BioCarbon Registry	**REDD+ Project Document**
Basic Project Information	
Project Title	Aire de Vida "FIIVO JAAGAVA KOMUYA JAG+Y+". Monochoa REDD+
Version	3
Project Location	**Country:** Colombia **Department:** Caquetá **Municipality:** Solano
Proposer and Representative	**MONOCHOA INDIGENOUS RESERVATION** **Caño Negro Community** Gustavo Rodríguez Paky **Tirivita Community** Waldemiro Hernandez Ortiz
Other Project Proponents and Representatives	**CARBO SOSTENIBLE SAS** Juan Andrés López Silva **TERRA COMMODITIES SAS** Federico Ortiz **YAUTO SAS** Pedro Posada **VISSO CONSULTANTS SAS** Jorge Giron
Prepared by	**CARBO SOSTENIBLE SAS** Juan Andrés López Silva **TERRA COMMODITIES SAS** Federico Ortiz

BioCarbon Registry	**REDD+ Project Document**
Basic Project Information	
	YAUTO SAS Pedro Posada
Validation Body and Verification	AENOR
Project duration	17-Jan-2018 to 16-Jan-2048; 30 years
Accreditation Period	17-Jan-2018 to 16-Jan-2048; 30 years
Methodology	ProClima 2020 AFOLU Sector Methodology Document Quantification of GHG Emission Reductions or Removals from REDD+ Projects Version 2.2. 05-February-2021
Estimated GHG reduction	**Deforestation:** 13,841,631 tCO2e for 30-year crediting period **Degradation:** 81,751 tCO2e for an accreditation period of 30 years **Total:** 13,923,383 tCO2e for an accreditation period of 30 years 464,024 average tCO2e/year
Contact Person	Juan Andrés López Silva jlopezsilva@carbosostenible.com +57 1 249 4098 +57 311 4814086

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1. Project description

1.1. Project summary

The territory of the Monochoa Indigenous Reserve (RI Monochoa) is located in the Municipality of Solano, in the Department of Caquetá. The Tiribita community, the Caño Negro community, and the Sainí settlement are located in this reserve. The reserve was legally established by Resolution 031 of April 6, 1988 issued by the Colombian Institute of Agrarian Reform (INCORA), now the Colombian Institute of Rural Development (INCODER), which granted title to 229,440 hectares. Subsequently, the area of the reserve was expanded by 33,653.41 ha through Resolution 031 of December 15, 2004 issued by INCORA and by 154,790.56 ha through Agreement 025 of 2017 issued by the National Land Agency (ANT), bringing the total area of the reserve to 417,883.97 ha.

The indigenous reservation's territory has experienced a reduction in forest cover due mainly to land-use changes resulting from the expansion of the agricultural frontier, timber extraction and the establishment of transitory crops. REDD+ strategy activities are aimed at reducing deforestation and unplanned forest degradation, contributing to climate change mitigation by reducing greenhouse gas (GHG) emissions associated with these two processes.

The objective of the project is to contribute to the sustainable development of the communities and conserve the existing forests in the territory of the Monochoa Indigenous Reserve by strengthening territorial governance, developing sustainable productive activities that contribute to food security and the generation of economic surpluses, social investment in health, education, basic sanitation and transportation, and the monitoring and protection of biodiversity.

The project area corresponds to 353,583 ha of forest and the conservation initiative falls under the Agriculture, Forestry and Other Land Use (AFOLU) sector, in the Reducing Emissions from Deforestation and Degradation (REDD+) category. The project is expected to generate close to 13.9 million

Verified Carbon Credits (VCC) during the 30-year crediting period (13,841,631 tCO2e for avoided deforestation and 81,751 tCO2e for avoided degradation), with an annual average of 464,024 tCO2e. The project's carbon certificates are aimed at the domestic carbon market (carbon tax exemption and voluntary compensation) and potentially at the international market. Through the commercialization of the CCVs, economic resources will be obtained to ensure the development of REDD+ activities and achieve short- and long-term objectives, as well as to contribute to the fulfillment of the Sustainable Development Goals (SDGs) addressed through the project.

The formulation and implementation of the project has been the responsibility of the communities and the project developers, involving the active participation of the leaders and representatives of the Monochoa IR. We have continuously worked to strengthen the interest, commitment to participation and orientation of all members involved so that both the design and implementation of the project's activities and objectives are carried out properly. The participation of community members in all stages of project development has facilitated understanding and ownership of the initiative at the local level.

1.2. Project objectives:

1.2.1. General Objective

Contribute to the sustainable development of the communities and conserve the existing forests in the territory of the Monochoa Indigenous Reserve in the municipality of Solano (Caquetá).

1.2.2. Specific objectives

- To develop production systems compatible with nature conservation and community welfare, contributing to guarantee food security.

- Contribute to improve the living conditions of the communities living in the indigenous reservation.

- Strengthen cultural identity and territorial governance.

- Strengthen the monitoring and conservation of the biodiversity present in the area of the indigenous reservation.

The actions developed under the project are aligned with the SDGs as presented below:

Table 1. Sustainable Development Goals with which the project activities are aligned.

Category	Unit of measure	Sustainable Development Goal
Reduction of emissions of GEI	Reductions emissions in the project area.	**SDG 13** - Climate Action
Forest cover	Area of forest that is preserved in the indigenous territories.	**SDG 13** - Climate Action **SDG 15** - Life of Terrestrial Ecosystems
Land use	Area of forest with improved management practices.	**SDG 11** - Sustainable cities and communities **SDG 13** - Climate Action **SDG 15** - Life of Terrestrial Ecosystems
	Area of agricultural systems with improved management practices.	**SDG 2** - Zero Hunger **SDG 11** - Sustainable cities and communities **SDG 13** - Climate Action **SDG 15** - Life of Terrestrial Ecosystems
Capacity building	People benefiting from training and capacity building in production systems management, biodiversity monitoring strategies and governance mechanisms.	**SDG 1** - End poverty **SDG 2** - Zero Hunger **SDG 8** - Decent work and economic growth **SDG 11** - Sustainable cities and communities **SDG 13** - Climate Action **SDG 15** - Life of Terrestrial Ecosystems
	Women who benefit from training	**SDG 1** - End poverty **SDG 2** - Zero Hunger

Category	Unit of measure	Sustainable Development Goal
	in production systems management, biodiversity monitoring strategies and territorial governance mechanisms.	**SDG 5** - Gender equality **SDG 8** - Decent work and economic growth **SDG 11** - Sustainable cities and communities **SDG 13** - Climate Action **SDG 15** - Life of Terrestrial Ecosystems
Employment	Persons who are employed or receive economic incentives in the framework of project activities.	**SDG 1** - End poverty **SDG 2** - Zero Hunger **SDG 8** - Decent work and economic growth **SDG 11** - Cities and communities sustainable
	Women who are employed or receive economic incentives in the framework of project activities.	**SDG 1** - End poverty **SDG 2** - Zero Hunger **SDG 5** - Gender equality **SDG 8** - Decent work and economic growth **SDG 11** - Cities and communities sustainable
Livelihoods	People who improve their livelihoods or income as a result of project activities.	**SDG 1** - End poverty **SDG 2** - Zero Hunger **SDG 8** - Decent work and economic growth **SDG 11** - Cities and communities sustainable
	Women improving their livelihoods or income as a result of project activities.	**SDG 1** - End poverty **SDG 2** - Zero Hunger **SDG 5** - Gender equality **SDG 8** - Decent work and economic growth **SDG 11** - Cities and communities sustainable
Health	Persons who obtain or improve the access to health.	**SDG 3** - Health and well-being **SDG 11** - Sustainable cities and communities

Category	Unit of measure	Sustainable Development Goal
	Women gaining or improving access to health services as a result of the activities of the project.	**SDG 3** - Health and well-being **SDG 5** - Gender equality **SDG 11** - Sustainable cities and communities
Education	Individuals gaining access to or improvements in the quality of education services as a result of the activities of the project.	**SDG 4** - Quality education **SDG 11** - Sustainable cities and communities
	Women gaining access to or improvements in the quality of education services as a result of the activities of the project.	**SDG 4** - Quality education **SDG 5** - Gender equality **SDG 11** - Sustainable cities and communities
Water and basic sanitation	People gaining access to safe drinking water or improving the quality of the water they consume as a result of activities of the project.	**SDG 1** - End Poverty **SDG 2** - Zero Hunger **SDG 3** - Health and Well-being **SDG 6** - Clean water and sanitation **SDG 11** - Sustainable cities and communities
	Women gaining access to safe drinking water or improving the quality of their drinking water as a result of project activities.	**SDG 1** - End Poverty **SDG 2** - Zero Hunger **SDG 3** - Health and Well-Being **SDG 5** - Gender equality **SDG 6** - Clean water and sanitation **SDG 11** - Sustainable cities and communities
Welfare	People whose well-being is improved as a result of project activities.	**SDG 3** - Health and well-being SDG7 - Clean Energy **SDG 11** - Sustainable cities and communities

Category	Unit of measure	Sustainable Development Goal
	Women whose well-being improves as a result of project activities.	**SDG 3** - Health and well-being **SDG 5** - Gender equality **SDG 11** - Sustainable cities and communities
Biodiversity conservation	Intervention area in which management measures are implemented for the conservation of the biodiversity.	**SDG 11** - Sustainable cities and communities **SDG 15** - Life of Terrestrial Ecosystems
	Species in any category of risk of extinction that are protected under the project activities.	**SDG 11** - Sustainable cities and communities **SDG 15** - Life of Terrestrial Ecosystems

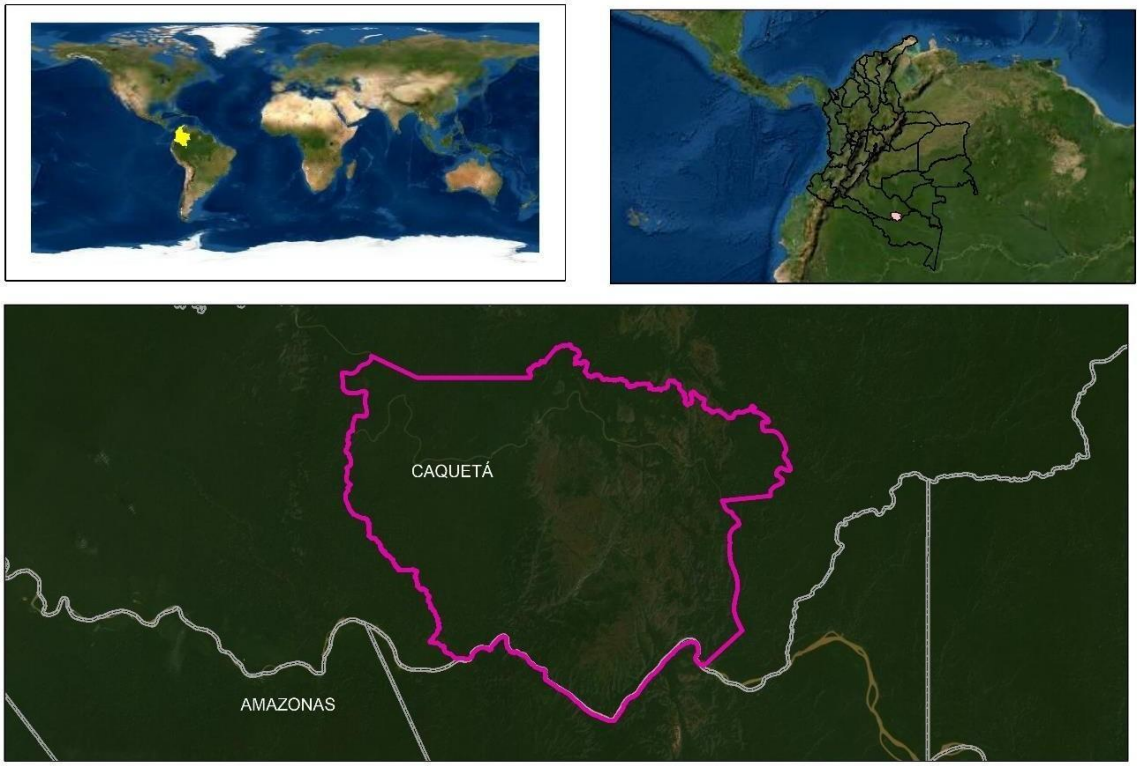
Source: *Own elaboration, 2021*

1.3. Project location

The project is located in the Monochoa IR territory, which has a total area of 417,883.97 ha and is located in the municipality of Solano, in the southeast of the department of Caquetá. To the north, it borders the forest reserve zone of the department of Caquetá and the Serranía del Chiribiquete National Natural Park. To the east, it borders the Mesay and Aduche indigenous reserves. To the south, it has its control and surveillance zone on the right bank of the Caquetá River, in the Predio Putumayo reservation. To the west, it borders the Puerto Zábalo and Los Monos reservations.

The spatial location of the project area is presented below:

Map 1. Location of the REDD+ project area (Solano, Caquetá).



Source: *Own elaboration, 2021*

1.4. Project duration

The start date of the project is 17-Jan-2018 and is for a period of 30 years, so the project will end on 16-Jan-2048.

1.5. Accreditation period

The accreditation period corresponds to the date from January 17, 2018 to January 16, 2048.

1.6. Initiative holder

The owners of the project correspond to the project proponents, that is, the communities that make up the Monochoa Indigenous Reservation, and CARBO Sostenible S.A.S., Terra Commodities S.A.S., Yauto S.A.S. and VISSO Consultores S.A.S. The owners of the project are responsible for the formulation, implementation, follow-up and registration of the initiative. The following is the information for each holder:

Name of organization	Monochoa Indigenous Reservation Caño Negro Community
Contact Person	Gustavo Rodríguez Paky
Position	Captain
Address	Monochoa Indigenous Reserve, Solano municipality, department of Caquetá
Phone	+57 322 2006755
Email	Not applicable
Role	Participatory joint project development Implementation of activities

Name of organization	Puerto Zábalo and Los Monos Indigenous Reservation El Quinche Community
Contact Person	Waldemiro Hernández Ortiz
Position	Governor
Address	Monochoa Indigenous Reserve, Solano municipality, department of Caquetá
Phone	+57 322 2006755
Email	Not applicable
Role	Participatory joint project development Implementation of activities

Name of organization	Carbo Sostenible SAS
Contact Person	Juan Andres Lopez
Position	Legal Representative
Address	Calle 77ª # 12-60, of 301
Phone	+57 311 4814086
Email	jlopezsilva@carbosostenible.com

Role	Project Developer Support in the implementation of activities Carbon credit trading Activity financing

Name of organization	Terra Commodities SAS
Contact Person	Federico Ortiz
Position	Director
Address	CALLE 70 No. 6-55 AP2 Bogotá, Colombia
Phone	+57 310 223 5070 +351 913608709
Email	fortiz@terracommodities.net
Role	Project Developer Support in the implementation of activities Carbon credit trading Financing of activities

Name of organization	Yauto SAS
Contact Person	Alicia Micolta
Position	Legal Representative
Address	URBANIZATION RINCON SAN PEDRO GUAYMARAL, Bogotá, Colombia
Phone	+57 316 831 2367
Email	amicoltac@gmail.com
Role	Project developer Coordination of field work Support in the implementation of activities Financing of activities

Name of organization	VISSO CONSULTANTS SAS
Contact Person	Jorge Giron
Position	Legal Representative

Address	Carrera 13ª # 127 - 40 / Office 402 Bogotá, Colombia
Phone	+57 315 345 9581
Email	asociado@vissoconsultores.com
Role	Project Developer Financing of activities

2. Applicability of the methodology

Table 2. Conditions of applicability of the methodology and its compliance.

Condition of applicability	Compliance
The areas within the geographic boundaries of the project correspond to the forest category (as defined by the forest and carbon monitoring system) at the beginning of each project activity and ten years earlier of the commencement date of the same.	**Compliant.** Based on the cartographic analysis, it can be determined that the project area corresponds to forest that was present ten years prior to the start date of the activities.
The identified causes of deforestation are: the expansion of the agricultural and livestock frontier, mining, extraction of and the expansion of infrastructure.	**Complies.** The expansion of the agricultural and livestock frontier and timber extraction were identified as the main causes of deforestation in the project area.
The identified causes of forest degradation are: selective logging, fuelwood extraction, forest fires, grazing in forests and expansion of the forest frontier, crops or crops of illicit use.	**Compliant.** In the project area, selective logging and the expansion of the agricultural frontier - illicit crops - were identified as causes of forest degradation.
No reduction in deforestation or degradation is expected to occur in the absence of the project.	**Complies.** The trend of deforestation and degradation has been maintained historically and may be maintained in the absence of the project.
In deforested areas, there is a high probability that carbon stocks or soil organic matter, litter and dead wood will decrease or remain in deforested areas.	**Complies.** In deforested areas, carbon stocks in soil organic matter, litter and dead wood decrease.

The quantification of GHGs other than carbon dioxide should be included in the measurement of emissions caused by forest fires during the monitoring period.	**Compliant.** During the monitoring period, if forest fires are detected, GHG emissions will be quantified and included in the emissions estimates associated with the project.
The activities that make up the REDD+ project will not result in the violation of any applicable law.	**Compliant.** REDD+ activities comply with national regulations.

Source: *Own elaboration, 2021*

3. Normative references

During the structuring of the project, the applicable legal framework was taken into account in order to address each of the required elements. As a compliance verification mechanism, the *QC-QA Monochoa v1.pdf procedure* was defined (located in the folder Annex 5), which includes a follow-up format called *Matriz Cumplimiento Legal_Proyecto REDD+ Monochoa v1.xlsx (*located in Annex 7). To highlight the regulatory framework that applies to the projects and that was taken into account in the development of the project, the following is a list of the standards and reference documents:

Resolution 1447 of 2018: issued by the Ministry of Environment and Sustainable Development (MADS), regulates the system for monitoring, reporting and verification of mitigation actions at the national level referred to in Article 175 of Law 1753 of 2015.

Resolution 831 of 2020: issued by the Ministry of Environment and Sustainable Development (MADS), which modifies Resolution 1447 of 2018 and establishes the requirements for registration in RENARE and the validity of projects to report in RENARE. It establishes guidelines to save and demonstrate the methodological consistency of the baselines of sectoral projects.

Law 1931 of 2018: issued by the national government, establishing guidelines for climate change management in the country.

Resolution 471 of 2020: issued by the Agustín Codazzi Geographic Institute (IGAC), it indicates the minimum technical specifications that must be included in the official basic cartography products of Colombia, as well as their scope of application, scope, among others.

Resolution 370 of 2021: issued by the Instituto Geográfico Agustín Codazzi (IGAC), which establishes the official cartographic projection system for Colombia.

Integral Strategy for Deforestation Control and Forest Management: approved in 2020 (CONPES Document 4021), its main objective is to reduce deforestation and forest degradation, to the extent that forest management is promoted in Colombia, under an integral sustainable rural development approach.

National REDD+ Strategy: defines the REDD+ policies and measures that will reduce GHG emissions associated with the forestry sector. It outlines the "road map" that establishes the activities that can be carried out, how they can be carried out and the economic resources required. It is part of the actions on Climate Change contemplated in the National Development Plan 2018-2022.

National Interpretation of Social and Environmental Safeguards for REDD+ in Colombia: provides guidelines regarding social and environmental safeguards, which must be taken into consideration to ensure respect for the rights of communities and mitigation of social and environmental risks.

Conceptual and methodological guidelines for the characterization of causes and agents of deforestation in Colombia: issued in 2018, presents a methodological and conceptual guide to adequately characterize the causes and agents of deforestation, so that the information is comparable and interoperable, at different spatial and temporal scales.

Proposed Reference Level of forest emissions from deforestation in the Amazon Biome of Colombia for REDD+ payment for results under the 2019 UNFCCC: presents the reference values to evaluate Colombia's performance in the implementation of REDD+ activities. The proposal presents the reference levels by biome (Amazon, Andes, Caribbean, Orinoco and Pacific).

Estimation of forest degradation in Colombia through fragmentation analysis: elaborated in 2018, presents the results of one of the methodologies prioritized by the Forest and Carbon Monitoring System (SMByC), to estimate forest degradation in Colombia.

The guidelines established by the IPCC in 2006 and 2019 for national greenhouse gas inventories - Volume 4. Agriculture, forestry and other land use: defines guidelines for estimating and reporting GHG emissions and removals, incorporating good practices and uncertainty management in national GHG inventories.

Law 1819 of 2016: Through which the structural tax reform is adopted, the mechanisms for the fight against tax evasion and avoidance are strengthened and through which the National Carbon Tax is created in response to the country's need for economic instruments to incentivize compliance with greenhouse gas (GHG) mitigation goals at the national level.

Decree 926 of 2017: Establishes the procedure for the Non Causation of the National Carbon Tax. Its purpose is to stimulate the formulation and implementation of mitigation initiatives that generate GHG emissions reductions or removals in exchange for the non causation of the tax.

Nationally Determined Contribution (NDC): Colombia signed and ratified the commitment acquired by the Paris Agreement in 2015 to strengthen its efforts to regulate its emissions to avoid global temperature increase. In the framework of this agreement, Colombia subscribed in its NDC an initial target of 20% reduction of its emissions with respect to a baseline scenario to 2030. In 2020, Colombia updated its NDC, acquiring an emissions reduction commitment of 51% by 2030 with a clear focus on reducing emissions from deforestation and forest degradation.

Resolution 031 of 1988: Issued by the Colombian Institute of Agrarian Reform (INCORA), by means of which a sector of land reserved for the benefit of the Witoto indigenous population of Parajo Monochoa, located in the jurisdiction of the municipality of Solano, department of Caquetá, is granted the legal status of Reserve.

Agreement 025 of 2017: Issued by the National Land Agency of the Ministry of Agriculture and Rural Development, whereby Resolution 031 of 1988 is amended and the area of the Uitoto Indigenous Reserve (Murui-Muinai) of Monochoa is expanded, on an ancestral occupation territory (vacant) located in the jurisdiction of the municipality of Solano, department of Caquetá.

PROCLIMA® Program: Program for Certification and Registration of GHG Mitigation Initiatives and other Greenhouse Gas Projects, corresponding to the latest published version.

4. Carbon sinks and GHG sources

4.1. Carbon deposits

According to the ProClima methodology (2021) and the Intergovernmental Panel on Climate Change (IPCC) (2006), carbon pools are: aboveground biomass, belowground biomass, dead wood, litter and soil organic carbon. However, for the case of the project, only 3 of these pools are considered, as contemplated in the Reference Level for Colombia (IDEAM, 2019).

The carbon reservoirs included in the project are:

Table 3. Carbon deposits.

Carbon tank	Is it included?	Justification
Aerial biomass. Arboreal vegetation	Yes	Represents the largest carbon pool resulting from the implementation of project activities.

Carbon tank	Is it included?	Justification
Aerial biomass. Non-tree vegetation	No	It is a carbon deposit that can be conservatively excluded.
Subway biomass	Yes	It is a representative carbon pool, derived from the implementation of project activities.
Dead wood	No	It is a carbon deposit that can be conservatively excluded.
Leaf litter	No	It is a carbon deposit that can be conservatively excluded.
Soil organic carbon	Yes	It is a reservoir whose carbon content is expected to change in the project scenario.

Source: *ProClima AFOLU Sector Methodological Document (2021).*

4.2. Sources of GHG

The emission sources and GHGs associated with project activities are presented below:

Table 4. Emission sources and associated GHGs.

Source	GEI	Does it apply?	Justification
Woody biomass combustion	CO_2	No	No project activities involving biomass burning are generated.
	CH_4	No	If forest fires occur during the monitoring period of the activities, methane emissions will be estimated and included in the emissions for the corresponding period.

Source	GEI	Does it apply?	Justification
	NO_2	No	If forest fires occur during the activity monitoring period, nitrogen dioxide of nitrogen emissions will be estimated and included in the emissions for the period corresponding.

Source: *Own elaboration, 2021.*

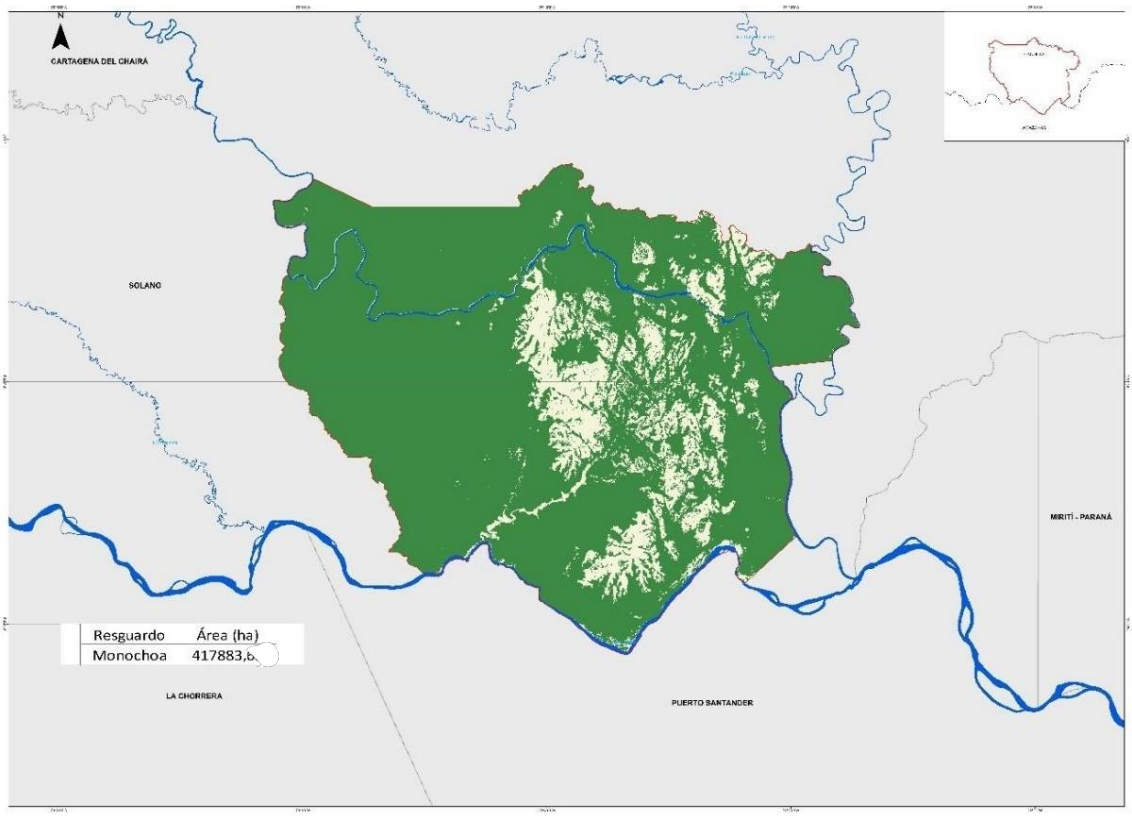
5. Spatial and temporal limits of the project

5.1. Eligible REDD+ project areas

Eligible project areas correspond to stable forest within the boundaries of the indigenous reserve for at least a ten-year period prior to the project start date, according to the definition of forest adopted by Colombia and used by the Forest and Carbon Monitoring System (SMByC). Forest is land occupied mainly by trees that may contain shrubs, palms, guaduas, herbs and lianas, in which tree cover predominates with a minimum canopy density of 30%, a minimum on site canopy height of 5 meters at the time of identification and a minimum area of one hectare (IDEAM, 2014).

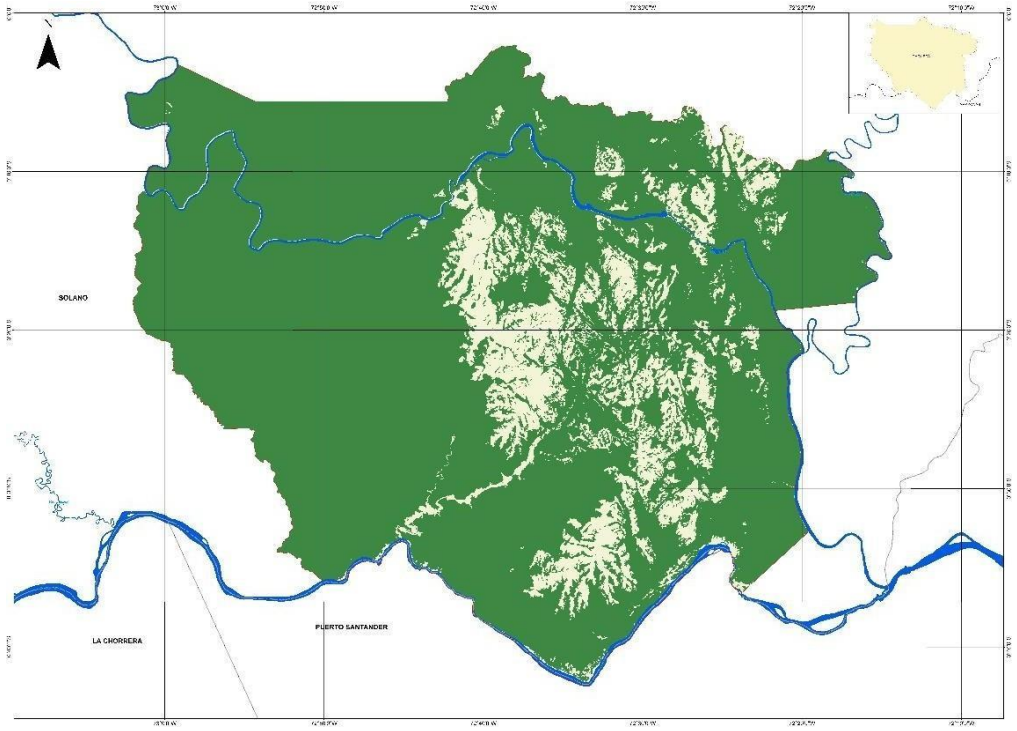
The project area corresponds to 353,583 hectares of forest present within the reserve for at least 10 years prior to the start of the REDD+ project. To identify the forest, data was downloaded from the Colombian Forest and Carbon Monitoring System (SMByC) and the area of forest existing at the beginning of the project (data from the previous year) and present ten years prior to the start date was calculated. The following map shows compliance with this characteristic.

