forest consolidated integrity and work with surrounding communities through the Consultative Committee |

Identify Risk	Potential impact of risk on climate, community and/or biodiversity benefits	Actions implemented to mitigate the risk
Internal conflicts within local settlements	Project activities may be difficult to implement with this type of conflicts	During this period, no internal conflicts have been reported within local settlements
Fires cannot be controlled because of dry seasons	Forest fires generate GHG emissions affecting negatively the climate benefits of the project	Forest fires are still frequent in dry season as a method to clear areas for future agriculture purposes. Project proponent forbids burns within project area. No fires were registered during current monitoring period

2.2.7 Benefit Permanence (G1.11)

During the current monitoring period (pre-carbon incomes), the main activities developed by project proponent are associated with the educational and diffusion activities for surrounding communities, mainly Indigenous Community Belgica and also a permanent dialogue and communication with the Provincial Municipality of Tahuamanu, being remarkable the signature of a partnership to implement joint activities for the development of the project zone.

2.3 Stakeholder Engagement

2.3.1 Stakeholder Access to Project Documents (G3.1)

Monitoring reports are already available in the company webpage (www.maderacre.com), with free access for everybody and have been shared with stakeholders through letters, radio advertisements and through citizen participation workshops and the Consultation Committee, as presented in the verification process.

During the project document design, the project was communicated to local stakeholders since 2018 to 2020, detailing the main components of the project. As the process was gaining definition, more details were shared and, since 2020, information regarding the stages of the process (including validation and verification audit and field visits) were included as well as the costs, risks and benefits.

Figure 2. 1. Evidence of communications

Tahuamanu Amazon REDD Project

- Proyecto Tahuamanu Amazon REDD Project desarrollado sobre una superficie de aproximadamente 172 mil Has.

- Proyecto en preparativos para ser certificado por el Verified Carbon Standard (VCS) y el Climate Community and Biodiversity (CCB).

- Ingresos complementarios que financian la ejecución del proyecto así como el fortalecimiento del sistema de custodia y vigilancia del área.

- Cumple un rol fundamental como área de amortiguamiento de la RT MDD donde habitan poblaciones PIACI y el PN Alto Purús.

- Junto con el MDD Amazon REDD Project, la RT MDD, el PN Alto Purús y el PN del Manu, conforma un corredor de conservación binacional.

(April 2018)

This screen capture is evidence that the project was already being communicated since April, 2018, including the key information: area, standards, income destinations, importance and others.

Figure 2. 2. Meetings

(September, 2021)

Through these meetings, the main scope and nature of the new REDD project was explained in a local language. These meetings were publicized appropriately to guarantee a high participation of local leaders and authorities. In the invitation letters, a link to the web page was include so the documentation could be reviewed directly. All this information (letters, PPT, brochure) may be found.

During 2020, because of the pandemic crisis, the dissemination was virtual but, in 2021, in person meetings were carried out again.

2.3.2 Dissemination of Summary Project Documents (G3.1)

During the validation process of the project, public summaries of the PD, the monitoring results, as well as complementary dissemination material such as brochures were prepared and distributed to the main project stakeholders.

Diffusion talks are held for collaborators where summary material and / or diffusion brochures are also distributed.

As described in the items of criterion G.3, the project's dissemination mechanisms consider various communication spaces such as participatory workshops with the population, consultative committees, delivery of informative documents (brochures and Public Summaries), and complementary media such as e-mails, use of the radio and the web page, which are implemented with greater emphasis due to the COVID 19 situation:

- Participatory Workshops with all stakeholders, twice a year.
- Consultative Committee with main stakeholders, twice a year.
- Dissemination of Social and Environmental Monitoring (Biodiversity) once after the end of the operational year or harvest through Public Summaries.
- Dissemination of Maderacre's website: www.maderacre.com
- Talks to workers about REDD.
- Delivery of information materials such as brochures.

These activities have a description and focus developed in the "Internal Communication Plan", found in Appendix 1.

The results of the Tahuamanu REDD project were disseminated in the aforementioned spaces.

2.3.3 Informational Meetings with Stakeholders (G3.1)

The project has held up to two annual meetings where all members of the community are openly invited.

They refer to the Citizen Participation Workshop (TPC) and the Consultative Committee (CC). During these meetings MADERACRE informs participants of the activities to be implemented within the framework of the sustainable forest management plan for the project area, highlighting the contribution of SFM to forest conservation, the harvesting activities scheduled for the corresponding harvest, and the chain of custody process, the results of monitoring and the main achievements in recent years of management, such as the maintenance of FSC FM / CoC, VCS, CCB Gold certifications and the latest accreditations achieved for diversity conservation and carbon sequestration in the FSC platform, as well as relevant information on the ongoing REDD project, progress in the implementation of activities and monitoring results.

The information gathered during these spaces is systematized and presented in a report prepared by the social responsibility area of the project and published on the MADERACRE website (www.maderacre.com).

Calls for the Citizen Participation Workshops and Consultative Committee are made by letter addressed to the main stakeholders, as well as through the dissemination of announcements on local radio, in order to have greater publicity.

The TPC and CC reports are available to the auditors, as well as the documents supporting the convening processes.

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

During the citizen participation workshop held on February 2021, information referred to the main costs, benefits and risks associated with the implementation of the projects were shared with the communities located within its area of influence as may be seen in Appendix 2. Meeting report of the Community Relations Advisory Committee.

As demonstrated in section 1.2 of standard metrics, the project is bringing concrete supports directly to the surrounding communities with a high level of participation. The project proponent organizes annual contests to finance productive projects within the communities as a demonstration of the participative and adaptive approach of the project.

Figure 2. 3. 2.3.4   Community Costs, Risks, and Benefits
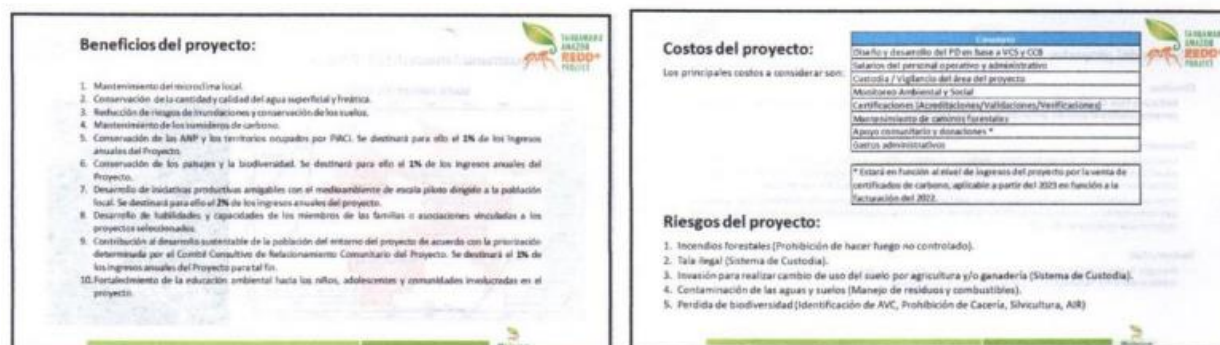
(March, 2021)

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

In the last TPC executed on February 26, 2021, the participants were informed that the project is within the process of its carbon certification by an independent accreditation body and that within the framework of this process a public consultation has been called to collect opinions, complaints or contributions from stakeholders. Additionally, the project plans to report on the validation and verification process to which it will be submitted by letter sent to the stakeholders approximately 15 days before its execution.

As part of this aspect, letters were submitted to stakeholders at September 1st, 2021, with at least one month of anticipation to the field visit for validation/verification, that were complemented with an advertising

in the local radio a few days previously to the field visit. It allowed to the VVB to achieve independent meetings with all the expected stakeholders during validation/verification process.

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

In the last TPC executed on February 26 of this year, the participants were informed that the project is about to be validated and verified by an independent accreditation body and that within the framework of this process a public consultation will be called to collect opinions, complaints or contributions from stakeholders. Additionally, the project plans to report on the validation and verification process to which it will be submitted by letter sent to the stakeholders approximately 15 days before its execution.

2.3.7   Stakeholder Consultation (G3.4)

MADERACRE has a Social Responsibility Plan based on stakeholder mapping and identification of the main stakeholders with whom MADERACRE interacts. In addition, MADERACRE has a Community Development Plan that establishes the guidelines for action in social and sustainable development with the environment. These management tools are published on the website.

The foregoing has also allowed MADERACRE to identify the need to institutionalize support for local development, for which the creation of a Community Relations Consultative Committee (CCRC) was promoted, which helps guide MADERACRE's decisions on issues concerning the prioritization of development axes on which to intervene. The CCRC meets at least twice a year and is made up of representatives of different institutions and civil and state organizations present in the surrounding communities.

For its part, in the Citizen Participation Workshop (TPC) that also takes place at least twice a year, the opinions and queries of the participants are collected and addressed. Relevant aspects collected in these processes feed the project and can, depending on their criticality, come to influence the design of the project. So far the design of the project has not been affected by the response of the communities.

The management tools of the area of social responsibility and the reports of the CCRC and TPC meetings are available to the audit team.

2.3.8   Continued Consultation and Adaptive Management (G3.4)

The development of the meetings of the CCRC and the TPCs are part of the programmatic of the project and are carried out at least twice a year. To this is added the operation of the suggestion box for the attention of the opinions, complaints or concerns of the general population, the same one that is located at the entrance to the company's facilities.

The "Procedure for Attention and Constructive Transformation of Complaints, Claims or Social Conflicts with Populations and / or Third Parties" is disseminated to the representatives of the communities, organizations and public and private institutions by means of letters.

The opinions, complaints and relevant inquiries of the stakeholders collected through the aforementioned mechanisms feed the project and influence the programmed activities as part of an adaptive management and continuous improvement mechanism based on 4 fundamental pillars: knowledge, planning, training. and monitoring.

The Procedure for Attention and Constructive Transformation of Complaints, Claims or Social Conflicts with Populations and / or Third Parties is available for review by the audit team.

2.3.9 Stakeholder Consultation Channels (G3.5)

The calls for participatory processes are addressed to the official representatives of the communities or other stakeholders. They make the decision to participate directly or appoint representatives to participate in our processes and activities.

Table 2. 6. Meetings

MEETING	DATE
Consultation Committee of Community Relationships	5/05/2017
Consultation Committee of Community Relationships	21/12/2017
Consultation Committee of Community Relationships	13/04/2018
Consultation Committee of Community Relationships	14/12/2018
Consultation Committee of Community Relationships	26/04/2019
Consultation Committee of Community Relationships	6/12/2019
Citizen Participation Workshop	5/05/2017
Citizen Participation Workshop	21/12/2017
Citizen Participation Workshop	13/04/2018
Citizen Participation Workshop	14/12/2018
Citizen Participation Workshop	26/04/2019
Citizen Participation Workshop	6/12/2019

The participation in these meetings includes following institutions:
- Provincial Municipality of Tahuamanu
- Health Center of Iñapari
- Health Center Tres Fronteras
- Peruvian National Police Department
- Forest and Wildlife Directorate – Iñapari Office
- Agrarian Regional Directorate – Iñapari Office
- Indigenous Community Belgica
- School I.E.B.R Secundaria – Iñapari
- School I.E. Nº 53003 ELENA BERTHA
- Rural Community Villa Primavera
- Rural Community Nueva Esperanza
- Rural Community Noaya
- Housing Association La Colonia
- Housing Association Nuevo Iñapari
- Housing Association Rosario del Acre
- Elder People Association
- Timber Company Canales Tahuamanu SAC
- Timber Company Yaveryja SAC

- SERFOREST Company
- Mothers' Club Iñapari
- SERVINDESA Company
- Chamber of Commerce
- National Service of Agrarian Sanity
- Sub-prefect Tahuamanu

- National Organism of Fishing Sanity

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

As described above, the main spaces or mechanism for consultation and participation of the communities and other stakeholders are the TPC and the CCRC, in addition, Participatory Rural Diagnoses are also carried out every 2 years to collect information on how the actors meet their product needs. coming from forests, mainly wood for firewood or construction and other forest resources, as well as identifying whether it comes from the project area. The methodology to develop the DRP includes workshops with focus groups and / or surveys in the different populated centers or communities. It should be noted that, due to the recommended social distancing in the face of the pandemic, the project has sought to minimize the congregation of people in the same space, so the DRP has been implemented with the survey methodology.

The project establishes conditions that seek the effective participation of community members and other stakeholders. These are the following:

- Involvement of all communities linked to the area of social influence of the project considering their ethnic and cultural diversity such as native community, rural community, urban settlement or populated center. The participation spaces also include private and public institutions, such as local forestry companies and local government authorities. Women's organizations, such as the Mothers' Club, are also invited to participate. The effective attendance of this organization is sought every year. In short, the project brings together the various local interest groups, considering all of them in the call. Likewise, the CCRC is made up of representatives of native communities, local authorities, women's organizations and urban areas. MADERACRE is respectful of the local culture, recognizing its diversity and social organization, promoting an intercultural, effective and female participation.

- Invitation by means of letters addressed to the representatives of these communities, civil and private organizations or institutions. In order to summon the communities and institutions, the project's social responsibility team personally visits them and, in addition to delivering the corresponding document, encourages them to participate, informing them directly and in person of the activity to be carried out.

- Use of Iñapari's local radio to broaden the scope of dissemination.

- Subsequently, on days or hours close to the activity, telephone calls are made to local actors requesting their participation in the event.

- Locate the places where the events will be held in central locations in the area where the communities are distributed, easily accessible and with basic services that allow the use of the material prepared for the dissemination or presentation, as needed.

- Support with mobility to guarantee their participation, as needed.

- The calls are open, allowing the communities, organizations and/or institutions themselves to determine their representation and manage the gender division based on their own criteria.

It is important to bear in mind that the vast majority of the communities present in the project's area of influence are migrants who have settled in these spaces, some for many decades and others recently, there is only one native community, called Belgium and that It is made up mainly of people of the Yine ethnic group, who although ancestrally were not present in these spaces, they have grouped and settled in the Iñapari District and have been recognized as a native community and have a territory titled in their favor, in This space they develop activities such as agriculture, livestock and forest management to obtain wood, being articulated with society and the productive and economic activity of the province. They currently have FSC forest certification and have developed a REDD project that is in the process of validation.

Documentation regarding the convening process is available to the audit team.

2.3.11 Anti-Discrimination Assurance (G3.7)

As cited and attached in the PD, the project proponent has an official policy against any type of discrimination, which is uploaded in the company webpage. No incidents have occurred during the current monitoring period. The statement reaffirms the commitment of project proponent to prevent any type of labor discrimination by gender and adheres to international agreements related with gender equity.

2.3.12 Grievances (G3.8)

In 2016, the Provincial Municipality of Tahuamanu on behalf of the Nuevo Iñapari Housing Association filed a complaint with MADERACRE for the generation of dust on the Santa Martha highway in the section that corresponds to the location of this neighborhood. This impact is generated in the dry season by the traffic of vehicles, including MADERACRE vehicles. The complaint was received and addressed within the framework of our Procedure for Attention and Constructive Transformation of Complaints, Claims or Social Conflicts with Populations and / or Third Parties. The company, since 2018, assumed the irrigation of the road to mitigate the generation of dust during the dry season. Subsequently, through Letter N ° 011-2020-MADERACRE, we ratify the commitment to maintain this support to the community throughout the years, which has been carried out, thus closing the case, a fact that has been accepted by the association of housing by Official Letter N ° 053-2020.

All the documentation related to the attention and closure of the complaint in question is available to the audit team.

2.3.13 Worker Training (G3.9)

During the current monitoring period, MADERACRE has provided training to its workers and third-party partners in different topics, being the most relevant and associated with the project, the following:

Table 2. 7. Worker Trainings (2017-2019)

Topic	Purpose	Target							
		2017		2018		2019		Aggregated	
		M	F	M	F	M	F	M	F
Behavior protocol in the case of encounters with PIACI population	To minimize the risk of damage to PIACI and also to the own company workers	103	0	327	3	281	14	711	17
Company Code of Conduct	To guarantee good relationships with local neighboring population	94	0	273	2	407	19	774	21

Table 2. 8. Worker trainings 2018

TRAININGS – 2018: Total = 155 (137 Male / 18 Female)		
TEMA	AREA	TYPE
Induction at the start of the activities	All the areas	Induction
Codification and measurement of round wood	Forest Management	Speeches
Code of Conduct	Forest Management	Speeches
Occupational health and safety (3)	Forest Management	Speeches
Forest certification and HCV (2)	Forest Management	Speeches
Reduced impact logging	Forest Management	Speeches & Trainings
Chain of Custody	Forest Management	Speeches
Camp building	Forest Management	Speeches
Procedures for data collection	Forest Management	Speeches & Trainings
Forest Census	Forest Management	Speeches
Wildlife monitoring	Forest Management	Speeches
Company Policy Values – Code of Conduct	CSR	Speeches
PCA PIACI - Protocols, characterization, flowchart of report	CSR	Speeches
Ergonomics	Occupational health & safety	Trainings
Dangers identification, risk assessment and control measurements	Occupational health & safety	Trainings
Safety based on behavior	Occupational health & safety	Trainings

TRAININGS – 2018: Total = 155 (137 Male / 18 Female)		
TEMA	AREA	TYPE
Personal Protection Equipment	Occupational health & safety	Trainings
Solid Waste Management	Occupational health & safety	Trainings
Insurance, health care (diseases and accidents) and SCTR	Social Welfare	Speeches
Labor benefits policies (Housing, food, loans and others)	Social Welfare	Speeches

Table 2. 9. Worker trainings 2019

TRAININGS – 2019: Total = 133 (115 Male / 18 Female)		
ISSUE	AREA	TYPE
Labor contracts, social benefits, retirement pension systems, ILO	Human Resources	Speeches
Forest Census	Forest Management	Speeches
Technical criteria for data collection during forest census	Forest Management	Speeches – Trainings
Code of Conduct	Forest Management	Speeches
Camp building & closure	Forest Management	Speeches
Chain of Custody & FSC (2)	Forest Management	Speeches
HCV identification	Forest Management	Speeches
Logging operations monitoring	M & E	Speeches
Wild life evaluation	M & E	Speeches
Code of Conduct	CSR	Speeches – Trainings
PCA PIACI - Protocols, characterization, flowchart of report	CSR	Speeches – Trainings
REDD Project Diffusion	CSR	Speeches
Insurance, health care (diseases and accidents) and SCTR	Social Welfare	Trainings
Tuberculosis	Social Welfare	Speeches
Ergonomics	Occupational health & safety	Trainings
Basics, maintenance and safe use of lift trucks	Occupational health & safety	Trainings
IPERC	Occupational health & safety	Trainings
PPE appropriate use & cleaning	Occupational health & safety	Trainings

MADERACRE, at the beginning of 2018, identified that a significant number of inhabitants of the province had not completed their basic studies (primary and secondary) made the decision to promote the constitution of alternative basic education programs in coordination with the Regional Directorate of Education of Madre de Dios, achieving that same year the creation of Alternative Basic Education Centers

(CEBA) in the towns of Iñapari and the Native Community of Belgium, the same ones that until the end of 2019 had attended 50 people, thus improving their capacities and opportunities to access the labor market, which is an important element in improving their living conditions. The CEBA Iñapari, despite the pandemic, has not interrupted its work and has been offering virtual classes, as well as other educational materials with the use of electronic platforms.

MADERACRE carries out radio broadcasts and banners to the general public, in addition to motivating its collaborators so that they can be part of the programs.