Map 2. Project area in 2018 (stable forest since 2007 within the reserve).



Source: *Own elaboration,2021*

Map 3. 2007 forest area within the reserve.



Source: *Own elaboration,2021*

5.2. Characteristics of the communities in the reserve

Cultural principles of land management

The communities of the Monochoa IR call themselves Gente de Centro, made up of a group of Amazonian ethnic groups with common cultural traits that identify them as a large family, whose cultural environment revolves around three fundamental elements, represented by three plant species: coca, tobacco and sweet yucca, which act on a single principle: life. Given the cultural importance of these elements, the project preserves and contributes to the strengthening of the community's cultural practices (Reserve Monochoa and its Control and Surveillance Zone in the Putumayo Estate, 2016).

Decision-making within the social structure corresponds to a process linked both to cosmological visions and to the organization of the authorities within a daily know- how and the performance of traditional dances.

Under the mythical form and material of the maloca, the different topics that concern the community are discussed. In this place, humans enter into communion with their spiritual guides (through the

ambil, the mambe and the manicuera) and with other men, although this contact occurs in other spaces as well (Reserve Monochoa and its Control and Surveillance Zone in the Putumayo Predio, 2016).

Figure 1. Traditional social organization of the Monochoa IR.

Source: *Reserve Monochoa and its Zone of Control and Surveillance in the Putumayo Estate, 2016*

Figure 2. Cultural Principles of Management of the Monochoa IR.

Source: *Rserve Monochoa and its Zone of Control and Surveillance in the Putumayo Estate, 2016.*

The following is a description of the most relevant cultural principles and their importance:

- *Gióna/bañóho* - Tobacco: it is the law and in it rests the spirit of the creator father. It represents wisdom and the word of command.

- *Jibina/jíibiky* - Coca: accompanies and sweetens the heart of man. Facilitates and minimizes the source of man's word.

- *Paréka/fáikúmigahi* - Sweet yucca: it is used to make manicure. It sweetens the heart of man, changes the emotional ups and downs, extinguishes the candle and cools the heart of man.

- *Yedárapue/Fagóji*: law of life, word of advice, given by the father creator through tobacco.

- *Naguíraiko baoja/Niibimija*: corresponds to the maloca, which represents the heart of man and is a symbol of power. There is the seat of power, the seat of thought, the seat of knowledge, where the word of tobacco and coca, nature and society is administered. The maloca also teaches rites, narrations, chants, prayers, among others.

- *Dióna úai/bañóho iijí (word of tobacco), jibíe úai/jíibiku iijí (word of coca), paréka úai/fáikúmigahi iijí (word of sweet yucca):* correspond to the principles of center. The territory is identified as the center of the life of the community, where the father creator left the Word of Life and the Word of Advice for good living. The management of the territory is done from the maloca, particularly

  the mambeadero[1] , special and obligatory place, social and spiritual meeting point of the Gente de Centro. There, in the evening hours

[1] Mambeadero: It is a place, a social and spiritual meeting point for the people of the center, where work is planned and analyzed daily, the natural environment is monitored, knowledge is offered and acquired, education is provided and contact is made with the Creator and other owners of nature.

the men gather around the preparation and consumption of the mambe[2] , the ambil[3] and the manicuera[4] and the women from their stoves, to plan the activities to be carried out on the following day and "make them dawn"[5] .

The elders are the ones who have more knowledge about the management of the territory and transmit the word of advice as fathers and mothers do to their daughters and sons. That is why their advice is followed and taken care of. However, due to the death of wise men and women during the rubber tapping period, the knowledge of some important dances for the indigenous reserve was lost.

Traditional dances:

Traditional dances are done for environmental management and nature management, maintaining a social and natural balance. The management of the territory is articulated through dialogue between the owners of dances that complement each other when they take turns performing them. The owners of the dance, the wise ones, have the knowledge of the management of the environment and its changes.

- *Tíkii/ ÁmokaBaila* - Hunting dance: performed when there are problems in humanity, society and home. These problems are seen as evils that manifest in some animals, the dance sweetens the animal and is converted into food.

- *Yuakí, Nímigeene* - Dance of fruits: it is done for coexistence and maintenance of health, to consecrate humanity and the owners of nature. It prevents diseases, consecrates the wild fruits and those of the chagras. It is also done in the inaugurations of malocas and when we want to celebrate joy and triumphs.

[2] Mambe: It is an element of ritual use of Amazonian cultures, product of the pulverization of coca leaves and ashes of special vegetables.
[3] Ambil: Element of ritual use of Amazonian indigenous cultures, product of the reduction of tobacco and other vegetable elements.
[4] Manicuera: It is a drink of high cultural representation, elaborated with sweet yucca or manicuera.
[5] To make dawn break, is an expression that denotes to make reality what was thought, planned and spoken.

- *Dúriai/Tire* - Dance of the charapa: it is done to prevent diarrhea, flu and cough, diseases associated with the aquatic world and the charapa. Also to maintain the good coexistence of the community.

- *Jutíroi/firaba* - Baptism dance: only women do it. It is done to make public the traditional name of a pair of children.

- *Kinekuitai* - Canangucho dance: it is performed by the *Aménani* clan and its meaning is hunting, related to the 12 moons of the year and the 12 hours of time.

Ecological calendar and food:

The daily diet of the communities of the Monochoa IR is based on the products of their crops, hunting, fishing and gathering of wild fruits that are worked and used, taking into account the moments of the annual cycle or ecological calendar. The chagra provides them with vegetable foods such as fruits, tubers and some legumes, among many others; cassava, which occupies a primordial place in this space and is considered the basis of the daily diet, in its different forms of preparation (cassava, fariña, manicuera, cahuana, etc.). The different plant species of the chagra are sown after a process of land adaptation based on the cutting and burning of small areas of forest; generally, a chagra produces for four years, then it is abandoned to allow the soil to recover naturally.

Fishing and hunting contribute to the daily diet with the supply of animal protein, which is necessary for food. Culturally, creek fish and small animals are destined for human consumption. For daily consumption, small arboreal land animals and different varieties of birds are normally hunted on a small scale. However, for special cases, such as dances and community work, large species such as tapir (*Tapirus terrestris*) or other smaller species are hunted in larger quantities; the main hunting tools used are shotguns and dogs and, on a smaller scale, other traditional methods such as traps. Fishing is carried out using conventional methods such as hook and line and other more traditional methods such as traps and controlled mass trapping methods. The most beneficial fish for health are considered to be the creek fish.

Also for special cases, from dances or community work, fish are obtained in large quantities; usually by means of the barbasco or barbasqueada technique.

Economic activities:

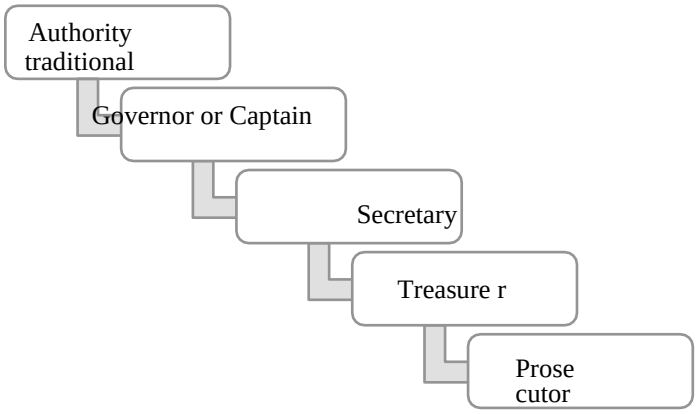
The main economic activities carried out by the indigenous communities are:

- Fishing, hunting and gathering
- Management of chagra as a traditional crop
- Exchange or barter
- State resources through the SGPRI as beneficiaries (managed by local mayors' offices).
- Contracts with the State
- NGO Interventions
- Company interventions in the territory

Form of government:

At the internal organizational level, the Monochoa IR has appropriated the governance structure and political organization of the cabildo, which is constituted as follows:

Figure 3. Governance structure and political organization of the Monochoa IR.



Source: *Own elaboration, 2021.*

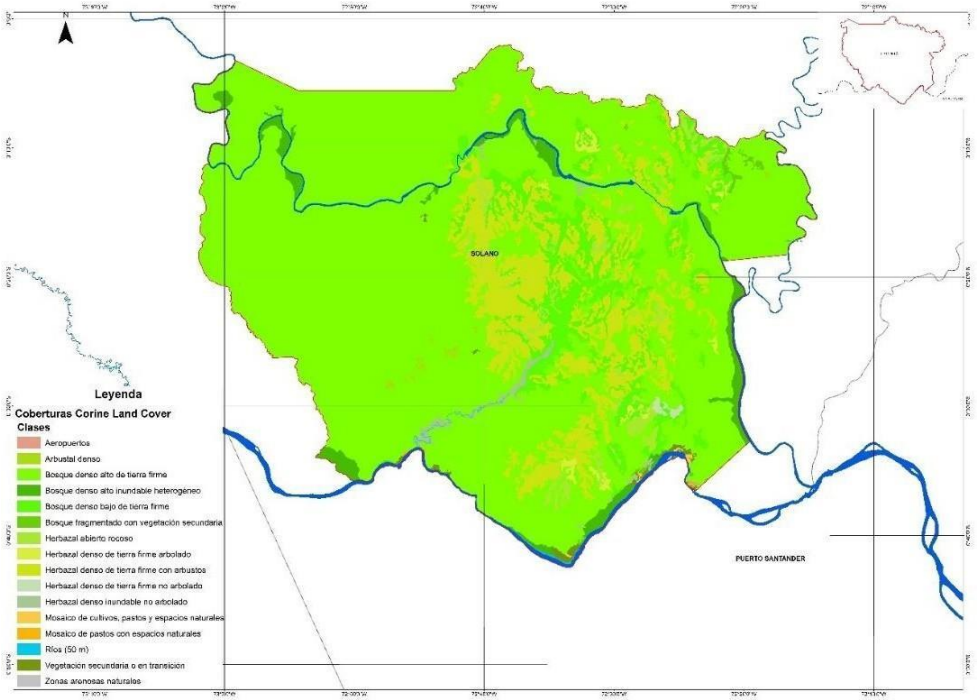
5.3. Biodiversity in the indigenous reserve

5.3.1. Land cover and land use

The following coverages have been identified in the territory comprising the Monochoa IR: high dense upland forest; heterogeneous high dense flooded forest; low dense upland forest; fragmented forest with secondary vegetation; open rocky grassland; dense forested upland grassland; dense shrubby upland grassland; dense non-forested upland grassland; dense non-forested flooded grassland; mosaic of crops, pasture and natural areas; mosaic of pasture with natural species; rivers; secondary or transitional vegetation; and natural sandy areas.

The following Map 4 shows the types of cover in the reserve and Table 5 shows the area and percentage assigned to each identified cover in the Monochoa IR territory.

Map 4. Coverages present in the Monochoa IR territory.



Source: *Own elaboration.*

Table 5. Description of coverages of the reserve.

Coverage	Area (ha)	Area (%)	
Airports	54,92	0,01	
Dense scrubland	584,85	0,14	
High dense forest mainland	305414,76	73,09	
High dense flooded forest heterogeneous	9965,46	2,38	
Low dense forest mainland	30327,63	7,26	
Fragmented forest with vegetation secondary	1051,96	0,25	
Herbazal open rocky	6875,86	1,65	
Dense grassland of land wooded ground	2561,10	0,61	
Dense grassland Firm with shrubs	50336,27	12,05	
Dense grassland firm no trees	526,58	0,13	
Herbazal dense floodable not wooded	2243,24	0,54	
Mosaic of crops, pastures and natural areas	243,64	0,06	
Pasture mosaic with Spaces natural	127,77	0,03	
Rivers (50 m)	5999,84	1,44	
Vegetation secondary o in transition	1387,37	0,33	
Zones sandy natural	182,42	0,04	
Total	417883,68	100	

Source: *Own elaboration.*

5.3.2. Fauna and Flora

Monochoa IR has a high diversity of birds, amphibians, reptiles, mammals, and plants and borders the Serranía de Chibiriquete National Natural Park, which is the largest natural reserve in the country. More than 1,429 species have been identified in the area, 44 of which are endemic. Some of these species are vulnerable, endangered, and critically endangered, according to the classification defined by the International Union for Conservation of Nature (IUCN).

Following are the species identified in the red book of reptiles of Colombia (Morales- Betancourt, Lasso, Páez, & Bock, 2015), red book of freshwater fishes of Colombia (Mojica, Usma Oviedo, Álvarez León, & Lasso, 2012), red book of birds of Colombia (Renjifo, Amaya-Villarreal, Burbano-Girón, & Velásquez- Tibatá, 2016), red book of plants of Colombia (Calderón-Sáenz, 2006; Cárdenas L. & Salinas, 2007), which are of interest in the project area:

Biodiversity identified in the red books for the project area.

Common name	Scientific name	National Classification
Reptiles		
Charapa Turtle	*Podocnemis expansa*	Critical Danger
Terecay Turtle	*Podocnemis unifilis*	Danger
Morrocoy Turtle	*Chelonoidis carbonarius*	Vulnerable
Black Cayman	*Melanosuchus niger*	Vulnerable
Freshwater fishes		
Paiche	*Arapaima gigas*	Vulnerable
Valentón	*Brachyplatystoma filamentosum*	Vulnerable
Apuy	*Brachyplatystoma juruense*	Vulnerable
Slimy	*Brachyplatystoma platynemum*	Vulnerable
Dorado	*Brachyplatystoma rousseauxii*	Vulnerable
Poor White	*Brachyplatystoma vaillantii*	Vulnerable
Arawana	*Osteoglossum bicirrhosum*	Vulnerable
Striped Catfish	*Pseudoplatystoma punctifer*	Vulnerable
Pintadillo Tiger	*Pseudoplatystoma tigrinum*	Vulnerable

Common name	Scientific name	National Classification
Yellow	*Zungaro zungaro*	Vulnerable
Black Cachama	*Colossoma macropomum*	Near Threatened
Bucket	*Sorubim lime*	Near Threatened
Axe Handle	*Sorubimichthys planiceps*	Near Threatened
Amphibians		
Rana from rain gargantimanchada	*Eleutherodactylus fallax*	Vulnerable
Inger Poison Frog	*Epipedobates ingeri*	Vulnerable
Johnson's horned frog	*Hemiphractus johnsoni*	Vulnerable
Birds		
Black Duck	*Netta erythrophthalma*	Critical Danger
red-breasted peacock	*crax globulosa*	Vulnerable
Tufted eagle	*Morphnus guianensis*	Near threatened
Plants		
Canelo	*Ocotea quixos*	Danger
Cedar	*Cedrela odorata L.*	Danger
Almond	*Caryocar amygdaliferum*	Vulnerable
Oak	*Quercus bumboldtii*	Vulnerable
Flyer	*Ceiba samauma*	Vulnerable

Source: *Red Books of Colombia.*

In addition, the list of species that are classified as Endangered, Vulnerable and Near Threatened by the International Union for Conservation of Nature (IUCN) in the project area is presented (IUCN, 2021).

Table 8. Species identified in the IUCN red list according to project area.

Category: Endangered			
Animalia	Mammalia	Giant otter	*Pteronura brasiliensis*
Animalia	Mammalia	Tucuxi	*Sotalia fluviatilis*
Animalia	Mammalia	Common spider monkey	*Ateles belzebuth*
Animalia	Birds	Paujil Moquirrojo	*Crax Globulosa*
Category: Vulnerable			
Animalia	Mammalia	Amazonian tapir or tapir	*Tapirus terrestris*
Animalia	Mammalia	Humboldt monkey, monkey choyo or gray woolly monkey	*Lagothrix lagothricha*

Animalia	Mammalia	Giant Armadillo	*Priodontes maximus*

Animalia	Mammalia	Tigrillo or tiger leopard	*Leopardus tigrinus*
Animalia	Mammalia	Giant anteater	*Myrmecophaga tridactyla*
Animalia	Mammalia	Bearded peccary	*Tayassu pecari*
Animalia	Mammalia	Calimico	*Callimico goeldii*
Animalia	Mammalia	Pygmy Marmoset	*Cebuella pygmaea*
Animalia	Mammalia	Sword-nosed bat	*Lonchorhina marinkellei*
Animalia	Mammalia	Primate	*Pithecia milleri*
Animalia	Mammalia	Titi de Manos negras	*cheracebus medemi*
Animalia	Birds	Yellow toucan furrowed	*Ramphastos culminatus*
Animalia	Birds	Wine pigeon	*Patagioenas subvinacea*
Animalia	Birds	White-winged curassow or turkey curassow guayanese	*Crax alector*
Animalia	Birds	Gara agami	*Agamia agami*
Animalia	Birds	Red-winged Parakeet	*Touit huetii*
Animalia	Birds	Spiny martin or swift chimney	*Chaetura pelagica*
Plantae	Magnolipside	American Cedar	*Cedrela odorata*
Plantae	Magnolipside	Majagua	*guatteria maguirei*
Category: Near threatened			
Animalia	Mammalia	Short-eared fox	*Atelocynus microtis*
Animalia	Mammalia	Margay or tiger cat	*Leopardus wiedii*
Animalia	Mammalia	Mountain dog	*Speothos venaticus*
Animalia	Mammalia	Jaguar	*Panthera onca*
Animalia	Mammalia	Spectral bat	*Vampyrum spectrum*
Animalia	Mammalia	Giant otter or water dog	*Lontra longicaudis*
Animalia	Birds	Harpy eagle	*Harpia harpyja*
Animalia	Birds	Goshawk ventrigris	*Accipiter poliogaster*
Animalia	Birds	Pibí oreal or colicorto	*Contopus cooperi*
Animalia	Birds	Common corcovado or codornis redhead	*Odontophorus gujanensis*
Animalia	Birds	Crested eagle	*Morphnus guianensis*
Animalia	Birds	Culicolored curassow	*Mitu tomentosum*
Animalia	Birds	Striated warbler or chipe sparrow	*Setophaga striata*
Animalia	Birds	Zebra heron or little egret	*Zebrilus undulatus*
Animalia	Birds	Orinoco goose or duck cartwright	*Neochen jubata*

Animalia	Birds	Orange-faced parrot	*Pyrilia barrabandi*
Animalia	Birds	Golden crested eagle	*Spizaetus ornatus*
Animalia	Birds	Red Knotted Sandpiper	*Calidris subruficollis*
Animalia	Birds	Tinamú grande or tinamú olive	*Tinamus major*
Animalia	Birds	Green parrot	*Amazona farinosa*
Animalia	Birds	Inambú hen or tinamú gorgiblanco	*Tinamus guttatus*
Animalia	Reptilia	Gray ground snake	*atractus occipitoalbus*

Source: *IUCN, 2021.*

5.3.3. Conservation Values

The values under conservation (VOC) were identified based on the community workshops and the information available for the reserve and the criteria of the team of biologists involved in structuring the project (see workshops 1, 2 and 3 in the Workshops folder and the *2012 Safeguard Plan 2012 Pueblo Uitoto Araracuara.pdf located* in *Annex 14*). All sources of information point to the importance of the selected VOCs from a social, cultural and ecological point of view. They are key components of the communities' way of life and livelihood. In addition, the activities that help protect these VOCs favor other cultural and biological elements of interest, thus fulfilling a function known as "umbrella". This means that by conserving the chagra, traditional medicine, language and the tapir, multiple additional elements that are closely related to these are favored and protected. The chagra is constituted as the center of life of the communities. Ancestral medicine must be strengthened in order to preserve its characteristics and be transmitted to the next generations. Language is an element that supports cultural identity, oral tradition and community education. Fauna species such as the tapir are indicators of the state of the ecosystems and require vast healthy extensions of territory to be able to live, so activities that protect these species will favor all the biodiversity that the forests of this region harbor.

For the definition of the Values under Conservation (VOC) in the project area, the biological, ecological, social and cultural attributes were identified that stand out for the goods and services provided by the reserve, among which are:

- **Fauna species under conservation:** Tapirs or tapirs are known as architects or engineers of the ecosystems. This species is found in the areas near the indigenous reserve and they are an indicator of the good conservation status of the territory because this species feeds on plants and fruits and are important seed dispersers; while they walk, their feces serve as fertilizer, which allows trees and plants to grow in different places. The tapir is also an especially important source of food for the indigenous people. For these reasons, the project activities

promote the protection of this species and actions will be developed for its conservation.

- **Traditional medicine:** As part of the cultural richness of the indigenous communities of the reserve, there is traditional medicine based on the relationship between man and his natural environment. Protecting this knowledge of the traditional doctors and guiding the younger generations in the procedures and identification of medicinal plants for ethnocultural healing is fundamental to preserve the identity and knowledge of the ethnic communities. However, this knowledge is continually threatened by the interaction with other cultures, by the lack of a good internal health service and by the State and the increase of vices, drug addiction and alcoholism by the young population of the communities.

- **Traditional language of the communities:** The Monochoa Indigenous Reserve, belong to the Uitoto and Muinane people, where most of them preserve their mother tongue. This language is taught in the educational institutions of the reserve. The educational level reflects that contact with the non-indigenous majority society has increased, which could generate ruptures with their cultural patterns and general relations.

- **Traditional subsistence agricultural production systems (Chagras):** The communities of the Monochoa Indigenous Reserve have traditionally engaged in hunting, fishing and gathering resources.

  The Amazonian soils contain few nutrients and the minerals in the ash, spread before the rainy season, improve the conditions for crops. In addition, they have a reforestation system with fruit trees (such as cucuy, chontaduro, laurel, umarí, caimo, uva yarumo and others) coupled with the natural recovery of the forest cover in the stubble area (Amazon Conservation Team Colombia, 2016). Given their cultural and food importance, the project aims to conserve and contribute to the continued development of these production systems.

5.4. Reference region for baseline estimation

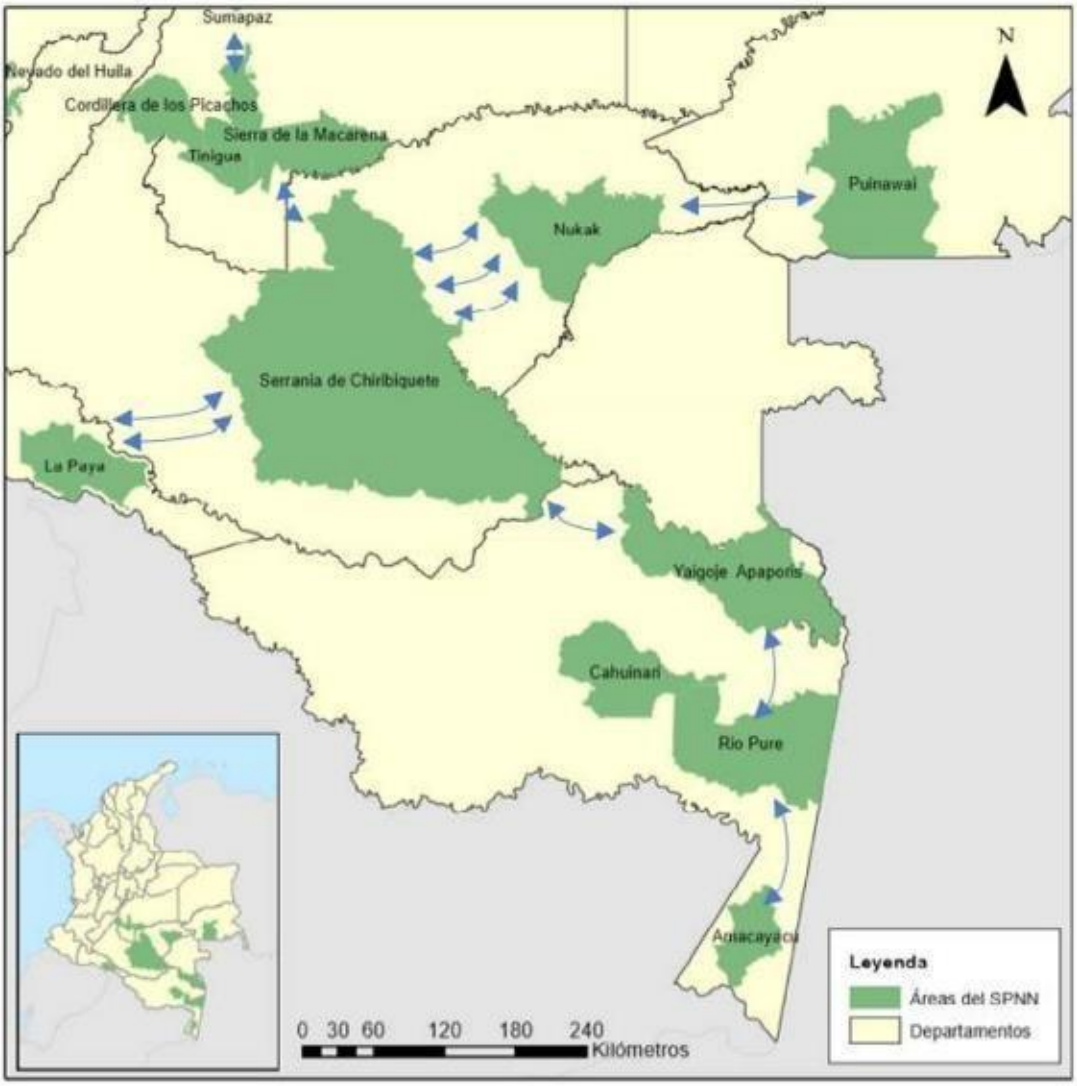
The department of Caquetá is considered one of the departments with the greatest loss of forest due to deforestation. Since 2017, an increase in the annual rate of deforestation has been seen reaching 18.16% (IDEAM, 2019). According to Soler's study (2012), the main causes of deforestation in the department are associated with land grabbing, expansion of the agricultural and livestock frontier and illegal logging of forest timber, which is consistent with the causes pointed out by members of the reserve communities highlighted in the participatory workshops (see *Annex 1, 1.1. Workshop 1*). The reserve area is located in the Amazon region in the municipality of Solano, which has a forest cover close to 90%. The natural or semi-natural areas of the municipality where it is located are mainly made up of native or exotic tree species. This coverage includes natural forests and plantations, including palm and guadua (Alcaldía Municipal de Solano, 2019).

To select the boundaries of the reference region, in accordance with the methodology and the context of the project's indigenous territory, the forest areas located in the area neighboring the reserve participating in the project were selected, taking into account the definition of forest adopted by the country. The Proclima methodology establishes that it is necessary to *"demonstrate that the areas in the geographical limits of the project correspond to the forest category (according to the SMByC definition, at the beginning of the project activities, and ten years before the project start date, defined as stable forest"*. For the case of the project, the SMByC territory data was downloaded and the change in forest cover was analyzed, which was present 10 years before the project start date. In 2007, 1,734,022 ha of forest were identified, increasing to 1,677,026 ha in 2017.

To define the boundaries of the reference region, the first step was to identify the regional context where the project will take place, determining that the location of the indigenous reserve is framed by protected areas and plays a fundamental role in terms of socio-ecological connectivity. The reserve's territory plays an important role as a conservation corridor between Serranía de Chiribiquete NP and Gran Predio Putumayo, as well as between Serranía de Chiribiquete NP, Yaigojé Apaporis NP and Cahuinarí NP. National protected areas were not included within the boundaries of the reference region because they are considered non-accessible areas for deforestation agents, as defined by the ProClima methodology.

Within the land-use planning figures of the region in question are indigenous reserves and Forest Reserve areas of Law 2 of 1959 in the Amazon, with the character of "Protective Forest Zones" and "Forests of General Interest", especially type A zones. That is, areas that contribute to the maintenance of basic ecological processes necessary to ensure the provision of ecosystem services, mainly related to water and climate regulation; assimilation of air and water pollutants; soil formation and protection; protection of unique landscapes and cultural heritage; and support for biological diversity (CORPOAMAZONIA, 2015).

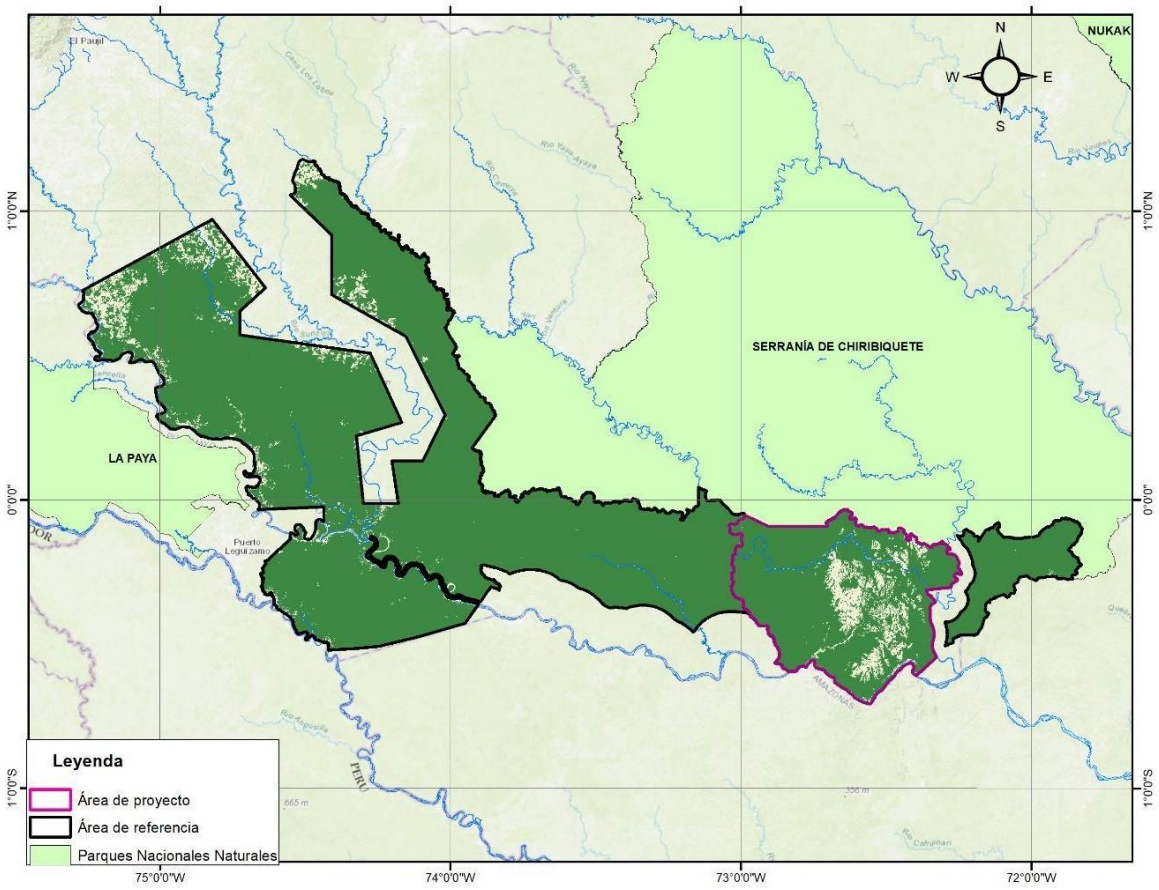
Map 5. Biological corridors between national protected areas.



***Source**: USAID, 2021*

The determining factors for defining the reference region were: **i)** access to the area, **ii)** agents and drivers of deforestation, **iii)** land tenure, **iv)** forest and ecosystems present, **v)** political context, and **vi)** enforceable regulations.

Map 6. Spatial location of the project area and reference region.



Source: *Own elaboration, 2021*

a) Access to the Area: The reference region is located in the municipalities of Solano, Cartagena del Chairá, La Montañita and Milán, located in the department of Caquetá. Access to both the reference area and the project area is mainly by river transportation using the main Caquetá and Orteguaza rivers. There are a few tertiary land routes that allow the population to access the project area and the reference region, as well as to move agricultural and livestock production, such as roads and trails. There are two airports in the municipality of Solano: one located at the Tres Esquinas Base, which, as a military base, is directed and managed by the Colombian Air Force (FAC). This airport is strictly for military use, and the second airport is located in the Inspectorate of Araracuara, where Satena airline offers a public service approximately every week.

b) Agents and Causes of deforestation/degradation: The main deforestation agents identified in the reference region and in the project areas are similar as described in IDEAM's conceptual and methodological guidelines for the characterization of causes and agents of

degradation in Colombia, including:

- Intermittent agricultural producer of coca crops for sale
- Illegal manual wood extractor for sale
- Agricultural producer with traditional crops for self-supply (chagras)
- Intermittent agricultural producer of crops for self-consumption.
- Wood extractor for self-consumption

The direct causes of deforestation and/or degradation present in the project area and in the reference region are identified as follows:

- Intermittent agricultural production of coca for sale
- Traditional agricultural production for self-consumption
- Intermittent agricultural production of coca for self-consumption
- Illegal manual harvesting of timber for sale
- Timber extraction for self-consumption

c) Land Tenure: The project area and the reference region have indigenous territories, which correspond to areas titled as collective property. The reference area is also close to the forest reserve zone of the department of Caquetá, the Serranía del Chiribiquete National Natural Park, and areas corresponding to the Amazon Forest Reserve Zone according to Law 2 of 1959.

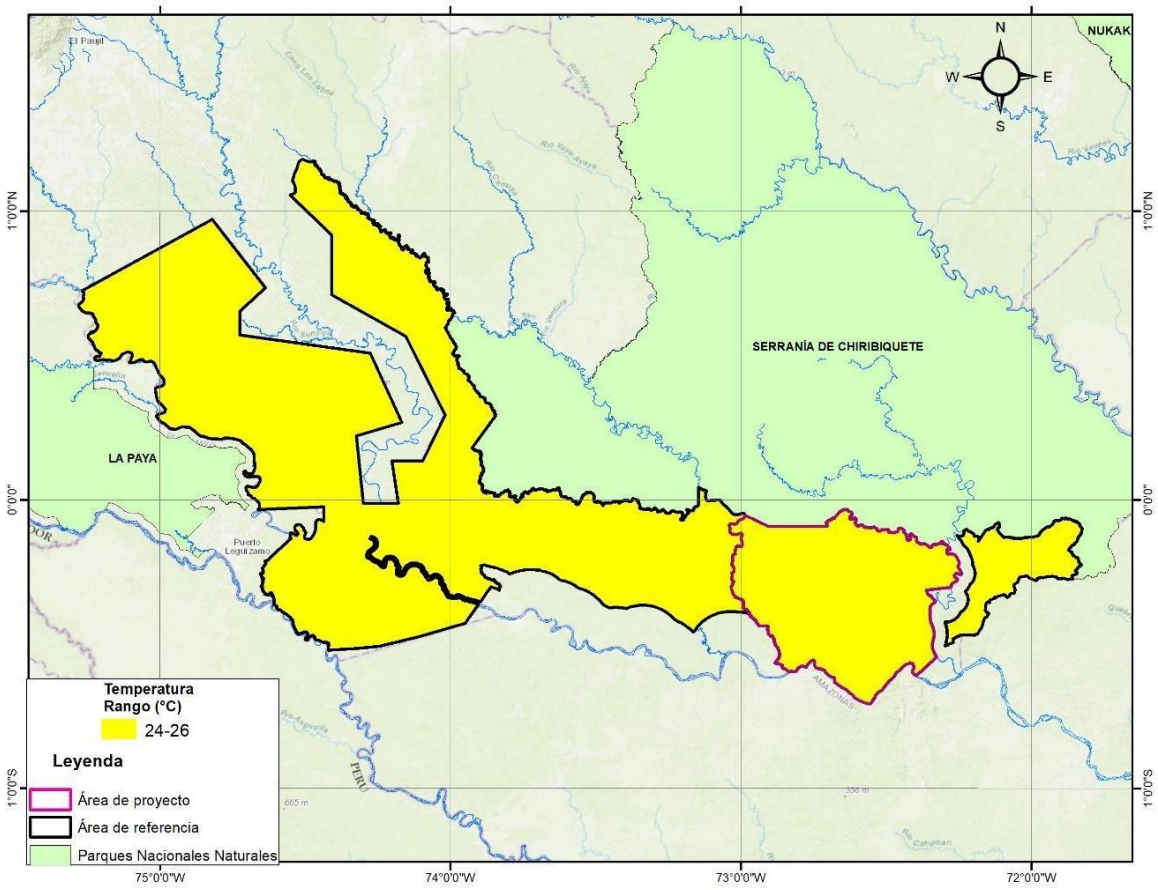
d) Land uses: The main land uses in the project area and in the reference region correspond to high dense solid ground forest, low dense solid ground forest, herbaceous and/or shrub vegetation.

e) **Forest and ecosystems present:** Considering that the project area and the reference region are in the same geographic region, the forests and ecosystems present are similar and belong to the following biomes: i) Amazonian and Orinoquia tropical forests; ii) Transformed Ecosystems; iii) Helobiomes of the Amazon.

f) **Policy Context and Applicable Standards:** The reference and project areas are located in the department of Caquetá. In both cases, the applicable regulations and the political context are similar. In the indigenous territories, the environmental authority is the indigenous reserve, which is responsible for administering and managing the lands in accordance with their traditions, customs, and needs. In turn, these indigenous communities formed what is currently known as the Asociación Consejo Regional Indígena del Medio Amazonas (Crima) under the principles of unity, autonomy, culture, and territory, whose mission is to represent the indigenous communities in this sector before the State and other external entities. It is also in charge of generating local processes in accordance with the life expectations of the affiliated communities. Outside the indigenous territories, the Corporation for the Sustainable Development of Southern Amazonia (CORPOAMAZONIA) is the environmental authority responsible for structuring and implementing policies, plans, programs and projects that promote conservation, protection and recovery of the environment and renewable natural resources.

g) **Climate:** The climate of the region where the project area is located and the reference region corresponds to the intertropical climate zone that belongs to a life zone called Tropical Rainforest (bh-T) considering that the average temperature is higher than 24°C (Amazon Vision, 2020).

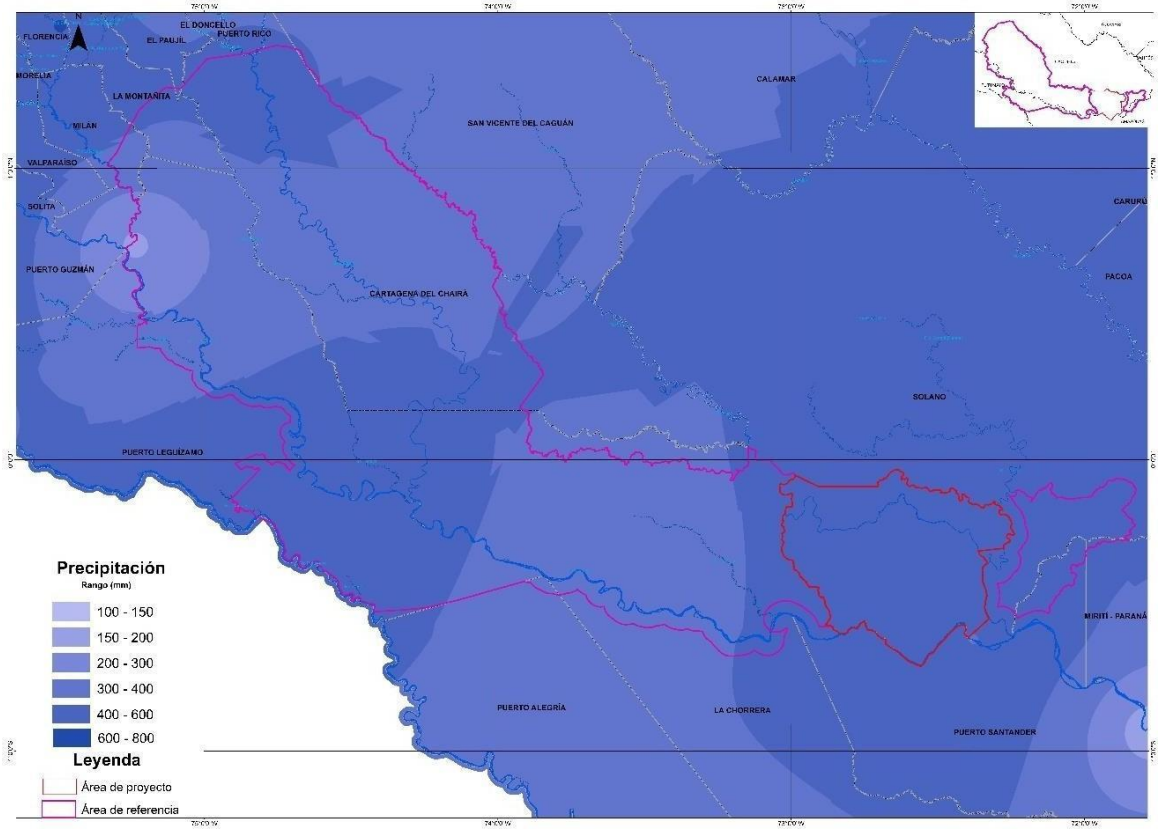
Map 7. Climate in the project area and in the reference region.



Source: *Own elaboration, 2021*

h) Hydrology and Hydrography: Annual precipitation in the project area is around 1,588 mm. For the rainiest months the average precipitation ranges between 337 mm and 387 mm and for the driest months the precipitation varies between 136 mm and 183 mm. Among the main precipitation generators in the region is the Intertropical Convergence Zone (ITCZ), which is characterized by high evaporation rates and high humidity levels; these characteristics mean that the precipitation regime in the project area and the reference region has high rainfall in the months of April - May and June (Amazon Vision, 2020).

Map 8. Average precipitation in the project area and in the reference region.

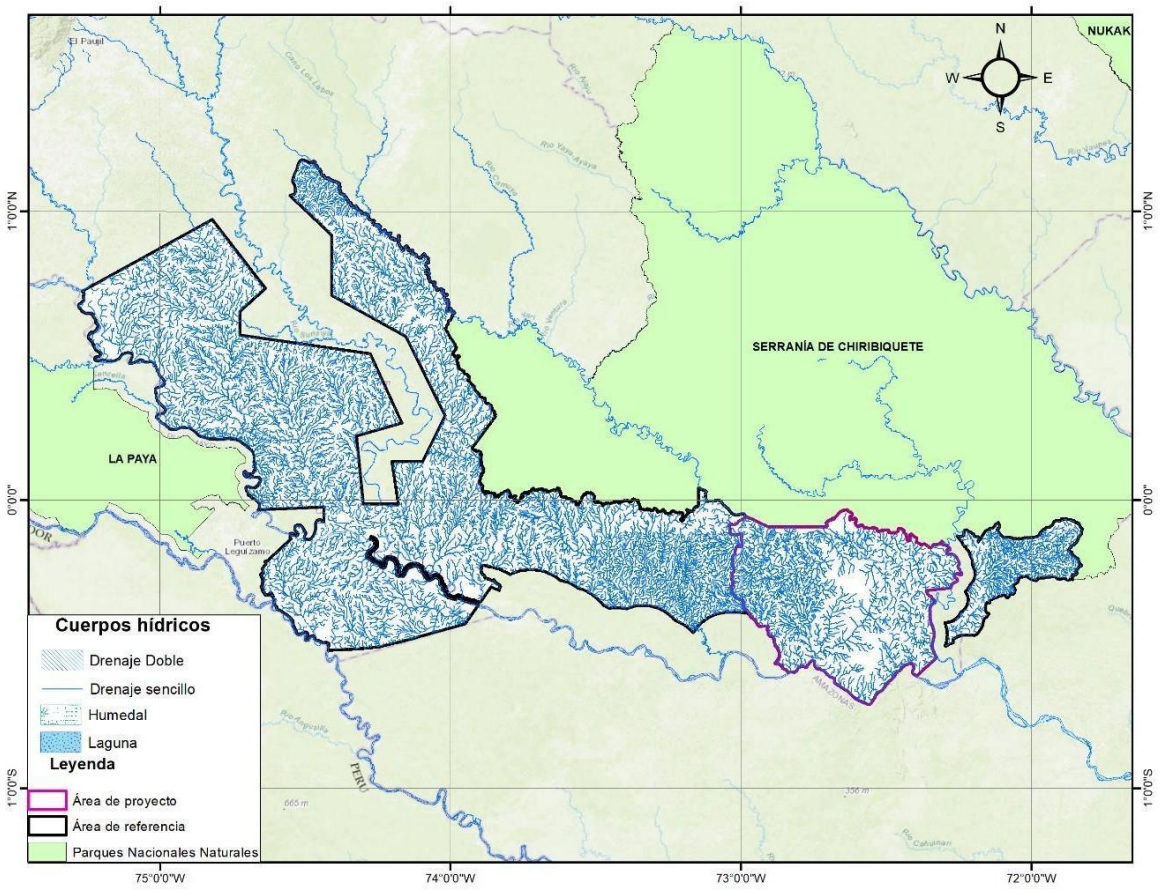


Source: *Own elaboration, 2021*

Great Caquetá River basin. The Caquetá River originates in the Colombian Massif, in the Páramo Del Letrero (Puracé National Natural Park), approximately 2.5 km from the source of the Magdalena River, in the department of Cauca. In its upper course, it flows in a southerly direction, crossing the southern part of the department of Cauca and forming the natural border between Cauca and the department of Putumayo. Then in a southeasterly direction, the Amazon jungle is found, also being the border between Putumayo and the department of Caquetá, in a stretch of more than 400 km, in which it first crosses the municipalities of Solita and Solano and in which near the town of Tres Esquinas, it receives the Orteguaza River. In this same section, further on, it also receives the Caguán River. In its easternmost stretch, it forms the border between Caquetá and the department of Amazonas, in another long stretch of about 500 km in which there are numerous rapids and waterfalls. Near the hills of Munoir, it forms the Araracuara rapids and receives one of its most important rivers.

Important tributaries, the Yarí River, the point from which the river enters the Amázonic department and receives the Cahuinari River and the Miritiparaná River (Gobernación del Caqueta, 2012).

Map 9. Hydrography of the project area and reference region.



Source: *Own elaboration, 2021*

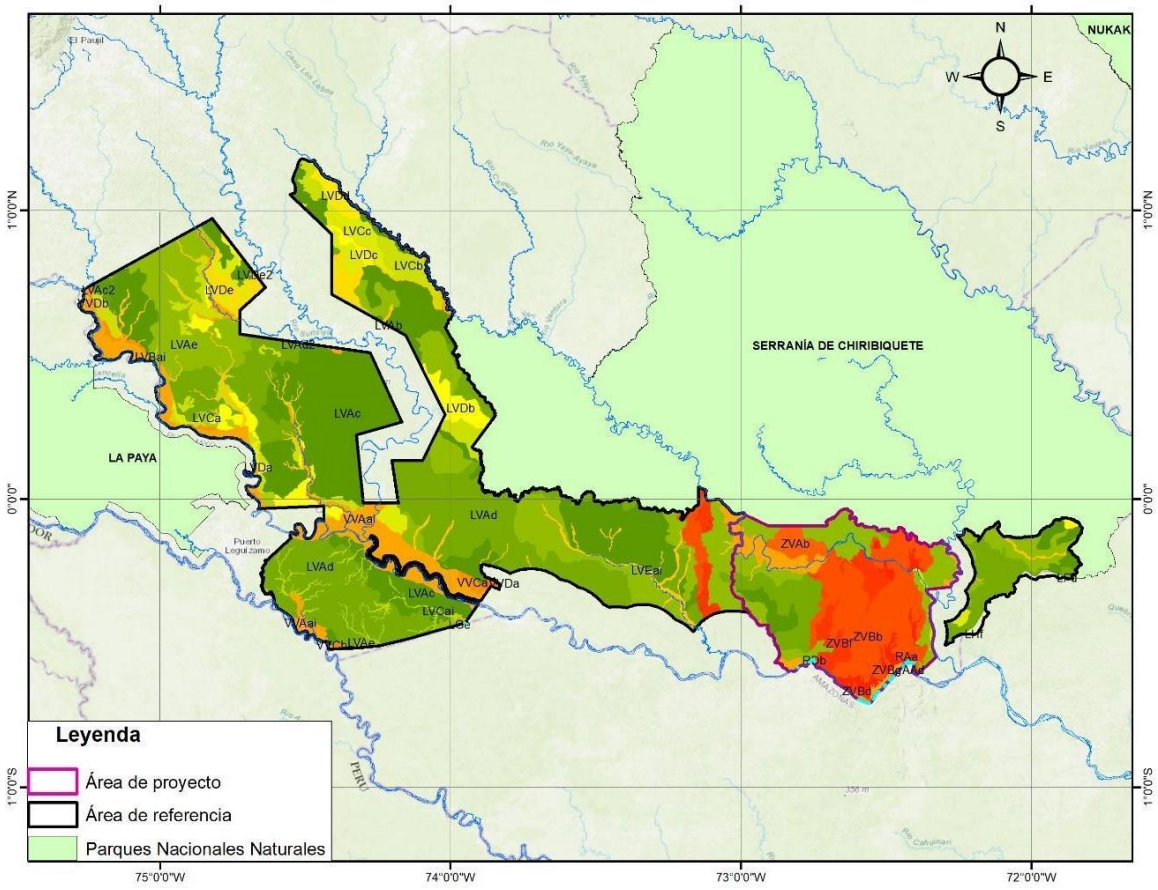
i) Soils: The soils of the project and reference region are mostly made up of variegated clays of the Orito formation and upper Tertiary, deposits of coarse to fine alluvial materials and claystones; these soils are characteristic of two major units or landscapes such as the lomerío and alluvial valleys, which have the following characteristics.

Lomerio Landscape: It has an undulating to flat dissected surface, resulting from convex slopes, corresponding to torrential cones; the underlying materials are generally blocks, gravel and larger diameter, heterogeneous and angular clasts embedded in a matrix of fine silt and clay at the base of torrential cones (Alcaldía Municipal de Solano, 2019).

Landscape surfaces, plains or alluvial valleys: Alluvial valleys associated with the Caquetá and Orteguaza rivers with variable stoniness and effective depth. Some are integrated by fine sediments that result in better conditions for the development of agricultural activities related to rice, corn and livestock crops, but due to the intensity of rainfall, they are considered vulnerable areas (Alcaldía Municipal de Solano, 2019). It is also considered as the orographic part that contains the bed of these rivers and that can be flooded before the ordinary and extraordinary floods of the waters of these rivers. Often the topography of the floodplains of these rivers is in the form of cones, called dejection cones, which means that the riverbed could move quite easily, flooding areas far from the main riverbed (Gobernación del Caqueta, 2012).

The soils in the project area and reference region are shown below.

Map 10. Soils in the project area and in the reference region.



Source: *Own elaboration, 2021*

Soil types and geomorphology in the project area and reference region.

Landscape	Relief	Lithology	Features	UCS	UCS_F	Area (h a)
Lomerío	Hills	Variegated clays of the Orito formation and Upper Tertiary		LVA	LVAc	572530,84
Lomerío	Hills	Variegated clays of the Orito formation and Upper Tertiary		LVA	LVAe	503233,49
Lomerío	Hills	Variegated clays of the Orito and Upper Tertiary formation		LVA	LVAd	485741,95
Alluv ial valley	Flood plane	Deposits fro m materials coarse		VVA	VVAai	379957,24

		to fine alluvial materials				
Lomerío	Hills	Claystones	Deep, well-drained soils, moderately fine textured, extremely acidic, very high aluminum saturation and low fertility, and very low	LVA	LVAd	182831,71
Lomerío	Hillocks and tables	Claystones and mudstones alternating with ferruginous sands of the Orito formation		LVD	LVDb	175684,81
Tectonic massif	Plateaus	Sands from the quartzites and quartzoarenites of the Serrania de Chiribiquete		ZVB	ZVBb	163429,29
Lomerío	Hills and hills	Variegated clays of the Orito and Upper Tertiary formation		LVA	LVAd2	154911,7
Lomerío	Tables	Claystones and mudstones highly altered		LVC	LVCb	113098,75
Lomerío	Hills and hills	Claystones	Deep, well-drained soils, moderately fine textured, extremely acidic, very high aluminum saturation and low fertility, and very low	LVA	LVAc	87836,02
Lomerío	Vallecitos	Sediments alluvial colluvium heterometrics		LVE	LVEai	71473,95
Lomerío	Hillocks and tables	Claystones and mudstones alternating with ferruginous sands of the Orito formation		LVD	LVDe	60762,66
Valley	Flood plane	Deposits heteroge neous alluvial deposits	Shallow to very deep soils, imperfectly to well drained, fine to moderately coarse textures, moderately to moderately coarse, moderately to well drained, moderately to well drained, moderately to well drained. coarse, moderately to moderately a very strongly acid, high and very	VVA	VVAai	57271,13

			high aluminum saturation and low fertility, medium and high			

Landscape	Relief	Lithology	Features	UCS	UCS_F	Area (h a)
Lomerío	Tables	Claystones and mudstones highly altered		LVC	LVCc	50555,4
Tectonic massif	Plateaus	Sands from the quartzites and quartz sandstones of the Serrania de Chiribiquete		ZVB	ZVBf	48106,77
Lomerío	Lomas	Tertiary continental sandstones, claystones and conglomerates	Strongly broken; strongly dissected, with narrow ridges of complex slopes 3-7%; short to medium slopes, rectilinear, of slopes 50-75	LH	LHf	41953
Lomerío	Vallecitos	Deposits fine alluvial deposits	Very shallow soils, fine and very fine textures, very poorly and well drained, very strongly y extremely acidic, medium and very high aluminum saturation, and moderate and high fertility.	LVC	LVCai	32823,85
Body of water	Body of water	Water body	Water body	CA	CA	30985,23
Lomerío	Hills and hills	Variegated clays of the Orito formation and upper Tertiary		LVA	LVAe2	20379,99
Tectonic massif	Plateaus	Sands from the quartzites and quartz sandstones of the Serrania de Chiribiquete		ZVB	ZVBg	20067,41
Tectonic massif	Tables	Claystones alternating with ferruginous sandstones y conglomerates		ZVA	ZVAb	19119,34

Alluvial valley	Middle terrace	Fine alluvial sediments y moderately fine, in sectors there are sand and sandy deposits and gravel		VVC	VVCa	17087,67

Landscape	Relief	Lithology	Features	UCS	UCS_F	Area (h a)
Lomerío	Lomas	Tertiary continental sandstones, claystones and conglomerates	Strongly undulating; moderately dissected, with narrow, convex ridges of slopes 1- 3%; straight, long slopes, with slopes 12-25%	LF	LFd	14900,39
Valley alluvial	Terrace high	Deposits alluvial deposits fine and medium		VVD	VVDa	14428,5
Lomerío	Hillocks and tables	Claystones and mudstones alternating with ferruginous sands of the Orito formation		LVD	LVDd	12832,37
Lomerío	Tables	Claystones and mudstones highly altered		LVC	LVCa	11831,2
Lomerío	Hillocks and tables	Claystones and mudstones alternating with ferruginous sands of the Orito formation.		LVD	LVDc	11539,12
Alluvial plain	Flood plans	Alluvium heterometric recent mixed alluvium from from from the eastern cordillera and the lomerio landscape. Amazonian	Flat; with slopes of 0-3%; concave and convex; corresponds to banks, shores, sandbanks, channel bars and islands.	RA	RAa	10758,2
Lomerío	Hills and hills	Variegated clays of the Orito formation and upper Tertiary		LVA	LVAb	6909,27

Lomerío	Lomas	Tertiary continental sandstones, claystones and conglomerates	Moderately broken; moderately to strongly dissected, with short to medium, convex, 1-3% slopes; straight, medium to steep slopes; moderately to strongly dissected, with short to medium, convex, 1-3% slopes; straight, medium to steep slopes. slopes 25-50.	LG	LGe	6685,54

Landscape	Relief	Lithology	Features	UCS	UCS_F	Area (h a)
Lomerío	Hills and hills	Claystones	Deep, well-drained soils, moderately fine textured, extremely acidic, very high aluminum saturation and low fertility, and very low	LVA	LVAe	6056,79
Lomerío	Vallecitos	Deposits colluvial-alluvial	Flat; with slopes 1- 3%; convex and concave, short	LM	LMa	5739,2
Alluvial plain	Flood plans	Alluvium fine and organic materials	Flat to slightly flat; with slopes 1-3%; concave and convex, short half-baked	RB	RBa	5330,87
Lomerío	Lomas	Tertiary continental sandstones, claystones and conglomerates	Moderately undulating; strongly dissected, with broad, convex ridges of slopes 1-3%; straight, medium slopes of slopes 7-12% and in sectors 12-25%	LE	LEc	4945,08
Lomerío	Hills and hills	Variegated clays of the Orito and Upper Tertiary formation		LVA	LVAc2	4161,14
Tectonic massif	Plateaus	Sands from the quartzites and quartzoarenites of the Serrania de Chiribiquete		ZVB	ZVBd	3705,55
Lomerío	Hillocks and tables	Claystones and mudstones alternating with ferruginous sands of the Orito formation		LVD	LVDa	3696,37

Alluvial plain	Flood plans	Heterometric subrecent alluvium, predominantly coming from the lomerio lomerío Amazonian	N/A	RD	RDb	3595,83
Valley	Terrace level 1	Deposits subrecen t fine alluvial deposits	Deep, well-drained, fine to medium texture, moderately to extremely acid soils, moderate and low fertility	VVB	VVBa	2223,95

Landscape	Relief	Lithology	Features	UCS	UCS_F	Area (h a)
Alluvial plain	Flood plans	Subsequent alluvium from from from the eastern cordillera and the lomerio landscape Amazonian	Flat to slightly flat; 1-3% slopes; straight, short, straight lines	RC	RCa	2166,1
Lomerío	Hillocks and tables	Claystones and mudstones alternating with ferruginous sands of the Orito formation		LVD	LVDe2	2145,27
Lomerío	Depressio n	Poorly decomposed organic deposits on clays gleizadas		LVB	LVBai	1798,38
Valley	Terrace level 2	Deposits ancient heterogeneous alluvial deposits	Deep, well-drained, fine-textured, very strongly acidic soils, very high aluminum saturation, very low fertility	VVC	VVCb	1712,13
Alluv ial valley	Flood plane	Organic deposits with alternation of alluvial materials fine		VVB	VVBai	1001,51
Valley alluvial	Terrace high	Deposits alluvial deposits fine and medium		VVD	VVDb	248,21
Zone urban	Zone urban	Urban area	Urban area	ZU	ZU	203,32

Lomerío	Tables	Claystones and mudstones highly altered		LVC	LVCc2	95,59
Highlands	Tables	Paleozoic sandstones and claystones. Paleozoic. Araracuara Formation	N/A	AA	AAd	15,11
Lomerío	Lomas	Neiss-derived claystones (Mitú Migmatitic Complex)	Strongly undulating; moderately dissected, with broad, convex ridges, slope 1-3%; long, convex slopes, slope 12-25%	LI	LId	0,49

Source: *Own elaboration, 2021*

j) Geomorphology: According to the dynamics of landscape modeling in the reference region and the project area, the landscape is dominated by hillsides (units LVA, LVB, LVC, LCD, LVE) with a warm humid climate, these soil units are moderately deep, well drained, with medium to fine textures, high to very high aluminum saturation, very strongly acid reaction, very low natural fertility and depend on the incorporation of organized matter through vegetation biomass as is characteristic of Amazonian soils; These soil units are moderately deep, well drained, with medium to fine textures, high to very high aluminum saturation, very strongly acidic reaction, very low natural fertility and depend on the incorporation of organic matter through the biomass of vegetation as is characteristic of Amazonian soils, also in the vicinity of Chibiriquete National Park are the mesas of Iguaje and the central massif, formed by tectonic massif soil units (Z) that have mainly claystones alternating with ferruginous sandstones. (Amazon Vision, 2020).