We have the agreements signed for 2018 and 2019.

Since 2019, there is a Specific Agreement for Academic Training and Training Experiences in Real Work Situations that are signed by the "Iberia Tahuamanu" Public Technological Higher Education Institute and the company Maderacre SAC. This institute provides access to a career of technical rank to the inhabitants of the entire province. To date, the dissemination efforts of MADERACRE have allowed the incorporation of 06 students to the institute to study the careers of: Agricultural Production and Administration of Forest Resources. MADERACRE in addition to radio broadcasting, through posters and motivational talks to its staff, is in charge of supporting the beneficiaries in coordinating their application, registration and monitoring of their performance.

Additionally, for the period in question, the project has implemented environmental education programs through talks aimed mainly at children and young people from the schools of Iñapari and Villa Primavera, as well as donation of school furniture, wood for the projects of Bosque de los Niños and Children's Land, painting, seedlings to improve green areas, sports equipment and clothing, and a kitchen to prepare food for children. In the case of CCNN Belgium, the support includes the monthly donation of a bonus for teachers and in this way to motivate their constant work at the service of the community, since it is a location far from the populated centers from which the teachers come.

The documentation that supports the training, the process of creating the CEBA in Iñapari and the CCNN Belgium, as well as the agreement with the Iberia Tahuamanu Technological Higher Education Institute are available to the audit team.

In addition, when each new worker starts being employed by the project proponent, the worker receives a handbook and a set of trainings in many topics including legal rights.

Employees in general, as well as those directly responsible for the implementation of project activities, receive ongoing training in the execution of their activities and the quality of their performance is evaluated by the Forestry Evaluation and Monitoring Area through the application of the guidelines defined in the Guide for Monitoring and Evaluation of Forestry Operations. In order to reduce turnover and thus prevent the knowledge developed from being lost, and in addition to ongoing training and the labor benefits that by law correspond to the collaborators, the project implements actions (a) for the retention and loyalty of personnel such as: promotions based on performance, a salary scale that recognizes labor and professional development, recreational spaces, productivity bonuses, complementary insurance for high-risk jobs, fully covered meals in the field and at the project facilities, as well as mechanisms to effectively communicate these benefits to the personnel.

2.3.14 Community Employment Opportunities (G3.10)

MADERACRE, thanks to the multiple activities it carries out within the framework of the sustainable management of the forest management unit, is an important source of jobs in the province and prioritizes the selection and hiring of residents of the surrounding communities, for which it has developed a Procedure for Recruitment, Selection and Incorporation of Personnel that includes the communication of the calls through the local radio stations of Iñapari (Agreement with Radio Integración and Radio Bon Suceso), it also publishes in the diffusion sources of the Municipality of Iñapari and Flyer actions or poster stickers are also carried out that are extended to other surrounding communities, thus giving preference to local hiring. In case the places are not covered, the call is extended at a regional or national level using other means or current communication mechanisms. All staff without exception have access to training and professional development opportunities within MADERACRE.

The Personnel Recruitment, Selection and Incorporation Procedure, as well as the material used in the recruitment and selection processes are available to the audit team.

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

Table 2. 10. Worker's Rights Legal Framework

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	This law promotes the massive access to employment through special programs and stimulates productive private sector investment. Furthermore, it improves levels of appropriateness in the country so substances, as well as combating unemployment and underemployment. Finally, ensures job security and incomes of workers, while respecting the constitutional rules of job security.
SUPREME DECREE 001-96-TR PRODUCTIVITY AND COMPETITIVENESS REGULATION	January 26th ,1996	This regulation develops and specifies the objectives and tenets of Legislative Decree 728.
LAW 29245 THIRD-PARTY SERVICES PROVIDER LAW	June 26th, 2008	This law regulates private third-party services. Also it regulates the cases from outsourcing, the requirements, rights and obligations, and penalties for companies that distort the use of this method for corporate engagement.
SUPREME DECREE 006-2008-TR THIRD-PARTY SERVICES PROVIDER REGULATIONS	September 12th, 2008	This regulation develops and specifies the objectives and tenets of Law 29245.
TUO SUPREME DECREE 001-97-TR SENIORITY BENEFITS LAW	March 1st, 1997	This law regulates compensation for length of service that has the quality of social benefit provision of contingencies that causes the cessation of work and promotion of workers and their families.
SUPREME DECREE 004-97-TR SENIORITY BENEFITS REGULATION	April 15th, 1997	This regulation develops and specifies the objectives and tenets of Supreme Decree 001-97-TR
LEGISLATIVE DECREE 713 VACATION LAW	November 8th, 1991	This law regulates the consolidation of the benefits provided by the existing labor laws.

Norm	Effective Date	Relevant articles demonstrating compatibility with the layout/implementation of the Project
SUPREME DECREE 012-92-TR VACATION REGULATION	December 3rd, 1992	This regulation develops and specifies the objectives and tenets of Legislative Decree 713.
LAW 27735 HALF/END-OF-YEAR HOLIDAY BONUSES LAW	May 8th, 2002	This law establishes the right of workers subject to the labor of the private sector to receive two bonuses in the year, among others.
SUPREME DECREE 005-2002-TR HALF/END-OF-YEAR HOLIDAY BONUSES REGULATION	July 4th, 2002	This regulation develops and specifies the objectives and tenets of Law 27735.
LEGISLATIVE DECREE 892 PROFIT SHARING LAW	November 8th, 1996	This standard regulates the right of workers to participate in the profits of companies that develop income-generating activities.
SUPREME DECREE 009-98-TR PROFIT SHARING REGULATION	November 6th, 1998	This regulation develops and specifies the objectives and tenets of Supreme Decree 009-98-TR.
LEGISLATIVE DECREE 688 SOCIAL BENEFITS CONSOLIDATION LAW	5th, 1991	This law regulates social benefits for workers.
SUPREME DECREE 024-2001-TR SOCIAL BENEFITS CONSOLIDATION REGULATION	July 22nd, 2001	This regulation develops and specifies the objectives and tenets of Legislative Decree 688.
SUPREME DECREE 007-2002-TR LAW ON DAYS OF WORK, HOURS AND OVERTIME	July 4th, 2002	This law regulates days of work, hours and overtime in benefit of workers and proceedings for Peruvian labor authority and registries in order to organize quality and quantity of work hours. Finally, it sets the maximum days and hours of work, including for night work, and regulate overtime.
SUPREME DECREE 008-2002-TR REGULATION ON DAYS OF WORK HOURS AND OVERTIME	July 4th, 2002	This regulation develops and specifies the objectives and tenets of Supreme Decree 008-2002-TR.
LEGISLATIVE DECREE 25593 (TUO SUPREME DECREE 010-2003-TR) LAW ON COLLECTIVE LABOR RELATIONS	October 5th, 2003	This law regulates union's freedom, i.e., all those relations through which workers can bargain collectively for better working conditions or otherwise.
SUPREME DECREE 011-92-TR REGULATION ON COLLECTIVE LABOR RELATIONS	October 14th, 1992	This regulation develops and specifies the objectives and tenets of Law on Collective Labor Relations.
LAW 28806 LABOR INSPECTION LAW	July 22nd, 2006	This law aims to regulate the labor inspection system, its composition, organization structure, powers and duties in accordance with Convention 81 of the International Labor Organization.
SUPREME DECREE 019-2006-TR REGULATION OF LABOR INSPECTION SYSTEM	September 1st, 2007	This regulation develops and specifies the objectives and tenets of Law 28806.

Norm	Effective Date	Relevant articles demonstrating compatibility with the layout/implementation of the Project
LAW 26636 PROCEDURAL LABOR LAW	June 21st, 1996	This law regulates all the judicial procedures that workers and employers need to do in order to access justice.
SUPREME DECREE 039-91-TR INTERNAL REGULATION	December 30th, 1991	Every employer who employs more than 100 workers is required to have internal work regulations. The regulation must contain the main provisions of the labor regulations in force and will be approved by the administrative labor authority upon presentation. Workers who consider that the regulation violates legal or conventional provisions in force at the workplace may take legal action.

As indicated in section 2.3.13, specific trainings related with workers' rights have been provided to company employees. In addition, a brochure has been given to each worker with more illustrative information.

Figure 2. 4. Company brochure about labor benefits

2.3.16 Occupational Safety Assessment (G3.12)

MADERACRE has developed an evaluation for the Identification of Hazards, Risk Assessment and Control Measures (IPER-C) to which workers are exposed daily in the performance of their tasks, has developed an industrial safety regulation also applicable to third parties and has provided training to collaborators in the identification of these risks and dangers, in addition to informing about the measures they must take to carry out a safe work.

MADERACRE equips all its collaborators with personal protective equipment depending on the type of tasks they perform, monitors their correct use and timely renewal. It also provides firefighting equipment for facilities and machinery in general.

We are concerned about the health of our collaborators, so we provide them with basic first aid training, they are provided with medicine cabinets and health professionals who are constantly present in the field operations camps.

MADERACRE has an environmental impact study and procedures for the responsible management of solid and polluting waste that its operations may generate.

The IPER-C and the supporting documents related to the work safety of the collaborators are available to the auditors.

2.4 Management Capacity

2.4.1 Required Technical Skills (G4.2)

The project team is successfully implementing another REDD+ project with similar characteristics since 2012. The project has been validated and verified by VCS and CCB Gold, which is a guarantee of proven abilities in terms of community and biodiversity. In addition, the project proponent is FSC certified. FSC certification is made up of a set of principles that include community participation and biodiversity assessment.

Regarding carbon measurement, MADERACRE has contracted PASKAY, which is a consulting company, made up of professionals who have participated in the design, implementation, monitoring, validation, and verification of many of the REDD+ projects that are carried out carried out in Peru: Castaña REDD project, Madre de Dios REDD project, Jaguar REDD project, among others.

Project activities are aimed at reducing deforestation and degradation in the project area through the implementation of an effective system of custody and surveillance of the project area, the implementation of reduced impact techniques in forest management, and strengthening the development mechanisms of the surrounding communities by promoting productive initiatives that are more environmentally friendly, ecological restoration, as well as the valorization of the standing forest, contributing in this aspect with local producers' organizations, communities, and institutions linked to biodiversity conservation, management of protected natural areas and the territories of indigenous peoples in voluntary isolation. In this sense, it is essential that the technical team is maintained over time and that it strengthens its technical capacities as

well as soft skills that allow them to lead, build and strengthen the implementation of project activities with a holistic and empathetic approach with the variety of actors present in the project's area of influence. The following is a list of the most important skills and abilities of the members of the technical team responsible for the implementation of activities, maintenance of community commitments, biodiversity assessment and monitoring of carbon metrics, deforestation, and degradation:

Position	Regional Management	Social Responsibility Coordinator	Head of Forestry Management	Head of Assessment of Monitoring
Responsible	Nelson Kroll	Miriam Chupan	Luis Naña	Cesar Carcheri
Goals the position	Ensure proper implementation of project activities. Develop annual plans and manage the necessary budgets to ensure compliance with the goals and objectives. Ensure the proper functioning of forestry operations with the objective of seeking environmental and financial efficiency. Ensure the proper relationship of the project with the communities and stakeholders in general.	Coordinate activities to contribute to the development of the communities in the area of influence of the project and maintain a transparent, timely and accurate dialogue with stakeholders. Monitoring of the social component indicators.	Ensure the correct implementation and execution of forest management plans. Development of ecological restoration, agroforestry and reforestation plans.	Ensure the correct implementation and execution of custody and surveillance plans. Monitoring of deforestation within the project and leakage. Monitoring of degradation generated by project activities. Monitoring of the biodiversity and environmental component of the project. Maintain project certificates (FSC, CCB and VCS).
Technical Capabilities and Soft Skills	Leadership skills	Empathy with different social groups	Personnel Management	
	Work in multidisciplinary teams			
	Forest management and forestry knowledge	Skills for the design, execution and monitoring of social projects.	Forest management and forestry knowledge	Skills for planning and execution of forest inventories
	Knowledge of ecological restoration, agroforestry and reforestation.	Skills for the prevention and management of social conflicts.	Knowledge of ecological restoration, agroforestry and reforestation.	Capabilities for planning and execution of environmental monitoring.
	Knowledge of guidelines for the design of forest management plans.	Knowledge and application of participatory rural appraisals.	Knowledge of guidelines for the design of forest management plans.	Knowledge of ecological restoration, agroforestry and reforestation.
	Knowledge and application of participatory rural appraisals.	Ability to establish interpersonal relationships with people from different cultures.	Knowledge of interpretation and management of remote sensing images.	Knowledge of interpretation and management of remote sensing images.
	Work skills in forest and rural environments	Work skills in forest and rural environments	Work skills in forest and rural environments	Work skills in forest and rural environments
	Feedback capability	Innovation capacity	Feedback capability	Feedback capability
	Interpersonal relations	Feedback capability	Interpersonal relations	Interpersonal relations
	Capacity for innovation	Proficient in Office, ArcGIS, intermediate GPS.	Innovation capacity	Innovation capacity
	Knowledge of forest certification		Knowledge of forest certification	Knowledge of forest certification
	Proficient in Office, ArcGIS, advanced GPS		Proficient in Office, ArcGIS, advanced GPS	Proficient in Office, ArcGIS, advanced GPS.

2.4.2 Management Team Experience (G4.2)

The project team is implementing another REDD+ project of similar characteristics since 2012 successfully. The project is VCS and CCB Gold validated and verified, which is a guarantee of proved skills in terms of community and biodiversity. In addition, the project proponent is FSC certified. FSC certification is composed by a set of principles that includes community engagement and biodiversity assessment.

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

Regarding carbon measurement and general REDD advisory, MADERACRE has hired PASKAY, who is a consultant company, composed by professionals who have been involved in the design, implementation, monitoring, validation and verification of many of the REDD+ projects taking place in Peru: Brazil nut REDD project, Madre de Dios REDD project, Jaguar REDD project, among others. PASKAY team was involved in designing jurisdictional programs for Peru government agencies and follows closely the REDD national and international process. PASKAY founder also is member of VCS JNR Stakeholders Group.

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

MADERACRE Financial Statements for current monitoring period (2017 to 2019) have been carried out and are available for audit team review during field visit. This information is considered sensitive so it is not included in the PD nor in the Monitoring Report, but it will be shared for review during audit visit.

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

MADERACRE has developed and implements an Ethics and Anti-Corruption Policy aimed at directors, managers, collaborators, suppliers and / or clients so that they apply ethical principles in their efforts and activities inside and outside the company.

Being the main economic activity of MADERACRE the forest management to obtain products derived from wood, we have signed the National Pact for Legal Wood, a commitment that involves and links state entities, NGOs and private companies, both producers and users of the wood. wood.

The Ethics and Anti-Corruption Policy and the proof of our participation in the pact for legal timber are available to the audit team.

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

In this section, it is included information regarding Financial Statements, commercial contracts and sales of the company, during the current monitoring period. This information will be available and shared with audit team during verification field visit.

2.5 Legal Status and Property Rights

2.5.1 Recognition of Property Rights (G5.1)

As described in the PD, the forest concession granted to MADERACRE has not any type of conflicts neither with other legal rights nor with consuetudinary rights of ancient traditional communities. The project area has been used for timber extraction for many decades, so no other rights are disputed over this area. It must be remembered that the concession was granted in 2002 over previous forest areas, in most of the cases already managed by the same companies/persons previously.

Statutory rights are conformed by titled areas for native communities (Belgica) and indigenous reserves for PIACI. Both areas are respected and supported by MADERACRE.

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

As already documented during FSC certification and other independent audits, there are no indigenous groups or traditional uses of forest resources that have been limited with the assignment of the forest concession. For this reason, no FPIC is needed.

2.5.3 Property Right Protection (G5.3)

As indicated in 2.5.1, the project area has been used for timber production purposes since decades and since 2003, through a concession contract valid for 40 years, renewable automatically every 5 years, so, at a practical way, permanent. Tahuamanu province has a large tradition of forestry activities with abundance of rich species.

2.5.4 Identification of Illegal Activity (G5.4)

MADERACRE is a company built on solid and transparent principles, where there is no room for illegal activities. MADERACRE ensures that the financing of its activities, including the development and implementation of the Tahuamanu Amazon REDD Project, comes from the same productive activity of the business and the financing of banking institutions.

2.5.5 Ongoing Disputes (G5.5)

No ongoing disputes are pending to be solved within the project area. To confirm that, the borders of the concession are clearly signaled with physical milestones, 39 at all, settled at approximate equivalent distances, that cover the 100% of the project boundaries.

2.5.6 National and Local Laws (G5.6)

MADERACRE sustainably manages a forest management unit under the protection of the forest concession contracts that it signed with the Peruvian State and through which it undertook to comply with the legislation on the matter, as well as to protect the forest heritage of the Nation. Thus, MADERACRE complies with the provisions of the Forestry Law No. 29763 and its regulations approved by Supreme Decree No. 018-2015-MINAGRI. The same ones that regulate the categorization of forests, access to forest resources, forestry and forest management, infractions in forestry matters, control, etc.

Access to forest resources is legally recognized as of the approval of the forest management plans, at the same time periodically the Supervisory Body of Forest Operations (OASINFOR) executes audits of our operations and annually the operation of MADERACRE is audited by independent certification body under the FSC MF and CoC Standards, a standard that contemplates in principle one compliance with national and international legislation on forest management.

The concession contracts, the resolutions that approve the management plans and the results of the OSINFOR inspections and the FSC certificates that validate compliance with the forest legislation are available to the audit team.

Table 2. 11. Relevant Legal Framework

Laws	Term	Content
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 rem, 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.
Law No. 28611 "General Environment Law"	October 15th, 2005	In Article VI of this Law, it stipulates that environmental management has as priority objectives to prevent, watch and avoid 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,

Laws	Term	Content
		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.
DL No. 1013 "Law for the Creation of the Ministry of the Environment"	May 15th, 2008	Through this standard, the Ministry of Environment is created, its scope of sectorial competence is established and its organic structure and its functions are regulated. The Ministry of Environment is the governing body of the executive branch of the environmental sector, which develops, directs, supervises and executes the National Environment Policy. The environmental sector includes the National Environmental Management System as a functional system, which integrates the National Environmental Impact Assessment System, the National Environmental Information System and the National System of Natural Areas Protected by the State. Among its functions is to develop and coordinate the national strategy against climate change and adaptation and mitigation measures, as well as supervise its implementation. It is also up to it to establish policies on environmental services, prepare the inventory and establish mechanisms to value, reward and maintain the provision of environmental services, as well as to promote financing, payment and supervision thereof. Finally, it is up to him to promote the creation of financing, payment and supervision mechanisms for environmental services.
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.

Laws	Term	Content
DS No. 006-2009-MINAM "Accurate denomination and proper functioning of the National Commission for Climate Change in accordance with Legislative Decree No. 1013"	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 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 9th, 2011	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 the area of 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 086-2003-PCM	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 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.

Laws	Term	Content
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.
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 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.

Laws	Term	Content
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.
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.
Law No. 29763 "Forestry and Wildlife Law" and its four Regulations	September 30th, 2015	Aims to promote the conservation, protection, increase and sustainable use of forest and wildlife 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.

Laws	Term	Content
		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 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.
DS No. 007-2013-MINAGRI "Regulation of Organization and	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 accordance with national policies, plans and objectives, constituting

Laws	Term	Content
Functions of the National Forest and Wildlife Service - SERFOR"		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.
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.

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
Sources of data:	Default value of 0.5 (VM0006)
Value applied:	0.50 (Tropical region; wood, tree d ≥ 10 cm)
Justification of choice of data or description of measurement methods and procedures applied:	According to the IPCC, the default value for tropical region is 0.49 Mg C (Mg DM)$^{-1}$ is applicable for wood, tree with d ≥ 10 cm all three tiers when remaining forest land, forest land or biomass carbon.
Purpose of data:	Calculation of baseline emissions, Calculation of project emissions; Determination of baseline scenario, Calculation of leakage
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).
Sources of data:	See Appendix 3.
Value applied:	-15.06
Comments:	-

Data/parameter [EA7]:	sc_2
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.
Sources of data:	See Appendix 3.
Value applied:	0.6683
Comments:	-

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 *ssee*. This can be estimated by multiplying the applicable fraction to the total amount of carbon in different harvested wood product category.
Sources 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 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
Sources of data:	Default values are 0.2, 0.1, 0.4 and 0.3 respectively for wood class *ssee*, 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 sawnwood, woodbased panel, paper/paper boards and industrial roundwood
Purpose of 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 *ssee*.
Sources of data:	See Table 19 (Winjum et al. 1998)
Value applied:	0.85 for being Sawnwood from a tropical forest region
Justification of choice of data or description of measurement methods and procedures applied:	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.
Purpose of data:	Calculation of project emissions
Comments:	Any new updates from locally generated results can be used instead of the default values

Data/parameter [EA11]:	$\rho_{wood,j}$

Data unit:	[Mg DM m^{-3}]
Description:	Average basic wood density of species or species group RR
Sources 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:	<table><tr><td>*Apuleia leiocarpa*</td><td>0.7</td></tr><tr><td>*Hymenaea oblongifolia*</td><td>0.62</td></tr><tr><td>*Swietenia macrophylla*</td><td>0.43</td></tr><tr><td>*Calycophyllum spruceanum*</td><td>0.74</td></tr><tr><td>*Myroxylon balsamum*</td><td>0.78</td></tr><tr><td>*Amburana cearensis*</td><td>0.43</td></tr><tr><td>*Manilkara bidentata*</td><td>0.87</td></tr><tr><td>*Dipteryx odorata*</td><td>0.93</td></tr><tr><td>*Tabebuia serratifolia*</td><td>0.92</td></tr></table>
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 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 [MN1]:	size$_{projectArea}$, size$_{leakageArea}$, size$_{ReferenceRegion}$, size$_{ReferenceForest}$.
Data unit	[ha]
Description	Size of project area, leakage area, reference region.
Source of data	Excel Monitoring report - Net carbon y VCU´s Tahuamanu

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	$Size_{projectArea}$	$Size_{leakageArea}$	$Size_{ReferenceRegion}$	$size_{ReferenceForest.}$
	171,584.08	100,554.47	341,552.03	286,356.23

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 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 *ii* within the project area, excluding ANR and harvest areas, under the project scenario during year *ss*. [ha yr^{-1}]. Section 8.2.3
Source of data	Remote sensing analysis - Excel Monitoring report - Net carbon y VCU´s Tahuamanu
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	((Project area – Area of felling plots) / Project area * $D_{projectAreaprojectScenario.DF}^{(t)}$) $D_{projectAreaprojectScenario.DF}^{(t)}$ is equal to "0" for each year.

Year	Area of felling plots	$\Delta area_{projectAreaEAH,projectScenario}(t, i)$
2017	11,848.94	0.00
2018	11,795.41	0.00
2019	12,090.06	0.00

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 ii within the project area, excluding the ANR area, and harvest areas, under the baseline scenario for year ss.
Source of data	Land-use change for Geobosques (MINAM) - Excel Monitoring report - Net carbon y VCU´s Tahuamanu
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	((Project area – Area of felling plots) / Project area * $D_{projectAreabaselineScenario.DF}^{(t)}$) $D_{projectAreabaselineScenario.DF}^{(t}$ is equal to "0" for each year.

Year	Area of felling plots	$\Delta area_{projectAreaEAH,BaselineScenario}(t, i)$
2017	11,848.94	1,948.52
2018	11,795.41	2,033.97
2019	12,090.06	2,455.29

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]:	$\Delta area_{projectAreaWithANR,baselineScenario}(t, i)$
Data unit	[ha yr^{-1}]
Description	Hectares undergoing transition i within the leakage area under the project scenario for year t
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	-
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 ii within the leakage area under the project scenario for year ss
Source of data	Remote sensing analysis - Excel Monitoring report - Net carbon y VCU´s Tahuamanu
Description of measurement methods and procedures to be applied	Coverage and demarcations will be monitored and created through the use of satellite imagery.

Frequency of monitoring/recording	At least once before verification
Value monitored	

Year	$D_{leakageArea,projectScenario}(t,i)$	$\Delta area_{leakageArea,projectScenario}(t, i)$
2017	1,285.83	1,285.83
2018	647.73	647.73
2019	454.31	454.31

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]:	$\Delta area_{leakageArea,baselineScenario}(t, i)$
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) - Excel Monitoring report - Net carbon y VCU´s Tahuamanu
Description of measurement methods and procedures to be applied	Coverage and demarcations will be monitored and created through the use of 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	$D_{leakageArea,baselineScenario}(t,i)$

Year	$D_{leakageArea,baselineScenario}(t,i)$	$\Delta area_{leakageArea,baselineScenario}(t, i)$
2017	1,224.27	1,224.27
2018	1,379.70	1,379.70
2019	1,548.00	1,548.00

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]:	$\Delta area_{historical}$ (CS$_1$→CS$_2$, t$_1$ → 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) - Excel Monitoring report - Net carbon y VCU´s Tahuamanu
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	In this case, as indicated by the methodological deviation, all deforestation is considered to be caused by the pasture driver. Only one representative class and only one stratum.

	2017-2018	2018-2019	2019-2020
Project area	0.00	0.00	0.00
Reference region	3,486.94	3,929.28	4,408.48
Leakage belt	1,285.83	647.73	454.31

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	-

Data/parameter [MN9]:	area$_{historical}$ (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) - Excel Monitoring report - Net carbon y VCU´s Tahuamanu
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	In this case, as indicated by the methodological deviation, all deforestation is considered to be caused by the pasture driver. Only one representative class and only one stratum.

	2017-2018	2018-2019	2019-2020
Project area	0.00	0.00	0.00
Reference region	3,486.94	3,929.28	4,408.48
Leakage belt	1,285.83	647.73	454.31

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	No comment.

Data/parameter [MN10]:	Area$_{biomassloss}$(i)
Data unit	[ha yr^{-1}]
Description	Total annual area of LULC class [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	-
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	-
Frequency of monitoring/recording	At least once before verification
Value monitored	N/A
QA/QC procedures to be applied	-
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	-
Frequency of monitoring/recording	At least once before verification
Value monitored	There is no value to report
QA/QC procedures to be applied	
Comments	Not applicability because ANR not included in project activity

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

Data/parameter [MN14]:	Area harvest(t, i)
Data unit	[ha]
Description	Area of forest in harvest stratum ii that is harvested at time ss. - Excel Monitoring report - Net carbon y VCU´s Tahuamanu
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	Area $_{harvest}$(t, i)
	11,551.45
	23,346.86
	12,090.06
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 - Excel Monitoring report - Net carbon y VCU´s Tahuamanu
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	
	Area $_{harvest}$(t, i)
	11,551.45
	23,346.86
	12,090.06
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 ii within the harvest areas under the baseline scenario during year ss.
Source of data	Own Forest Management Plan - Excel Monitoring report - Net carbon y VCU´s Tahuamanu
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) * $D_{projectArea,baselineScenario,DF}^{(t,i)}$ <table><tr><td>$Area_{projectAreawithHarvest,BaselineScenario}(t, i)$</td></tr><tr><td>140.65</td></tr><tr><td>320.34</td></tr><tr><td>186.12</td></tr></table>
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	Not applicable
Comments	No comment.

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 - Excel Monitoring report - Net carbon y VCU´s Tahuamanu
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	<table><thead><tr><th>Year</th><th>BetaReg$_{DF}$$^{(t)}$</th></tr></thead><tbody><tr><td>2017</td><td>3,486.94</td></tr><tr><td>2018</td><td>3,929.28</td></tr><tr><td>2019</td><td>4,408.48</td></tr><tr><td>2020</td><td>4,925.62</td></tr><tr><td>2021</td><td>5,480.50</td></tr><tr><td>2022</td><td>6,071.66</td></tr><tr><td>2023</td><td>6,696.27</td></tr><tr><td>2024</td><td>7,350.02</td></tr><tr><td>2025</td><td>8,027.05</td></tr><tr><td>2026</td><td>8,719.98</td></tr></tbody></table>
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	-
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)
Data unit	$[m^3 \, yr^{-1}]$
Description	Annually extracted volume of harvested timber round-wood for commercial on-sale under the baseline scenario during harvest *h* 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 similar to 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 "Monitoring report – Net carbon y VCU´S MADERACRE" 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	Σ ((π * 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 See Workbook "Monitoring report – Net carbon y VCU´S MADERACRE" 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	Σ ((π * 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 "Monitoring report – Net carbon y VCU´S MADERACRE" 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 *cc* at time *ss* 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	-
Frequency of monitoring/recording	At least once before baseline update.
Value monitored	There is no value to report
QA/QC procedures to be applied	-
Comments	Not applicable.

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	-
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	
Comments	Not applicable.

Data/parameter [MN36]:	effectiveness(a, d)
Data unit	[-]
Description	Effectiveness of every project activity a in decreasing any driver of deforestation d relative to that driver's contribution to deforestation and forest degradation,
Source of data	Relevant academic literature or documented expert opinion. - Excel Monitoring report – Net carbon y VCU´s Tahuamanu
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 * $(\frac{\sum income\ through\ alternative\ livelihood}{\sum Total\ value\ of\ forest\ products})$ [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: 0.312
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 CO2 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	-
Frequency of monitoring/recording	At least once before verification
Value applied	There is no value to report
QA/QC procedures to be applied	-
Comments	Not applicable.

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 $OM_{plant}(i)$ and $OM_{soil}(i)$
Purpose of data	Calculation of baseline emissions, Calculation of project emissions; Determination of baseline scenario
Comments	No comment.

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><td>Driver</td><td>$proportion_{DF}(i)$</td><td>$proportion_{DG}(i)$</td></tr><tr><td>1. Conversion of forest land to cropland</td><td>100%</td><td>0%</td></tr></table>
Purpose of data	Calculation of baseline emissions, Calculation of project emissions; Determination of baseline scenario
Comments	-

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 - Excel Monitoring report – Net carbon y VCU´s Tahuamanu
Description of measurement methods and procedures to be applied	For the forest class: _(table below)_ For the Pasture class:
Frequency of monitoring/recording	At least once before verification
Value monitored	Forest: 186.34 Pasture: 33.24
Purpose of data	Calculation of baseline emissions, Calculation of project emissions; Determination of baseline scenario
Comments	No comment.

Table within "Description of measurement methods":

Equation or Factor	Application in Peru	IPCC climatic zone	Reference
Above-ground biomass in trees (AGB.t)			
ρ*Exp(-1.499+2.148*ln(**dbh**)+0.207*ln(**dbh**)^2-0.0281*ln(**dbh**)^3)	*Selva Baja*	Moist forest	Chave *et al.*, 2005
Below-ground biomass in trees (BGB.t)			
BGB.t=0.489*AGB.t $^{0.890}$	All		Mokany *et al.*,2006

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= ρ*Exp(-1.499+2.148*Ln(dap)+0.207*Ln(dap)^2–0.0281*Ln(dap)^3.

	and to estimate necromasa of standing dead wood Vol = (π2∑(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 "Monitoring report – Net carbon y VCU´S Tahuamanu" 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	0.011
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	$$CE_{inventory}(i) = \frac{\sqrt{\sum_o HWCI\left(OM_o(i)\right)^2}}{\sum_o OM_o(i)}$$
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	-
Description of measurement methods and procedures to be applied	-
Frequency of monitoring/recording	-
Value monitored	There is no value to report
QA/QC procedures to be applied	-
Comments	Not applicable.

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	1.00
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	-
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)

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 Urochloa decumbens y Paspalum notatum (Poaceae) en el sureste de México[14] - Excel Monitoring report – Net carbon y VCU´s Tahuamanu
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

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[14] https://www.scielo.sa.cr/pdf/rbt/v68n2/0034-7744-rbt-68-02-440.pdf

Calculation method	$$u_{transition}(CS1 \rightarrow CS2) = \begin{cases} 1 & \text{if } CE_{transition}(CS1 \rightarrow CS2) \leq 0.15, \\ 1 - CE_{transition}(CS1 \rightarrow CS2) & \text{if } 0.15 < CE_{transition}(CS1 \rightarrow CS2) < 1, \\ 0 & \text{if } CE_{transition}(CS1 \rightarrow CS2) \geq 1 \end{cases} \quad \text{[EQ34]}$$
Comments	No comment.

3.1.3 Monitoring Plan

The main objective of the Monitoring Plan is the collection of data that allow the verification of deforestation and degradation within the project area and its leakage belt over time, periodically updating the emission estimates as well as the generation of information. sufficient and timely to measure the results of the implementation of the activities defined to achieve the objectives of the Tahuamanu Amazon REDD Project and from there make the necessary adjustments in the strategies or activities as part of the adaptive management being implemented.

Figure 3. 1. Sources of information by type

ORGANIZATIONAL STRUCTURE

The Project is implemented by MADERACRE SAC, a company with almost two decades of experience in the sustainable management of natural tropical forests in order to obtain ecosystem benefits from the sustainable management of the landscape. MADERACRE SAC has a trained and experienced technical team for the implementation of the project, capacities that also extend to monitoring tasks.

The development of the Monitoring Plan is in charge of a multidisciplinary team, led by an economist, a forestry specialist and a social specialist, allowing a comprehensive approach to the different components of the plan. Its implementation is in charge of the head of the Monitoring and Evaluation Area (M&E), who must articulate it with the technical field staff, the latter is the one who performs the measurements on the

ground and corroborates the information in the office. It has specialized consultants with extensive experience who provide support in the calculations of emissions, as well as support in GIS for the analysis and interpretation of satellite images necessary for the calculation of deforestation.

The information flow of the monitoring system and the organizational structure of the project monitoring system are detailed below:

Figure 3. 2. Organizational Structure

INFORMATION MANAGEMENT: COLLECTION, TREATMENT and REPORTS

The project is based on the premise of "Adaptive Management", in this sense all intervention in the forest is based on previous information collected in the field as a knowledge base. Based on this knowledge, the Management Plans, 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 the project activities. The knowledge that is generated allows to validate or adapt the system, and if necessary, make changes in the management tools or in the project activities.

The information collected in the field by the technical staff is entered, reviewed and systematized by the Head of Monitoring and Evaluation for the environmental component and by the Social Responsibility Coordinator (SR) for the community component, both at the end of the period (annually) They present the corresponding monitoring reports to the forestry specialist and social specialist for their review and validation. The relevant information is incorporated in the process of reviewing the management tools and in the preparation of the new Operational Plan for the project.

The information flow in 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 a file called "TAH REDD PROJECT" located on the MADERACRE server, which is managed by the Specialist. Forest. 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.

ANALYSIS OF DEFORESTATION AND DEGRADATION

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 leak 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 taken into account 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. Degradation monitoring

The Project has a Custody System in the process of implementation (checkpoints, defined boundaries, periodic patrolling, etc.). In this sense, it is expected that there will be no degradation due to wood extraction due to illegal logging or the production of firewood or charcoal. If this occurs within the concessions, this degradation will be discounted in the calculations.

A Participatory Rural Assessment (PRA) will be conducted to determine if degradation occurs. In this sense, the following steps will be followed:

a) Degradation due to illegal logging:

The PRA will take place every 2 years. If the results indicate that the project area does not have pressure for this type of degradation, then it will be assumed that: $\Delta Cp, Deg, i, t = 0$.

If the PRA results indicate that there is a potential for degradation, then you should:

- Obtain a "penetration distance" in the PRA (distance that degradation agents can enter from the closest access points).

- Identify the most important access points to the vulnerable area.

- From these points, the penetration distances are projected and a Buffer Area is created with a width equal to the length.

- Transects will be established to assess the buffer zone. The evaluated area should not be less than 1% of the buffer area.

- If no stumps (harvested trees) are found, it is assumed that $\Delta Cp, Deg, i, t = 0$ and the evaluation is repeated every 2 years.

- If stumps are found, a systematic assessment is carried out. For this, the plots are systematically distributed, with the area to be evaluated being ≥ 3% of the buffer area.

- Take into account the diameter of the stumps, which will be assumed as their DBH. If they are very large (for example, due to buttresses), then the stump species is identified and standing trees of the same species are located. Subsequently, its DBH and stump diameter are measured and a DBH / stump diameter ratio is calculated. With this relationship, the DBH of the stump diameter of the cleared individuals found is estimated.

- With the DAP data, the carbon stock of the harvested trees is calculated, using the allometric equation that was used to estimate the carbon stocks of the trees in the baseline (Chavé Equation).

- All stocks will be assumed to be lost to the atmosphere.

- This evaluation must be repeated every 5 years.

b) Degradation by fire:

- Burned areas should be measured in the field using GPS.

- For the calculation of its emissions, the Module E-BB of the approved VCS REDD Methodology Modules will be followed.

2.3 Monitoring of areas with higher carbon stocks

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

2.4 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. In the event that 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. In the event that 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.

ANALYSIS AND INTERPRETATION OF SATELLITE IMAGES

Analysis of deforestation and source of land use change should be done through the use of satellite imagery 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 located 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 taking into account positive changes in the forest (natural regeneration).

QA

Review processes will be carried out in order to ensure the quality of the project information, minimizing the risks of error, thus obtaining reliable data as the basis of a solid monitoring system. It includes the following steps:

1. Training

Training will be provided to staff in general in the different roles that they must play in the framework of the project, activities and the methodologies to be followed, as well as the care they must take in those critical points of information management in its different stages: collection of field data, fingering, processing.

2. On-site verification

It basically consists of the monitoring in the field that the Head of E&M must carry out on the work of the technical team, taking care at all times that the procedures established in the methodological guidelines of the guides and manuals are implemented and that have been disseminated to the staff in the process. training.

An error in the implementation of the procedures must be corrected in the field during the execution of the samplings or evaluations.

3. Review of data collected before and after digitization

- Field data collection: form header review, complete fields, data consistency (values within parameters).

- Fingering: once 100% of the information contained in the form has been entered into the database, an indication of "fingering" must be entered in the corresponding form and once the consistency of the fingering has been checked, it must be entered an indicative of "revised".

- Processing: is the responsibility of the Head of E&M and the Social Responsibility Coordinator. They should take into consideration the methodological guidelines defined in the monitoring guides or manuals developed by the project.

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

4. Review of monitoring reports before publication.

The monitoring reports should be reviewed before publication to confirm that the calculations, analysis and conclusions are correct and if they have been obtained following the corresponding guidelines. This work is in charge of the Forestry Specialist.

If there are non-conformities during the internal or external audit processes, the data should be reviewed and the non-conformities addressed.

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

The project will execute Citizen Participation Workshops (at the start and close of logging operations) twice per year to spread the main results and conclusions of their multidimensional monitoring system, complementing other methods to make publicly available those results as the webpage of the company.

Here, the main conclusions of the monitoring systems of previous year and the expected activities for next year will be shared.

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 continue to be respected.