Due to its proximity to the Chibiriquete National Park in the project area and the reference region, the presence of the Iguaje mesas and the central massif has been identified, formed by tectonic massif soil units (Z), consisting mainly of claystones alternating with ferruginous sandstones. This area is part of the Caquetá river basin and the sub-basins of the Orteguaza, Caguán, Cuemani yarí and Apaporis rivers; with formations corresponding to valleys and terraces (VVA, VVB, VVC, VVD) belonging to the network of wetlands, lagoons and cananguchales characteristic of the Amazon on flood plains and deposits of sediments and coarse to fine alluvial materials (Visión Amazonia, 2020).

k) Ecosystems: According to the cartography of the reference region and the project area, the following types of biomes are identified, as shown in the Table 7.

Table 7. Ecosystems present in the reference region.

Biome	Area (ha)
Tropical forests of Amazonia and Orinoquia	1.654.329,51

Transformed Ecosystems	337.621,94
Helobiomes of the Amazon	224.421,217
Amazonian Lithobiomes	106.878,312
Amazonian Orobiomes	103.863,096

Source: *Own elaboration, 2021*

The tropical forest of Amazonia and Orinoquia is characterized by presenting tropical humid zonobiome which covers extensive areas of the Amazon- Orinoquia region, it is characterized by being at an altitude below 500 m.a.s.l. and being covered by dense forest, with complex structure and composition and trees up to 1 m in diameter that form a canopy up to 30 m high, with emergents up to 60 m high and shallow roots (Bernal, Gradstein, & Celis, 2016).

On the other hand, the Amazon-Orinoquía helobiome has areas of high aquatic influence, permanently or temporarily flooded. They are characterized by aquatic vegetation in the vicinity of rivers and lakes and ecosystems of greater complexity, as is the case of plain forests (Bernal, Gradstein, & Celis, 2016). The Litobioma of the Amazon - Orinoquia corresponds to vegetation associated with the rocky formations and white sands that represent the outcrops of the Guiana Shield.

Additionally, the Amazonian Orobiome is defined by the presence of mountains that change the water regime and form vegetation belts or belts according to their increase in altitude and the respective decrease in temperature (Walter, 1977). In general terms, these are the mountain biomes within the zonobiomes.

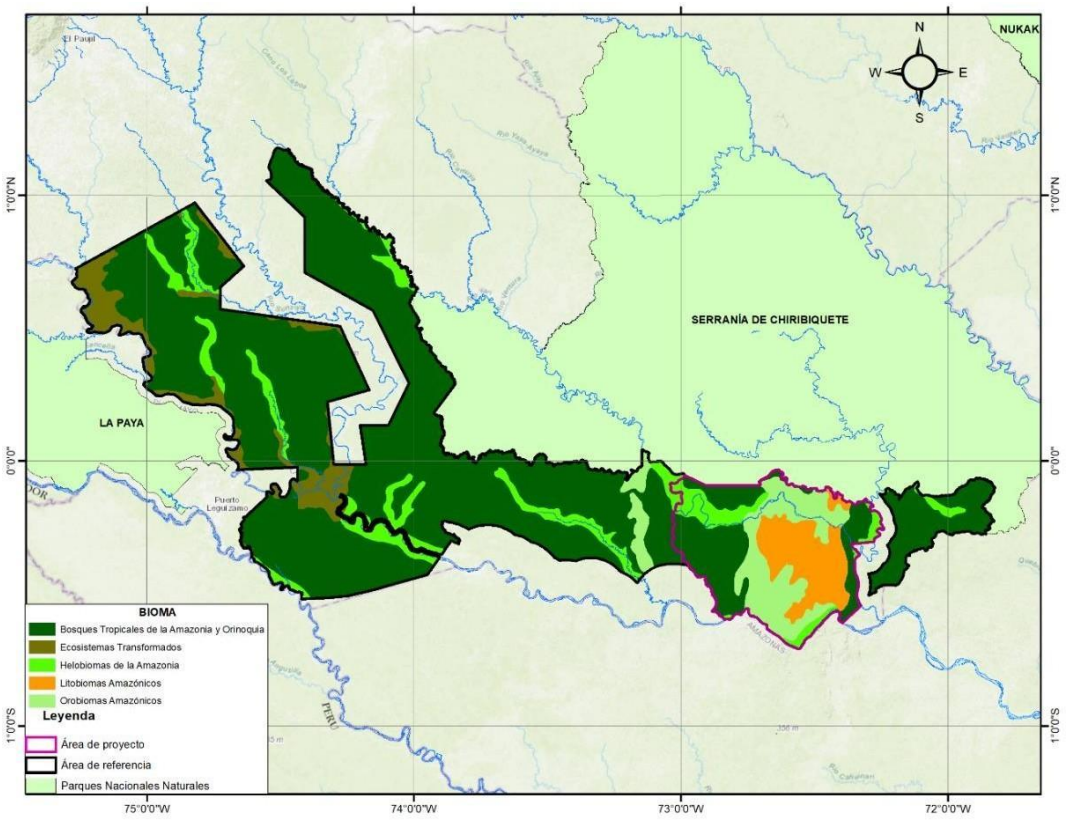
Finally, if the Holdridge life zone classification (Espinal & Montenegro, 1963) is taken into consideration, taking into account the characteristics of the project area and the reference region, the forests present, based on this classification, correspond to the tropical rainforest (bh-T), taking into account the following criteria:

Table 8. Forest stratification according to Holdridge life zones for Colombia.

Criteria	Tropical Rainforest	Project area and region reference
Altitude (m.a.s.l.)	<800	200 a 400
Temperature (°C)	>24,0	25 a 30
Precipitation (mm/year)	2.000 a 4.000	3.000 a 4.000

Source: *Phillips Bernal et al. 2011.*

Map 11. Ecosystems present in the project area and in the reference region.



Source: *Own elaboration, 2021*

Taking into account the combination and similarity of all the characteristics described, it can be concluded that the reference region is indeed an area that represents the trend of land uses and the pressure on the forests in the area where the Monochoa reserve is located. It also shows that the deforestation agents operating in the reference region have a regional scope and permeate the territory of the indigenous reservation that participates in the project, accessing through the main access routes to the reservation that correspond to the Caquetá and Yarí rivers in search of resources and spaces for illegal logging that has historically occurred in this department.

5.5. Leakage area

The identification of the agents of deforestation was carried out in a participatory manner with the community and also used studies on deforestation in the region (see files *1.1.13. Workshop 1_Tirivita_Project Matrix.pdf* in subfolder *Workshop 1* in *Annex 1*

folder; file *1.2.9. Workshop 2_Leakage Map.pdf* in subfolder *Workshop 2* in *Annex* 1; file *9.1. Cover Change Matrix_Monochoa.xlsx* located in *Annex 9*; *State of the Art Deforestation Caqueta_Thesis 2021.pdf* located in *Annex 14*; *Rodrigo- Botero_Recent Deforestation Amazonia 2020.pdf* located in *Annex 14*).

The forest harvesting agents and activities are mainly associated with the riverbanks at a walking distance that does not usually exceed 5 km. The harvested timber is dragged and taken to the boat located on the river for later transport to the market. In some areas where trails are created due to regular harvesting, incursions can be made at a greater distance, however, the journey is still made on foot, which limits the mobilization of the timber to the walking distance. Small, medium or large logs can be harvested for sale. Traveling by river represents a very high fuel cost, which limits the distance traveled to find the forest resource and obtain profits from marketing it. Taking into account the most common type of boat used in the area (3 to 15 HP engines) and conversations with people from the reserve's communities, it was estimated that a two-hour trip to the logging site is a real limit for river travel to find the timber of interest, which results in a trip of approximately 20 km. Based on these land and river travel limits and the travel routes, the project's potential leakage zone was defined. Within these limits, the stable forest from 2007 (86,258 ha) to the time of project initiation (85,564 ha) was quantified and the average annual forest loss was estimated to determine the baseline. On the western margin of the reserve, the river travel distance was not considered to avoid the leakage area overlapping with the leakage area of the REDD+ Puerto Zábalo and Los Monos project, which is a neighbor of this project.

The following criteria were taken into account to determine the delimited leakage area of the project:

Table 9. Criteria for defining the leakage area with its compliance.

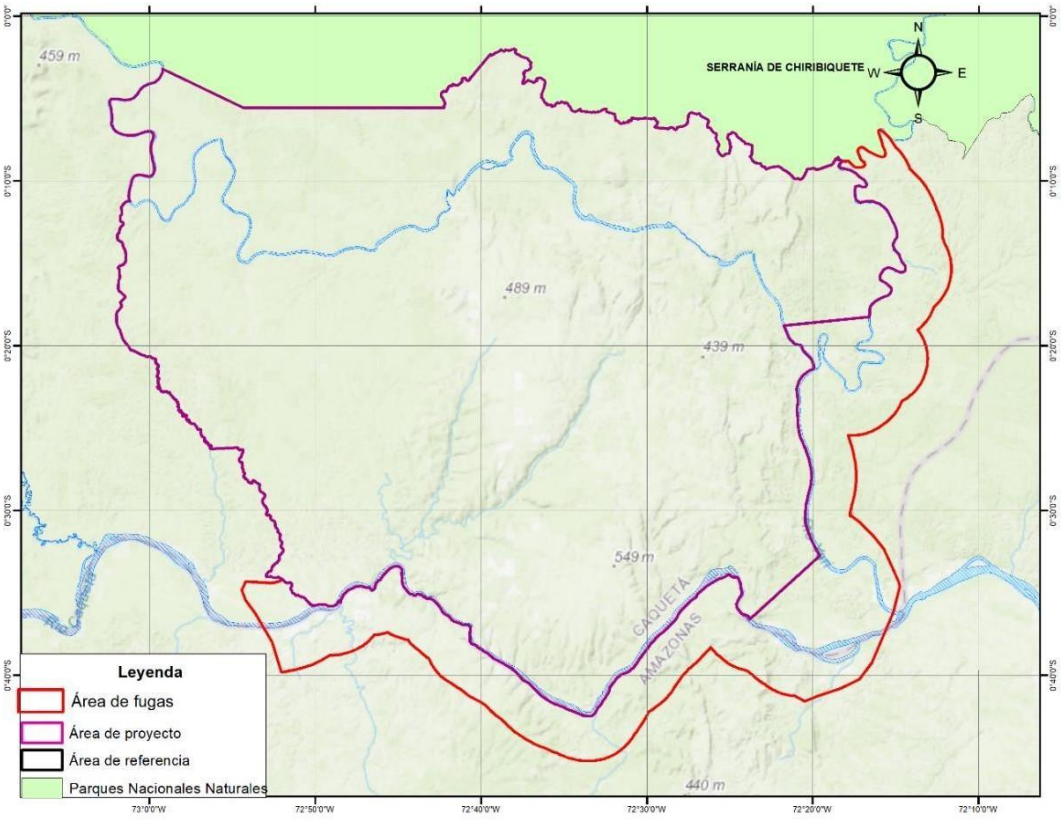
Criteria	Compliance
All forest areas that fall within the mobility range of the identified agents.	**Compliant:** Includes the total area of forest that is within the range of mobility of deforestation agents.
Criteria	**Compliance**
Exclude areas with restricted access to the agents of deforestation and degradation.	**Compliant:** Excludes Park areas. National Parks of Colombia.

Source: *Methodological document. AFOLU Sector.*

The leakage area was delimited taking into account the trend of mobilization of deforestation agents in the territory, as well as the characteristics of relationships and development of activities in the project area.

The leakage area includes the western side of the reserve, where the Mesay River flows into the Yari River. This area is used as a route for timber and other goods grown in the region and is considered an area of possible mobilization of deforestation agents present in the reserve.

Map 12. *Leakage areas of the project.*



Source: *Own elaboration, 2021*

5.6. Time limits and analysis periods

The time limits of the project are presented below:

5.6.1. Project start date: 17-Jan-2018.

The start date of the project is based on the moment that the Letter of Intent and Exclusivity is signed between the project proponents and the company Yauto SAS, which corresponds to January 17, 2018 (see *12.1 Letter of Intent Development and Sale Carbon_Monochoa_17022018.pdf*, located in *Annex 12* folder, *Start Date)*. This letter constitutes the field activity that formalizes the community decision to participate in the carbon markets and receive the economic incentive for protecting their forests and avoiding deforestation of their territory. This is the first action developed in the territory to start the implementation of the REDD+ project.

Subsequent to this action, activities have been carried out in the territory aimed at monitoring species of fauna and flora in the area comprising the Monochoa Indigenous Reserve, with the support of the Amazon Conservation Team (ACT). The construction of the pilot baseline for community monitoring was also carried out, incorporating preparatory activities (training, workshops, preparation, meetings and preliminary identification), to subsequently conduct expeditions in the territory to carry out

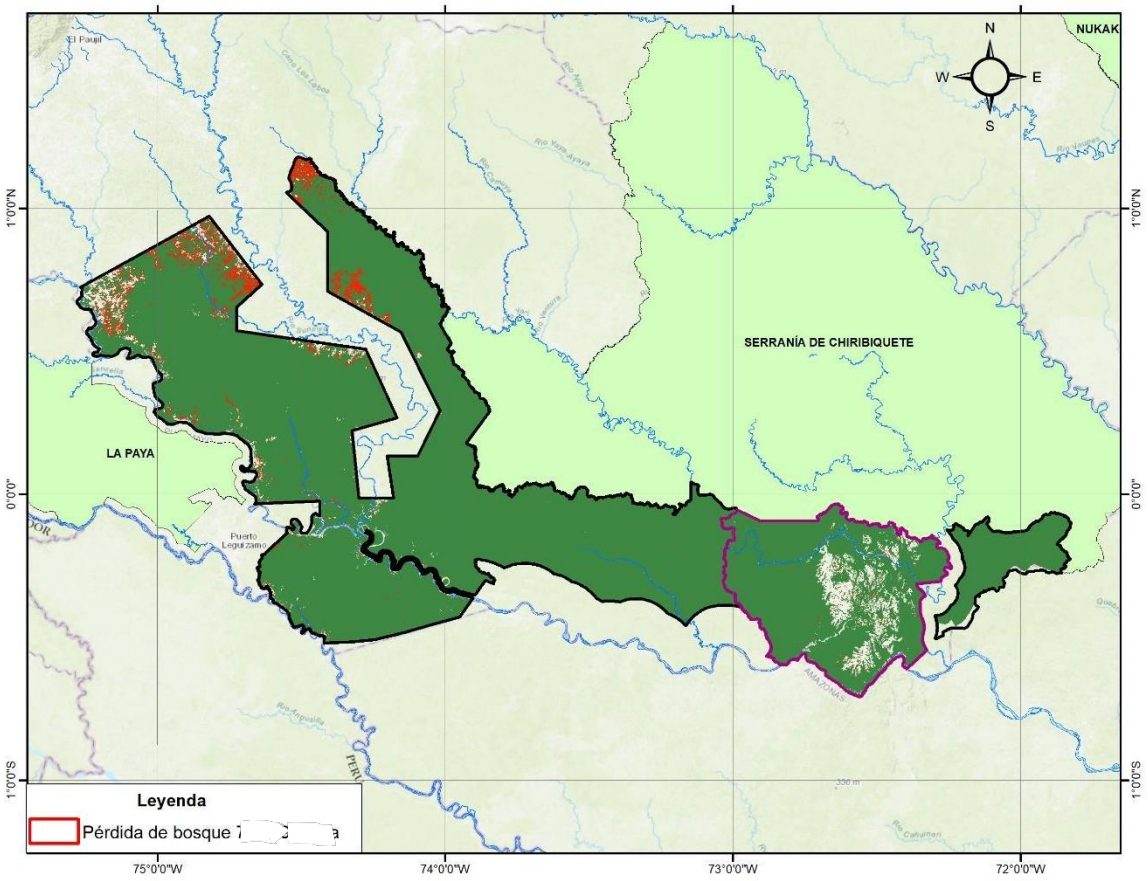
baseline surveys of forest topography and biodiversity, delimit the ancestral territories and provide training to local indigenous teams in the management of tools and good monitoring practices (see *Annex 6*, document *6.4. ACT 2018 Annual Report.pdf* and audiovisual record *6.6. Interview Narciso Perdomo_28012022.mp4*). As a result of this activity, the booklet "Ethnoecological characterization and development of guidelines for community monitoring exercises in the Monochoa Indigenous Reservation and its control and surveillance zone" was generated (see *Annex 6*, document *6.2. Ethnoecological Characterization of the Monochoa Community Monitoero (ACT).pdf*).

All activities subsequent to the signing of the letter of intent are part of the structural elements of the REDD+ Project. Therefore, the progress and results of these activities carried out from January 2018 to June 2021 correspond to the first implementation period of the project and are described in the

Monitoring Report, which also shows the impact on emissions reductions and reports progress according to the schedule, actors, follow-up methodologies and other planning parameters defined in the monitoring plan, which is based on the requirements of the ProClima methodology.

At the same time, an analysis of deforestation and degradation after the start date was carried out, showing a decrease in forest loss in the project area compared to the reference region. Map 13 shows the deforestation that took place for the period between 2007 and 2017 in the reference area, which amounts to a total of 56,995 hectares of forest cover and is equivalent to a deforestation rate of 0.3% per year.

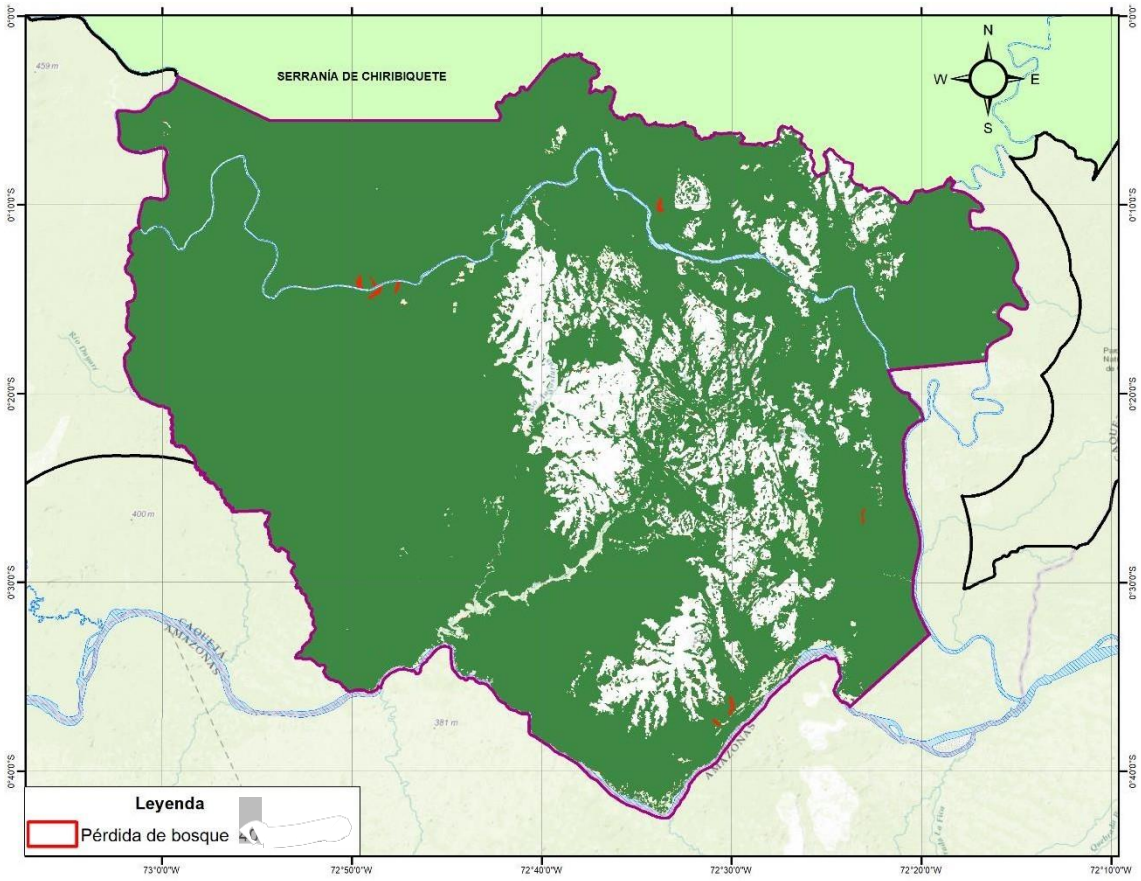
Map 13. Forest loss in the project reference area for the period from 2007 to 2017.



Source: *Own elaboration, 2021*

On the other hand, Map 14 presents the loss of forest cover for the period from 2018 to 2021 in the project area, showing a significant reduction in the deforestation rate compared to that estimated for the reference area (2007-2017). For this period, the forest loss was 330 ha, equivalent to a deforestation rate of 0.09% per year.

Map 14. Forest loss in the project area for the period from 2018 to 2021.



Source: *Own elaboration, 2021*

5.6.2. Emission quantification period

January 17, 2018 to January 16, 2048; 30

years

5.6.3. Monitoring periods

The first period corresponds to January 17, 2018 to June 30, 2021. Subsequently, monitoring reports are expected to be carried out on a biannual basis or when defined by the project owners.

5.6.4. Historical period of deforestation

To estimate the deforestation trend in the reference area and the leakage area, the changes observed during the historical period 2007-2017, which corresponds to the ten-year period before the start of the project, were analyzed. The estimation of forest degradation was calculated by taking two historical periods, the year 2017- 2016 and 2016-2007.

5.6.5. REDD+ project emissions estimation

GHG emission reductions resulting from the implementation of the project.

Year	Dates	Estimated GHG reductions from deforestation (tCO2e)	Estimated cumulative GHG reductions due to deforestation (tCO2e)	Estimated GHG reductions from degradation (tCO2e)	Estimated GHG reductions from degradation (tCO2e)	Estimated total GHG reductions (tCO2e)
1	17/01/2018 a 31/12/2018	567.868,3	567.868,3	2.606,48	2.606,5	570.474,8
2	01/01/2019 a 31/12/2019	622.821,6	1.190.689,9	2.725,91	5.332,4	625.547,5
3	01/01/2020 - 31/12/2020	647.852,8	1.838.542,7	2.725,85	8.058,2	650.578,6
4	01/01/2021 - 31/12/2021	668.310,2	2.506.852,9	2.725,79	10.784,0	671.036,0
5	01/01/2022 - 31/12/2022	683.700,8	3.190.553,7	2.725,72	13.509,7	686.426,5
6	01/01/2023 - 31/12/2023	442.459,2	3.633.012,9	2.725,66	16.235,4	445.184,9
7	1/01/2024 - 31/12/2024	440.995,4	4.074.008,3	2.725,60	18.961,0	443.721,0
8	01/01/2025 - 31/12/2025	439.536,4	4.513.544,7	2.725,53	21.686,5	442.262,0
9	01/01/2026 - 31/12/2026	438.082,2	4.951.627,0	2.725,47	24.412,0	440.807,7
10	01/01/2027 - 31/12/2027	436.632,8	5.388.259,8	2.725,41	27.137,4	439.358,3
11	01/01/2028 - 31/12/2028	435.188,2	5.823.448,0	2.725,35	29.862,8	437.913,6
12	01/01/2029 - 31/12/2029	433.748,3	6.257.196,4	2.725,28	32.588,0	436.473,6
13	01/01/2030 - 31/12/2030	432.313,2	6.689.509,6	2.725,22	35.313,3	435.038,4
14	01/01/2031 - 31/12/2031	430.882,8	7.120.392,4	2.725,16	38.038,4	433.608,0
15	01/01/2032 - 31/12/2032	429.457,1	7.549.849,6	2.725,09	40.763,5	432.182,2
16	01/01/2033 - 31/12/2033	428.036,1	7.977.885,7	2.725,03	43.488,5	430.761,2
17	01/01/2034 - 31/12/2034	426.619,8	8.404.505,5	2.724,97	46.213,5	429.344,8
18	01/01/2035 - 31/12/2035	425.208,1	8.829.713,6	2.724,90	48.938,4	427.933,0
19	01/01/2036 - 31/12/2036	423.801,1	9.253.514,7	2.724,84	51.663,3	426.526,0
20	01/01/2037 - 31/12/2037	422.398,7	9.675.913,5	2.724,78	54.388,0	425.123,5

Year	Dates	Estimated GHG reductions from deforestation (tCO2e)	Estimated cumulative GHG reductions due to deforestation (tCO2e)	Estimated GHG reductions from degradation (tCO2e)	Estimated GHG reductions from degradation (tCO2e)	Estimated total GHG reductions (tCO2e)
21	01/01/2038 - 31/12/2038	421.001,0	10.096.914,5	2.724,71	57.112,8	423.725,7
22	01/01/2039 - 31/12/2039	419.607,8	10.516.522,3	2.724,65	59.837,4	422.332,5
23	01/01/2040 - 31/12/2040	418.219,2	10.934.741,5	2.724,59	62.562,0	420.943,8
24	01/01/2041 - 31/12/2041	416.835,2	11.351.576,8	2.724,53	65.286,5	419.559,8
25	01/01/2042 - 31/12/2042	415.455,8	11.767.032,6	2.724,46	68.011,0	418.180,3
26	01/01/2043 - 31/12/2043	414.080,9	12.181.113,5	2.724,40	70.735,4	416.805,3
27	01/01/2044 - 31/12/2044	412.710,5	12.593.824,0	2.724,34	73.459,7	415.434,8
28	01/01/2045 - 31/12/2045	411.344,6	13.005.168,6	2.724,27	76.184,0	414.068,9
29	01/01/2046 - 31/12/2046	409.983,3	13.415.151,9	2.724,21	78.908,2	412.707,5
30	01/01/2047 - 31/12/2047	408.626,4	13.823.778,3	2.724,15	81.632,3	411.350,5
31	01/01/2048 - 16/01/2048	17.853,1	13.841.631,4	119,41	81.751,8	17.972,5
Total Reduction of Estimated GHG emissions (tCO2e)		13.841.631		81.751		13.923.383
Accreditation period (years)		30 years		30 years		30 years
Emissions Reduction GHG annual (tCO2e/year)		461.387		2.637		464.024

Source: Own elaboration, 2021

6. Baseline scenario and additionality analysis

The baseline scenario was identified based on changes in carbon stocks at the project boundaries. This section presents the procedure developed for the identification of the baseline scenario, according to the guidelines established in the AFOLU Sector Methodological Document, REDD+ Projects, version 2.2 (ProClima, 2021).

6.1. Step 0. REDD+ project start date

The start date of the project corresponds to the moment when the Letter of Intent and Exclusivity is signed between the project proponents and the company Yauto SAS, which corresponds to January 17, 2018 (see *12.1 Letter of Intent for Carbon Development and Sale_Monochoa_17022018.pdf*, located in *Annex 12.)* This letter constitutes the field activity that formalizes the community's decision to participate in the carbon markets and receive the economic incentive for protecting the carbon market their forests and avoid deforestation of their territory. This is the first action developed in the territory to start the implementation of the REDD+ project.

6.2. Step 1. Identification of land use alternatives

In accordance with the provisions of the Methodological Document AFOLU sector, ProClima REDD+ Projects (2021), the identification and selection of alternatives for land use is carried out. Through participatory workshops held with the communities of the Monochoa Indigenous Reserve, the current land use and trends in land use in the absence of the project were identified and can be defined as a baseline (see *Annex 1. Workshops with community participation*).

6.2.1. Sub-step 1. Identification of probable land use alternatives in the project areas.

The following land use scenarios were identified taking into account the conditions present in the project area:

Scenario i: Continued land use (pre-project)

Historically, activities have been carried out in the territory of the indigenous reserve that represent pressure on the region's natural and forest resources. The trend of deforestation and forest degradation in the territory has historically increased and threatens the sustainability of the local communities' territory and biodiversity. The socioeconomic conditions faced by the indigenous communities in their territory make it difficult to effectively control activities that threaten the forests and reduce the availability of other natural resources. Likewise, different productive booms that have transited these territories, controlled by people outside the reserve, have impacted the populations (displacements and violence) that have compromised their cultural structure, governance capacity and management of their territories.

Consequently, the trend of forest loss would continue in the future and the community's ability to control and manage the territory in a sustainable manner would be limited sustainable development would continue to be undermined by conditions of low governance and few opportunities to generate income and provide welfare for the population.

Based on the observations and workshops conducted with members of the Monochoa IR (see *Annex 1. Workshops with community participation*) and the multi-temporal analyses of land use, the continuation of existing practices involves the following land uses:

- **Timber extraction:** This activity is a cause of historical forest degradation. The harvesting and commercialization of timber species is an opportunity to generate economic resources for some members of the community (ICER, 2015).

- **Subsistence agriculture:** This is a traditional agricultural production system of the communities living in the indigenous reserve and is the basis for food production. The chagras correspond to a system in which several species are cultivated (yucca, plantain, pineapple, sugar cane, banana, among others) in a cyclical manner. This system is complemented by activities such as fishing, hunting and gathering of available forest products.

  For the establishment of the chagras, the following activities are carried out:

1) Select the site and proceed with the healing; 2) Cutting of vegetation and felling of trees; 3) Burning; 4) Planting of plants that will produce tubers, fruits and bread; 5) Weeding and maintenance of the chagra; 6) Harvesting; 7) Abandonment and natural restoration (after 3-6 years of use, approximately).

- **Expansion of the agricultural frontier:** This activity involves the deforestation of large areas of forest for the establishment of illicit crops.

Scenario ii: REDD+ projects without certification of emission reductions

This scenario consists of community members voluntarily controlling the activities that generate forest loss in their territories: timber extraction and illicit crops. In this scenario progressively replace these activities with productive activities that do not affect forest cover. The communities of the Indigenous Reserve could implement REDD+ project activities without registering the project with a carbon market. The community is interested in preserving its territory and protecting its culture, so the willingness to move forward with activities that contribute to avoiding forest loss is evident in the community.