The emissions of the project's reference activities are found in the following table. These baseline emissions are derived from section 3.2 of the PD.

Table 3. 1. Reference emissions in the project area

Year	L (1): Annual carbon loss by conversion of forest lands in pastures [Mg.C/year]	L (1): Annual CO_2 loss by conversion of forest lands in pastures [Mg.CO_2/year]
2017	319,857.25	1,172,809.93
2018	360,450.86	1,321,653.17
2019	404,406.61	1,482,824.22

According to the second deviation of section 3.1.6 of the PD, conservatively there is only change of use of forest land to pasture.

3.2.2   Project Emissions

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

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, $\Delta areaprojectAreaEAH,(t,i)$, 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 found the following deforestation (ha / year) in the project area.

Table 3. 2. Deforestation rate in the project scenario

Year	Hectares in transition ii within the project area, excluding ANR and harvest areas, in the project scenario during year t (ha/year)
2017	0.00
2018	0.00
2019	0.00

No transition from forest land to pasture was identified within the project area for the monitoring period.

Monitoring of Long-Term Average Carbon Stock in Harvest Areas

The average density of long-term carbon stocks (*LTAC$_{Harvest}$*) in the collection areas have been updated in the attached spreadsheets "Monitoring report - Net carbon and VCU's MADERACRE".

The procedure to estimate $C_{\text{harvest}}(i)$ and $u_{\text{inventory,harvest}}(i)$, is as described in Section 8.1.4.4 but the estimates are based on only the plots located in harvest areas.

Determining Long-Term Average Carbon Stock

$$LTAC_{harvest} = \frac{\sum_{t=0}^{T} \sum_{i=1}^{nrStrata} C_{harvest}(t,i) \cdot u_{inventory,harvest}(i)}{T} \qquad [\text{EQ79}]$$

where:

$LTAC_{harvest}$	=	Long-term average Carbon stock density contained in harvested areas. [tCO$_{2e}$ ha-1]
$nrStrata$	=	Number of forest strata. [-]
$C_{harvest}(t, i)$	=	Biomass carbon stock density at time t in stratum i in harvested areas. [tCO$_2$ ha^{-1}]
$u_{inventory,harvest}(i)$	=	Discounting factor for the uncertainty in biomass estimation in harvested areas in stratum i in harvest areas. The most recent $u_{inventory,harvest}(t, i)$ value must for used for discounting the estimate for future years. [-]
T	=	Minimal time period for estimating long term average. [yr].

T: 40 yr

To estimate the u$_{inventory, harvest}$(i), we need to develop EQ (17 – 22):

$$OM_o(i) = average\left(OM_{o,plot\text{-}wise}(i,p)\right) \tag{EQ17}$$

$$stdev\left(OM_o(i)\right) = stdev\left(OM_{o,plot\text{-}wise}(i,p)\right) \tag{EQ18}$$

$$stderr\left(OM_o(i)\right) = \frac{stdev\left(OM_o(i)\right)}{\sqrt{n_i}} \tag{EQ19}$$

$$HCWI\left(OM_o(i)\right) = t_{0.95,n-1} \cdot stderr\left(OM_o(i)\right) \tag{EQ20}$$

$$CE_{inventory}(i) = \frac{\sqrt{\sum_o HWCI\left(OM_o(i)\right)^2}}{\sum_o OM_o(i)} \tag{EQ21}$$

$$u_{inventory}(i) = \begin{cases} 1 & \text{if } CE(i) \le 0.15, \\ 1 - CE(i) & \text{if } 0.15 < CE_{inventory}(i) < 1, \\ 0 & \text{if } CE(i) \ge 1 \end{cases} \tag{EQ22}$$

Table 3. 3. Discounting factors

CE transition	U transition	CE inventory	U inventory
0.014	1	0.011096182	1

According to EQ21 $CE_{inventory}(i)$ is equal to 0.014, and according to EQ22, $u_{inventory,harvest}(i)$ is equal to 1.00.

To find the $C_{harvest}(t,i)$, we need to determine the following info:

- Average annual carbon density in harvested timber, equal to 0.32 tCO$_2$/ha

According to IPCC (2006), the net growth of aboveground biomass in tropical rainforest in South America for forests ≥ 20 years old is 3.1 t/ha/year, respectively. This growth, in tCO$_2$ is 5.68. Calculations are more detailed in "Monitoring report – Net carbon y VCU´s – MADERACRE, sheet "10".

Table 3. 4. Long-term average carbon stock density contained in harvested areas

$LTAC_{harvest}$: Long term average density in harvest zones. [tCO2e/ha]	Year	$C_{harvest}(t,i)$: Carbon density in harvest zone by time and harvest area
729.64	2017	683.01
	2018	687.04
	2019	687.30

Calculate emissions or sinks on land on which harvesting activities are implemented

$$\Delta C_{areaWithHarvest}(t) = \qquad\qquad\qquad\qquad\qquad\qquad\qquad \text{[EQ80]}$$

$$\sum_{i=1}^{nrStrata} area_{projectAreaWithHarvest,projectScenario}(t,i) \cdot \left(\frac{C_{harvest}(t_2,i) - C_{harvest}(t_1,i)}{t_2 - t_1} \right)$$

$$\cdot\, u_{inventory,harvest}(i)$$

$$-\sum_{i=1}^{nrFNFtransitions} \sum_{tt=1}^{t} \left(\begin{array}{c} u_{classification} \cdot u_{transition}(i) \\ \cdot \Delta area_{projectAreaWithHarvet,baselineScenario}(t,i) \\ \cdot \left(EF_{AGL}(i) + EF_{AGD}(i, t-tt) + EF_{BG}(i, t-tt) + EF_{SOM}(i, t-tt) \right) \end{array} \right)$$

$$-\sum_{i=1}^{nrStrataTransitions} \sum_{tt=1}^{t} \left(\begin{array}{c} u_{stratification} \cdot u_{transition}(i) \\ \cdot \Delta area_{projectAreaWitHarvest,baselineScenario}(t,i) \\ \cdot \left(EF_{AGL}(i) + EF_{AGD}(i, t-tt) + EF_{BG}(i, t-tt) + EF_{SOM}(i, t-tt) \right) \end{array} \right),$$

Table 3. 5. Density of carbon stocks in harvested areas

$\Delta C_{areaWithHarvest}$: Density of carbon stocks in harvested areas in stratum ii in year t. [tCO2/ha]
121,653.37
177,466.49
143,637.76

3.2.3   Leakage

Map 3. 1. Delimitation and area of the leakage belt

The Leakage area has not changed since the delimitation performed in the PD. The calculation was carried out using the annual deforestation rate (2017 – 2019) provided by GEOBOSQUES.

Summarizing:

Table 3. 6. Deforestation rate in Leakage area

Year	$\Delta area_{leakageArea,projectScenario}^{(i)}$ Hectares in transition ii within the leakage area in the project scenario (monitoring period) during year t. [ha yr-1]
2017	1,285.83
2018	647.73
2019	454.31

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. 7. Sources of emissions

[EQ105]: Net Emission Reductions(NERs)	=
ΔGHG from avoided deforestation excluding ANR and harvest areas	01 +
+ ΔGHG from deforestation due to leakage	02 +
+ ΔGHG from avoided degradation	03 +
+ ΔGHG from degradation due to leakage	04 +
+ΔGHG from leakage by unconstrained geographic drivers	05 +
+ ΔGHG from assisted natural regeneration	06 +
+ ΔGHG from changes in long-lived wood products	07 +
+ ΔGHG from improved cook stoves	08 +
+ ΔGHG from other and secondary sources	09 +
+ΔGHG from avoided deforestation from areas under harvest	10

ΔGHG from avoided deforestation:

$$❶ = \sum_{i=1}^{nrFNFtransitions} \sum_{tt=1}^{t} u_{classification} \cdot u_{transition}(i)$$

$$\cdot \begin{pmatrix} +\Delta area_{projectAreaEAH,projectScenario}(t,i) \\ -\Delta area_{projectAreaEAH,baselineScenario}(t,i) \end{pmatrix}$$

$$\cdot \left(EF_{AGL}(i) + EF_{AGD}(i,t-tt) + EF_{BG}(i,t-tt) + EF_{SOM}(i,t-tt) \right)$$

[EQ107]

Uclassification: 1

Utransition: 1

Table 3. 8. ΔGHG from avoided deforestation excluding ANR and harvest areas

Year	1	$\Delta area_{projectAreaEAH,projectScenario}(i)$ Hectares in transition within project zone, excluding ANR and harvest areas, under project scenario during year t	$\Delta area_{projectAreaEAH,baselineScenario}(i)$ Hectares in transition within project zone, excluding ANR and harvest areas, under baseline scenario during year t
2017	1,041,457.71	0.00	1,948.52
2018	1,087,126.85	0.00	2,033.97
2019	1,312,319.37	0.00	2,455.29

ΔGHG from deforestation due to leakage:

$$❷ = \sum_{i=1}^{nrFNFtransitions} \sum_{tt=1}^{t} u_{classification} \cdot u_{transition}(i)$$

$$\cdot \begin{pmatrix} +\Delta area_{leakageArea,projectScenario}(t,i) \\ -\Delta area_{leakageArea,baselineScenario}(t,i) \end{pmatrix}$$

$$\cdot \left(EF_{AGL}(i) + EF_{AGD}(i,t-tt) + EF_{BG}(i,t-tt) + EF_{SOM}(i,t-tt) \right)$$

[EQ108]

Uclassification: 1

Utransition: 1

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

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

In both cases, transition area is 100% of deforestation rate in the leakage area in both scenarios.

Table 3. 9. ΔGHG from deforestation due to leakage

Year	2	$\Delta area_{leakageArea,projectScenario,DF}^{(t)}$	$\Delta area_{leakageArea,baselineScenario,DF}^{(t)}$
2017	-32,905.35	1,285.83	1,224.27
2018	0.00	647.73	1,379.70
2019	0.00	454.31	1,548.00

ΔGHG from avoided degradation:

$$\mathbf{❸} = \sum_{i=1}^{nrStrataTransitions} \sum_{tt=1}^{t} u_{stratification} \cdot u_{transition}(i) \quad \text{[EQ109]}$$

$$\cdot \begin{pmatrix} +\Delta area_{projectAreaEAH,projectScenario}(t,i) \\ -\Delta area_{projectAreaEAH,baselineScenario}(t,i) \end{pmatrix}$$

$$\cdot \left(EF_{AGL}(i) + EF_{AGD}(i, t-tt) + EF_{BG}(i, t-tt) + EF_{SOM}(i, t-tt) \right)$$

It is equivalent to 0.00.

ΔGHG from degradation due to leakage: [EQ110]

$$\mathbf{❹} = \sum_{i=1}^{nrStrataTransitions} \sum_{tt=1}^{t} u_{stratification} \cdot u_{transition}(i)$$

$$\cdot \begin{pmatrix} +\Delta area_{leakageArea,projectScenario}(t,i) \\ -\Delta area_{leakageArea,baselineScenario}(t,i) \end{pmatrix}$$

$$\cdot \left(EF_{AGL}(i) + EF_{AGD}(i, t-tt) + EF_{BG}(i, t-tt) + EF_{SOM}(i, t-tt) \right)$$

It is equivalent to 0.00.

ΔGHG from leakage by unconstrained geographic drivers:

$$\text{❺} = -GHG_{otherLeakageSources}(t) - GHG_{marketLeakage}(t) \qquad \text{[EQ111]}$$

It is equivalent to 0.00.

ΔGHG from assisted natural regeneration:

$$\text{❻} = C_{ANR}(t) \qquad \text{[EQ112]}$$

It equals to 0.00.

ΔGHG from changes in long-lived wood products:

$$\text{❼} = \frac{44}{12} \cdot \left(C_{LWP,project}(t) - C_{LWP,baseline}(t) \right) \qquad \text{[EQ113]}$$

$C_{LWP,project}(t)$: Carbon stock in long-lived wood products under the baseline scenario during year t [Mg C]

$C_{LWP,baseline}(t)$: Carbon stock in long-lived wood products under the project scenario during year t [Mg C]

$$C_{LWP,project}(t) = \sum_{s,wp,ppb,oir}^{ty} C_{HWP,project}(ty,t)$$
$$\cdot \left(1 - wwf(ty)\right)\left(1 - slp(ty)\right)\left(1 - fo(ty)\right) \qquad \text{[EQ103]}$$
$$C_{LWP,baseline}(t) = \sum_{s,wp,ppb,oir}^{ty} C_{HWP,baseline}(ty,t)$$
$$\cdot \left(1 - wwf(ty)\right)\left(1 - slp(ty)\right)\left(1 - fo(ty)\right)$$

wwf (ty): Fraction of carbon in harvested wood products that is emitted immediately because of mill inefficiency for wood class, 24%.

slp (ty): Proportion of short-lived products, 0.2.

fo (ty): Fraction of carbon that will be emitted to the atmosphere between 5 and 100 years of harvest for wood class, 0.85.

$$C_{HWP,project}(ty,t)$$

$$= \sum_{h=1}^{H_{PS}} \sum_{j=1}^{S_{PS}} \left(\left(DT_{project}(h,j,ty,t) + CT_{project}(h,j,ty,t) \right) \right. \qquad \text{[EQ102]}$$
$$\left. \cdot \rho_{wood,J} \cdot CF \right)$$

$$C_{HWP,baseline}(ty,t)$$

$$= \sum_{h=1}^{H_{PS}} \sum_{j=1}^{S_{PS}} \left(\left(DT_{baseline}(h,j,ty,t) + CT_{baseline}(h,j,ty,t) \right) \right.$$
$$\left. \cdot \rho_{wood,J} \cdot CF \right)$$

where:

$C_{HWP,project}(ty,t)$ and $C_{HWP,baseline}(ty,t)$	=	Total carbon stock in long-lived wood products within the project boundary for class ty during time t of wood product ty in the project and baseline scenario, respectively [Mg C]
$DT_{project}(h,j,ty,t)$, $DT_{baseline}(h,j,ty,t)$, $CT_{project}(h,j,ty,t)$ $CT_{baseline}(h,j,ty,t)$	=	The volume of timber extracted from within the project boundary during harvest h by species j and wood product class ty during year t in the project and baseline scenario, respectively. DT = domestic timber; CT = commercial timber [m³].
$\rho_{wood,j}$	=	Wood density of harvested species or species group j [Mg DM m⁻³]
h	=	1, 2, 3, ..., H_{PS} number of harvests [-]
j	=	1, 2, 3, ..., S_{PS} harvested tree species [-]
ty	=	Wood product class – defined here as sawn wood (sw), wood-based panels (wp), other industrial round wood (oir), and paper and paper board (ppb).
CF	=	Carbon fraction of wood [Mg C (Mg DM)⁻¹] (default value = 0.5)

$DT_{project}$ y $DT_{baseline}$ are equal to 0.00.

For CT$_{baseline,}$ and CTproject, the values were provided by the consolidated MADERACRE, according to the extractions that it has been carrying out from 2017 to 2019, obtaining the volume of wood extracted annually from each species harvested in m3 / year.

Then both CHWPproject and CHWPbaseline were calculated by multiplying the basic density of each species by the harvested volume and the carbon factor, this for each year in the same way, likewise the carbon in long-lived wood products is found in the project scenario multiplying the CHWpproject or CHWPbaseline by the fraction of carbon that will be emitted into the atmosphere (fo), by the proportion of short-lived products (slp), and by the applicable fraction (wwf) which is 24%. And finally, there is the net change in carbon stocks in long-lived wood products for each year, subtracting the carbon in long-life wood products from the project scenario minus the reference scenario.

All these calculations can be seen in the excel calculations of emissions and net removals.

Table 3. 10. Carbon content in harvested wood products within project area (2017)

$C_{HWP,project}(ty,t)$ Total carbon content in harvested wood products within project boundaries . [Mg C]	$CT_{Project}$: Volume of annual harvested wood, round wood for commercial sales [m3/year]	Scientific Name	Basic density per specie, using Table GPG-LULUCF 3A.1.9. [Mg.dm/m3]
892.27	2,549.34	*Apuleia leiocarpa*	0.7
1,504.76	4,854.06	*Hymenaea oblongifolia*	0.62
17.76	82.59	*Swietenia macrophylla*	0.43
61.30	165.67	*Calycophyllum spruceanum*	0.74
1,711.81	4,389.26	*Myroxylon balsamum*	0.78
815.95	3,795.11	*Amburana cearensis*	0.43
734.41	1,688.30	*Manilkara bidentata*	0.87
12,823.89	27,578.27	*Dipteryx odorata*	0.93
82.69	179.76	*Tabebuia serratifolia*	0.92

Table 3. 11. Net variation of existences in 2017

Net variations of carbon content in long-term wood products during year t [Mg CO2]	$C_{LWP,project}(t)$ Carbon in long-term wood products within project scenario. [Mg C]
0.00	81.38
0.00	137.23
0.00	1.62
0.00	5.59
0.00	156.12

Net variations of carbon content in long-term wood products during year t [Mg CO2]	$C_{LWP,project}(t)$ Carbon in long-term wood products within project scenario. [Mg C]
0.00	74.41
0.00	66.98
0.00	1,169.54
0.00	7.54
0.00	1,700.41

The total net variation of the carbon content in wood products in the long term in 2017 -2019 is found in the following table

Table 3. 12. ΔGHG from changes in long-lived wood products tCO2

Year	7
2017	0.00
2018	0.00
2019	0.00

ΔGHG from GHG Emissions Reduction from Cookstove and Fuel Efficiency (CFE):

$$❽ = ER_{CFE}(t) \tag{EQ114}$$

It is 0.00.

ΔGHG from other and secondary sources:

$$❾ = -GHG_{fireBreaks}(t) - GHG_{sources,leakagePrevention}(t) - GHG_{sources,ANR}(t) \tag{EQ115}$$

It is 0.00.

ΔGHG from avoided deforestation and degradation from areas under harvest   [EQ116]

In case:

$$\sum_{i}^{t} \Delta C_{areaWithHarvest}(i) \geq \sum_{i=1}^{nrStrata} area_{projectAreaWithHarvest,projectScenario}(t,i) \cdot LTAC_{Harvest}$$

$$\text{⑩} = 0$$

$$
\begin{aligned}
\Delta C_{areaWithHarvest}(t) = \quad & \text{[EQ80]}\\[6pt]
\sum_{i=1}^{nrStrata} & area_{projectAreaWithHarvest,projectScenario}(t,i) \cdot \left(\frac{C_{harvest}(t_2,i) - C_{harvest}(t_1,i)}{t_2 - t_1}\right)\\
& \cdot u_{inventory,harvest}(i)\\[4pt]
- \sum_{i=1}^{nrFNFtransitions} \sum_{tt=1}^{t} & \left(\begin{array}{c} u_{classification} \cdot u_{transition}(i)\\ \cdot \Delta area_{projectAreaWithHarvet,baselineScenario}(t,i)\\ \cdot \left(EF_{AGL}(i) + EF_{AGD}(i,t-tt) + EF_{BG}(i,t-tt) + EF_{SOM}(i,t-tt)\right)\end{array}\right)\\[4pt]
- \sum_{i=1}^{nrStrataTransitions} \sum_{tt=1}^{t} & \left(\begin{array}{c} u_{stratification} \cdot u_{transition}(i)\\ \cdot \Delta area_{projectAreaWitHarvest,baselineScenario}(t,i)\\ \cdot \left(EF_{AGL}(i) + EF_{AGD}(i,t-tt) + EF_{BG}(i,t-tt) + EF_{SOM}(i,t-tt)\right)\end{array}\right)
\end{aligned}
$$

$area_{projectAreaWithHarvest,projectScenario}(t,i)$: Hectares in transition ii within project area in harvest zone, in project scenario.

Table 3. 13. Transition areas in harvest zone in project area

Year	$area_{projectAreaWithHarvest,projectScenario}(t,i)$: Hectares in transition ii within harvest area in project scenario during year t
2017	11,551.45
2018	23,346.86
2019	12,090.06

$area_{projectAreaWithHarvest,baselineScenario}(t,i)$: Hectares in transition ii within project area in harvest zone, in baseline scenario was obtained as (proportion of harvest area of total project area) * deforestation rate in project.

Table 3. 14. transition areas in harvest zone in project area

Year	area_projectAreaWithHarvest,baselineScenario(t,i): Hectares in transition ii within harvest area in baseline scenario during year t
2017	140.65
2018	320.34
2019	186.12

$u_{inventory,harvest}(i)$ is equivalent to 1.

According to EQ80, $\Delta C_{areaWithHarvest}(t)$ for every year is:

Table 3. 15. Carbon density in harvest zones in stratum ii in year t

Year	10: [tCO2/ha]
2017	121,653.37
2018	177,466.49
2019	143,637.76

$$LTAC_{harvest} = \frac{\sum_{t=0}^{T} \sum_{i=1}^{nrStrata} C_{harvest}(t,i) \cdot u_{inventory,harvest}(i)}{T}$$ [EQ79]

With project crediting period (T) of 40 years, the LTACharvest is 729.64 tCO2e/ha.

For this reason, according to EQ80, as area_projectAreaWithHarvest,projectScenario(t,i) * LTAC_harvest, is greater than $\Delta C_{areaWithHarvest}(t)$, ΔGHG from avoided deforestation from areas under harvest (**10**) is equal to $\Delta C_{areaWithHarvest}(t)$.

The NERs generated during this monitoring period are the following:

Table 3. 16. Net GHG emissions reductions tCO2

Year	Net Emission Reductions (NERs)	1	2	7	10
2017	1,130,205.00	1,041,457.71	-32,905.35	0.00	121,653.37
2018	1,264,593.00	1,087,126.85	0.00	0.00	177,466.49
2019	1,455,957.00	1,312,319.37	0.00	0.00	143,637.76

Although not required by the methodology, baseline, project, and leakage emissions have been separated out from each other and included in Table 33 as included in the monitoring report template required by VCS.

Table 3. 17. Baseline, project, and leakage emissions as well as NERs achieved by the project during this monitoring period

Year	Baseline emissions or removals (tCO2e)	Project emissions or removals (tCO2e)	Leakage emissions (tCO2e)	Net GHG emission reductions or removals (tCO2e)
2017	-1,110,397.2	52,713.9	-32,905.3	1,130,205
2018	-1,254,811.8	9,781.5	0.0	1,264,593
2019	-1,405,825.1	50,132.0	0.0	1,455,957
Total	-3,771,034.1	112,627.4	-32,905.3	3,850,755

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 415,921.07.

Table 3. 18. 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)
2017	1,130,205	116,312.00	1,013,893
2018	1,264,593	126,460.00	1,138,133
2019	1,455,957	145,596.00	1,310,361
Total	3,850,755	388,368.00	3,462,387

3.3   Optional Criterion: Climate Change Adaptation Benefits

This section is not applicable.

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

This section is not applicable.

4   COMMUNITY

4.1   Net Positive Community Impacts

4.1.1   Community Impacts (CM2.1)

As indicated in the PD, the monitoring system is going to be fully implemented since the project receives the carbon incomes.

Regarding community impacts, there are four indicators proposed:

- Crop productivity: As justified in the PD, this variable, instead of incomes (that depend on an external factor as price) or production (that may depend on the area or external factor as the current pandemic situation), clearly reflects the effectiveness of technical assistance supplied by the project to contribute with the necessary incomes to sustain their families without the necessity to clear new forest areas or, under a scenario of global economic decline, a barrier to the vulnerability. The methodological approach to measure this impact is the community survey.

Table 4. 1. Increase crops productivity

Community Group	Local families (all sectors)
Impact	Increase crops productivity
Type of Benefit/Cost/Risk	Benefit: increase in crops productivity as a direct consequence of the technical assistance of REDD project.
Change in Well-being	Increase in well-being as a consequence of an increase in incomes (ceteris paribus, agrarian prices) or, in case a significant decline in prices (for instance, as a consequence of an economic decline because of the pandemic), a reduction in the vulnerability from external economic negative shocks.

For this impact we have these results:

The results show that the use given to the territory by part of the families is the following: 91.8% of the families use it for agriculture. In second place, 68.5%; They stated that they have secondary forest on their land, and in third place, the families have pastures on their property (50.7%). Likewise, several families still have primary forest (46.6%; 34 families) and to a lesser extent they have unused deforested areas (17.8%). Finally, other uses were also identified, such as fish farming and forest extraction, as well as reforested land (5.5%).

The expectation for the families in the current year are increase the production in agriculture (68.5%) and in livestock (32.9%).

The project through monitoring and support hopes to achieve the benefit of economic stability so that the increase in productivity through sustainable practices.

- Agrarian frontier stabilization: Related with the previous impact, the project plans to stabilize the expansion of agrarian frontier in the project area but also in the leakage belt. According to the baseline survey, the average area per family dedicated to pastures is 14.09 hectares while the average area per family dedicated to agriculture is 6.42 hectares.

Table 4. 2. Agrarian frontier stabilization

Community Group	Local families (all sectors)
Impact	Agrarian frontier stabilization
Type of Benefit/Cost/Risk	Benefit: The improvement of productive practices should imply a stabilization of agrarian frontier. The expansion of agrarian frontier is a necessity because productivity decreases as a consequence of inappropriate production techniques and land use but the new areas are further away implying more costs than previous ones. For this reason, if the project may help them to maintain their actual incomes without need to expand to new areas, this will be a net benefit for local families.
Change in Well-being	Better environment conditions without affecting local incomes and needs

For this impact we have these results:

Agriculture was maintained in 62.7% of the cases, increased in 19.4% and decreased by 17.9%.

Catlle was maintained in 45% of the cases, increased in 30% and decreased in 25%.

For this indicator, the project expects that families will be able to support and maintain these main productive activities through the support of the project.

- Support to education, health and other resources (water): As described in Chapter 1, the project has provided extensive support to neighboring communities in education, health and other resources. According to PD, the goals expected to be achieved since 2022 are as follows:

Table 4. 3. Neighboring settlements

Community Group	Neighboring settlements
Impact(s)	Support to education, health and other resources (as water access as a consequence of the protection of water natural sources) for rural and urban neighboring settlements
Type of Benefit/Cost/Risk	Benefit: improved access to public services and water quality and availability as a consequence of direct support from REDD project to these activities
Change in Well-being	Enhanced quality in education, health and water access

The results of the impact were positive and attendece and support eight (08) sector and communities in this period they were:

- San Francisco Asis
- Flor de Acre
- Chilina vieja
- San Antonio Abad
- San Isidro Chilina
- Noaya
- Native Comunity Belgica

They represent the 67% the communities involve in the Project benefits. The next year the project expects to cover every community involved.

- Enhanced livelihood conditions of indigenous groups: Even though the project proponent has committed to invest 1% of carbon incomes for indigenous protection, during the current monitoring period, the project has collaborated with many identifiable benefits for Native Community of Belgica in different education and health issues.

Table 4. 4. Indigenous Groups

Community Group	Indigenous Groups (Belgica)
Impact(s)	Enhanced livelihood conditions

Type of Benefit/Cost/Risk	Benefit: increased financial resources for activities that can protect and benefit the PIACI territories, as well for development pf native communities
Change in Well-being	Survival of PIACI groups and enhanced well-being of indigenous families

No changes are reported in this expected impact

4.1.2   Negative Community Impact Mitigation (CM2.2)

The PD analyzed that the main risk of negative impact is an increased difficult to access to forest resources for traditional community uses.

The baseline survey concludes that there is a very high level of use of firewood (88%), while charcoal is used only by 55% and timber, 68%. But, most of these families collect them from their own plots. The project must monitor how much resources are still available in their plots and help them to develop a strategy to replace the sources without affecting surrounding natural forests. One of them may be the reforestation with species appropriate for firewood, charcoal or timber.

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

To demonstrate the net impacts of the project on the well-being of the communities, these are the communities listed in Section 4.1.1 of the PD, while the expected impacts are described in Section 4.2.1 of the PD. Based on that, we analyze the impact of the project during the current monitoring period:

Table 4. 5. Net impact

	Crop productivity	Agrarian frontier stabilization	Support to health, education & others	Enhanced indigenous livelihood	Net impact
San Francisco Asis	No activities in this period	No activities in this period	Activities described in sections 1.2, 2.1.1	Not applicable	Positive
Flor de Acre	No activities in this period	No activities in this period	Activities described in sections 1.2, 2.1.1	Not applicable	Positive
Oceania	No activities in this period	No activities in this period	Has not participated in project activities	Not applicable	Zero

La Republica	No activities in this period	No activities in this period	Has not participated in project activities	Not applicable	Zero
Chilina Vieja	No activities in this period	No activities in this period	Activities described in sections 1.2, 2.1.1	Not applicable	Positive
San Antonio Abad	No activities in this period	No activities in this period	Has not participated in project activities	Not applicable	Zero
San Isidro Chilina	No activities in this period	No activities in this period	Activities described in sections 1.2, 2.1.1	Not applicable	Positive
Arca Pacahuara	No activities in this period	No activities in this period	Has not participated in project activities	Not applicable	Zero
Noaya	No activities in this period	No activities in this period	Activities described in sections 1.2, 2.1.1	Not applicable	Positive
Villa Primavera	No activities in this period	No activities in this period	Activities described in sections 1.2, 2.1.1	Not applicable	Positive
Nueva Esperanza	No activities in this period	No activities in this period	Activities described in sections 1.2, 2.1.1	Not applicable	Positive
Belgica	No activities in this period	No activities in this period	Activities described in sections 1.2, 2.1.1	Activities described in sections 1.2, 2.1.1	Positive
ACCUMULATED	Zero	Zero	Positive	Positive	Positive

As a balance, the net impact is positive thanks to the activities associated with the support in education, health, water and others.

The project does not expect to obtain Gold Level.

4.1.4 Protection of High Conservation Values (CM2.4)

Community needs. As described in Chapter 1, the project is already providing support for basic community needs as education, health, training, among others. Specific activities have already listed in Chapter 1.

Cultural values. Similarly, some of the beneficiaries of activities listed in Chapter 1 are focused on indigenous people.

4.2   Other Stakeholder Impacts

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

The main potential negative impact could be on two stakeholders:

The project has defined activities that will mitigate the impact over these stakeholders, respectively:

Table 4. 6. Mitigation Measures

Stakeholder	Potential Negative Impact	Mitigation Measures
Arca Pacahuara Community	Limitation of expected increased incomes from expansion of (illegal) agrarian activities	Support pilot sustainable productive initiatives of surrounding communities, reducing the expansion of agrarian frontier and improving livelihood conditions with 2% of project incomes
Neighboring forest concessions	Increased pressure as a consequence of agrarian expansion	Satellite monitoring and field assessment of sectors with risk of invasion

Regarding the first activity, it is associated with the generation of carbon incomes.

4.2.2   Net Impacts on Other Stakeholders (CM3.3)

In the case of the surrounding communities, the project activities have not resulted in negative impacts as may be confirmed with the results of the social baseline. As seen in table 35, below, in Section 4.3.1, as an average, the main activities developed by local communities: agriculture and cattle ranching have increased more than declined.

In the case of cattle ranching, 36% of families consider that they have increased their areas compared to 23% in the last 5 years, while in the case of agrarian lands, 20% considers that they have increased compared to 18% who have declined.

In the following years, the project will monitor the evolution of the productivity, quality and incomes of the families, not only occupied area, as the project will focus on added value instead on extension of the activity.

In the case of forest concessions, the project has played like a barrier for forest concessions located in the western part of the project. Deforestation in these concessions were less than projected in the baseline scenario.

4.3   Community Impact Monitoring

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

The baseline survey was applied in 2021 during the preparation of the PD for its approval. In that sense, for the current monitoring report, no new data is pertinent nor available. The main results, at the community level, are the following:

Table 4. 7. Parcel distribution in an average family (per community)

Hectares	Cattle ranching	Agriculture	Unproductive lands	Primary forests	Secondary forests
Arca Pacahuara	4.29	7.00	3.05	3.65	9.05
Belgica	3.33	66.67	0.67	75.00	50.00
Chilina vieja	48.33	9.67	10.00	10.33	44.00
Flor de Acre	17.22	4.89	1.67	16.00	14.22
La Republica	15.00	8.00	-	24.50	20.50
Noaya	100.00	-	-	-	-
Nueva Esperanza	200.00	8.00	20.00	200.00	200.00
Oceania	6.25	1.75	-	24.75	68.00
San Antonio de Abad	24.25	2.50	-	5.00	47.75
San Francisco de Asis	4.20	3.60	8.00	18.80	30.60
San Isidro de Chilina	1.50	6.75	-	6.00	39.75
Villa Primavera	40.00	16.33	-	58.33	12.00

As may be seen, some communities are more dedicated to agriculture (Arca Pacahuara, Belgica) while others are more dedicated to cattle ranching (Nueva Esperanza, Noaya, San Antonio de Abad, Chilina Vieja). As an average, a family has 6.4 hectares for agriculture and 14.1 hectares for cattle ranching.

It is also remarkable than some communities have a very low remnant forests per family. It implies that any potential production increase will affect forests that do not belong to them. As an average, each family has 12.9 hectares of primary forest and 22.0 hectares of secondary forest.

Table 4. 8. Main crops and cattle (per community)

Hectares	Cattle (units)	Banana	Yucca	Corn	Rice
Arca Pacahuara	2.18	0.43	0.30	5.16	0.37
Belgica	33.33	0.33	0.50	1.67	1.33

Hectares	Cattle (units)	Banana	Yucca	Corn	Rice
Chilina vieja	10.00	0.67	1.67	5.50	0.50
Flor de Acre	8.11	0.28	0.22	3.06	0.44
La Republica	-	1.75	-	4.00	1.00
Noaya	140.00	-	-	-	-
Nueva Esperanza	350.00	4.00	2.00	2.00	-
Oceania	15.00	0.63	0.38	0.38	0.38
San Antonio de Abad	31.75	0.38	0.13	0.75	-
San Francisco de Asis	4.00	0.55	0.55	0.70	0.60
San Isidro de chilina	-	0.25	0.25	0.25	0.25
Villa Primavera	21.67	0.33	0.33	1.33	0.33

The average number of cattle per family is 12.5 but, as may be seen, there are some communities that are very focused on that activity as Noaya and Nueva Esperanza. On the other side, the average extension for agrarian products is: 3.65 for corn (with Arca Pacahuara leading); 0.5 for banana (with Nueva Esperanza and La Republica leading); 0.39 for rice (with Belgica and La Republica leading); and 0.36 for yucca (with Chilina Vieja and Nueva Esperanza leading).

The trend of agrarian extension in the previous and coming years is shown in the following table:
Table 4. 9. Trend of land use in the previous years (per activity)

In the previous 5 years	Cattle ranching	Agriculture	Forestry
% of answers	27%	90%	4%
Increased	36%	20%	
Is stable	41%	62%	33%
Declined	23%	18%	67%

It is interesting that most of the families keep stable their areas dedicated to agrarian or cattle ranching activities in the previous 5 years. Maybe it is explained because of the pandemic situation.

On the other side, most of the families plan to increase their areas dedicated to agriculture and cattle ranching. Considering that there are not too much where to grow, the risk that these plans affect the project area or other neighboring forest areas is real and expected for the short-term. According to the interviews, 79% stated that they still have enough lands where to grow while 21% accepted that they will need to buy new lands to expand their agrarian activities.

Table 4. 10. Expected trend of land use in the coming years (per activity)

In the coming 5 years	Cattle ranching	Agriculture	Forestry
% of answers	37%	89%	6%
Plan to increase	83%	75%	20%
Plan to maintain stable	17%	25%	20%
Plan to decline			
No clear response			60%

It is expected that the community monitoring plan will be applied annually as indicated in the PD. Indicators, methods and other parameters are described in PD. The data from the surveys carried out can be found in Appendix 4.

Table 4. 11. Impact support to education, health and other resources

	Committed since 2022	Achieved target		
		2017	2018	2019
Education	256	375	251	230
Health	2 039	2,000	2,004	2,134
Water	6,013	6,013	6,013	6,013

As seen in the table, the project, even without the incomes from carbon sales, has had high indicators in the three major areas, overpassing the maximum target committed. Gender indicators have not established yet.

Table 4.12. Other Stakeholders indicators

Indicator	Indicator type	Method	2017	2018	2019
Deforested areas in Forest Concessions inside Reference Region	% of increment in deforestation rate	Analysis of mapping results of GEOBOSQUES	163.0 %	-34.6 %	25.1 %
Income from PDAF paid to the Regional Forest and Wildlife Administration by Forest Concessions located inside the Reference Region	% of increment of income	Annual registry from the Regional Forest and Wildlife Authority	-52.9 %	-0.6 %	1.1 %

Considering the first indicator, it is seen in the results that deforestation did not have a clear trend. It was more than double in 2017 when compared to the year before (2016), and the following years in decreased in 35% and increased again in 25%. These values are (except the for 2017) below the behavior of deforestation inside the whole Reference Region: +46% (2017), -27% (2018) and +58% (2019).

With respect to the second indicator, the revenues collected by the Regional Forest and Wildlife Administration had a significant decrease in 2017, but in the following years it remained constant.

The values used to estimate the results of Other Stakeholders Indicator can be seen in Appendix 5.

4.3.2 Monitoring Plan Dissemination (CM4.3)

As indicated in other sections on dissemination, the results of the community monitoring have been disseminated through public summaries, as well as complementary dissemination material, such as brochures, which were distributed to the main stakeholders of the project.

Diffusion talks are held for collaborators where summary material and / or diffusion brochures are also distributed.

As described in the items of criterion G.3, the project's dissemination mechanisms consider various communication spaces such as participatory workshops with the population, consultative committees, delivery of informative documents (brochures and Public Summaries), and complementary media such as e-mails, use of the radio and the web page, which are implemented with greater emphasis due to the COVID 19 situation:

- Participatory Workshops with all stakeholders, twice a year.

- Consultative Committee with main stakeholders, twice a year.

- Dissemination of Social and Environmental Monitoring (Biodiversity) once after the end of the operational year or harvest through Public Summaries.

- Dissemination of Maderacre's website: www.maderacre.com

- Talks to workers about REDD.

- Delivery of information materials such as brochures.

These activities have a description and focus developed in the "Internal Communication Plan", found in Appendix 1.

The results of the Tahuamanu REDD project were disseminated in the aforementioned spaces.