REDD+ activities include efforts to maintain livelihood strategies that do not threaten the integrity of the forests, exercise constant presence in the territory and greater control over its natural resources to avoid the extraction of forest resources and reduce pressures on the forest either by external or internal actors of the reserve.

By not registering the project with the REDD+ mechanism, the members of the indigenous reservation do not have access to economic income associated with the reduction of GHG emissions from deforestation and forest degradation in their territories.

Scenario iii: Improving agricultural systems and increasing the forestry economy

This scenario consists of the establishment of agricultural systems above the historical trend and is based on the promotion currently being carried out by municipal and departmental authorities in the region. Taking into account the vocation of land use and the most promising activities, there is interest in promoting an economy based on the use of forests, coupled with the National Forest Policy and the National Forestry Development Plan, which seeks to promote the competitiveness of timber and non-timber forest products in the national and international market, based on the sustainable management of natural and planted forests (Alcaldía Municipal de Solano, 2019). Although to date the participation of indigenous communities in these initiatives has been incipient, the process can be strengthened if budgetary restrictions are overcome and the geographic scope includes the indigenous reservation.

An economy based on sustainable forest products would make it possible to progressively displace activities that result in deforestation of the territory and counteract the population's economic dependence on timber extraction for commercialization and non-licit cultivation areas; however, it would also increase the establishment and expansion of agricultural activities, which could intensify

and accelerate forest loss in the project area. Considering these elements and analyzing the dynamics of forest loss in the project area, the third scenario envisages productive development promoted by the national government to limit the unsustainable use of forests and counteract the population's economic dependence on these activities.

6.2.2. Sub-step 1b. Consistency of land use alternatives with applicable laws and regulations.

The scenarios that have been considered can be implemented based on records and historical trends in the region. According to municipal and departmental planning instruments, these territories have a vocation for forest conservation, the establishment of agroforestry systems and subsistence production systems. In addition, the reality of the territory also offers the possibility that activities that involve deforestation and are not approved by national regulations may be maintained, such as deforestation for the expansion of the agricultural and livestock frontier and illegal timber extraction.

Considering the state's limited capacity to enforce regulations that protect natural resources in these areas far from urban centers, non-compliance with regulations does not result in legal or penal consequences that would discourage those involved from correcting their practices. The lack of government representatives in this indigenous reservation makes it impossible to guarantee compliance with the laws.

Taking into account that the legal constitution of the reserve grants autonomy to the indigenous peoples for the management and development of the territory, the scenarios that have been proposed are aligned with the possibilities and vocation of the territory and in line with national regulations and therefore can be developed without inconvenience within the reserve.

Table 11. Scenarios described in the project.

Scenario	Description
i	It involves the continuation of historical land use (chagras, timber extraction, and illicit crops). Although these activities are not aligned with current regulations, they are carried out by the population established in the project area and in the reference region. Therefore, it is assumed that this scenario could be maintained over time and constitute a probable alternative for land use. floor.
Ii	Involves all REDD+ project activities but without registering the project with a carbon market to certify the emission reductions Corresponds to a reduction in practices that have deteriorated the forest through the implementation of productive alternatives that are friendly to the natural environment (mambe, tobacco, cacao, banana, sugar cane, among others) and a greater exercise of territorial control. These activities comply with current regulations. Considering that the community seeks to improve its living conditions and its capacity to manage the territory in a sustainable manner, this scenario is configured as an alternative that the community can seek. using its own resources.
Iii	It consists of the development and improvement of sustainable forestry activities, production in chagras, timber species systems and productive chaining. These activities are aligned with the interests of municipal and departmental authorities. Therefore, these activities are aligned with the interests of municipal and departmental authorities. considers a likely alternative land use in the future.

Source: *Own elaboration. 2021*

6.3. Barrier analysis

Barriers that may prevent the implementation of the REDD+ project, but do not prevent the implementation of the land use alternatives considered in the scenarios are described below.

6.3.1. Sub-step 2. Identification of the barriers that would prevent the implementation of the project.

Investment barriers:

The indigenous communities do not have access to investment credits and the government does not have sufficient resources to implement activities that ensure adequate land management and offer economic alternatives that do not involve deforestation and allow them to meet their basic needs.

The sustainable production systems that can be implemented and strengthened have low profit margins and profits must be reinvested and directed to sustaining them and paying salaries. The other project activities (governance, monitoring and social investment) do not generate profitability and their implementation depends entirely on resources that are not currently available to the indigenous people.

Activities to control deforestation do not offer a financial return that allows them to be sustained over time. For this reason, a viable instrument for financing activities consists of accessing the REDD+ mechanism, which offers the possibility of trading carbon credits associated with the forest that is being protected and receiving resources to make investments to implement the activities necessary to ensure its conservation. This mechanism also covers the costs of the formulation, validation and verification stages of the project, which could not be financed in the absence of carbon credit trading.

Social barriers:

The social conflict between the indigenous community and external actors (e.g., illegal armed groups) associated with immigration processes, illegal occupation of indigenous territory and the development of widespread illegal practices are part of the situations that affect the implementation of actions to change the trend of historical land use. Since the signing of the peace agreement with the FARC guerrillas, there have been dissidents that promote the establishment of illicit crops and generate pressure on the forest. Likewise, the demand for timber generates extraction dynamics and illegal commercialization in the territory, leading to deforestation and forest degradation.

6.3.2. Sub-step 2b. Analysis of barriers to the implementation of the scenarios.

The following is the analysis of barriers identified in sub-step 2, with respect to the land use scenarios presented in sub-step 1.

Table 12. Barrier analysis with respect to identified land use scenarios.

Alternatives of land use	Type of barrier		Scenario analysis and implementation
	Investment	Condition Social	
i	No	No	None of these barriers prevent the continuation of activities that have historically been developed in the territory.

Ii	Yes	Yes	**Investment:** Without the availability of investment capital, there is no transition from current productive activities to those that do not affect forest cover. **Social:** Considering the economic dependence (establishment and production of illicit crops and timber exploitation) among the population groups (indigenous people, external actors and dissidents) present in the reservation and the fact that this promotes the development of activities that generate deforestation, if the population does not have a financial mechanism to counteract this dependence, it is unlikely that economic alternatives that offer opportunities will be developed. employment and mitigate those that generate deforestation.
Iii	Yes	No	**Investment:** Although there are plans and programs by the Mayor's Office of Solano and the Governor's Office of Caquetá to control deforestation and forest degradation, these entities have limited investment resources. Therefore, it is unlikely that these institutions will have resources available to control deforestation and forest degradation. to invest in the project area and to achieve

Alternatives for the use of the ground	Type of barrier		Scenario analysis and implementation
	Investment	Condition Social	
			counteracting activities that cause deforestation in the area.

Source: *Own elaboration, 2021*

According to the results presented in Table 12, the most probable and conservative land use alternative to define the project baseline (different from the project activity) is the continuation of the one presented at the beginning of the project, corresponding to Scenario i.

6.4. Impact of project registration

The economic benefits derived from the commercialization of carbon credits are a source of investment resources that allow the implementation of project activities, which are necessary to address the practices and factors that represent a threat to forests. REDD+ activities represent opportunities for work and income generation, which reduces dependence on activities that involve deforestation of the territory.

The resources from the registration of this REDD+ project are configured as working capital available to materialize the interests and opportunities identified by the community members, who seek the sustainability of their culture and territory. It is also true that REDD+ activities do not offer significant profitability and the focus of the project is on territorial and cultural conservation. REDD+ project activities can only be sustained and increase their impact if resources are obtained through the sale of the CCVs. The indigenous community does not have access to bank loans or financial support from the government or banking entities, so the resources derived from the commercialization of the CCVs constitute a unique opportunity to finance REDD+ activities. These resources also allow improving management and territorial governance capacity, which results in a cultural strengthening of the communities and improvement in their quality of life, who by accessing the benefits associated with GHG reduction can promote the sustainability of actions to reduce deforestation over time.

Considering the above, it is evident that the project does not correspond to the baseline scenario, therefore, the project is additional.

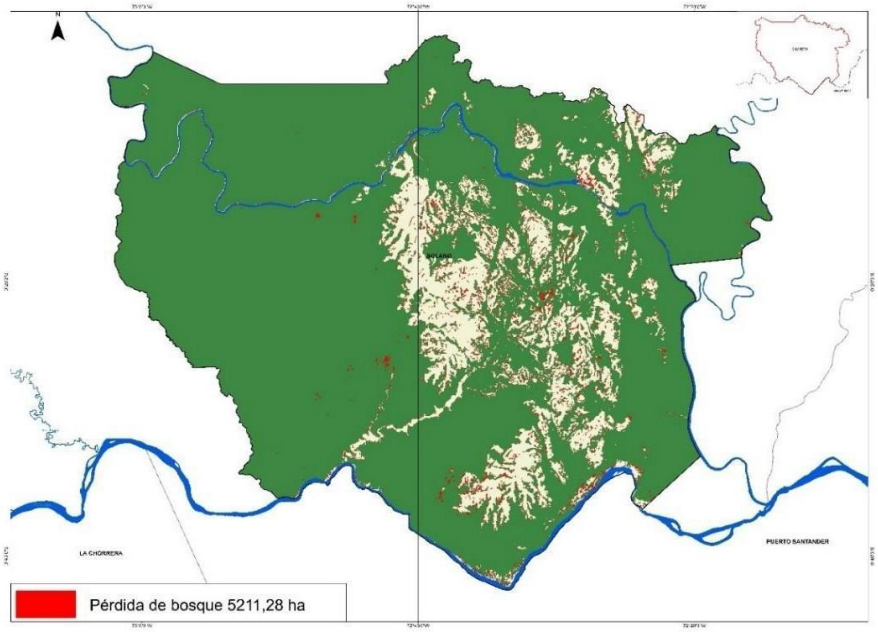
7. Causes and drivers of deforestation and degradation

The following is the identification, description and analysis of the causes and agents of deforestation, from which measures and actions were designed to mitigate deforestation and forest degradation in the project area.

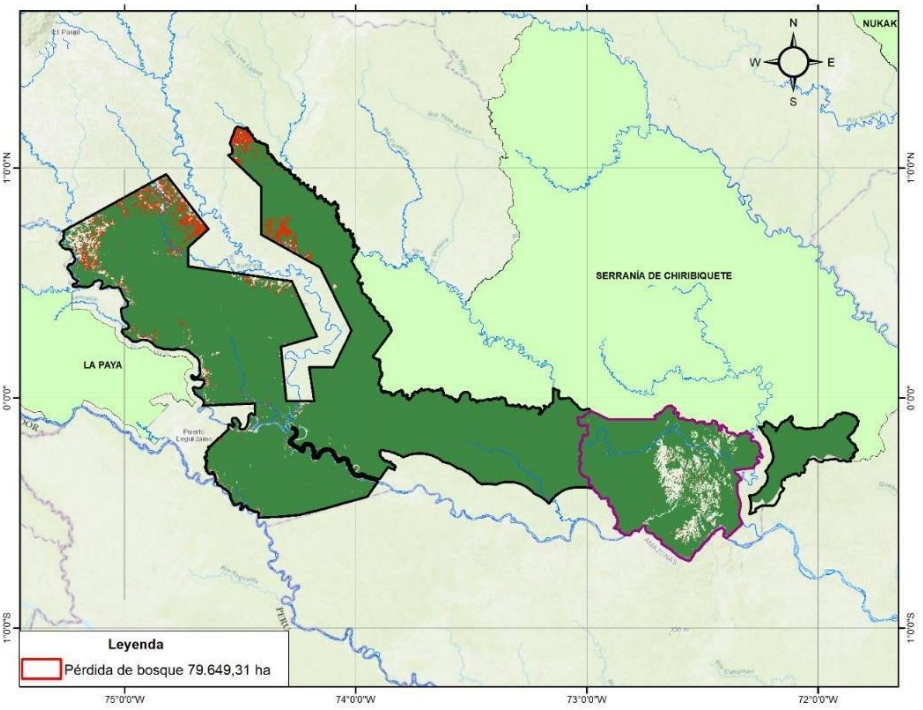
7.1. Spatial and temporal dimensions

Deforestation and degradation present in the reference region were characterized spatially and temporally. The analysis was also conducted for the project area. For this, a period of analysis was taken for deforestation between 2007 and 2017 and for degradation the periods 2007-2014 and 2014-2017 were taken.

Map 15. Forest loss in the project area for the period between 2007 and 2017.

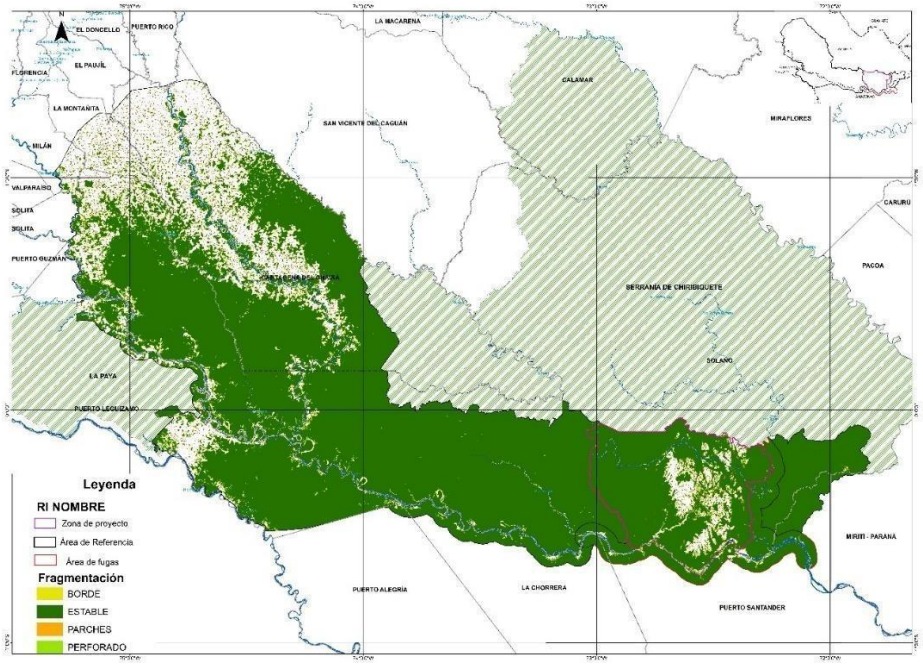


Map 16. Deforestation in the project area and reference region in the period from 2007 to 2017.



Source: *Own elaboration, 2021*

Map 17. Degradation in the project area, reference region and leakage area in 2018.



7.2. Territorial Context

The Monochoa Indigenous Reserve is a territory ancestrally occupied by members of the Uitoto and Muinane ethnic groups. These territories are appropriated by knowledge and practices framed from the reserve's own cosmology and cosmogony, in a general way, based on their cultural practices, uses and customs (Agencia Nacional de Tierras, 2017).

The territory is the center of life of the communities of the reserve, it is identified as their mother. In it, the father creator left the Word of Life, the Word of Advice (yeđára úai/fagójɨ) for the good living of the community and the multiplication of the word of life, the reproduction of the people and the abundance of food (found in the environment of the territory: the bush and the animals that live there in the realms of land, water, air) (reserve Monochoa and its Control and Surveillance Zone in the Putumayo Estate, 2016).

The Monochoa IR territory is characterized by a dense forest cover that requires the clearing of vegetation for the establishment of houses and farms. In addition, the presence of actors external to the indigenous reserve has been identified, such as forest resource extractors and illegal actors.

The reserve has a vision of territorial use in which each member of the communities makes use of the territory according to the tasks they perform. For example, grandparents make a special management of mythological places; women dedicate a good part of their time to the care and management of the chagras; young people and children recognize places for hunting, fishing and foraging areas where they get food that we consume daily, such as bush animals, fish and fruits (reserve Monochoa and its Control and Surveillance Zone in the Putumayo Predio, 2016).

For the communities of the IR, it is essential to strengthen their culture and make good use of the territory and there is a willingness to work on strengthening governance, control, use and management of natural resources. For this purpose, the following management zones have been defined in the territory of the Indigenous Reserve:

- **Surveillance zone:** this zone is occupied by the communities at the eastern and western ends, who are in charge of exercising control over third parties that wish to enter the IR's territory. If a third party wishes to enter, they must request permission and reach agreements with the IR community authorities.

- **Gathering, hunting and fishing zone:** the gathering sites correspond to the creeks, streams, rivers, lagoons and salt marshes. All members affiliated to the communities enjoy the natural resources of this zone, as long as they use them appropriately and in order to improve their domestic conditions.

- **Land area:** corresponds to the land destined to the development of domestic activities and they are owners only of the place where they have put their labor.

- **Timber Zone:** Corresponds to the areas destined for the harvesting of forest resources to supply the needs of the community. Large-scale commercialization of timber from the Monochoa IR and its control and surveillance zone is not allowed.

- **Mining and hydrocarbon exploitation zone:** The territory of the IR has a delimitation of an Indigenous Mining Zone. However, considering that this activity is one that destroys non-renewable natural resources according to the community's vision, it is not currently being carried out.

In general terms, the indigenous peoples of the Colombian Amazon have suffered over the years processes of violation of rights that have generated greater or lesser impact, depending on the territorial context, making reference to affectations to the traditional government, to their structures, to leaderships; likewise they have generated in environmental terms, contamination of water sources, loss of vegetation cover due to deforestation, loss or scarcity of sources of supply especially for hunting.

The bonanzas that have been presented, from quinoa, tigrilladas, drug trafficking, rubber and gold, without forgetting the displacement, confinement, recruitment of men, women and children in the context of the violence described by the Constitutional Court in Auto 004 of 2009, which identified thirty-four (34) indigenous peoples at risk of extinction and also ordered a program of guarantees and thirty-four (34) safeguard plans, with affirmative actions to move forward in overcoming the unconstitutional state of affairs for this population and the effective enjoyment of rights of indigenous peoples.

On the other hand, historically, the presence of illegal armed groups has been registered in the territory of the reserve. The interaction between the indigenous people and these groups has been mediated mainly by fear and the limitations of the indigenous people to defend their culture and territory. In general, external agents are the ones with working capital and resources to invest in productive activities.

7.3. Socio-cultural context

The indigenous reservation, according to the census of the population that requested the extension of the reservation under agreement 025 of 2017, amounts to a total of 341 people belonging to 88 families. However, according to the participatory workshops conducted with the community in Table 13 identifies the approximate number of people and families per community.

Table 13. Distribution of communities and settlements reserve Monochoa

Community	No. families*	No. persons*
Caño Negro	14	70
Tiribita	12	80

		No. persons*
Saini	7	32

Source: *Own elaboration, participatory workshops, 2021.*

The population of the Reserve de Monochoa is 92.1% indigenous, 7.1% is mestizo and 0.8% is foreign, who arrived motivated by the different bonanzas and became rooted through the formation of families with inhabitants of the reserve. Others, although they did not form family ties, managed to establish working relationships and friendships to the point of being adopted as part of the reserve. Two ethnic groups predominate, the Muinane (39.9%) and the Uitoto (44.4%), which are the cultural base of the reserve and is consistent with what is stipulated in the decree of conformation of the reserve (SINCHI, 2012).

However, the reserve indicates that it has had contact with people from outside the community at different times: rubber tapping, orphanages, tigrilladas, the arrival of institutions, illicit crops, among others. During the bonanzas, the relationship established with these agents was a labor relationship where community members worked as laborers in these activities.

The community has appropriated other cultural practices in a forced or voluntary manner. Upon entering the dynamics of the economic market, new needs arise, such as professional training to increase labor competitiveness, access to communication networks and non-traditional medicines. These needs are aggravated by their location in a region that is difficult to access and where the Colombian government has little presence. As a result, the commercialization of some of the territory's resources has been chosen to satisfy these needs.

7.4. Economic context

The Monochoa IR traditionally hunts, fishes, and collects forest resources. Subsistence agriculture (chagras) is carried out in the indigenous reserve, producing mainly fariña, cassava and plantains, and there is also a reforestation system with fruit trees (such as cucuy, chontaduro, laurel, umarí, caimo, uva yarumo and others). Since these are subsistence activities, none of them are a representative source of income; when there are surpluses in agricultural production volumes, they are exchanged for other goods and their commercialization is very sporadic. Another source of income for the common population is the sale of fast food, such as empanadas and frozen soft drinks. Formal employment sources are scarce due to the weak institutional presence and the lack of business development.

Another source of income for the region is wild game hunting, which supplies meat to the Puerto Santander and Araracuara area due to the scarcity of other types of domestic meat such as beef, pork or poultry. However, due to the difficult economic conditions, they work as day laborers or

commercialize resources such as timber, fish, bush meat, products from the chagra or livestock (Visión Amazonia, 2020).

Considering the low availability of profitable productive activities in the area, an increase in timber extraction has been identified. While the main sources of employment for the members of the reserve consist of timber commercialization, illicit crops also offer an opportunity to generate income. Due to the lack of income- generating opportunities, these activities become sources of economic resources for some members of the communities, and the development of these activities has been identified as a cause of deforestation in the project area and reference region.

Despite the national government's interest in promoting the strengthening of viable economic alternatives for these territories, limited resources and capacity have not allowed them to successfully reach these geographic zones. It is also identified that the cost of goods and services is high due to the spatial location of the reserve since the logistics required for the transportation of these elements implies high costs.

7.5. Historical context

The indigenous population occupied the territory long before the arrival of Europeans to the continent and the discovery of America. With the arrival of the conquistadors, the ethnic groups and indigenous peoples were subjected to slavery, lost their freedom, autonomy, control over their territory, cultural identity, resources, organization and family members. The indigenous people were victims of inhumane treatment when they wanted to be stripped of their property and put up resistance, others fled their territory and settled in other areas of the country.

Subsequently, during the second half of the 19th century and the first half of the 20th century, the popularization of rubber tapping transformed the spatial and economic dynamics of the region. This period was marked by the exploitation and enslavement of the indigenous population for the development of economic activity and the intensification of trade.

Later, the rubber gum shortage led to a fur bonanza in the 1950s and a second fur and syringa bonanza in 1967. During these bonanzas, traders began to work in the extraction of skins from animals that were highly sought after in the market, such as caiman, ocelots and wolves. During this bonanza, the indigenous population was once again threatened, which led to their displacement and the establishment of new indigenous settlements within the forest.

Since the end of the 1970s, there was a boom in the fishing and cold room industries, as well as emigration and the founding of communities. During this period, the drug trafficking economy became one of the main economic drivers, not only for the region but also for the country, due to the profitability it represented. The planting boom led to the development of new businesses and the migration of people from other areas of the country in search of new economic alternatives, attracted by the coca boom.

Later, in accordance with Colombian regulations regarding indigenous reserves, INCORA granted legal status as a reserve to a tract of vacant land in favor of the Uitoto population of the Monochoa area in 1988.

At the beginning of the 1990s, with the appearance of illegal groups and the armed conflict in Colombia, there was a massive dispossession of land and forced displacement of indigenous people. These communities have been particularly vulnerable considering that they depend on their territories, because of the relationship they establish with their lands.

Later, in the 2000s, paramilitaries, military and FARC members entered the area. In the Amazon region, the FARC became an alternative social order to the central state. This was a period marked by territorial disputes between armed groups. These disputes affected the territoriality of the indigenous reservations in the area, who in many cases were forced to move outside their territories.

In 2016, with the signing of the Peace Agreement and the departure of the FARC from the area, part of the territories previously controlled by this group were left at the mercy of new occupants. While the FARC were promoters of deforestation processes, they also acted as a regulating entity in this area characterized by low state presence, which is why the expansion of colonization and land grabbing increased after their departure from the territory.

Currently, the presence of FARC dissidents has been identified in the region. These groups, despite not having a high armed capacity, have carried out actions that have had a highly negative impact on the indigenous populations and their territories. A corridor of expansion of these groups has been identified in the area between southern Guaviare, southwestern Caquetá and western Vaupés (Álvarez Vanegas, Pardo Calderón, & Cajiao Vélez, 2018).

7.6. Key players, interests and motivations

The main deforestation agents identified in the reference region and in the project area are similar, among which are:

Table 14. Main agents and causes of deforestation

Agent	Causes	Interest
Manual illicit extractor of wood for sale	Illegal manual extraction wood for sale	Economic
Extractor fromwood for self-consumption	Timber extraction for self-consumption	Self-consumption

Mineral extractor for sale	Licit extraction (Mining Declaration not yet exercised) and unlawful	Economic
Producer intermi ttent agricultural producer of coke for sale	Production intermi ttent agricultural production of coca for the sale	Economic - accumulation of wealth in non regulated

Producer intermittent agricultural producer of coca for self-consumption	Production intermi ttent agricultural production of coca for self-consumption	Self- consumption

Agent	Causes	Interest
Agricultural producer with crops traditional for self-consumption and coca (chagras)	Production traditional for self-consumption	Self-consumption

Source: *Own elaboration, 2021*

Table 15. Key actors, motivations and interests.

Actor	Scope	Motivations and interest	Location of the deforestation
Illegal manual wood extractor for sale	Direct	Subsistence economic interests.	Near the canals and rivers
Wood extractor for self-consumption	Direct	Subsistenc e interests.	Near the canals and rivers Rebusque Zones
Miners	Direct	Economic interests	Near the canals and rivers
Intermittent agricultural producer of coca crops for sale	Indirect	Economic interest for the accumulation of wealth in non-market markets regulated.	Near the canals and rivers
Intermittent agricultural producer of coca cultivation for self-consumption	Direct and indirect	Preservation of cultural traditions	Expansion of the productive area
Agricultural producer with traditional self-consumption and coca crops (chagras)	Direct and indirect	Preservation of cultural traditions and livelihood interests.	Expansion of the productive area

Source: *Own elaboration, 2021*

7.7. Economic activities and their importance

Table 16. Economic activities and their importance.

Activity	Importance economic	Importance sociocultural	Description
Extractor manu al wood extraction for sale	Hig h	Downl oad	This activity is a source of income for external agents.
Extractor illegal manual of wood for self-consumption	Dow nloa d	Media	This activity is developed for self-consumption and internal use within the reserve.
Legal and illegal mining for sale to third parties	Hig h	Downl oad	This activity is a source of income for external agents. However, with the 2017 Declaration of Indigenous Mining Zone, the possibility of mining development in the territory was formalized, having the community as a priority.
Intermittent agricultural producer of coca crops for sale	Hig h	Downl oad	This activity is carried out by external actors (illegal armed groups) who carry out these activities for the purpose of in illegal markets.
Intermittent agricultural producer of coca cultivation for self-consumption	Downloa d	High	This activity is developed for self-consumption and conservation of the culture and beliefs of the reserve.
Agricultural Producer with traditional crops for self-consumption and coca (chagras)	Downloa d	High	This activity is developed for self-consumption and conservation of the culture and beliefs of the reserve.

Source: *Own elaboration, 2021*

7.8. Direct and indirect impact

Table 17. Causes of deforestation and its impact.

Cause	Agent	Type of impact	Impact	Description
Illegal manual logging timber for sale	Illegal manual wood extractor of timber for sale	Direct	High	It is one of the activities that cause the most deforestation in the project area and region. of reference.
Timber extraction for self-consumption	Extractor from wood for self-consumption	Direct	Under	The practice of timber extraction is not carried out on a permanent basis for self-consumption
Legal or illegal mining for sale a third parties	Illegal artisanal miner or legal miner with the highest greater capacity of extraction	Direct	High	Large-scale legal mining is already pre-qualified with the declaration of indigenous mining zone obtained by resolution in 2017. Through this declaration, third parties can apply for permits, process titles and licenses for legal mining in most of the territory, with the reserve community as a priority. However, thanks to the REDD+ project, the reserve will not allow mining development. Illegal mining activities are occurring on a smaller scale with practices crafts
Intermittent agricultural production of coca for the sale	Intermittent agricultural producer of coca crops for sale	Indirect	High	This is one of the activities that cause the most deforestation in the project area and reference region.

Intermittent agricultural production of coca for self-consumption	Intermittent agricultural producer of coca cultivation for self-consumption	Direct and indirect	Under	The areas intervened for the establishment of agricultural systems for self-consumption are small and do not require a large extension of land. land.
Traditional agricultural production for self-consumption	Agricultural producer with traditional crops for self-consumption and coca (chagras)	Direct and indirect	Under	The areas intervened for the establishment of agricultural systems for self-consumption are small and do not require a large extension of land.

Source: *Own elaboration,2021*

7.9. Relationships and synergies

To analyze the deforestation processes in the project area, surveys and workshops were conducted with the communities to identify the problems, causes of the problems and solutions regarding forest loss (see *Annex 1. Workshops with community participation; Annex 2.*). Based on satellite images and cover changes during the reference period, it was possible to corroborate the information obtained directly with the community.

As can be seen in the file *Matriz cambio de coberturas_Monochoa.xlsx* and Table 18, the historical trend of change from forest to other land use is mainly secondary vegetation in transition, crop mosaic, pasture and natural spaces (deforested and abandoned areas). This is congruent with the drivers of forest change identified with the community, which correspond to the expansion of the agricultural and livestock frontier, subsistence production systems, illicit crops and timber extraction. With this analysis of land uses after deforestation, it is possible to validate the reasons associated with forest loss during the reference period, which is also recorded in the records of the workshops conducted with the communities (see *Annex 9, 9.1. Matrix of land cover change_Monochoa*).

Table 18. Land use change matrix.