4.4 Optional Criterion: Exceptional Community Benefits

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

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

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

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

4.4.3 Net Impacts on Women (GL2.5)

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

4.4.4 Benefit Sharing Mechanisms (GL2.6)

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

4.4.5 Governance and Implementation Structures (GL2.8)

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

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

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

5   BIODIVERSITY

5.1   Net Positive Biodiversity Impacts

5.1.1   Biodiversity Changes (B2.1)

Table 5. 1. Biodiversity Impacts

Change in Biodiversity	Maintenance and increase of the umbrella species.
Monitored Change	In the evaluation of wild fauna carried out in 2020 in the 15 felling plots, it was possible to register 15 species of the 23 species established as indicators for the MADERACRE SAC wildlife monitoring system. Obtaining 2 new records compared to the evaluation of PC14 (2018). One of the new records being the sighting of *Harpia harpyja*. There were 21 species of wild fauna protected by national and international legislation, in mammals: 13 species belong to CITES, 11 IUCN species and 7 species DS-004-2014-MINAGRI, in birds 7 species belong to CITES, 16 IUCN species and 03 species in DS-004-2014-MINAGRI and in reptiles: 1 species belongs to CITES and DS-004-2014-MINAGRI.
Justification of Change	The maintenance of the concession forest and the adjacent forest are the main factors that allow generating this change, as a consequence of the fact that it is a project based on the management of selective logging and low impact, allowing natural regeneration and growth. and reproduction of unharvested individuals. This allows the conservation of an almost intact forest cover, while guaranteeing the conservation of innumerable species of associated flora and fauna, among them the Otorongo, an umbrella species at the top of the pyramid of the food chain. The forest thus 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 (as is the case of top predators such as the Otorongo, the harpy eagle or the giant otter) and where other species very sensitive to human presence (tapirs, deer, wild pigs, curassows and turkeys) maintain healthy populations. It is also worth mentioning that complementary activities to the sustainable use of the forest are carried out in the concession area, among them, fauna monitoring, fauna evaluations are carried out annually, with this it seeks to determine the status of its populations, with special emphasis in species that are indicative of a healthy environment. In addition, a database of places of importance for fauna is prepared, so that it can be used for planning of use. To do this, evaluations are carried out in a specific PCA using the transect method. According to the last evaluation of wild fauna in PC 15 of the consolidated, it was possible to register 15 species of the 23 species established as indicators for the MADERACRE SAC wildlife monitoring system. Obtaining 2 new records compared to the evaluation of PC14 (2018). One of the new records being the sighting of Harpia harpyja. The presence

	of key species and in a significant number in areas with past interventions allows us to infer that wildlife and their habitats are in healthy conditions within the MADERACRE FMU.

Change in Biodiversity	Sustainable forest management with FSC certification and Chain of Custody (CoC) certification.
Monitored Change	A total of 725 individuals grouped in 53 species of wild fauna distributed in 34 families made up of amphibians, reptiles, mammals and birds were registered in PC 15, the latter presenting the largest number of species with 377 individuals distributed in 15 families, 322 mammal individuals distributed in 12 families, reptiles with 13 individuals distributed in 5 families and amphibians 13 individuals distributed in 2 families. Ñaña, in 2018 registered 45 species of wildlife with 701 individuals in PC 14, being a lower record compared to the current result, which represents an increase of 17.8% in the number of species and 3.4% in the number of individuals registered.
Justification of Change	The project is based on a management of selective and low-impact logging, dividing the area subject to sustainable forest management into a total of 20 logging plots, which are harvested annually (one part each year) and at a certain intensity of logging. (The design considers a cutting cycle every 20 years), allowing natural regeneration and the growth and reproduction of untapped individuals. A great diversity of species (226) with timber potential has been inventoried.
	In 2019 the General Forest Management Plan was approved and in 2018 the preparation of the Annual Operational Plan, which begins with a forest inventory, in which the variety and quantity of potential species to be exploited is recorded. This made it possible to know 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 the total volume of wood to be harvested, among other things, to be calculated and controlled. Seed trees were identified (approximately 20% of the total number of individuals to be harvested) that are kept in the forest, guaranteeing the production of seeds and ensuring the survival of the species and favoring their natural regeneration. The felling is done by directing the fall and minimizing damage to the surrounding vegetation, so that the gaps left in the forest are of similar dimensions 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 the seedlings that remained dormant under the shade of the parent tree.
	This allows the forest cover to be preserved almost intact, while guaranteeing the conservation of innumerable species of associated flora and fauna.
	For this, the project has trained the staff, created the infrastructure and adapted the processes necessary to obtain the Sustainable Forest Management Certification - FSC 100% - guaranteeing an environmentally sustainable, socially inclusive and economically viable model. It also has its Chain of Custody (CoC) certification, which guarantees that the product it sells reaches customers respecting traceability processes and the three pillars of sustainability (environmental, social and economic).

> 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)

To maintain and conserve the HCV, the following activities have been defined:

Measures to maintain flora species:

For forest species classified as species with some category of threat and that are part of the UMF's utilization program, the following measures are considered:

Figure 5. 1. Results of carry out evaluations and studies to define the state of Natural Regeneration.
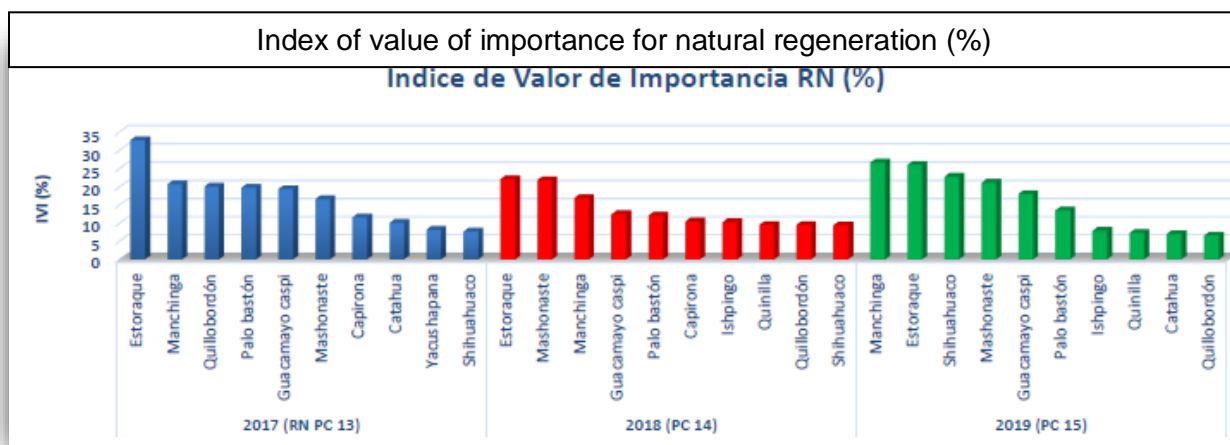
Comparisons of the IVI of the 10 most relevant species in RN studies can be observed. In general, the storax is present within the three most important species in the studies carried out, as well as the Manchinga species, which is evidenced with the greatest presence in the 2019 study. It is important to note that the presence of the Shihuahuaco species, the most used currently, is present within the 10 most important species, placing in third position in the studies of the year 2019 and in tenth place for the evaluations of 2017 and 2018. The presence and establishment of the NR of species commercial species after harvest shows us that the opening of the canopy by forest harvesting activities encourages an increase in forest dynamics and that these spaces are also occupied by commercial species that are even subject to harvest. The increase in the dynamics of the forest is also healthy from the point of view of climate change, since the wood harvested keeps the carbon fixed for decades in the infrastructure built with that wood, and in the forest, the spaces left by the harvested trees are occupied by others that will fix carbon at an even higher rate due to the greater growth they experience compared to mature trees of reduced growth already harvested.

Figure 5. 2. Results of measure the growth of each species so that the necessary information is available to adjust its silvicultural variables at the PGMF level.
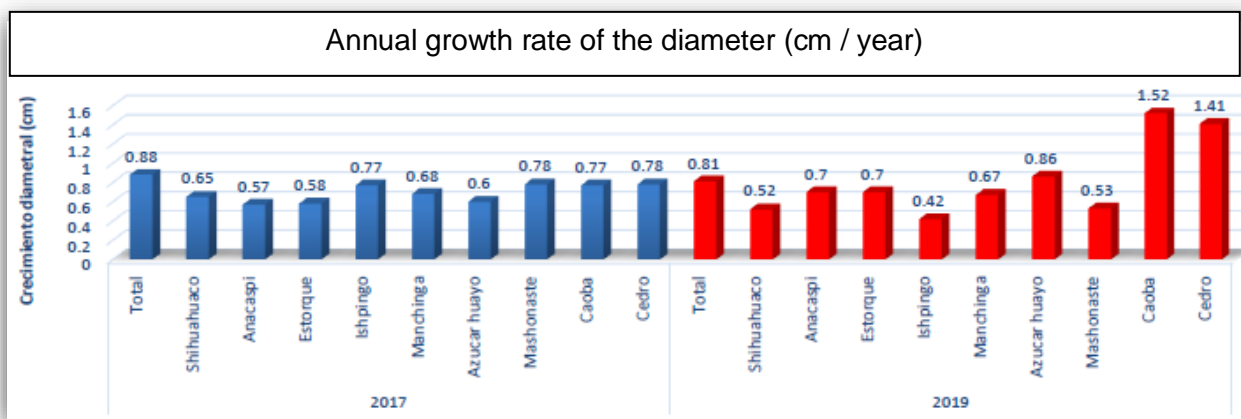
The comparison of the annual diametral growth of the most important species in current forest use is shown. The methodology consists of taking measurements every two years and then dividing the value by 2 to obtain the Annual Growth Rate (AGR, TCA in Spanish). The annual total average value shows a slight reduction of 0.07cm, however, the variability of the values of many of the species is indifferent to the latter. The species that have had an increase in average diameter growth for the year 2019 are Anacaspi, Estoraque, Huayo sugar, mahogany and cedar, the latter two being the ones that have generated a greater margin of growth. Otherwise, the rest of the species have decreased in their values, however, only the Ishpingo species is below 0.5 cm, a value that corresponds to that defined by the 20-year polycyclic system applied by the company.

1. Results of propose silvicultural measures that allow responsible management of these species, propose adequate silvicultural variables for each species and based on the Cutting Cycle (CC) defined for the FMU: Minimum cutting diameter (DMC) and cutting intensity (IC).

Review PGMF 2019 section 6.3 Cutting cycle page. 43: Below is the extract of this section that allows corroborating that the silvicultural monitoring of growth rates has allowed validating the current increase rate used in the definition of the Cutting Cycle, which is one of the most important silvicultural variables included. in the management plan.

..."A 20-year rotation cycle has been established, considering an average annual diameter increase of 0.5 cm, data that has been preliminarily validated with the establishment of growth monitoring systems for the species of interest in the MADERACRE concession (See technical report: "DIAMETRIC GROWTH RATE OF TIMBER SPECIES IN THE MADERACRE SAC FORESTRY CONCESSION, TAHUAMANU, MADRE DE DIOS, PERU", 2012)."

Review PGMF 2019 section 6.8.2 Silvicultural treatments to apply page. 69: The extract from this section is presented below, which shows that the evaluations carried out in the project area have made it possible to collect sufficient information for making silvicultural decisions that are incorporated into the processes for updating the management plan.

..."The results of the diagnostic sampling (2005) and the evaluation of natural regeneration (2011) indicate that silvicultural release treatments are not required, because the stems in their greater proportion do not present competition for light. In other words, they have an acceptable degree of luminosity. On the other hand, the opening of the canopy due to exploitation tasks allows sufficient light to enter to randomly favor poles and seedlings of the species of interest. It is verified that after 1 year of intervened a PC, the quantity of individuals of natural regeneration of the species of interest is greater in comparison with a non-intervened PC."

Results of define the need and feasibility of implementing silvicultural treatments by species, based on the results of evaluations and studies carried out in the same forest.

Review PGMF 2019 section 6.8.2 Silvicultural treatments to apply page. 72 see the evaluation matrix to define the requirement of silvicultural treatments; and then the analysis of the results on p. 75:

..."The results also show that in the vast majority of species the number of individuals below the DMC is considerably higher than 60% of the population (% recommended in the management of tropical natural forests), with the average number of individuals below the DMC of the order of 88% for the species of interest of the Consolidated, which allows inferring that natural regeneration and future harvests would be guaranteed, especially when applying the silvicultural guidelines and exploitation techniques proposed in this PGMF. It should also be considered that the increase in the number of clearings in the forest due to exploitation would change the dynamics of the species under management, increasing and making their natural regeneration viable, so that enrichment treatments would not be necessary, the application being essential. of an appropriate DMC and CI so that post-harvesting additional remnants are maintained that added to the seedlings would guarantee an appropriate source of genetic material, material that would have greater viability thanks to the clearings produced by harvesting."

2. Results of the adjustment of the variables and silvicultural treatments is carried out based on the results of the monitoring.

Although the maximum term for review is 5 years, we must highlight that the average updating period of the MRA PGMF is 2.8 years, this because between 2002 (starting date of the FMU management) to In 2019, the PGMF has been reviewed and updated 6 times.

Results of implement a reduced impact harvesting system (AIR) that reduces the impact on the regeneration of species of commercial interest and other species of flora with some category of threat.

Figure 5. 3. Degraded area for wood storing area (ha / year)
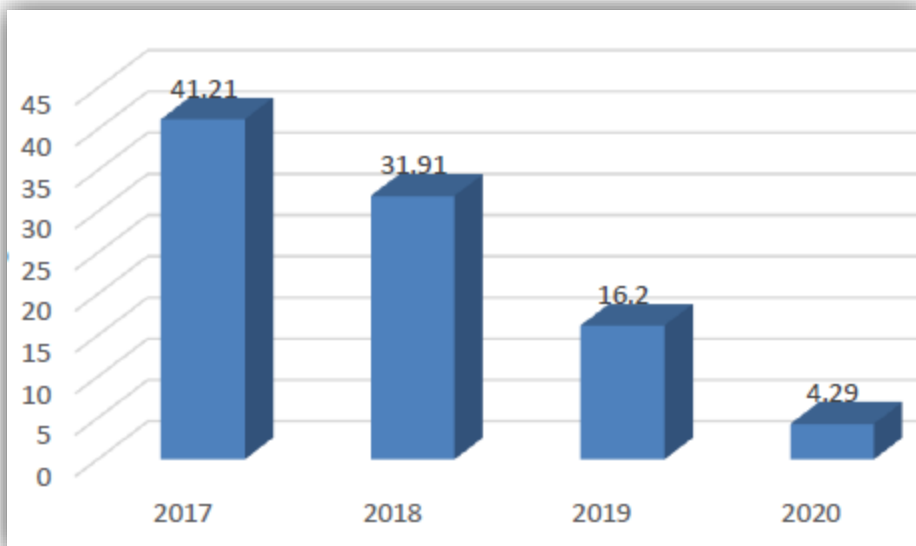
A proportional decrease in the area degraded by the opening of storage yards is observed over the years, as a result of proper planning and execution of reduced impact use (RIA). In 2020, forestry operations were on a smaller scale as a result of the pandemic caused by COVID 19, in this case only a small number of patios were enabled in PC17, the same one that was intervened in 2019.

Figure 5. 4. Affected area around the wood storing area (ha / year)
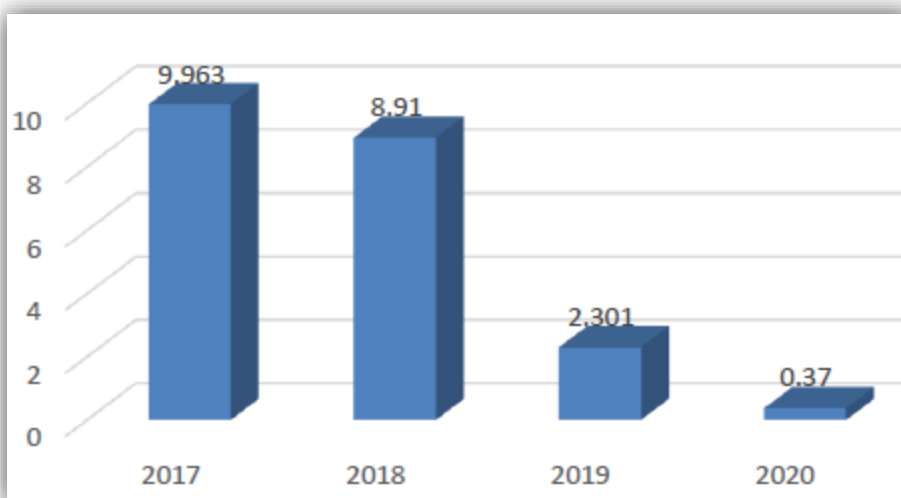
Parallel to the degradation of the patio area, this graphic shows that the impacted area outside the patio maintains a downward trend as a result of good planning and correct execution of AIR operations. In 2020,

forestry operations were on a smaller scale, in this case only a small number of patios were enabled in PC17, the same one that was intervened in 2019.

Figure 5. 5. Number of trees affected by logging per year
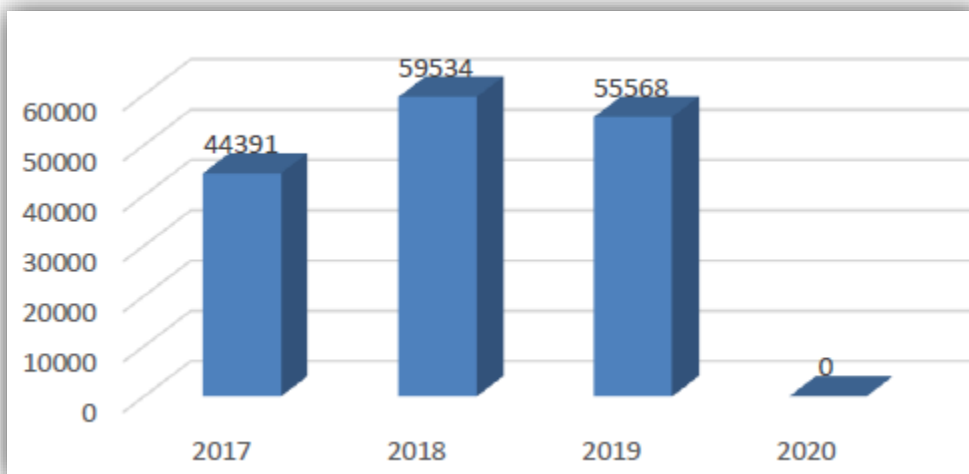
All individuals greater than 10 cm DBH affected by felling are shown. An increase is observed in the years 2018 and 2019, since the volumes felled are greater. It should be noted that the number of trees felled in 2019 is greater, however, the number of affected individuals is less than in 2018, due to good AIR practices as well as the smaller dimensions of the trees in PC17 corresponding to that year. In 2020, no logging operations were carried out.

It is important to point out that seed trees and future harvest trees were not affected in the reported period, consistent with the adequate planning and execution of AIR techniques.

3. Results of establish an adequate system of control and surveillance of the accesses and limits of the concession to avoid illegal logging and invasions with the consequent change in land use.

These results are found in the documents "Plan de Custodia MRA 2017, 2018 y 2019" y "Informes de patrullaje 2017, 2018 y 2019".

Measures for the maintenance of fauna species:

For species of fauna present in the FMU and that are classified as species with some category of threat, the following measures are considered:

1. Results of prohibit the hunting of fauna species within the concession.

Review PGMF 2019 section 4.1. Sorting categories p. 18:

..."Prohibit the hunting of fauna species within the concession."

Review PGMF 2019 section 7.2.1. Preventive action plan - corrector p. 91

Table 5. 2. Reduction of fauna populations due to poaching. Wildlife movement.

Impact Description	Environmental control measure	Monitoring measures	Frequency	Responsible
Reduction of fauna populations due to poaching. Wildlife movement.	Prohibition of hunting and fishing for self-consumption and commercial purposes. Control and sanctions. The trucks do not transport people other than the FMU staff. Drivers and their helpers are prohibited from hunting and transporting animals.	Number of hunting events. Number of complaints for hunting.	Once a month	Forest management
	Report to the forest authority people who are caught hunting.	Number of seizures of wildlife in traffic.		

Results of carry out periodic evaluations of the fauna through sighting records carried out annually by previously trained company personnel. The objective is to know the presence of the species cataloged as important for monitoring, either because of their degree of threat or because they are indicator species of the state of the ecosystem. Its results should be analyzed and presented in the annual monitoring report, making a comparative historical analysis with the findings of previous evaluations.

These results are found in the documents "Informe de fauna silvestre 2017", "Informe de fauna silvestre 2018" y "Informe de fauna silvestre 2019".

2. Carry out five-year evaluations that allow assessing the state of fauna populations in general, in addition to the evolution of their population indicators over time, taking into consideration or as a baseline the population densities of the species. These evaluations, due to their complexity and the high degree of specialization required for the recognition of fauna species, will be carried out by specialists external to the company.

These results are found in the document "Informe de fauna silvestre 2017"

3. Identify during the forest census work and other evaluation work, the sites of importance for the fauna:

Explanatory note: Sites of importance to wildlife are considered High Conservation Value (HCV) sites. The information on this requirement is presented in the following point.

All sites of importance for wildlife or other HCVs that are identified during forest censuses or other evaluation works should be progressively considered in the cartography to be excluded from the use of the corresponding PC. The area occupied by these sites or HCVs, depending on their importance, will be delimited with the use of signs or other markings on the ground that allow field personnel to locate and avoid them.

Review:

- HCV location maps

- Informe Nº 004_2018_AVC-PC16-LÑS Monitoreo.

- Informe N°001_2019 YCB AVC PC18 Monitoreo.

- Informe N°003_2019 YCB AVC PC18 Monitoreo".

4. Establish an adequate system of control and surveillance of the accesses and limits of the concession to prevent poaching.

These results are found in the documents "Plan de Custodia MRA 2017, 2018 y 2019.

Measures to maintain conservation areas:

To maintain the integrity of the species and ecosystems that occur in the conservation areas defined in the FMU, the following measures must be considered:

1. Exclude conservation areas from forest extraction. Make a use compatible with the conservation of the area (non-timber management, ecotourism, environmental services, etc.).

Review PGMF section 4.1. Ordering categories, see the ordering category table and description of the CA defined in the project's UMF

2. Prohibit the hunting of fauna species within the concession.

See Point 1 of Measures to maintain fauna species

3. Delimit and mark conservation areas with the use of pedestrian paths and information signs.

These results are found in the documents "Plan de Custodia MRA 2017, 2018 y 2019" section marking and signage.

4. Establish an adequate surveillance system for the accesses and limits of the conservation areas.

These results are found in the documents "Plan de Custodia MRA 2017, 2018 y 2019".

Measures to maintain the integrity of the landscape:

To maintain the integrity of the landscape, it is necessary to avoid the fragmentation of the forests, in that sense the measures are:

1. Establish an adequate surveillance system for the accesses and limits of the UMF.

These results are found in the documents "Plan de Custodia MRA 2017, 2018 y 2019".

Implement a reduced impact harvesting system.

These results are found in the document "Informes de Monitoreo de Operaciones Forestales 2017 - 2018 – 2019".

Measures to maintain water quality:

To maintain water quality, the following measures are applied:

1. Establish an adequate surveillance system for the accesses and limits of the UMF.

These results are found in the documents "Plan de Custodia MRA 2017, 2018 y 2019".

Establish fiscal strips in open rivers and streams of up to 25 meters on each side of the watercourse.

Review "Manual de operaciones 2019", section 1.2.4. Watercourses and protection zones page 10.

The protection strip or fiscal strip, on both sides of the water courses and open water mirrors, must be delimited on the map or, failing that, the trees located within it must be presented with a distinctive symbol. The fiscal strip is 25 m on each side and the trees within it must be protected.

2. Implement a reduced impact collection system.

Review:

- Manual de operaciones 2019

- Informes de Monitoreo de Operaciones Forestales 2017, 2018 y 2019

- Informe Nº 004_2018_AVC-PC16-LÑS Monitoreo

- Informe Nº 005_2019 LÑS AVC PC17 Monitoreo

- Informe Nº 006_2019 LÑS Ubicación de puentes y cursos de agua 2019

- INFORME Nº 008_2018_Curso de aguas afectados

- Mapa de tala (franja fiscal)PC 18

- Mapa de tala (franja fiscal-AVC) PC18

3. Identify and mark water sources (springs) to prevent them from being affected by forestry operations.

Review:

- HCV location maps.

- Informe N°001_2019 YCB AVC PC18 Monitoreo

- Informe N°003_2019 YCB AVC PC18 Monitoreo

- Mapa de tala (franja fiscal) PC 18

- Mapa de tala (franja fiscal-AVC) PC18

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

The current good state of wildlife within the Consolidated Area is apparently due to the prohibition of hunting, the application of low impact harvesting techniques, surveillance and control actions, and the monitoring of processes and continuous training of staff.

Even though hunting pressure is very low or almost non-existent thanks to the control mechanisms carried out by the concession, 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. Continuous and permanent patrols throughout the area ensure that no illegal hunting activity occurs within the concession area, a goal that can only be achieved through carbon finance.

On the other hand, the fauna is being monitored to control and evaluate the populations of indicator species such as:

- Species of the Order Primates (Alouatta seniculus, Ateles Chamek) these species correspond to medium and large primates, easily observable that use trees as habitat and as a source of food (Pozo W, 2009), if the trees present in MADERACRE do not provide the Necessary conditions for the establishment of populations of these species the forestry activity could be having a negative impact on the wild fauna of the area.

- Species of the family Felidae (Panthera onca), Tapiridae (Tapirus terrestris) and Accipitridae (Harpia harpyja). These large species are classified as "umbrella species" or "landscape species" because they use large and ecologically diverse areas and have a significant impact on the structure and function of natural ecosystems. Their habitat requirements in time and space make them especially vulnerable to human practices of land use and resource harvesting. (WCS, 2002). The monitoring of these species and their presence in MADERACRE can indicate the good health of their environment and in the case of predatory species they also allow inferring the state of conservation of the species of fauna that constitute their food source (prey).

- In the Peruvian Amazon, species of the Cracidae family (Pipile cumanensis, Penelope jacquacu and Mitu tuberosa) are hunted. Generally, in places with a lot of hunting pressure there are very low populations, however, in MADERACRE the sightings were relatively abundant, which indicates that there is no hunting pressure in the area, however, the damage to their habitats can also affect their populations to the extent that their food requirements come from the fruits of the forest. If the populations of these species decrease, MADERACRE's forestry activities could be affecting them (Cancino and Brooks, 2006).

- Species of the families Psittacidae (Ara ararauna and Ara chloropterus), Ramphastidae (Ramphastos cuvieri) and Piscidae (Celeus sp). These species are closely related to large

tree species and many of them timber. The Psittacidae build their nests in emerging trees; Ramphastidae feed on the fruits of emergent trees and Piscidae feed on the larvae of insects found in emergent trees.

○ Geochelone denticulata. - This species is easy to observe and its slow movements make it an easy prey for its hunters, so its populations decrease with the human presence. In MADERACRE few individuals were observed during the evaluation, however, workers mention that they are easily found in their daily work hours. Monitoring of this species is recommended since the decrease in their populations may indicate that there is hunting pressure on them.

Source: Indicator and suggested species for monitoring according to: (Loja 2011) (Barrios 2015) (Loja, 2017) Five-year monitoring of wildlife in the Maderacre concession.

It should also be noted that the Project includes other complementary activities for the sustainable use of the forest, such as: Sustainable use of Brazil nuts and monitoring of wildlife.

5.1.4   High Conservation Values Protected (B2.4)

Directed and low-impact logging does not adversely affect any HCV, but sustainable harvesting favors the conservation of an almost intact forest cover, while ensuring the conservation of countless associated species of flora and fauna, as well as the jaguar and others. endangered species, which were shown in a table above.

The study by Toddler, et al. (2018) within the concessions certified by the FSC to evaluate the population of jaguars in Guatemala and Peru, had determined, within the Consolidated, a population density of Jaguars of 4.5 individuals per 100 km2 and highlights that this data is comparable only with protected natural areas. Concluding that the intensity of forest use in the consolidated, adequately protects the Jaguars and therefore other species; and that extraction has a positive impact on the diversity and abundance of certain species. In addition, it affirms that certified concessions allow connectivity between protected areas and the natural forest; This is due to the absence of hunters in the concessions as a measure to protect the biodiversity that inhabits them.

Also according to the preliminary report of the study of jaguars and pumas in the certified forest concessions MADERAS COCAMA AND ASERRADERO ESPINOZA, of the "Amazon Areas Project, WWF-PERU and San Diego Global Zoo", within the consolidated also there is the highest frequency of large carnivores and small land birds such as the paujil (Mitu tuberosa), primates such as the spider monkey (Ateles chamek), the box monkey (Alouatta sara) and the white machin monkey (Cebus macrocephalus), and also a high frequency of large ungulates such as tapirs (Tapirus terrestris), sajinos (Pecari tajacu) and red deer (Mazama americana).

In this sense, the high conservation values identified for the project as the area per se of more than 170 thousand hectares and the umbrella species are not affected by the harvesting activities.

5.1.5   Invasive Species (B2.5)

The forestry management used in both consolidations is of the type of entresaca polycyclic, i.e., it exclusively manages the mass on foot favoring the growth of commercial species without eliminating

undesirable species. In addition, this system allows forest dynamics to continue as it allows for several periods of years of rest in the previously exploited area. Therefore, there would be no possibility of the area being affected by invasive species.

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)

Table 5. 3. Offsite biodiversity impacts

Negative Offsite Impact	Mitigation Measure(s)
Increased deforestation pressure due to the expansion of the agricultural and livestock frontier in the areas adjacent to the concession.	Identify and finance every two years' pilot productive initiatives of the population around the project (families and / or associations) that contemplate a friendlier use of the land, reduce the expansion of the agricultural frontier and at the same time improve their living conditions. For this purpose, 2% of the annual income of the project will be used for its financing at a pilot level, seeking that this allows them to scale over time, as well as to be replicated in other members of the community. Promote initiatives that contribute to the sustainable development of the population around the project in accordance with the prioritization determined by the Project's Community Relations Consultative Committee. 1% of the annual income of the Project will be used for this purpose. Development and implementation of mechanisms for the dissemination of environmental education among children, adolescents and communities involved in the project. Where it articulates with workshops on the management of crops of interest, controlled burning, agroforestry systems, etc. to adjacent communities.
Increase in illegal logging of high commercial value	Implementation of the Comprehensive Custody Plan of the forest management unit (UMF). It contemplates the following sub-activities:

Negative Offsite Impact	Mitigation Measure(s)
forest species in the areas adjacent to the concession.	a) Installation and maintenance of the UMF surveillance posts. b) Delimitation and maintenance of 100% of the limits of the UMF. c) Installation and maintenance of "Milestones" at the vertices of the UMF. d) Improve and maintain the UMF signage. e) Periodic patrolling of vulnerable sectors. Participate in the spaces for dialogue and management of the Protected Natural Areas (ANP) and the Madre de Dios Territorial Reserve, seeking to generate alliances with key institutions for their protection. Promote activities with institutions whose objectives are oriented to the protection of Protected Natural Areas (ANP) and the territories inhabited by the PIACI. 1% of the annual income of the Project will be used for this.
Loss of biodiversity due to increased illegal hunting of wildlife in areas adjacent to the concession	Implementation of the Comprehensive Custody Plan of the forest management unit (UMF). It contemplates the following sub-activities: a) Installation and maintenance of the UMF surveillance posts. b) Delimitation and maintenance of 100% of the limits of the UMF. c) Installation and maintenance of "Milestones" at the vertices of the UMF. d) Improve and maintain the UMF signage. e) Periodic patrolling of vulnerable sectors. Promote activities with institutions whose objectives are oriented to the protection of emblematic fauna and flora species. 1% of the annual income of the Project will be used for this purpose.

5.2.2   Net Offsite Biodiversity Benefits (B3.3)

Under the principle of adaptive management, unmitigated off-site impacts on biodiversity will be identified during the course of the project and strategies and activities to reduce negative impacts generated by the project will be reassessed.

The measures adopted will focus mainly on continuously training the local population on the benefits and appropriate use of the forest resources through informative and educational talks.

On the other hand, although deforestation pressure has increased in order to expand the agricultural and livestock frontier in the areas adjacent to the concession, this has contributed to the high population density of umbrella or indicator species in the concession area, which has become a refuge area because it is a space with minimal human disturbance.

## 5.3   Biodiversity Impact Monitoring

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

The company developed a Comprehensive Monitoring Plan, which constitutes an internal management tool, this plan includes monitoring the environmental, social and economic aspects of the company's operations, including monitoring the implementation of the REDD project and the deforestation within and in the area of influence of the MADERACRE concession, this will be implemented by obtaining income from the sale of credits for the reduction of carbon emissions and other greenhouse gases. Below is a summary with some of the activities carried out in the monitoring of operations in the concession:

a) CENSUS:

*Number of trees and total volumes per ha and per species in PC.
Figure 5. 6. Commercial census area.
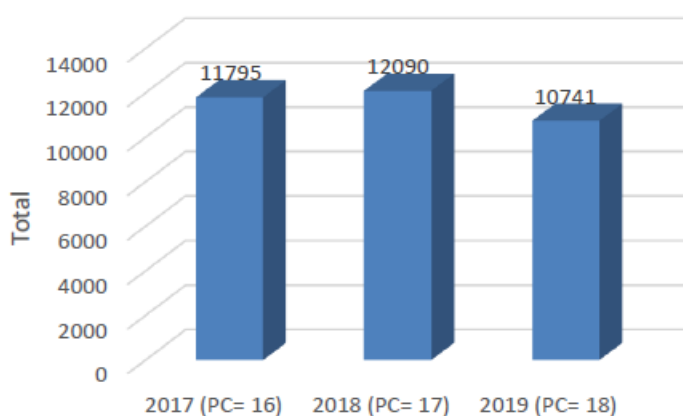
Year

The figure shows the areas censed annually as a result of the administrative distribution by Cutting Parcels (PC), the consolidation of each of them is linked to the rotation cycle established for the management unit, regulating production based on an annual area.

Figure 5. 7. Amount of censed species
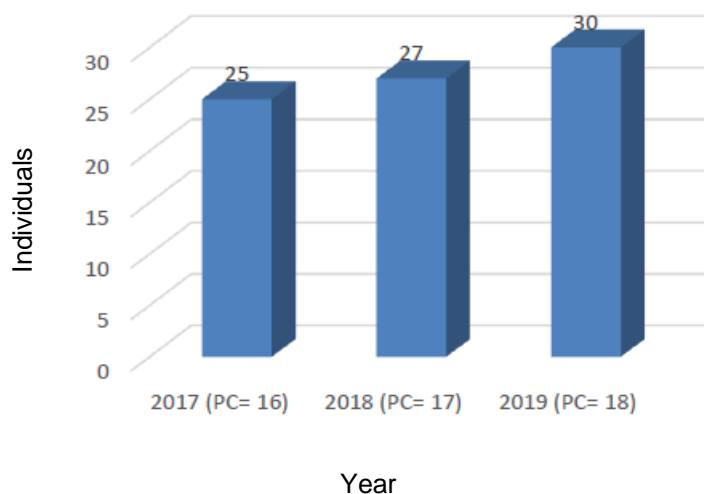
The figure shows the number of registered species established by the company. During the annual censuses carried out, the number of species to be censed has increased, since species with important timber potential for the development of forest management are included in the list.

Figure 5. 8. Abundance of harvestable censed individuals (#/year)
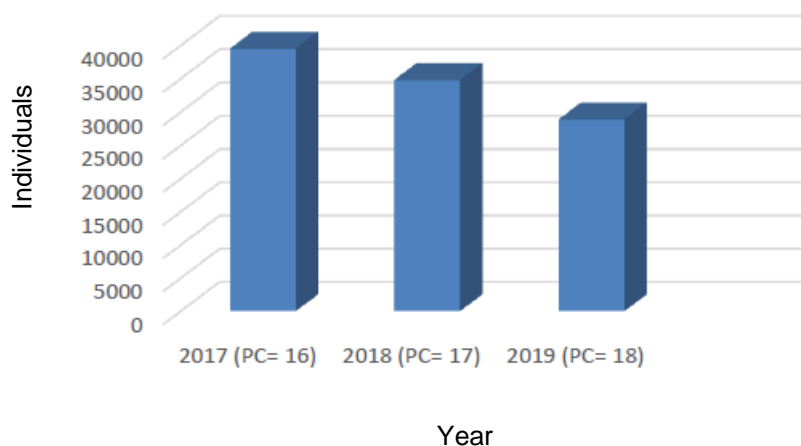
The figure shows the number of individuals registered in the "usable" category where there is a downward trend due to different factors:

- The illegal logging activities present in PC 17 and 18 in years prior to the acquisition of the concessions were the main causes in the reduction of important timber species such as mahogany and cedar, since there was an ease of extraction of the same. by river through the Tahuamanu River.

- PC 17 and PC 18 are adjacent to large bodies of water that allow the establishment of flood zones (low terraces), which constitute areas of forest with low timber potential (low abundance of timber trees).

- The physiography of PC 16 is less rugged than that of the other plots, predominating the physiography of low hills distant from large bodies of water, which allows the occurrence of a greater abundance of species of commercial interest.

The volumes felled in PC 16 (80943.82 m3) and 17 (80985.17 m3) have very similar values, however, the number of individuals felled in PC17 to reach these volumes is greater in that plot (8894 trees compared to 8302 in PC17). PC16), this might seem contradictory with the number of usable trees counted in these plots, however, what happens is that in PC16 the non-harvested species have a greater number of trees counted.
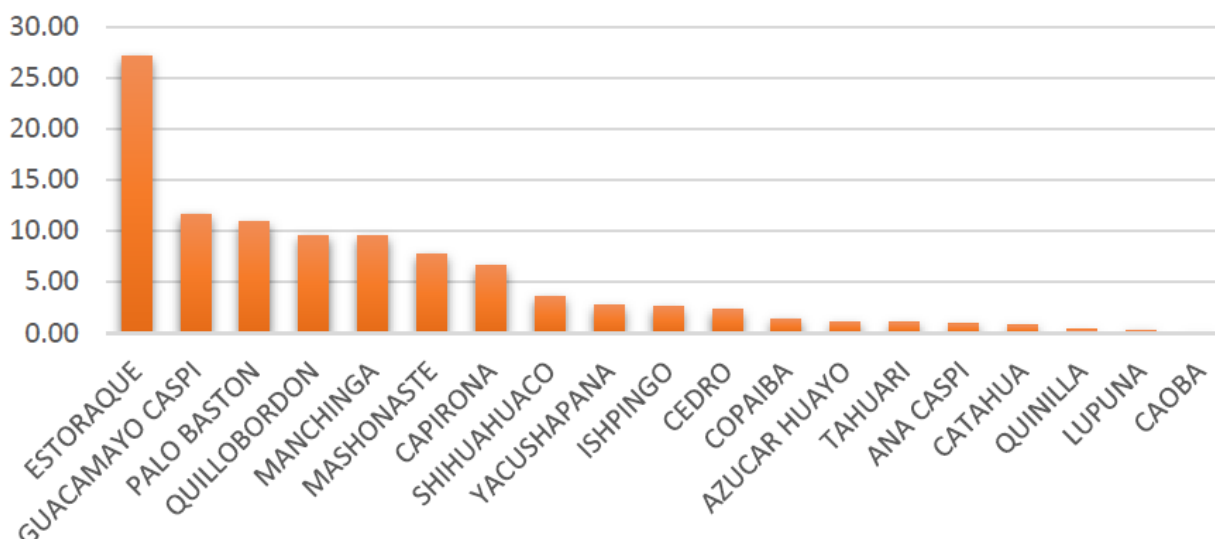
The results are found in the document "Monitoreo Q de impacto ambiental-forestal".

b) FORESTRY MONITORING:

* Natural regeneration.