Coverage 2008/2018	Airports	M	Mosaic of pastures with natural spaces	S		Rivers (50 m)	Fr		High dense upland forest	Lowland dense forest		Hi	Dense non-forested dryland grassland	Dense, wooded dryland grassland	Dense dryland grassland with shrubs	D
Airports	100 %															
Grass mosaic with spaces natural		59%		40,3%												
Secondary vegetation or in transition		5,4%	5%	54,7%			6,91%		8%			19,4%				
Natural sandy areas					98%	1,8%										
Rivers (50 m)					1,4%	98%										
Fragmented forest with pasture and crops		30,4 %		6,3%			63,29 %									

Fragmented forest with vegetation secondary		2,37 %		1,43%			76,9%		18%							0,95 %
Dense shrubland				0,16%				99%								
High dense ground forest firm		0,001 %	0,003 %	0,02%		0,00 2%	0,01%		99 %	0,01%	0,01 %			0,02%	0,06%	0,01 %
Dense forest under the mainland							0,02%		0,03 %	75,73%		23,85%	0,02%	0,04%	0,31%	
Open rocky grassland											100 %					
High dense heterogeneous flooded forest												99,90 %	0,10%			
Dense dryland grassland trees														100,00 %		

Coverage 2008/2018	Airports	M	Mosaic of pastures with natural spaces	S		Rivers (50 m)	Fr		High dense upland forest	Lowland lowland dense forest		Hi	Dense non-forested dryland grassland	Dense, wooded dryland grassland	Dense drylan d grassl and with shrubs	D
Dense dryland grassland with shrubs									0,11 %	0,12%					99,77 %	
Dense dryland grassland non-wooded													74,06 %			25,9 4%
Dense grassland floodable non-forested																100 %

Source: *Own elaboration, 2021*

Elements affecting land use change:

The project identifies the expansion of the agricultural frontier and the establishment of crops for the generation of productive surpluses as an element that influences land use change.

Actors:

The communities of the indigenous reserve exert pressure on the forest cover for the establishment of chagras. The illegal armed groups are also identified as deforestation actors in the establishment of illicit crops and timber extraction for sale; these activities are mainly encouraged by the opportunity to market the product and obtain income.

However, activities developed within the reserve, such as the establishment of small crops for surplus generation, also cause forest loss.

The reserve's geographic location and access characteristics limit its ability to connect the territory with secondary cities and other points of commercialization of goods and services. The distances between these points are long and the main means of transportation require fuel, which implies a high cost for the mobilization of goods. The high cost of fuel affects productive development and makes most of the region's agricultural initiatives unviable. The supply of electricity in the territory was based on the installation of some photovoltaic solar systems, limiting the production, distribution and conservation of products that require low temperatures to preserve their quality. In addition, the low availability of agricultural incentives (access to loans, low market prices, high input costs, difficulty in accessing technical assistance programs, among others) and the absence of productive linkages limit the opportunity to generate income and promote sustainable development for the reserve's communities.

7.10. Deforestation and degradation chain of events

Table 19. Chain of deforestation and degradation events.

Underlying cause	Agent involved	Direct cause
The low state presence in the territory facilitates the development of irregular activities. There is a market and the possibility of commercializing the products and therefore it is attractive for the population of these areas. areas.	Illegal manual harvesting of timber for sale	Illegal manual harvesting of timber for sale
Indigenous communities have used timber resources for the development of their activities for this reason it has a low impact, but it is done in a non-timber form. controlled.	Wood extractor for self-consumption	Extraction from wood for self-consumption

Mining is a source of income for third parties in the territory, usually promoted informally and illegally. However, with the declaration of the indigenous mining zone, formal mining is enabled, which nevertheless requires the issuance of a mining title and exploitation permits, with priority for the community of the reserve. Informal and artisanal mining, the miners make developments of	Miners legal and illegal miners	Extraction for sale to third parties

Underlying cause	Agent involved	Direct cause
small-scale riverine mining (riverine mining) alluvium)		
The low state presence in the territory facilitates the development of irregular activities. There is a market and the possibility of commercializing the products and therefore it is attractive for the population of these areas. areas	Intermittent agricultural producer of coca crops for sale	Intermittent agricultural production of coca for sale
The low state presence in the territory facilitates the development of irregular activities. There is a market and the possibility of commercializing the products and therefore it is attractive for the population of these areas. areas.	Intermittent agricultural producer of coca crops for self- consumption	Intermittent agricultural production from coca for self-consumption
Communities have historically used subsistence production systems to meet food security requirements. Removal techniques are employed and burning of coverings.	Agricultural producer with traditional crops for self- consumption and coca (chagras).	Traditional agricultural production for self-consumption

Source: *Own elaboration, 2021*

7.11. REDD+ Activities

7.12. General intervention strategy

The territorial dynamics that cause deforestation and forest degradation in the territory are diverse and have effects that are difficult to counteract directly. The REDD+ strategy incorporates four components related to territorial management and activities that discourage deforestation and promote conservation. Project activities have been agreed with the community and are in line with the objectives and components of the Environmental Management Plan (See *Annex 11, file 11.1*) established by the community, the guidelines of the Safeguard Plan (See *Annex 11, file 11.4*) and the Action Plan against Deforestation in the Municipality of Solano (See *Annex 11, file 11.2*).

REDD+ activities were agreed upon and adjusted during the development of participatory workshops 1, 2, 3 and 4 (see Workshops folder). The workshops were attended by almost all community members, as evidenced in the attendance lists for each workshop (see attendance lists in each sub-folder of Workshop 1, 2, 3 and 4). The following aspects were used as basic community inputs: identification of livelihoods, problem tree, solution tree and community surveys. The problem and solution trees (see files with this name in the folder Workshop 1), as well as the community surveys (see file *Systematization of REDD+ Surveys.xlsx*, located in Annex 2.1 Surveys) made it possible to characterize the needs, opportunities and potential interventions to address the causes of deforestation and improve the quality of life of the communities. The exercise of identifying livelihoods and ways of life illustrated the relationship and interactions of the communities with the environment (see file 1.1.9. Workshop 1_Caño Negro_Modes and livelihoods.pdf and *1.1.14. Workshop 1_Tirivita_Modes and livelihoods.pdf*). With these inputs, in each community of the reserve, the grouping of possible activities and interventions mentioned in common thematic components such as governance, productive systems and monitoring was carried out (see files 1.1.13. Workshop 1_Tirivita_Project matrix.pdf and *1.1.8. Workshop 1_Caño Negro_Project matrix.pdf*). Workshop 2 included a fourth thematic component corresponding to social investment, which had been worked on within the Governance component (see file *1.2.5. Workshop 2_Social Investment.pdf* in Annex 1.2 folder).

The distribution of benefits in the four pillars (components) of the Project was carried out in a participatory manner during the community workshops and the record of the agreements that were established were documented in the following files:

- 1.2.7. Workshop 2_Budget Distribution.pdf (located in folder 1.2 Workshop 2): shows the distribution of the budget among the four lines of action of the project, according to the needs of each community.
- 1.2.8. Workshop 2_Final Budget Distribution.pdf (located in folder 1.2 Workshop 2): the summary of the budget distribution between the lines of action in each community and the average for the entire project is shown.
- 1.3.1. Workshop 3_Meeting Minutes.pdf (located in subfolder 1.3 Workshop 3): page 2 of the document shows the ratification of the distribution agreement.

The project is based on the distribution of benefits between the reserve and the developers, as well as the distribution of the indigenous investment resources among the four lines of action of the project.

7.13. Prioritization of areas for interventions:

According to the community REDD+ project structuring exercises, through social mapping and project beneficiaries, potential intervention areas for productive activities and forest recovery are established. In addition, activities that the community has been developing with its own resources, of national or departmental origin, are located.

The location of the interventions will be carried out in accordance with the Indigenous Reserve's Environmental Management Plan, the spatial location of the people in the community and the areas that have been recently deforested. The project's interventions aimed at establishing productive systems are concentrated in areas that present a change from forest to other land uses (pastures, crops and fragmented forests). This work scheme is aimed at containing the expansion of the agricultural frontier or active deforestation fronts and recovering forest that has recently been lost, which is congruent with the environmental determinants for land use planning in the Municipality of Solano.

The deforestation maps show the sites that have been intervened in the reference period (2007-2017) and that are prioritized in the framework of the project for the process of establishing environmentally friendly production systems and restoration processes.

In Workshops 3 and 4, exercises were carried out to identify the intervention sites for the activities corresponding to the four components. In the file *1.3.5. Workshop 3_Social Cartography and Implementation and Intervention Zones.pdf* (located in the subfolder *Annex 1.3 Workshop_3*) the areas that will be prioritized for the implementation of REDD+ activities in each of the communities are shown. During workshop 4, the location of community activities and the development of project activities were also reviewed on a broader scale, based on the land use and occupation model currently in place (see *Workshop_4_Monochoa_Mapeo_Chronogram.pdf* located in subfolder *Annex 1.4 Workshop_4).*

7.14. Participation of all stakeholders in the territory

As part of the project strategy, it is essential to recognize the importance of involving those directly and indirectly responsible for deforestation in the reserve's area, to strengthen cultural identity and to foster community unity.

The REDD+ Project communities, within their historical context of natural resource management, have areas for gathering and grazing in which they make sustainable use of forest resources,

respecting traditional uses and practices (chagras, hunting, fishing, agroforestry, fruit and seed collection) and recognizing conservation areas where no harvesting or interventions should be carried out.

7.15. Contribution of the REDD+ Project to national climate change targets

In terms of land use planning, the Amazon Regional Land Use Planning Model - MOTRA (MADS and DNP, 2019) guides the implementation of concrete actions that lead to the solution of existing conflicts in this area of the country. The actions prioritized for historical conflicts in the Amazon region correspond to the following: effective articulation of territorial planning instruments, recognition of the economic and social dynamics that affect the use and occupation of the territory, the importance of protecting the main ecological structure and reducing vulnerability to climate change, strengthening territorial governance and the articulation of urban and rural areas. The Monochoa REDD+ Project bases its intervention strategy and prioritization of activities on these regional land-use planning guidelines. Recognizing that by 2030 the country hopes to be recognized internationally for solving conflicts related to land use planning, the project contributes directly to the following achievements:

- Reduce forest loss.
- Reduce deforestation to zero.
- Increase community and ecosystem resilience.
- Stabilize the agricultural frontier within the territory.
- Strengthen the regional integration of the territory.

In addition, it should be considered that the country has set ambitious targets for the reduction of national GHG emissions. Colombia updated its Nationally Determined Contribution (NDC) at the end of 2020, setting a target of reducing projected emissions by 51% by 2030. Much of Colombia's forests, particularly in the Amazon and the Pacific, are located in indigenous reservations and Afro-Colombian collective territories and their preservation depends on the defense of ways of life appropriate to the territory. The participation of indigenous peoples is essential to protect the forests and the participation of peasant communities is essential to transform agricultural production practices and rural development in the country, to prevent the expansion of the agricultural frontier and to safeguard food security. The REDD+ Project promotes the active participation of these focal groups, contributing directly to the country's goal of reducing the annual deforestation rate to 50,000 ha/year by 2030, with a trajectory of 155,000 ha/year by 2022 and 100,000 ha/year by 2025. The historical reference rate of deforestation in the project area is approximately 208.5 ha/year and it is expected that by 2030 the project actions will maintain it at a maximum of 50 ha/year. This represents a reduction of 935 ha/year, equivalent to 1.7% of the national target for 2025 and 0.89% of the deforestation reduction target for 2030.

7.16. Description of REDD+ activities

REDD+ activities were defined in a participatory manner based on the results of the analysis of the causes and agents of deforestation, as well as the strategies and solutions to these problems. The general list of activities is presented below:

ID Activity	A-1				
Description of the REDD+ activity	Development of Project Design Document (PDD) for accessing carbon markets				
Relationship activity with direct or underlying cause	Certification is required for activities carried out by the community to reduce land use change through the conversion or degradation of forest cover. Documentary management of GHG emission reductions will allow the generation of income to generate a virtuous circle in land management, so that forest conservation can be sustained in the long term, while at the same time achieving a sustainable forest management system. community development and biodiversity protection				
Compliance with life plans or ethno-development plans	This activity is aligned with the programs against deforestation that are part of *the Action Plan against Deforestation of the Municipality of Solano* and is aligned with the land management agreements established in the *Environmental Management Plan* of the reserve, considering that it is oriented to the development of social and cultural economic activities suitable for the generation of sustainable income. It also promotes the conservation of the biological and intellectual heritage associated with the resources. natural resources of the territory.				
Consultation mechanism to define the REDD+ activity	Participatory workshops with the members of the reserve Approval at the general assembly.				
Responsibility and role of actors involved in implementation	• Local communities: implementers • Project Manager (Yauto) • Carbo-Terra: developers and implementers				
Schedule of Implementation	From the first year of the project.				
Indicators for reporting progress					
Name	**ID Indicator**	**Type**	**Goal**	**Unit of Measure**	**Responsible Measurement**
# of people participating in meetings, surveys or workshops on problem tree and identification of drivers of deforestation and forest degradation. possible solutions	**A-1.1**	Result	The processes of identification and Prioritization of activities are carried out in a participatory manner.	Number of persons	Carbo-Terra Yauto
# of legal agreements to support the development and implementation of the project including commercialization	**A-1.2**	Result	Agreements of development marketing	Agreements	Yauto

of carbon credits					
Registration of project in the waste reduction certification program. emissions	**A-1.3**	Result	Project registration	Registration	Carbo-Terra

ID Activity	**A-2**
REDD+ Activity Description	Strengthen community capacities for the management of the prioritized productive systems and development of business plans to implement productive systems that contribute to the wellbeing of the community and the natural environment (e.g., the development of a business plan to implement productive systems that contribute to the wellbeing of the community and the natural environment). mambe, tobacco, cacao, banana, sugar cane, copoazú and cocoa).
Relationship activity with direct or underlying cause	Defining and prioritizing viable productive systems for the community is a basis for achieving the economic sustainability of the communities and offering income and maintenance alternatives to offset the opportunity cost of displacing activities that lead to deforestation. Involving the community in this exercise allows setting expectations and increasing the commitment of its members to control the activities that threaten the forest, since the availability of resources for the development of these activities depends on the care of the forest. To the extent that the technical and operational capacities of the community are strengthened for the management of the prioritized productive systems, the probability of success and permanence increases. This strengthens the capacity of the community members to counteract the incidence of activities that lead to forest loss.
Compliance with life plans or ethnodevelopment plans	This activity is aligned with *Lines of Action 1 and 2 of the Plan for the control of deforestation in the Municipality of Solano* and will be carried out in accordance with the *Management Agreements*, respecting the areas for gathering and grazing (hunting and fishing) and the land management activities established in the reserve's *Environmental Management Plan. It* is also in line with the possible lines of action of the *Araracuara chapter of* the *Uitoto People's Safeguard Plan,* considering that it is oriented towards access to technical assistance and the development of appropriate social and cultural economic activities for the generation of sustainable income and that it generates production alternatives that will strengthen the *Uitoto people.* food sovereignty of the community of the Indigenous Reserve.
Consultation mechanism to define the activity REDD+	Participatory workshops with the members of the reserve and approval at the general assembly. Meetings with entities and programs
Responsibility and role of actors involved in implementation	• Local communities: implementers • Yauto: project manager • Carbo-Terra: implementers • Entities and programs

Schedule of Implementation	From the third year of the project.				
Indicators for reporting progress					
Name	**ID Indicator**	**Type**	**Goal**	**Unit of Measure**	**Responsible Measurement**
# of people involved in the development of productive systems who participate in training or training sessions training.	**A-2.1**	Result	All people involved in the development of production systems participate in training or workshops. at training.	# of persons	Carbo-Terra Yauto Reports of third parties
# of women involved in the development of productive systems who participate in training or training workshops training.	**A-2.2**	Result	All women involved in the development of productive systems participate in training or workshops. at training.	# of women	Carbo-Terra Yauto
Productive activities identified	**A-2.3**	Impact	Sustainable productive activities identified for investment with the resources generated by the project	Number of productive activities	Carbo-Terra Yauto Reports T hird Party
# business plans prepared	**A-2.4**	Product	At least one business plan is defined for implementation	Number	Carbo-Terra Yauto

ID Activity	A-3
Description of the REDD+ activity	Implement or improve prioritized production systems (e.g. mambe, tobacco, cacao), banana, sugar cane, copoazú and cocoa).
Relationship activity with direct or underlying cause	The establishment and improvement of prioritized production systems reduces the community's dependence on the establishment of new crop areas to generate surpluses, which will reduce pressure on land cover. forestry.
Compliance with life plans or ethnodevelopment plans	This activity is aligned with the *Management Agreements*, respecting the gathering and grazing areas (hunting and fishing) and the land management activities established in the Reserve's *Environmental Management Plan*, considering that it is oriented to the development of social and cultural economic activities suitable for the generation of income. of sustainable income.

Consultation mechanism to define the activity REDD+	Participatory workshops with the members of the reserve and approval at the general assembly.
Responsibility and role of actors involved in implementation	• Carbo-Terra: implementers. • Yauto: project manager • Local communities: implementers • Technical and research entities offer technical support: SENA, SINCHI, NGOs, Private Sector.
Schedule of Implementation	Starting in the fourth year of the project.

Indicators for reporting progress

Name	ID Indicator	Type	Goal	Unit of Measure	Responsible Measurement
# of IR members employed full time by IR activity project	**A-3.1**	Impact	Project activities provide full-time jobs for the community.	Number of persons	Carbo-Terra Yauto Representative for community
# of female IR members employed full time by IR activities project	**A-3.2**	Impact	Project activities provide full-time employment for women in the community.	Number of women	Carbo-Terra Yauto Representative for community
# of people who improve their income with productive systems	**A-3.3**	Impact	The project activities enable members of the of community members to improve their income.	Number of persons	Carbo-Terra Yauto Representative for community
# of women who improve their income with productive systems	**A-3.4**	Impact	The project activities enable women members of the community to improve their income.	Number of persons	Carbo-Terra Yauto Representative for community

# of hectares of productive systems that have special management measures to favor the biodiversity	**A-3.5**	Result	Management measures are implemented in production systems that favor biodiversity.	Area (ha)	Carbo-Terra Yauto Representative for community
# of hectares of productive systems that are improved or established	**A-3.6**	Result	Productive systems are implemented or existing productive systems are improved. systems are implemented or existing production systems are improved.	Area (ha)	Carbo-Terra Yauto Representative for community
# Activities that generate surpluses implemented	**A-3.7**	Product	Implemented at least an activity that generates surpluses.	Number	Carbo-Terra Yauto Representative from on community

ID Activity	**A-4**
Description of the REDD+ activity	Maintain and follow up on the production systems implemented.
Relationship activity with direct or underlying cause	By carrying out maintenance and follow-up activities, positive results and continuous improvement of the productive activity are promoted. Successful productive activities help to halt the advance of activities that threaten the forests and to displace the economic dependence of members of the forest community. the community towards them.
Compliance with life plans or ethno developmen t plans	This activity is aligned with *Lines of Action 1, 2 and 4 of the Plan for the control of deforestation in the Municipality of Solano* and will be carried out in accordance with the *Management Agreements*, respecting the areas for gathering and grazing (hunting and fishing) and the surveillance activities established in the *Environmental Management Plan* of the reserve, considering that it is oriented towards access to technical assistance, the development of appropriate social and cultural economic activities for the generation of sustainable income, and access to fair markets.
Consultation mechanism to define the REDD+ activity	Participatory workshops with the members of the reserve and approval at the general assembly.

Responsibility and role of actors involved in implementation	• Carbo-Terra: implementers • Yauto: project manager • Local communities: implementers • Technical and research entities offer technical support: SENA, SINCHI, NGOs, Private Sector.
Schedule of Implementation	From the fifth year of the project.

Indicators for reporting progress					
Name	**ID Indicator**	**Type**	**Goal**	**Unit of Measure**	**Responsible Measurement**
# records of controls or maintenance performed/# of controls or maintenance performed expected	**A-4.1**	Result	The production systems receive the required controls or maintenance.	Percentage (%)	Carbo-Terra Yauto Community representative
Total amount of goods or services produced in the production systems	**A-4.2**	Product	See implemented Systems production that offer goods or services quantifiable services to the community	Unit	Carbo-Terra Yauto
Balance of revenues and expenditures generated in the systems of production.	**A-4.3**	Product	At least one production system is implemented that shows a balance sheet financially positive.	Currency	Carbo-Terra Yauto Representative of the community

ID Activity	A-5				
Description of the REDD+ activity	Identify and prioritize the community's social investment needs.				
Relationship activity with direct or underlying cause	Identifying social investment needs and planning how they will be addressed by the project increases the degree of community ownership and commitment to the project. Planning clearly defines the expected results and expectations of the population. This helps mitigate the risk of the community seeking additional resources from activities that may involve deforestation, as this would compromise access to the elements that are prioritized by all members. Resources are allocated to social investment activities that seek to improve the living conditions of the communities. Increased well-being of the communities, which is the reason for the reduces pressure on natural resources.				
Compliance with life plans or ethnodevelopmen t plans	This activity is aligned with the attention to the needs of the communities established in the *Plan for the safeguarding of the Uitoto people of the Araracuara chapter* and the possible lines of action, as well as with the management proposed to address the issues related to health and traditional medicine, food sovereignty, tradition and education proposed in the *Environmental Management Plan* of the Reserve, considering that these strategies are oriented to the rights over the territory and the conditions of the communities. access to education and health care.				
Consultation mechanism to define the REDD+ activity	Participatory workshops with the members of the reserve and approval at the general assembly. Participatory events with institutions and programs				
Responsibility and role of actors involved in implementation	• Carbo-Terra: implementers. • Yauto: project manager • Local communities: implementers • Institutions and programs				
Schedule of Implementation	From the first year of the project.				
Indicators for reporting progress					
Name	**ID Indicator**	**Type**	**Goal**	**Unit of Measure**	**Responsible Measureme nt**

# of people participating in meetings or workshops on issues of social investment	**A-5.1**	Result	Social investment identification and prioritization processes are carried out in the following ways participatory.	Number of persons	Carbo-Terra Yauto Reports third parties
# of women participating in meetings or workshops on social investment issues.	**A-5.2**	Result	The processes of identification and prioritization of social investment are carried out with the participation of the women.	Number of women	Carbo-Terra Yauto Reports of third parties

ID Activity	**A-6**				
REDD+ Activity Description	Improve transportation conditions to facilitate the movement of people and elements in the reserve (e.g., strengthen river (ports) and land transportation). (bridges and roads), ambulance boat, land transportation).				
Relationship activity with direct or underlying cause	Improving transportation conditions strengthens connectivity between communities, markets, and population centers, among others. This contributes to reducing the cost of transporting goods and services, improving access to markets and health services, and consequently can boost the local and regional economy. In this way, the prices of goods and services entering and leaving the communities become more competitive, increasing the options for economically viable activities, thus displacing to some extent the dependence on activities that are not economically viable. Historically, they have been conducive to deforestation.				
Compliance with life plans or ethnodevelopment plans	This activity is aligned with lines of action 1, 2 and 3 *of the Plan for the control of deforestation in the Municipality of Solano* and will be carried out in accordance with the management planned to guarantee food sovereignty established in the *Environmental Management Plan* of the Reserve and is in line with the possible lines of action of the *Plan to safeguard the Uitoto people, Araracuara chapter,* considering that they are oriented towards social and cultural stability and integrity, to the extent that it strengthens territorial control. and connectivity of the territory and access to markets.				
Consultation mechanism to define the activity REDD+	Participatory workshops with the members of the reserve and approval at the general assembly. Meetings with financing entities and programs				
Responsibility and role of actors involved in implementation	• Carbo-Terra: implementers. • Yauto: project manager • Local communities: implementers • Entities and programs • Suppliers of services and goods: technical and commercial support.				
Schedule of Implementation	From the second year of the project				
Indicators for reporting progress					
Name	**ID Indicator**	**Type**	**Goal**	**Unit of Measure**	**Responsible Measurement**

ID Activity	A-6				
# of people participating in meetings or workshops on transportation issues	**A-6.1**	Result	The processes of identification and prioritization of social investment are carried out in a participatory manner.	Number of persons	Carbo-Terra Yauto Reports th ird party Entities o Programs
# of activities/elements that facilitate the mobilization of the people	**A-6.2**	Product	See improved mobilization of community members	Number	Carbo-Terra Yauto Community Representative

ID Activity	**A-7**
Description of the REDD+ activity	Improve infrastructure and education services in the reserve.
Relationship activity with direct or underlying cause	The education of community members is essential to raise awareness and build criteria and knowledge that allow for the continuity of the protection of the territory and indigenous culture, which strengthens the social fabric and serves as a barrier against possible extractive and unsustainable activities that may compromise the natural resources of the territory. This also respects and promotes traditional knowledge. Resources are allocated to investment activities social programs that seek to improve the living conditions of the communities.
Compliance with life plans or life insurance plans ethnodevelopment	This activity is aligned with the possible lines of action of the *Plan for* the *safeguarding of the Uitoto people, Araracuara chapter, and* with the management proposed for tradition and education according to the *Environmental Management Plan* of the Reserve, considering that it is oriented to integral access to education.
Consultation mechanism to define REDD+ activity	Participatory workshops with the members of the reserve and approval at the general assembly. Meetings with institutions and programs
Responsibility and role of actors involved in implementation	• Carbo-Terra: implementers. • Yauto: project manager • Local communities: implementers • Institutions and programs • Suppliers of services and goods: technical and commercial support.
Schedule of Implementation	From the second year of the project.

Indicators for reporting progress					
Name	**ID Indicator**	**Type**	**Goal**	**Unit of Measure**	**Responsible Measurement**

# of persons participating in meetings or workshops on topics of education	**A-7.1**	Result	The processes of identification y prioritization of social investment is carried out in the following ways participatory.	Number of persons	Carbo-Terra Yauto Reports third parties Entities o Programs
# of educational facilities built or improved	A-7.2	Product	Construct or improve educational facilities located in the reserve	Number	Carbo-Terra Yauto Community representative Communit y Entities o programs
# of instructors funded	A-7.3	Product	Improving the provision of educati onal service	Number	Carbo-Terra Yauto Community representative Communit y Entities o programs
# of people receiving traditional language training	A-7.4	Result	Strengthen the knowledge of the traditional language with the members of the community	Number	Carbo-Terra Yauto Community representative
# of women receiving traditional language reinforcement	A-7.5	Result	Strengthen the knowledge of the traditional language with the women of the community	Number	Carbo-Terra Yauto Community representative
# of adequate or constructed sports facilities	7.6	Product	Facilitate the development of sports activities in the communities.	Number	Carbo-Terra Yauto Community representative

ID Activity	**A-8**
REDD+ Activity Description	Provide facilities for community members to access formal education. o to a better quality of education (basic primary, basic secondary, scholarships for higher education).
Relationship activity with direct or underlying cause	The education of community members is essential to raise awareness and build criteria and knowledge that allow for the continued protection of the territory and the indigenous culture, which strengthens the social fabric and serves as a barrier against possible extractive and unsustainable activities that could compromise the natural resources of the territory.

Compliance with life plans or life insurance plans ethnodevelopmen t	This activity is aligned with the actions of the *Araracuara chapter of* the *Uitoto People's Safeguard Plan and* the management proposed for tradition and education according to the *Environmental Management Plan* of the reserve, considering that it is oriented towards integral access to the education.
Consultation mechanism to define the REDD+ activity	Participatory workshops with the members of the reserve and approval at the general assembly. Meetings with entities and programs
Responsibility and role of actors involved in implementation	• Carbo-Terra: implementers. • Yauto: project manager • Local communities: implementers • Entities and programs • Companies, NGOs and educational entities: technical and professional support.
Schedule of Implementation	Starting in the fourth year of the project.

Indicators for reporting progress					
Name	**ID Indicator**	**Type**	**Goal**	**Unit of Measure**	**Responsible Measureme nt**
# people with access to formal education programs or improved quality of education. education	**A-8.1**	Result	Improving the quality of education or access to formal education programs for members of the poorest households. communities.	Number of persons	Carbo-Terra Yauto Community representative
# of women with access to formal education programs or improved quality of education. education	**A-8.2**	Result	Improving the quality of education or access to formal education programs for women in rural areas. communities.	Number of women	Carbo-Terra Yauto Community representative

ID Activity	**A-9**
REDD+ Activity Description	Improve medical care mechanisms for the inhabitants of the indigenous reservation. (e.g., health post, availability of medical supplies and first aid kits, strengthening of traditional and ancestral medicine and training in western medicine).
Relationship activity with direct or underlying cause	Facilitating access to medical care and health services is essential to protect community members, promote healthy practices and improve care for people in life stages that are more vulnerable than others, such as children and the elderly. Having basic health care services contributes to the protection of the population, which increases awareness of the importance of the REDD+ project, which fights against the deterioration of the territory through a comprehensive approach and respecting the knowledge of traditional medicine. Resources are allocated to social investment activities that seek to improve the living conditions of the communities. communities and strengthen their ancestral practices.

Compliance with life plans or life insurance plans ethnodevelopment	This activity is aligned with the possible actions of the *Plan for* the *safeguarding of the Uitoto people, Araracuara chapter, and* the proposed management of health and traditional medicine according to the *Environmental Management Plan* of the Reserve, considering that it is oriented towards access to health and traditional medicine. integral health care.
Consultation mechanism for defining REDD+ activity	Participatory workshops with the members of the reserve and approval at the general assembly. Meetings with institutions and programs
Responsibility and role of actors involved in implementation	• Carbo-Terra: implementers. • Yauto: project manager • Local communities: implementers • Entities and programs • Health care providers, Mayor's Office, Governor's Office, NGOs: technical and professional support.
Implementation Schedule	From the third year of the project.

Indicators for reporting progress

Name	ID Indicator	Type	Goal	Unit of Measure	Responsible Measurement
# of people who participate in meetings or workshops on health issues	**A-9.1**	Result	The processes of identification and prioritization of social investment are carried out in a participatory manner.	Number	Carbo-Terra Yauto Third party reports
# of people with access to health services	**A-9.2**	Result	Improved access to health services for community members.	Number	Carbo-Terra Yauto Community representative Entities or programs
# of health posts constructed/improved	**A-9.3**	Result	The infrastructure for providing health services to community members is improved.	Number	Carbo-Terra Yauto Community representative Entities or programs
# of people trained in traditional, ancestral or western medicine	**A-9.4**	Result	Strengthening the knowledge of traditional, ancestral and western medicine among community members.	Number	Carbo-Terra Yauto Community representative Entities or programs

8. REDD+ Safeguards

The implementation of REDD+ activities has the objective of generating benefits for communities and the environment, in addition to reducing GHG. The REDD+ Safeguards are the measures aimed at preventing the affectation of rights of a social, economic or environmental nature, as well as the occurrence of negative impacts due to the design and implementation of REDD+ activities. Additionally, they include the measures that make it possible to improve the obtaining and distribution of the benefits derived from the implementation of REDD+ activities.