2017:
Figure 5. 9. Abundance of species in PC 13 (in %)

With reference to the abundance in the 120 strips evaluated, species such as: Estoraque (Myroxilon balsamun), Macaw caspi (Fabecea sp), Palo bastón (Crepidospermum goudotianum), Quillobordón (Aspidosperma vargasii), Manchinga (Brosimum alicastrum), such as 05 most abundant species of PC No. 13, representing 27.10%, 11.65%, 10.85%, 9.57% and 9.48% of all identified individuals, respectively, likewise Ana caspi (Apuleia leiocarpa), Catahua (Hura crepitans), Quinilla (Manilkara spp), Lupuna (Ceiba pentandra), Caoba (Swietenia macrophylla), as the least abundant since they represent only 0.90%, 0.74%, 0.31 %, 0.29%, 0.13% respectively.

Figure 5. 10. Abundance of natural regeneration in PC 14 (in %)
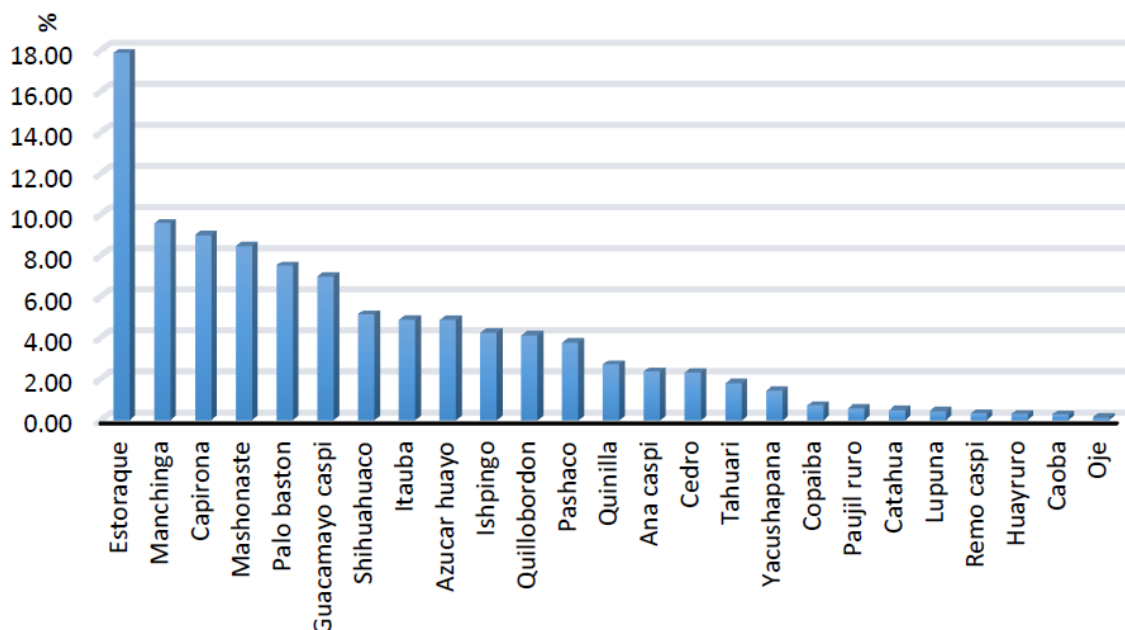
With reference to abundance in the 120 strips evaluated, species such as Estoraque (Myroxilon balsamun), Manchinga (Brosimum alicastrum), Capirona (Calycophyllum spruceanum), Mashonaste (Clarisia racemosa), Palo baston (Astronium graveolens) were recorded as the 05 most abundant in PC No. 14, representing 17.86%, 9.57%, 8.98%, 8.46% and 7.5% of all identified individuals, respectively, likewise Lupuna (Ceiba pentandra), Remo caspi (Aspidosperma rigidum), Huayruro (Ormosia schumkei), Mahogany (Swietenia macrophylla), Oje (Ficus insipida) as the least abundant since they represent only 0.44%, 0.31%, 0.29%, 0.26%, 0.12% respectively.

Figure 5. 11. Abundance of natural regeneration of 23 forest species in PC 15
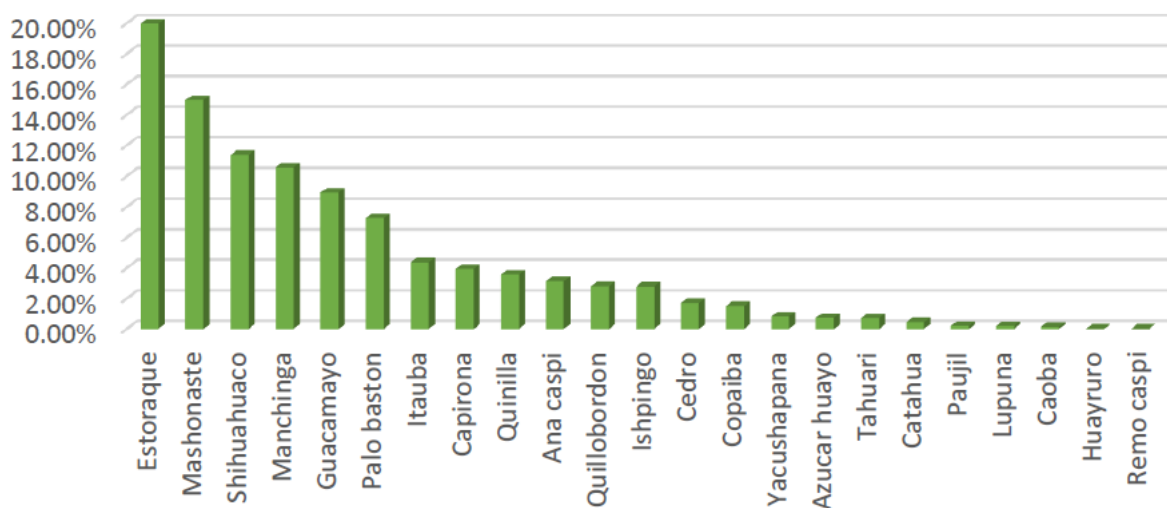
In the 120 strips evaluated, the following species were recorded: Estoraque, Mashonaste, Shihuahuaco, Manchinga and Guacamayo caspi as the 5 most abundant, representing 19.96%, 14.97%, 11.39%, 10.54%

and 8.92%, respectively. the species: Paujil ruro, Lupuna, Caoba, Huayruro and Remo caspi: as the least abundant species since it represents only 0.21%, 0.19%, 0.13%, 0.01% and 0.01% respectively of all the individuals identified in PC 15.

The results are found in the document "Informes de regeneración natural 2017 - 2018 – 2019"

*Forest dynamics (Growth, mortality and recruitment).

- 157 individuals of a total of 25 evaluated forest species were identified and registered, all of them identified in PC - 13 of the Consolidated.

- The average annual diameter growth rate for the timber species that are present in the MADERACRE SAC forest concession is 0.88 cm./year, this value is within the estimated range for the tropical forests of South America, in addition to all the individuals evaluated on minimum diameter was 0.01cm and maximum diameter was 2.86cm.

- The forest species Lupuna (2.32 cm/year) has the highest Annual Growth Rate in diameter, followed by Huimba (2.19 cm/year), while the tahuari (0.53 cm/year) and Quillabordon (0.53 cm/year) are the lowest TCA presented. The other species present TCA similar to those registered in tropical forests. The results indicate that at the level of the Amazon, the TCAs will have similar values in TCA, but with abrupt changes in some fast-growing or "soft" tree species and slight changes in hard species, depending on the quality of the site and ecological variables.

- 98.07% of the trees have crowns with good light reception. Based on the DBH of the timber species under study, we infer that the other individuals not plated or unmonitored and that are within that DBH interval, have a high probability of having gained the necessary vital space (vertical and horizontal) in the canopy or subcanopy. , which allows them to ensure their survival in natural conditions, or at least have the minimum light requirement for their development.

- 128 individuals of a total of 25 forest species were identified and evaluated, all located in PCs 11, 12 and 13 of the Consolidated Maderacre.

- The average annual diameter growth rate for the timber species of interest for management in the MADERACRE SAC forest concession is 0.81 cm./year, this value is within the estimated range for tropical forests in South America and is greater than the rate of growth used to define the silvicultural variables (DMC, IC, CC) of the MADERACRE PGMF.

- The forest species Lupuna (1.66 cm/year) presents the highest Annual Growth Rate in diameter, followed by Mahogany (1.52 cm/year) and Cedar (1.41 cm/year), while Ishpingo (0.42 cm/year) and Quilloborden (0.39 cm/year) have the lowest TCA. The other species present TCA similar to those registered in tropical forests.

- 89.84% of the trees have crowns with good light reception. Based on the DBH of the timber species under study, we infer that the other individuals not considered in the evaluation and that are within that DBH interval, have a high probability of occupying a vertical sociological position that allows them to have an adequate level of capture of light.

The results are found in the documents "Informes de crecimiento diametral Árbol parcela 2017 – 2019" y "Informes de PPM 2017 - 2018 – 2019"

c) CUSTODY AND SURVEILLANCE

*Lining and signage, Patrol, Control and surveillance.

- Maintenance and patrolling of 3000 m was carried out, on the boundary that goes from vertex 6 to 7 of the Consolidated MADERACRE.

- There was evidence of undergrowth grazing within the MADERACRE consolidation in the Amatec zone between V6 and V7 of the CMRA.

- The placement of 3" * 3" wooden posts was carried out along 100 meters on the boundary, prioritizing the affected area

- Maintenance and patrolling of 9.5 km was carried out on the boundary between the V16-V17 of the consolidated MADERACRE SAC.

- There was evidence of forestry activity (logging, logging and skidding) in the adjoining concession.

- Three trees of the chestnut species were georeferenced within the concession, one of them with signs of fruit use years ago.

- Two trees of the shihuahuaco species were georeferenced for monitoring as they are on the border with the adjoining concession.

d) ENVIRONMENTAL MONITORING

*Water courses.

When carrying out the evaluation of the trawling activity, no signs of obstruction or alteration of watercourses were found.

No alteration of watercourses due to the construction of roads was reported. The bridges where debris entered have been cleaned.

The results are found in the document "Informes de Monitoreo de Operaciones Forestales 2017 - 2018 – 2019"

*Forest Degradation.

2017:

- It is estimated that the area degraded by skidding activity in PC12 was 24.29 Ha, while in PC15 a degradation of 168.14 Ha is estimated.

- In PC12, 9,611.65 linear meters of main road and 12,581 meters of secondary road were reopened, causing a degradation of 38.75 hectares.

- In PC15, 19,492.51 linear meters of main road and 154,596.17 meters of secondary road were built, causing a degradation of 219.67 hectares.

- In terms of the total area of the FMU of the consolidated (220844.56 Ha), the percentage of degradation in the CP intervened in the 2017-2018 harvest represents 0.35%, being an extremely low level of impact.

2018:

- In the 2018 - 2019 harvest, a total of 8,302 trees were felled in an area of 11,795.41 Ha, determining a felling intensity of 0.70 trees/ha; a degradation of 297.3 Ha of forest in PC16 is estimated as a result of this activity and that the number of individuals ≥ 10cm DBH affected by the activity was 59534.2019.

2019:

- In the 2019-2020 harvest, a total of 8,894 trees were felled in an area of 12,090.06 Ha, determining a felling intensity of 0.74 trees/ha; a degradation of 223,571 Ha of forest in PC17 is estimated as a result of this activity and that the number of individuals ≥ 10cm DBH affected by the activity was 55,568.

The results are found in the document "Informes de Monitoreo de Operaciones Forestales 2017 - 2018 – 2019"

*Impacts on indicator fauna.

During the aforementioned forest harvesting operations, there were no reports of dead animals, or impact on sites of importance to wildlife, HCV sites or alteration or obstruction of water courses, that is, the company complied with the provisions of the Manual of Forest Operations and the Forest Management Practices Regulation and other management instructions.

The results are found in the document "Informes de Monitoreo de Operaciones Forestales 2017 - 2018 – 2019".

*Impact prevention and correction.

In the forestry operations monitoring reports, the area degraded by forest management operations is calculated, these being recovered by the process of regeneration and natural succession. For this purpose, the company Maderacre closes the forestry operations in a certain intervened area so that after Therefore, the natural processes of forest regeneration allow it to recover continuously due to the principle of resilience.

*Surveillance and monitoring

The indicator refers to the implementation of quality control procedures for the biodiversity monitoring system that includes an annual frequency report with scope to the different monitoring activities of the project. The indicator will be implemented from the 2022 period and financed with project income from the sale of carbon credits.

5.3.2   Biodiversity Monitoring Plan Dissemination (B4.3)

The results of the Fauna Monitoring and High Conservation Values (HCV) evaluations, as well as the related documentation, are uploaded to the official website of the project proponent for dissemination. This is shown in the following figure and the online address is http://maderacre.com/sostenibilidad/

In addition, in the case of FSC certification, as part of its public announcements on its official page for Peru, which is https://pe.fsc.org/es-pe

For the dissemination with the neighboring communities, it is carried out through the social manager, following a social dissemination plan, through informative workshops and meetings with representatives and residents.
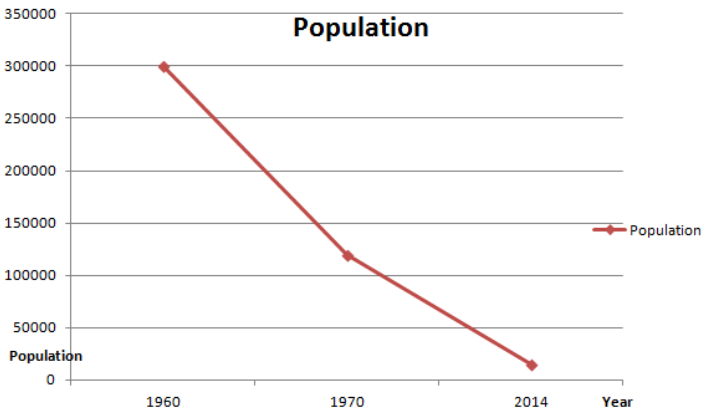
Figure 5. 12. Company Webpage

5.4   Optional Criterion: Exceptional Biodiversity Benefits

5.4.1   Trigger Species Population Trends (GL3.3)

Table 5. 4. Trigger Species

Trigger Species	Jaguar (Panthera onca)
Population Trend at Start of Project	Yet today, jaguars have been almost eliminated from the United States and populations in Central and South America are falling because of habitat destruction, trophy hunting and conflict with humans. Jaguars are listed as "Near Threatened" on the International Union for the Conservation of Nature (IUCN) Red List of Threatened Species. Although they still exist in countries such as Arizona and Mexico, the species only inhabits 40% of their original, historical range (WCS, 2007)[15]. In the mid-1800s, the jaguar population extended from Southern Brazil north to Central America, and along west coasts of Mexico. Jaguars could be found in the southwestern United States, and as far north as the Grand Canyon in Arizona (Tony Davis, 2013). There were an estimated 400,000 jaguars roaming in the wild. In the 1960s and 1970s, approximately 18,000 jaguars were killed each year (Panthera Inc, 2014). By 1996, the jaguar population was almost completely eliminated from the United States. Only four jaguars sighted in New Mexico and Arizona established that the population still inhabited the U.S, and the jaguar is now listed as an endangered species in these areas by the U.S. Fish and Wildlife Service. Today it is estimated that only 15,000 jaguars remain in the wild, and have been protected under the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) since 1973 (Tony Davis, 2013). As number of jaguars has drastically declined in the past 150 years, the pattern of growth exhibited by the species is exponential decay. The birth rates of the jaguars are declining as their death rates are increasing, and this is causing their numbers to steadily decline. With 22,000 jaguars in its territory, Peru is the second country in South America with the largest number of jaguars after Brazil; however, this figure is half of what

[15] Wildlife Conservation Society (wcs), 2007, "Jaguars in the New Millenium Data Set Update: Th e State of the Jaguar in 2006", wcs, Nueva York; 1998, "Edge Eff ects and the Extinction of Populations Inside Protected Areas", Science, 280 (5372): 2126–2128

	should be registered, according to the corporate sustainability program Conexión Jaguar.
	According to international research, it is estimated that for every 100 square kilometers of protected areas in the Amazon there are 4.5 jaguars, and in unprotected areas the number is reduced by half.
	The threats to jaguar survival are increasing. Illegal trade and poaching have increased in recent years due to a growing demand for their tusks in the Asian market. This situation, coupled with the loss of its habitat, is accelerating the risk of extinction for the species.
	A bleak outlook for the region's largest cat. For this reason, Peru has asked CITES to recognize the jaguar as a flag species of the American countries where it lives and to adopt special measures to protect it.
Without-project Scenario	As can be seen from the information presented, there are no precise statistics on the population of jaguars in the American continent or in Peru. However, what all researchers agree on is the fact that this population is decreasing at an alarming rate as a consequence of the damage to its habitat and the fragmentation of the biological corridors that this species requires for its survival.
	As can be seen in the adjacent areas, the loss and degradation of forests is increasing with the consequent negative impact on the jaguar population and pushing this population towards the protected forests of the project area, as reported by the study by PROJECT AREAS AMAZONIA, WWF-PERU AND SAN DIEGO ZOO GLOBAL, using camera traps, the frequency of observation of larger cats such as the Jaguar is considerably higher than in other nearby conservation areas.
With-project Scenario	The study by PROJECT AREAS AMAZONIA, WWF-PERU, AND SAN DIEGO ZOO GLOBAL[16] within the Consolidated indicates that the population density of the Jaguar in the Espinoza group concessions during 2009, up to 27 different jaguars could be identified through the pattern of the spots that is unique for each individual. Thanks to this information, we have been able to calculate a specific density estimate for this area, using the spatially explicit capture recapture (SECR) method, of 4.9 jaguars per 100 km2. While the average density found in all our studies was 4.4 ± 0.7 jaguars / 100km2.
	These measurements were made through camera traps placed in strategic locations within the forest and extraction roads. The Jaguar is an indicator of the good condition of the forest, its presence alone would demonstrate that the ecological processes of the forest are optimal and that the logging carried out does not generate a negative impact on biodiversity but on the contrary is a bridge for the transit of countless species, improving the connectivity between natural protected areas and the project.

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[16] AREAS-Amazonia of WWF-Perú (2012). Preliminary report of the study of jaguars and pumas in the certified forest concessions maderas cocama and aserradero espinoza. Puerto Maldonado, September 2012.

6   LIST OF APPENDICES

Appendix 1. Internal Communication Plan.

Appendix 2. Meeting report of the Community Relations Advisory Committee.

Appendix 3. Estimation of Scarcity Factor.

Appendix 4. Data from the surveys.

Appendix 5. Other Stakeholders indicators.