Table 20. REDD+ safeguards and their compliance.

Thematic	Safeguard Cancun	National Safeguard	Description	Compliance
Institucional	A. In accordance with national forestry programs and international agreements	1. Correspondence with national legislation	The initiative is developed within the framework of the National Forestry Development Plan, international conventions and agreements signed by Colombia in the areas of: Forests, Biodiversity and Climate Change, as well as the national policies corresponding to these agreements. All proposed REDD+ Policies, Actions and Measures must be in correspondence with: -The international agreements signed by Colombia. -The national legislation (the Constitution, laws and decrees). -National policies, programs and projects.	Compliant. The initiative complies with the provisions of the National Policy on REDD+ Projects and is part of the climate change management strategies and instruments of forest governance and environmental regulations, as indicated in the Regulatory Framework. In terms of land management, under Article 330 of Colombia's Political Situation and ILO Convention 169, the Indigenous Reserves have autonomy in land management and constitute a special figure of land and environmental management. However, the project will seek synergies through coordination with regional initiatives at the territorial level that contribute to the project's conservation objectives.
	B. Transparency and effectiveness of forest governance structures	2. Transformation and access to information	Stakeholders have access to transparent, accessible and timely information related to REDD+ actions in the information platforms or media that are determined. If there are ethnic groups involved that do not speak Spanish well, it should be ensured that in the consultation and information spaces there are interpreters for their language, as well as adequate material to facilitate their understanding. Be clear in informing about:	Complies. As part of the development of the project, participatory workshops have been held with members of the communities. The workshops have been developed in language appropriate for the understanding of the participants. Some of the topics that have been addressed correspond to the project activities and their implications and responsibilities. In addition, the corresponding documents have been submitted.

Thematic	Safeguard Cancun	National Safeguard	Description	Compliance
			- Which entity is in charge of formulating and implementing the measure. - What are the benefits to be delivered to the communities in the territory. to the communities in the territory. - The commitments made by the parties involved in the implementation of the measures.	The letter of commitment signed by the authorities of the Indigenous Reserve and the minutes of approval of the activities in the General Assembly held by the communities are available.
		3. Accountability	Institutions and actors present REDD+ management reports to the partners involved, institutions and the general public, including information on the application of and compliance with safeguards. Those in charge of implementing REDD+ activities should convene accountability spaces where their management reports are presented: what has been done, how, how much has been spent and how resources have been invested, and what are the results. Information should be included on the status of implementation of the safeguards for reducing risks and promoting benefits. Stakeholders are committed to attend these informative spaces. Accountability reports should be public and accessible to the various stakeholders.	Compliant. During project implementation, community representatives and project implementers are expected to submit relevant reports and documents for proper accountability, as required by the implementation plan and project monitoring.

Thematic	Safeguard Cancun	National Safeguard	Description	Compliance
		4. Recognition of forest governance structures	REDD+ actions are developed in accordance with the existing forest governance structures established by the rules and/or by establishing the necessary structures among the actors involved in the process (strengthening or creating new structures can be a mechanism for implementing governance). In some cases, where various stakeholders are involved, the establishment of new arrangements or articulation mechanisms for decision making may be required. These could be forestry roundtables, monitoring committees or the creation of spaces for dialogue within the framework of community action boards.	Compliant. There is an appropriate governance structure that takes into account the ethnic particularities, knowledge and traditions of the Indigenous Reservation participating in the project and that is in accordance with the forms of governance and guidelines related to compliance with safeguard 14.
		5. Capacity building	The strengthening of the technical, legal and administrative governance capacities of the actors directly involved is guaranteed, so that the parties can make documented, analyzed and informed decisions. It is necessary to have programs that contribute to strengthening the capacities of the stakeholders involved as required in each case: - Technical capacities: training in REDD+ issues, climate change, forest governance, sustainable forest management, conservation, monitoring, implementation of sustainable production models, among others. - Legal capacities: training in	Complies. During the socialization sessions and in the project activities, technical, legal and administrative capacity building is planned for those involved in the project for its adequate implementation and to achieve sustainability of the results over time and once the project is completed.

Thematic	Safeguard Cancun	National Safeguard	Description	Compliance
			national legislation and international agreements related to these issues. - Administrative capacities: training in tools for project monitoring, resource management and accountability.	
Social and cultural	C. Respect for the traditional knowledge and rights of communities	6. Free, Prior and Informed Consent	When a measure or action affects or may directly affect one or several ethnic groups, the national provisions on consultation and free, prior and informed consent established in legislation and jurisprudence must be applied, as well as the guidelines issued by the Ministry of the Interior as the competent entity in this area, with the support of the control agencies.	Complies. The project complies with current regulations regarding consultation and relations with indigenous communities.
		7. Respect for traditional knowledge	Traditional knowledge systems and local and ethnic communities' own visions of the territory are recognized, respected and promoted in accordance with national legislation and in compliance with international agreements. For the development of any initiative to reduce deforestation, the different cultures that inhabit the territories must be taken into account, respecting their ways of understanding and relating to the environment, so that the traditions, uses and customs of the communities are not affected.	Compliant. The project complies with the regulations on consultation and relations with indigenous communities. During the formulation and implementation of the project, the worldview, culture, knowledge and capacities of the communities participating in the project have been taken into account.

Thematic	Safeguard Cancun	National Safeguard	Description	Compliance
		8. Distribution of benefits	The participation and fair and equitable distribution of the benefits generated by policies, measures and actions to reduce deforestation for ethnic and local peoples and communities and all those benefits derived from traditional knowledge, innovations and practices for the conservation and sustainable use of forests, their diversity and Ecosystem Services is guaranteed.	Compliant. There is a distribution scheme for the distribution of income derived from project activities that ensures that it is done in an equitable manner among project participants, taking into account the project's own levels of risk and profit.
		9. Land rights	The collective and individual territorial rights of ethnic and local peoples and communities are respected; their cultural, economic and spiritual use and significance. For this, the land tenure forms in the areas where REDD+ measures and actions are expected to be implemented must be known and decisions must be made accordingly.	Complies. The project is aligned with the regulations on consultation and relations with indigenous communities. The formulation and implementation of project activities takes into account the culture, knowledge, and capacities of the communities. In addition, it is recognized that the form of land tenure corresponds to collective ownership and that the area is titled in favor of the indigenous reservation proposing the project.
	D. Participation full and effective	10. Participation	The right to full and effective participation of all stakeholders is respected to ensure governance and adequate decision-making on REDD+. The participation structures of each stakeholder group, especially communities, must be recognized and respected in accordance with national legislation and international agreements signed by Colombia.	Compliant. All interested community representatives have been involved in the participation process for the design and implementation of the project, taking into account the applicable regulations and considering the organizational structure of the indigenous reservation.

Thematic	Safeguard Cancun	National Safeguard	Description	Compliance
Environmental and Social	E. Conservation and benefits	11. Forest conservation and biodiversity	REDD+ initiatives support forest conservation and the implementation of measures established for this purpose. REDD+ initiatives developed in the country should not be detrimental to the conservation of forests and the biodiversity they harbor.	Complies. The project seeks to conserve the forests, which is expected to conserve the biodiversity harbored therein.
		12. Provision of environmental goods and services	REDD+ initiatives support the provision and enjoyment of ecosystem services. The implementation of REDD+ initiatives must not directly or indirectly affect the benefits provided by ecosystems, which are known as ecosystem services (provisioning, supporting, regulating and cultural), for example: water supply, soil, biodiversity, among others.	Compliant. The project is expected to enhance the conservation of ecosystem resources and therefore does not negatively impact them.
	F. Prevent reversion risks	13. Environmental and territorial planning	REDD+ initiatives support the consolidation of land-use and environmental management instruments provided for in the legislation, with a focus on conservation and sustainable forest management.	Complies. Within the framework of strengthening forest governance, the development of a Territorial Management Plan is contemplated, taking into account the forms of management defined by the members of the Indigenous Reservation.
		14. Sector planning		The project is in line with the Solano Caquetá 2020-2023 Municipal Development Plan, with Pillar 1 of the environment and sustainable development, considering that it incorporates productive processes, promotes the sustainable use of biodiversity and its ecosystem services, conservation and restoration of ecosystems (See Annex 11, file 11.5). The above, taking into account that

Thematic	Safeguard Cancun	National Safeguard	Description	Compliance
				REDD+ activities contribute to the conservation of forests and their biodiversity. At the departmental level, the project contributes to the fulfillment of the objective of the Biodiversity Conservation and Ecosystem Services Program of the Governor's Office of Caquetá, which seeks to "achieve public, private and community articulation to consolidate strategies for conservation, restoration and respect for the natural wealth of our region, being the Government of Caquetá the pioneer entity in the generation of successful processes that generate a great socio-environmental impact", specifically to the actions in "restoration areas with the support of cooperation and real conservation commitments with the owners of the properties, to improve the ecosystem services" and "recovery of properties in protected areas, as strategies to stop deforestation" (see Annex 11, file 11. 7)
	G. Avoidance of emissions displacement	15. Forestry control and monitoring to prevent emissions displacement	REDD+ initiatives incorporate measures to reduce emissions displacement in their design and ensure timely monitoring and control when emissions displacement occurs. Community monitoring, articulated with early warning systems for deforestation and the activation of protocols that allow for timely responses,	Complies. One of the project's objectives is to contribute to the monitoring and conservation of the forests and biodiversity present in the territory through the development of actions aimed at monitoring and control of the territory. The community has characterized the entire project structuring process, as well as the definition of

Thematic	Safeguard Cancun	National Safeguard	Description	Compliance
			can be decisive in ensuring that problems associated with forest loss and degradation do not spread to other places.	REDD+ activities to halt deforestation. The project has also defined a leakage area that recognizes the dynamics of mobilization of deforestation agents and established schemes for monitoring the permanence of the project, as well as the forest cover associated with the project boundaries. The project will be building capacity to improve forest monitoring and surveillance, which will also be complemented by the social control exercised by community members.

9. Reduction of GHG emissions from REDD+ activities

9.1. Managing uncertainty

The uncertainty of the estimates of project reductions is related to the activity data and emission factors. The data of the REDD+ project activity (deforestation and forest degradation) were calculated using information from the SMByC, following the methodological approach described in the Digital Image Processing Protocol for the Quantification of Deforestation in Colombia V.2 of IDEAM (Galindo *et al* 2014). In the same way, the emission factors (carbon contents per deposit) were taken from this study. Therefore, following the guidance of the ProClima methodology, the uncertainty associated with these sources of information corresponds to the uncertainty of the estimates of reductions made within the framework of the REDD+ Project. The uncertainty values reported directly by IDEAM in the NREF document were used, which correspond to 9% in activity data, 2.1% in aerial biomass and 2% in soil organic carbon (MinAmbiente and IDEAM, 2019). Using the equation for combining the uncertainties of various emission sources proposed by the IPCC (2006), the uncertainty of the emission factor was calculated. Using the equation for combining uncertainties of the emission source, also proposed by the IPCC (2006), the approximate error of the Project reductions was calculated.

A) Reference equation to combine the uncertainties of several sources of issue:

$$t = \frac{\sqrt{(Ax\ a)^2 + (B\ xb)^2 + (Cxc)^2}}{T}$$

Where:

t = is the total uncertainty.

T = It is the total associated greenhouse gas emissions.

A = These are category A emissions.

a = It is the uncertainty of category A emissions.
B = These are category B emissions.
b = It is the uncertainty of category B emissions.
N = They are the emissions of category N.
n = It is the uncertainty of the emissions of category N.

a) Uncertainty of the emission factor:

Amazon area biomass = 444.8 tCO2/ha/year
Amazon soil organic carbon = 14 tCO2/ha/year
Uncertainty emission factor = Root ((444.8 tCO2/ha/year * 2.1%) + (14 tCO2/ha/ year)).
Emission factor uncertainty = 2.04%

b) Uncertainty of the activity data:

Activity data = 9%

B) Reference equation to combine the uncertainties of a source of issue:

$$U_{Total} = \sqrt{U_1^2 + U_2^2 + \cdots + U_n^2}$$

Where:

U total = Total uncertainty.

U1 = Percentage of uncertainty for each of the sources of uncertainty.

c) Uncertainty of project reductions:

Uncertainty of project estimates = Root ((2.04)2 + (9) 2).
Uncertainty of project estimates = 9.3%.

This procedure was included in the PDD and in the monitoring report, in the final section on uncertainty estimation.

In order to reduce uncertainty, maps with a precision of 9% were used to estimate the data values of the activities and the emission factors developed at the national level to report the Reference Level that represent a 10% uncertainty (IDEAM , 2019). By combining the uncertainties of the activity data and the emission factors, it was estimated that the estimates of emission reductions present an uncertainty of 9.3%.

9.2. Activity data

9.2.1. Deforestation

10.2.1.1. Estimation of the deforestation rate from the historical average

To estimate the deforestation rate, an analysis of change in the forest to non-forest cover between at least two dates, in this case 2007 was taken and 2017. Additionally, gross deforestation was taken for its estimation and forest losses were omitted after one or several dates without information in order not to incur in the overestimation of the rates.

10.2.1.2 Historical annual deforestations in the reference region

The estimate of annual historical deforestation in the reference region is calculated using the following equation.

$$CSB_{año} = \left(\frac{1}{t_2 - t_1}\right) \times (A_1 - A_2)$$

$$CSB_{año} = 5.699\ ha$$

$$CSB_{año} = \left(\frac{1}{2017 - 2007}\right) \times (1.734.022 - 1.677.026)$$

$CSB_{año}$ = Annual change in the area covered by forest in the reference region (ha)

t_2 = Final year of the reference period

t_1 = Starting year of the reference period

A_1 = Forest area of the area under control at the initial moment (ha)

A_2 = Forest area of the area under control at the final moment (ha)

The CSB corresponds to the historical average deforestation of the project area and will be the value used to represent the loss of forest expected in the baseline scenario.

10.2.1.3. Annual projected deforestation in the scenario with REDD+ project

To calculate the annual projected deforestation in the scenario with the project of REDD+, the following equation is used:

$$CSB_{proy,año} = CSB_{lb,año} \times \%\ increase\ due\ to\ national\ circumstances\ \times (1 - \%DD)$$

$$CSB_{proy,año} = 1.162 \times (1 + 31{,}7\%) \times (1 - 70\%)$$

$$CSB_{proy,año} = 459\ ha$$

$CSB_{proy,año}$ =Annual change in the area covered by forest in the scenario with project (ha)

$CSB_{lb,año}$ = Annual change in the area covered by forest in the scenario without the project (ha)

$\%DD$ = Projection of the decrease in deforestation due to the implementation of REDD+ activities

10.2.1.4. Historic annual deforestation in the leak area

To estimate deforestation in the leakage area, it is necessary to apply the following equation:

$$CSB_{f,año} = \left(\frac{1}{t_2 - t_1}\right) \times \left(A_{1,f} - A_{2,f}\right)$$

$$CSB_{f,año} = \left(\frac{1}{2017 - 2007}\right) \times (86.258 - 85.564)$$

$$CSB_{f,año} = 69{,}4\ ha$$

Where:

$CSB_{f,año}$ =Annual change in the area covered by forest in the leakage area, in the scenario without the project (ha)

$t2$ = Final year of the reference period

$t1$ = Starting year of the reference period

$A_{1,f}$ = Forest area of the leakage area at the beginning of the period reference (ha)

$A_{2,f}$ = Forest area of the leakage area at the end of the period reference (ha)

10.2.1.5. Annual projected deforestation in the leakage area in the scenario with project

In order to estimate the annual projected deforestation in the leakage area in the scenario with the REDD+ project, the following equation is estimated:

$$CSB_{REDD+proy,faño} = CSB_{f,lb} \times (1 + \%Ef)$$
$$CSB_{REDD+proy,faño} = 68{,}8 \times (1 + 10\%)$$
$$CSB_{REDD+proy,faño} = 75{,}7\ ha$$

Where:

$CSB_{REDD+proy,faño}$ = Annual change in the area covered by forest in the leakage area, in the scenario without the project (ha)

$CSB_{f,lb}$ = change in the area covered by forest in the leakage area, in the scenario with project (ha)

$\%Ef$ = Percentage increase in emissions in the leak area due to the implementation of REDD+ activities.

9.2.2. Degradation

The degradation analysis is carried out based on a fragmentation analysis, as provided by the methodology carried out by the Forest and Carbon Monitoring System office (SMByC) of the Institute of Hydrology, Meteorology and Environmental Studies - IDEAM in 2018.

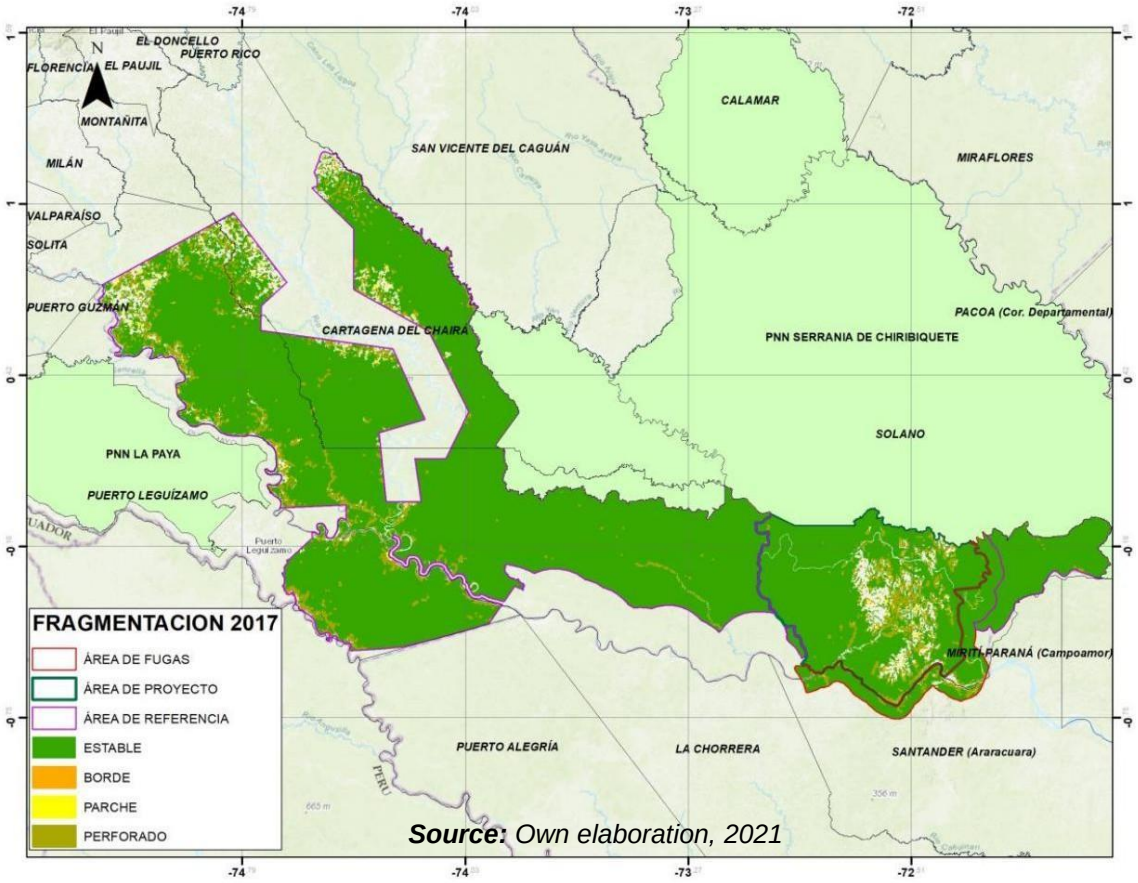
To estimate forest degradation through fragmentation analysis, the forest cover layers were used (No Forest of the study area for the years 2007, 2014, 2017), the Landscape processing tool was used .

Fragmentation Tool for ESRI's ArcMap software, which performs a distance-to- forest edge analysis. The selected distance is 100 meters from the edge and a comparison was made between the fragmentation classes of the different periods in order to establish the transitions from one period to another.

For the study, the transition that exists when going from forest fragments with a minimum area of 200 ha called "core" to forest areas with areas of less than 100 ha called "patch", whose transition is called "degradation" was taken into account. primary" and the transition that occurs when going from non-forest areas surrounded by forest fragments between 100 and 200 ha called perforated to patch areas which is called "secondary degradation".

10.2.2.1. Layer of cartographic information used

Map 18. Degradation in the project area, reference region and leakage area 2017.



Source: *Own elaboration, 2021*

10.2.2.2. Fragmentation classes

Table 21. Fragmentation classes.

Class	2007 (biomass map)	2007	2014	2017
Core		1,729,123	1,697,001	1,635,023
Perforated		1086.42	786.53	806.02
Patch		137.42	175.03	177.52

Source: *Own elaboration*

10.2.2.3. Precision analysis to reduce the uncertainty of forest degradation estimates

The data on forest degradation in the territory of the reservation were calculated using information from the SMByC, following the methodological approach described in the Digital Image Processing Protocol for the Quantification of Deforestation in Colombia V.2 of IDEAM (Galindo et al. to 2014).

This protocol is based on determining the changes in aboveground biomass present in different assigned forest cover classes through a fragmentation analysis. Fragmentation makes it possible to estimate forest degradation since it not only implies a reduction in the forest area, but also the division of the remaining forest into patches that could continue to decrease in size over time.

In accordance with the orientation of the ProClima methodology, the uncertainty associated with this source of information is determined by the precision of the maps used. Taking into account that the inputs and procedures defined by the SMByC were used to identify forest degradation, the associated uncertainty corresponds to 9%. (MinAmbiente and IDEAM, 2019).

10.2.2.4. Transitions Between Fragmentation Classes

Table 22. Transition of fragmentation classes (ha) for the period from 2007 to 2014 in the reference region.

Year 1 class/Year 2 class	Perforated	Patch
Core	73,8	
Perforated		123

Table 23. Transition of fragmentation classes (ha) for the 2016-2018 period in the reference region.

class		a t c
Core	14	
Perforated		38.7

Source: *Own elaboration*

10.2.2.5. Historical annual degradation in the reference area in the baseline

To estimate the historical annual degradation in the project area, in the scenario without a REDD+ project, it is necessary to use the following equation:

$$DFP_{lb,año} = \left(\frac{1}{t_2 - t_1}\right) \times \left(A_{núcleo.lb} - A_{núcleo-par,lb}\right)$$

$$DFP_{lb,año} = 79{,}7\ ha$$

Where:

$DFP_{lb,año}$= Annual historical primary degradation in the baseline (ha)

$t2$= Final year of the reference period

$t1$= Starting year of the reference period

$A_{nucleo.lb}$= Area of the reference region in core class in the year of start of reference period (ha)

$A_{nucle-par,lb}$= Area of the reference

region that passes from kernel to patch in the final year of the reference period (ha)

$$DFS_{lb,año} = \left(\frac{1}{t_2 - t_1}\right) \times \left(A_{perforado.lb} - A_{perforado-par,lb}\right)$$

$$DFS_{lb,año} = 40\ ha$$

Where:

$DFS_{lb,año}$= Annual historical secondary degradation in the scenario without project (ha)

*t*2= Final year of the reference period

*t*1= Starting year of the reference period

$A_{perforado.lb}$= Area of the reference region in class drilled in the year of beginning of the reference period (ha)

$A_{perforado-par,lb}$= Area of the reference region that passes from perforation to patch in the final year of the reference period (ha)

10.2.2.6. Historical annual degradation in the leakage area in the baseline scenario.

For the estimation of degradation in the leakage area, in the scenario without the project REDD+, the following equations are used:

$$DFP_{lb,f,año} = \left(\frac{1}{t_2 - t_1}\right) \times \left(A_{núcleo,lb,f} - A_{núcleo-par,lb,f}\right)$$

$$DFP_{lb,f,año} = 7{,}1\ ha$$

Where:

DF = Annual primary degradation in leakage area (ha)

t_2 = Final year of the reference period

t_1 = Starting year of the reference period

A_{n} = Leakage area in core class in the beginning year of the reference period (ha)

$A_{núcleo-par,lb,f}$ = Leakage area that passes from core to patch in the final year of the reference period (ha)

$$DFS_{lb,f,año} = \left(\frac{1}{t_2 - t_1}\right) \times \left(A_{perforado,lb,f} - A_{perforado-par,lb,f}\right)$$

$$DFS_{lb,f,año} = 15{,}2\ ha$$

Where:

$DFS_{lb,f,año}$ = Annual secondary degradation in the leakage area (ha)

t2= Final year of the reference period

t1= Starting year of the reference period

$A_{perforado,lb,f}$= Leakage area in drilled class in the year of beginning of the reference period (ha)

$A_{perforadoo-par,lb,f}$= Leakage area that goes from drilling to patching in the final year of the reference period (ha)

10.2.2.7. Annual projected degradation in the project area in the scenario with project REDD+

To estimate the projected degradation in the project area, the following equation is used:

$$DFP_{REDD+proy,año} = DFP_{lb} \times (1 - \%DFP)$$

$$DFP_{REDD+proy,año} = 16{,}1 \times (1 - 70\%)$$

$$DFP_{REDD+proy,año} = 4{,}8\ h$$

Where:

$DFP_{REDD+proy,año}$	=	Annual primary degradation in the project area in the with-project scenario (ha)
DFP_{lb}	=	Annual historical primary degradation in the without-project scenario (ha)
$\%DFP$	=	Projected decrease in degradation due to implementation of REDD+ activities

$$DFS_{REDD+,proy,año} = DFS_{lb} \times (1 - \%DFS)$$

$$DFS_{REDD+,proy,año} = 8{,}1 \times (1 - \%70)$$

$$DFS_{REDD+,proy,año} = 2{,}4\ ha$$

Where:

$DFS_{REDD+,proy,año}$	=	Secondary degradation in the scenario with project (ha)
DFS_{lb}	=	Annual historical secondary degradation in the without-project scenario (ha)
$\%DFS$	=	Projected decrease in degradation due to implementation of REDD+ activities

10.2.2.8. Annual projected degradation in the leakage area in the scenario with project REDD+

To estimate the degradation in the scenario with the REDD+ project, in the leakage area, the following equations are used:

$$DFP_{f,año} = DFP_f \times (1 + \%Ef)$$

$$DFP_{f,año} = 7{,}5 \times (1 + 10\%)$$

$$DFP_{f,año} = 8{,}3\ ha$$

Where:

$DFP_{f,año}$ = Annual primary degradation of the leakage area in the scenario with project (ha)

DFP_f = Historical annual primary degradation of the leakage area in the scenario without project (ha)

$\%Ef$ = Percentage increase in emissions in the leak area due to the implementation of REDD+ activities.

$$DFS_{f,año} = DFS_f \times (1 + \%Ef)$$

$$DFS_{f,año} = 15{,}1 \times (1 + 10\%)$$

$$DFS_{f,año} = 16{,}6\ ha$$

Where:

$DFS_{f,año}$ = Annual secondary degradation of the leakage area in the scenario with project (ha)

DFS_f = Annual historical secondary degradation of the leakage area in the scenario without project (ha)

$\%Ef$ = Percentage increase in emissions in the leak area due to the implementation of REDD+ activities.

10.3 GHG emissions in the analysis period

10.3.1. Deforestation

10.3.1.1. Carbon emission factor in total biomass

The estimation of the equivalent carbon dioxide contained in the total biomass is estimated from the seventy equation:

$$CBF_{eq} = BT \times FC \times \frac{44}{12}$$

$$CBF_{eq} = 544 \ \frac{tCO_2e}{ha}$$

Where:

CBF_{eq}	=	Equivalent carbon dioxide contained in the total biomass (tCO2e/ha)
BT	=	Total biomass (t/ha)
FC	=	Carbon fraction of dry matter (0.47)

10.3.1.2. Carbon emission factor in total biomass

The estimation of the equivalent carbon dioxide contained in the soils is estimated from the equation:

$$COS_{eq} = \frac{COS}{20} \times \frac{44}{12}$$

$$COS_{eq} = 13{,}6 \ \frac{tCO_2e}{ha}$$

Where:

COS_{eq} = Equivalent carbon dioxide contained in soils (tCO2e/ha)

COS = Soil carbon content (tC/ha)

10.3.1.3. *Total Carbon Emission Factor*

The total carbon emission factor is estimated from the following equation:

$$CT_{eq} = CBF_{eq} + COS_{eq}$$

$$CT_{eq} = 577{,}6\ \frac{tCO_2e}{ha}$$

Where:

= Total carbon dioxide equivalent (tCO2e/ha)

= Equivalent carbon dioxide contained in the total biomass (tCO2e/ha)

= Equivalent carbon dioxide contained in soils (tCO2e/ha)

10.3.2 Degradation

Table 24. Area biomass by fragmentation class.

Fragmentation class	Mean biomass per class (tCO2/ha)
Nucleus	544
Perforated	317.7
Patch	241.5

Table 25. Aerial biomass difference by type of fragmentation

transition ID	ransition classes	mean difference of aerial biomass (tCO2/ha)
		2
		26.3

10.4 GHG emissions in the analysis period

10.4.2 Deforestation

The annual emission from deforestation in the baseline scenario is calculated from the following equation:

$$EA_{lb} = DA_{lb} \times CT_{eq}$$

$$EA_{lb} = 1.531 \times 557$$

$$EA_{lb} = 853.917\ tCO2e$$

Where:

EA_{lb} = Annual emission in the baseline scenario (tCO2)

DA_{lb} = Historical annual deforestation in the baseline scenario (ha)

CT_{eq} = Equivalent carbon dioxide contained in soils (tCO2e/ha)

The annual emission from deforestation in the scenario with the project is calculated from the following equation:

$$EA_{REDD+proy,año} = DA_{REDD+proy} \times CT_{eq}$$

$$EA_{REDD+proy,año} = 459 \times 557$$

$$EA_{REDD+proy,año} = 256.175\ tCO2e$$

Where:

$EA_{REDD+proy,año}$ = Annual emission in the scenario with project (tCO2)

$DA_{REDD+proy}$ = Historical annual deforestation in the scenario with project (ha)

CT_{eq} = Total carbon dioxide equivalent (tCO2e/ha)

The annual emission from deforestation in the leakage area is estimated from the following equation:

$$EA_{f,año} = DA_f \times CT_{eq}$$

$$EA_{f,año} = 68{,}8 \times 557$$

$$EA_{f,año} = 38.396\ tCO2e$$

Where:

$EA_{f,año}$	=	Annual emission in the leak area (tCO2)
DA_f	=	Historical annual deforestation in the leakage area (ha)
CT_{eq}	=	Total carbon dioxide equivalent (tCO2e/ha)

10.4.3 Degradation

The annual emission from degradation in the baseline scenario is calculated from the following equation:

$$EA_{d,lb,año} = \left(DFP_{lb,año} \times DCBT_{DP}\right) + \left(DFS_{lb,año} \times DCBT_{DS}\right)$$

$$EA_{d,lb,año} = 4.302\ tCO2e$$

The annual emission due to degradation in the scenario with the project is calculated from the following equation:

$$EA_{d,REDD+proy,año} = \left(DFP_{REDD+proy,año} \times DCBT_{DP}\right) + \left(DFS_{REDD+proy,año} \times DCBT_{DS}\right)$$

$$EA_{d,REDD+proy,año} = 1.290 \text{ tCO2e}$$

Where:

$EA_{d,REDD+proy,año}$	=	Annual emission due to degradation in the scenario with project (tCO2)
$DFP_{REDD+proy,año}$	=	Annual historical primary degradation in the scenario with project (ha)
$DFS_{REDD+proy,año}$	=	Annual historical secondary degradation in the scenario with project (ha)
$DCBT_{DP}$	=	Equivalent carbon dioxide contained in the total biomass difference per hectare in the case of primary degradation (tCO2e/ha)
$DCBT_{DS}$	=	Equivalent carbon dioxide contained in the total biomass difference per hectare in the case of secondary degradation (tCO2e/ha)

The annual emission due to degradation in the leakage area in the scenario with the project is calculated from the following equation:

$$EA_{d,f,año} = \left(DFP_{f,año} \times DCBT_{DP}\right) + \left(DFS_{f,año} \times DCBT_{DS}\right)$$

$$EA_{d,f,año} = 3.143\ tCO2e$$

Where:

$EA_{d,f,año}$	=	Annual emission due to degradation in the leak area (tCO2e)
$DFP_{f,año}$	=	Annual historical primary degradation in leakage area (ha)
$DFS_{f,año}$	=	Annual historical secondary degradation in the leakage area (ha)
$DCBT_{DP}$	=	Equivalent carbon dioxide contained in the total biomass difference per hectare in the case of primary degradation (tCO2e/ha)
$DCBT_{DS}$	=	Equivalent carbon dioxide contained in the total biomass difference per hectare in the case of secondary degradation (tCO2e/ha)

10.5 Reduction of expected GHG emissions with the implementation of REDD+ activities

10.5.2 Deforestation

The reduction in emissions from avoided deforestation is estimated from the following equation:

$$RE_{DEF,REDD+proy} = (t_2 - t_1) \times \left(EA_{DEF,lb,año} - EA_{DEF,REDD+proy,año} - EA_{DEF,f,año}\right)$$

$$RE_{DEF,REDD+proy} = 461.387\ tCO2e$$

Where:

$RE_{DEF,REDD+proy}$	=	Reduction of emissions from avoided deforestation in the scenario with the project (tCO2e)
t_2	=	Final year of the reference period
t_1	=	Starting year of the reference period
$EA_{DEF,lb,año}$	=	Annual emission from deforestation in the baseline scenario (tCO2e)
$EA_{DEF,REDD+proy,año}$	=	Annual emission from deforestation in the project area (tCO2e)

10.5.3 Degradation

The reduction of emissions due to avoided degradation is estimated from the following equation:

$$RE_{DEG,REDD+proy} = (t_2 - t_1) \times \left(EA_{DEG,lb,año} - EA_{DEG,REDD+proy,año} - EA_{DEG,f,año}\right)$$

$$RE_{DEG,REDD+proy} = 2.637\ tCO2e$$

Where:

$RE_{DEG,REDD+proy}$	=	Reduction of emissions due to degradation avoided in the scenario with the project (tCO2e)
t_2	=	Final year of the reference period
t_1	=	Starting year of the reference period
$EA_{DEG,lb,año}$	=	Annual emission from degradation in the baseline scenario (tCO2e)
$EA_{DEG,REDD+proy,año}$	=	Annual emission from degradation in the project area (tCO2e)
$EA_{DEG,f,año}$	=	Annual emission from degradation in the leak area (tCO2e)

11 Monitoring plan

The monitoring plan presents the procedures for proper monitoring of project activities, compliance with safeguards, and reduction of GHG emissions in the scope of the project.

The plan provides for the collection of relevant information and data to:

i. Check the applicability conditions listed in section 2 Applicability of the methodology
ii. Verify changes in carbon stocks of selected pools.
iii. Verify project emissions and leaks.

The data collected will be archived for at least a period of two years after the end of the last project period. The data and parameters monitored, the methods used for their generation, their proper collection and archiving, and the processes related to sampling models and quality control will be included.

11.2 Project limits

The monitoring of the limits of the project will be carried out using Geographic Information Systems (GIS) tools based on the georeferencing of the project area, reference region and project leakage area, during the development of the project, following the specifications. techniques required for cartographic products.

The monitoring of the reduction of emissions from deforestation and degradation will be carried out for the geographical areas contemplated in the project. Periodic verification of deforestation and degradation in the project area will be carried out following the guidelines established in section 0. Reduction of GHG emissions expected with the implementation of REDD+ activities.

11.3 Execution of REDD+ activities

The monitoring plan for project activities is presented below, including compliance with the Sustainable Development Goals (SDGs):

Activity ID	A-1
Indicator ID	A-1.1
Indicator name	# of people who participate in meetings, surveys or workshops on the problem tree and the identification of drivers of deforestation and productive systems and governance management
Type	Result
Goal	Workshops or meetings are held in a participatory manner.
SDG to meet	ODS1 (carbon revenues and productive projects), ODS2 (productive projects), ODS8 (Productive projects and governance activities), SDG13 (reduction of emissions), SDG15 (protection of forest habitat)
Unit of measurement	Number
Monitoring methodology	For the measurement and reporting of this indicator, the number of participants in the meetings, workshops or surveys carried out is taken into account
monitoring frequency	Annually
Responsible for the measurement	Carbo-Terra Yauto
Indicator result in the reporting period	
Documents to support the information	• Photographic record and / or videos. • Attendance lists to workshops and meetings summoned. • Minutes of the meetings and workshops called.

	• Surveys applied to community members.
Observations	Available documentation should be used

Activity ID	A-1
Indicator ID	A-1.2
Indicator name	# of legal support agreements for the development and implementation of the project including commercialization of carbon credits
Type	Result
Goal	Monitor the agreements reached.
Unit of measurement	agreements
Monitoring methodology	For the measurement and reporting of this indicator, the signed agreements and the minutes or reports related to their subscription will be reviewed
monitoring frequency	Annually
Responsible for the measurement	Yauto
Indicator result in the reporting period	
Documents to support the information	Agreements Minutes of Rapporteurship meetings.
Observations	Available documentation should be used

Activity ID	A-1
Indicator ID	A-1.3
Indicator name	Project registration in waste reduction certification program emissions
Type	Result
Goal	project record.
Unit of measurement	record
Monitoring methodology	Registration review on registration platform
monitoring frequency	Annually
Responsible for the measurement	Carbo-terra
Indicator result in the reporting period	
Documents to support the information	Registration number Link to field on platform
Observations	

Activity ID	A-2
Indicator ID	A-2.1
Indicator name	# of people involved in the development of productive systems that participate in training sessions or training days.
Type	Result
Goal	All the people involved in the development of production systems participate in training sessions or training sessions.
SDG to meet	ODS1 (productive projects), ODS2 (productive projects), ODS8 (productive projects), ODS13 (reduction of emissions), ODS15 (protection of forest habitat)
Unit of measurement	Number
Monitoring methodology	Number of community members who attend training sessions for the management of prioritized productive systems and the value obtained is reported.
monitoring frequency	Annually
Responsible for the measurement	Carbo-Terra Yauto
Indicator result in the reporting period	•Third party reports
Documents to support the information	• Photographic record and / or videos. • Attendance lists to workshops and meetings summoned. • Minutes of the meetings and workshops called. •Meeting record
Observations	Available documentation should be used

Activity ID	A-2
Indicator ID	A-2.2
Indicator name	# of women involved in the development of production systems who participate in training sessions or training days.
Type	Result
Goal	All the women involved in the development of productive systems participate in training sessions or training sessions.
SDG to meet	ODS1 (productive projects), ODS2 (productive projects), ODS5 (women's participation), ODS8 (productive projects), ODS13 (reduction of emissions), ODS15 (protection of forest habitat)
Unit of measurement	Number
Monitoring methodology	Number of women who are part of the community who attend training sessions for the management of prioritized productive systems and the value obtained is reported.
monitoring frequency	Annually
Responsible for the measurement	Carbo-Terra Yauto
Indicator result in the reporting period	•Third party reports
Documents to support the information	• Photographic record and / or videos. • Attendance lists to workshops and meetings summoned. • Minutes of the meetings and workshops called.
Observations	Available documentation should be used

Activity ID	A-2
Indicator ID	A-2.3
Indicator name	# of productive activities identified
Type	Product
Goal	Profitable productive activities are identified.
SDG to meet	ODS1 (productive projects), ODS2 (productive projects), ODS8 (productive projects), ODS13 (reduction of emissions), ODS15 (protection of forest habitat)
Unit of measurement	Compliance/non-compliance
Monitoring methodology	For the measurement and reporting of this indicator, the number of productive activities prioritized in the project is considered
monitoring frequency	Annually
Responsible for the measurement	Carbo-Terra Yauto
Indicator result in the reporting period	•Third party reports
Documents to support the information	Workshop report
Observations	From the fourth year

Activity ID	A-2
Indicator ID	A-2.4
Indicator name	# business plans prepared
Type	Product
Goal	At least one business plan is defined to be implemented
SDG to meet	ODS1 (productive projects), ODS2 (productive projects), ODS8 (productive projects), ODS13 (reduction of emissions), SDG15 (protection of forest habitat)
Unit of measurement	Compliance/non-compliance
Monitoring methodology	For the measurement and reporting of this indicator, the number of Business Plans prepared by the project implementer and the proponents is taken into account.
monitoring frequency	Annually
Responsible for the measurement	Carbo-Terra Yauto
Indicator result in the reporting period	•Third party reports
Documents to support the information	•Business Plan Documents developed. •Prioritized Business Plan Documents.
Observations	From the fourth year

Activity ID	A-3
Indicator ID	A-3.1
Indicator name	# of IR members employed full-time by project activities
Type	Impact
Goal	Project activities provide full-time jobs for the community
SDG to meet	SDG1 (employment), SDG2 (employment), SDG8 (employment), SDG13 (reduction of emissions), SDG15 (protection of forest habitat)
Unit of measurement	Number
Monitoring methodology	For the measurement and reporting of this indicator, the number of people employed full-time for project activities is taken into account.
monitoring frequency	Annually
Responsible for the measurement	Carbo-Terra Yauto Responsible delegate representing the reservation

Indicator result in the reporting period	
Documents to support the information	• Contracts concluded with members of the community •Payment receipts
Observations	

Activity ID	A-3
Indicator ID	A-3.2
Indicator name	# of women RI members employed full-time by project activities
Type	Impact
Goal	Project activities offer full-time jobs for women from the community
SDG to meet	ODS1 (employment), ODS2 (employment), ODS5 (gender equality), ODS8 (employment), ODS13 (reduction of emissions), ODS15 (protection of forest habitat)
Unit of measurement	Number
Monitoring methodology	For the measurement and reporting of this indicator, the number of women employed full-time for project activities is taken into account.
monitoring frequency	Annually
Responsible for the measurement	Carbo-Terra Yauto Responsible delegate representing the reservation
Indicator result in the reporting period	
Documents to support the information	• Contracts concluded with women members of the community • Payment receipts
Observations	

Activity ID	A-3
Indicator ID	A-3.3
Indicator name	# of people who improve their income with production systems
Type	Impact
Goal	Project activities allow community members to improve their income.
SDG to meet	ODS1 (productive projects), ODS2 (productive projects), ODS8 (productive projects), ODS13 (reduction of emissions), ODS15 (protection of forest habitat as it discourages deforestation)
Unit of measurement	Number
Monitoring methodology	For the measurement and reporting of this indicator, the number of beneficiaries who receive income with the prioritized productive systems are taken into account.
monitoring frequency	Annually
Responsible for the measurement	Carbo-Terra Yauto Responsible delegate representing the reservation
Indicator result in the reporting period	
Documents to support the information	• Contracts concluded with women members of the community • Payment receipts
Observations	

Activity ID	A-3
Indicator ID	A-3.4
Indicator name	# of women who improve their income with productive systems
Type	Impact
Goal	Project activities allow women members of the community to improve their income.
SDG to meet	ODS1 (productive projects), ODS2 (productive projects), ODS5 (women's participation), ODS8 (productive projects), ODS13 (reduction of emissions), ODS15 (protection of forest habitat as it discourages deforestation)
Unit of measurement	Number
Monitoring methodology	Number of women who receive income with the prioritized production systems.
monitoring frequency	Annually
Responsible for the measurement	Carbo-Terra Yauto Responsible delegate representing the reservation
Indicator result in the reporting period	
Documents to support the information	• Contracts concluded with women members of the community • Payment receipts
Observations	

Activity ID	A-3
Indicator ID	A-3.5
Indicator name	# of hectares of productive systems that have special management measures to favor biodiversity
Type	Result
Goal	Management measures are implemented in productive systems that favor biodiversity..
SDG to meet	SDG15 (protection of forest habitat favoring biodiversity)
Unit of measurement	Area (ha)
Monitoring methodology	For the measurement and reporting of this indicator, the productive area that has special management measures to improve biodiversity conditions is identified and estimated and Geographic Information Systems, satellite images, remote sensors and information taken in situ are used to estimate the area.
monitoring frequency	Annually
Responsible for the measurement	Carbo-Terra Yauto Responsible delegate representing the reservation
Indicator result in the reporting period	
Documents to support the information	• Visit report • Photographic record • Verification and satellite measurement with GIS tools • Others
Observations	

Activity ID	A-3
Indicator ID	A-3.6
Indicator name	# of hectares of productive systems that are improved or established
Type	Result
Goal	Production systems are implemented or existing production systems are improved.
SDG to meet	ODS1 (productive projects), ODS2 (productive projects), ODS8 (productive projects), ODS13 (reduction of emissions), ODS15

	(protection of forest habitat as it discourages deforestation)
Unit of measurement	Area (ha)
Monitoring methodology	For the measurement and reporting of this indicator, the area that will be allocated to the establishment of productive systems is defined. Subsequently, Geographic Information Systems are used with the help of satellite images, remote sensors and information taken in situ to estimate the area.
monitoring frequency	Annually
Responsible for the measurement	Carbo-Terra Yauto Responsible delegate representing the reservation
Indicator result in the reporting period	
Documents to support the information	• Meeting minutes with the community • Photographic record • Report of field visits • Verification and satellite measurement with GIS tools
Observations	

Activity ID	A-3
Indicator ID	A-3.7
Indicator name	# Activities that generate surpluses implemented
Type	Product
Goal	At least 1 activity that generates economic surpluses is implemented.
SDG to meet	ODS1 (productive projects), ODS2 (productive projects), ODS8 (productive projects), ODS13 (reduction of emissions), SDG15 (protection of forest habitat)
Unit of measurement	Number
Monitoring methodology	For the measurement and reporting of this indicator, the activities implemented that generate surpluses that can be marketed or represent an economic income for the people of the community are taken into account.
monitoring frequency	Annually
Responsible for the measurement	Carbo-Terra Yauto Community representative
Indicator result in the reporting period	Documents or supports of the activities that generate surpluses.
Documents to support the information	• Financial statements •Transaction support
Observations	

Activity ID	A-4
Indicator ID	A-4.1
Indicator name	# records of checks or maintenance performed/# of checks or maintenance expected
Type	Result
Goal	Production systems receive the required controls or maintenance.
SDG to meet	ODS1 (productive projects), ODS2 (productive projects), ODS8 (productive projects)
Unit of measurement	Percentage (%)
Monitoring methodology	The beneficiaries in charge of the maintenance activities of the productive systems keep records of maintenance activities. For the measurement and reporting of this indicator, the number of controls carried out in the systems is quantified productive and divided by the number of controls required or planned..
monitoring frequency	Annually
Responsible for the measurement	Carbo-Terra

	Yauto Community representative
Indicator result in the reporting period	
Documents to support the information	• Visit report •Photographic record •Records of maintenance activities to production systems
Observations	

Activity ID	A-4
Indicator ID	A-4.2
Indicator name	Total quantity of goods or services produced in production systems
Type	Product
Goal	Production systems that offer quantifiable goods or services for the community are implemented
SDG to meet	ODS1 (productive projects), ODS2 (productive projects), ODS8 (productive projects), ODS13 (reduction of emissions), SDG15 (protection of forest habitat as it discourages deforestation)
Unit of measurement	Unit
Monitoring methodology	For the measurement and reporting of this indicator, we start from the Production obtained per area unit of the established and/or improved productive system. To do this, the quantities of product produced are recorded.
monitoring frequency	Annually
Responsible for the measurement	Carbo-Terra Yauto Community representative
Indicator result in the reporting period	
Documents to support the information	Records of production obtained in the productive systems
Observations	

Activity ID	A-4
Indicator ID	A-4.3
Indicator name	Balance of income and expenses generated in the production systems.
Type	Product
Goal	At least one productive system is implemented that presents a positive financial balance.
SDG to meet	ODS1 (productive projects), ODS2 (productive projects), ODS8 (productive projects), ODS13 (reduction of emissions), SDG15 (protection of forest habitat as it discourages deforestation)
Unit of measurement	Currency
Monitoring methodology	For the measurement and reporting of this indicator, it is based on the registration of costs (associated with the production or provision of services: eg harvest, post-harvest and transformation, logistics) and the income associated with the sale of products or services.
monitoring frequency	Annually
Responsible for the measurement	Carbo-Terra Yauto Community representative
Indicator result in the reporting period	
Documents to support the information	Records of production obtained in the productive systems
Observations	

Activity ID	A-5

Indicator ID	A-5.1
Indicator name	# of people who participate in meetings or workshops on social investment issues
Type	Result
Goal	The processes of identification and prioritization of social investment are carried out in a participatory manner.
SDG to meet	ODS1 (social investment), ODS3 (investment in health), ODS4 (investment in education), ODS6 (investment in water and sanitation9, ODS11 (investment in housing), ODS13 (reduction of emissions), SDG15 (protection of forest habitat as it discourages deforestation)
Unit of measurement	Number
Monitoring methodology	•Registration of participants •Minutes •Rapporteurships
monitoring frequency	Annually
Responsible for the measurement	Carbo-Terra Yauto Third Party Reports
Indicator result in the reporting period	
Documents to support the information	•Photographic record and / or videos. •Attendance lists to the workshops and meetings called •Minutes of meetings and workshops •Rapporteurship
Observations	Available information will be used

Activity ID	A-5
Indicator ID	A-5.2
Indicator name	# of women who participate in meetings or workshops on social investment issues.
Type	Result
Goal	The processes of identification and prioritization of social investment are carried out with the participation of women.
SDG to meet	ODS1 (social investment), ODS3 (investment in health), ODS4 (investment in education), ODS5 (gender equality), ODS6 (investment in water and sanitation9, ODS11 (investment in housing), ODS13 (reduction of emissions), ODS15 (protection of forest habitat as it discourages deforestation)
Unit of measurement	Number
Monitoring methodology	For the measurement and reporting of this indicator, the number of female participants who attend the meetings, workshops or surveys carried out for the identification and prioritization of social investment to develop or improve with the project is taken into account.
monitoring frequency	Annually
Responsible for the measurement	Carbo-Terra Yauto Third Party Reports
Indicator result in the reporting period	
Documents to support the information	•Photographic record and / or videos. •Attendance lists to the workshops and meetings called •Minutes of meetings and workshops •Rapporteurship
Observations	

Activity ID	A-6
Indicator ID	A-6.1
Indicator name	# of people who participate in meetings or workshops on transportation

	issues
Type	Result
Goal	The identification and prioritization processes are carried out in a participatory manner
SDG to meet	ODS1 (social investment), ODS3 (transportation for health), ODS8 (transport to get products), ODS13 (reduction of emissions), ODS15 (protection of forest habitat as it discourages deforestation)
Unit of measurement	Number
Monitoring methodology	•Registration of participants •Minutes •Rapporteurships
monitoring frequency	Annually
Responsible for the measurement	Carbo-Terra Yauto Third Party Reports Entities or programs that carry out activities
Indicator result in the reporting period	
Documents to support the information	•Photographic record and / or videos. •Attendance lists to the workshops and meetings called •Minutes of meetings and workshops •Rapporteurship
Observations	Available information will be used

Activity ID	A-6
Indicator ID	A-6.2
Indicator name	# of activities/elements that facilitate the mobilization of people
Type	Product
Goal	Mobilization of community members is improved
SDG to meet	ODS1 (social investment), ODS3 (transportation for health), ODS4 (investment in education in traditional medicine), ODS6 (investment in water and sanitation), ODS13 (reduction of emissions), ODS15 (protection of forest habitat as it discourages deforestation)
Unit of measurement	Number
Monitoring methodology	The execution of project resources and the number of activities or acquisition of elements that favor the mobilization of people are verified.
monitoring frequency	Annually
Responsible for the measurement	Carbo-Terra Yauto Third Party Reports Community representative
Indicator result in the reporting period	
Documents to support the information	•Photographic record and / or videos. • Record of acquisitions made within the framework of the project •Verification of the means of transport acquired
Observations	Available information will be used

Activity ID	A-7
Indicator ID	A-7.1
Indicator name	# of people who participate in meetings or workshops on education issues
Type	Result
Goal	The identification and prioritization processes are carried out in a participatory manner.
SDG to meet	ODS1 (social investment), ODS4 (investment in education), ODS13

	(reduction of emissions), ODS15 (protection of forest habitat as it discourages deforestation)
Unit of measurement	Number
Monitoring methodology	•Registration of participants •Minutes •Rapporteurships
monitoring frequency	Annually
Responsible for the measurement	Carbo-Terra Yauto Third Party Reports Entities and Programs that develop the activity
Indicator result in the reporting period	
Documents to support the information	•Photographic record and / or videos. •Attendance lists to the workshops and meetings called •Minutes of meetings and workshops •Rapporteurship
Observations	Available information will be used

Activity ID	A-7
Indicator ID	A-7.2
Indicator name	# of educational facilities built or improved
Type	Product
Goal	Build or improve educational facilities located on the reservation.
SDG to meet	ODS1 (social investment), ODS4 (investment in education), ODS13 (reduction of emissions), ODS15 (protection of forest habitat as it discourages deforestation)
Unit of measurement	Number
Monitoring methodology	It is verified from the budget execution and the records of construction activities or improvement of educational facilities within the framework of the project.
monitoring frequency	Annually
Responsible for the measurement	Carbo-Terra Yauto Third Party Reports Entities and Programs that develop the activity
Indicator result in the reporting period	
Documents to support the information	•Verification during on-site visits •Photographic record •Budget execution •Records of maintenance activities and construction •Reports
Observations	Available information will be used

Activity ID	A-7
Indicator ID	A-7.3
Indicator name	# of instructors funded
Type	Product
Goal	Improve the provision of educational service.
SDG to meet	ODS1 (social investment), ODS4 (investment in education), ODS13 (reduction of emissions), ODS15 (protection of forest habitat as it discourages deforestation)
Unit of measurement	Number
Monitoring methodology	The hiring of instructors to provide educational services in the indigenous reservation is verified.
monitoring frequency	Annually
Responsible for the measurement	Carbo-Terra

	Yauto Third Party Reports Entities and Programs that develop the activity
Indicator result in the reporting period	
Documents to support the information	•Budget execution • Contracts entered into with instructors
Observations	Available information will be used

Activity ID	A-7
Indicator ID	A-7.4
Indicator name	# of people receiving traditional language strengthening
Type	Product
Goal	Strengthen the knowledge of the traditional language in the members of the community.
SDG to meet	ODS1 (social investment), ODS4 (investment in education), ODS13 (reduction of emissions), ODS15 (protection of forest habitat as it discourages deforestation)
Unit of measurement	Number
Monitoring methodology	•Registration of participants •Minutes
monitoring frequency	Annually
Responsible for the measurement	Carbo-Terra Yauto Community representative
Indicator result in the reporting period	
Documents to support the information	Photographic record and / or videos. Attendance lists to the workshops and meetings called Minutes of meetings and workshops
Observations	Available information will be used

Activity ID	A-7
Indicator ID	A-7.5
Indicator name	# of women receiving traditional language strengthening
Type	Result
Goal	Strengthen the knowledge of the traditional language in the women of the community.
SDG to meet	ODS1 (social investment), ODS4 (investment in education), ODS13 (reduction of emissions), ODS15 (protection of forest habitat as it discourages deforestation)
Unit of measurement	Number
Monitoring methodology	•Registration of participants •Minutes
monitoring frequency	Annually
Responsible for the measurement	Carbo-Terra Yauto Community representative
Indicator result in the reporting period	
Documents to support the information	Photographic record and / or videos. Attendance lists to the workshops and meetings called Minutes of meetings and workshops
Observations	Available information will be used

Activity ID	A-7
Indicator ID	A-7.6

Indicator name	# of sports spaces suitable or built
Type	Product
Goal	Facilitate the development of sports activities in the communities.
SDG to meet	ODS1 (social investment), ODS4 (investment in education), ODS13 (reduction of emissions), ODS15 (protection of forest habitat as it discourages deforestation)
Unit of measurement	Number
Monitoring methodology	It is verified from the budget execution and the records of construction activities or improvement of sports infrastructure
monitoring frequency	Annually
Responsible for the measurement	Carbo-Terra Yauto Community representative
Indicator result in the reporting period	
Documents to support the information	•Verification during on-site visits •Photographic record •Budget execution •Records of construction activities •Reports
Observations	Available information will be used

Activity ID	A-8
Indicator ID	A-8.1
Indicator name	# people with access to formal education programs or better quality education
Type	Result
Goal	The quality of education or access to formal education programs for community members is improved.
SDG to meet	ODS1 (social investment), ODS4 (investment in education), ODS5 (women's participation), ODS13 (reduction of emissions), ODS15 (protection of forest habitat as it discourages deforestation)
Unit of measurement	Result
Monitoring methodology	The execution of project resources and the women who have access to formal education or a better quality of education are verified
monitoring frequency	Annually
Responsible for the measurement	Carbo-Terra Yauto Community representative
Indicator result in the reporting period	
Documents to support the information	• Execution of project resources •Development of formal education programs Record of actions aimed at improving the education of community •Registry of women beneficiaries of actions aimed at improving
Observations	

Activity ID	A-9
Indicator ID	A-9.1
Indicator name	# of people who participate in meetings or workshops on health issues
Type	Result
Goal	The identification and prioritization processes are carried out in a participatory manner
SDG to meet	ODS1 (social investment), ODS3 (health), ODS13 (reduction of emissions), ODS15 (protection of forest habitat as it discourages deforestation)
Unit of measurement	Number

Monitoring methodology	•Registration of participants •Minutes •Rapporteurships
monitoring frequency	Annually
Responsible for the measurement	Carbo-Terra Yauto Entities or programs that carry out activities
Indicator result in the reporting period	
Documents to support the information	• Photographic record and / or videos •Attendance lists to workshops and meetings summoned •Minutes of meetings and workshops •Rapporteurship
Observations	Available information will be used

Activity ID	A-9
Indicator ID	A-9.2
Indicator name	# of people with access to health services
Type	Result
Goal	Access to health services for community members is improved.
SDG to meet	ODS1 (social investment), ODS3 (health), ODS13 (reduction of emissions), ODS15 (protection of forest habitat as it discourages deforestation)
Unit of measurement	Number
Monitoring methodology	The execution of project resources and the investments made in improvements to health services are verified. The number of people in the community who have access to health services or improvements in this service is quantified.
monitoring frequency	Annually
Responsible for the measurement	Carbo-Terra Yauto Community representative Entities or programs
Indicator result in the reporting period	
Documents to support the information	• Execution of project resources •Development of health programs •Record of actions aimed at improving access to health services by the community •Registration of people who access health services
Observations	

Activity ID	A-9
Indicator ID	A-9.3
Indicator name	# of health posts built/improved
Type	Result
Goal	The infrastructure to provide health services to community members is improved.
SDG to meet	ODS1 (social investment), ODS3 (health), ODS13 (reduction of emissions), ODS15 (protection of forest habitat as it discourages deforestation)
Unit of measurement	Number
Monitoring methodology	The execution of project resources and the investments made in the construction and adaptation of health posts are verified. The number of health posts built or improved is quantified.
monitoring frequency	Annually
Responsible for the measurement	Carbo-Terra

	Yauto Community representative Entities or programs
Indicator result in the reporting period	
Documents to support the information	• Execution of project resources • Constructed and adequate health posts •Evidence of contract •On-site visits
Observations	Use available information

Activity ID	A-9
Indicator ID	A-9.4
Indicator name	# of people trained in traditional, ancestral or western medicine
Type	Number
Goal	The knowledge of traditional, ancestral and western medicine is strengthened in the members of the communities.
SDG to meet	ODS1 (social investment), ODS3 (health), ODS13 (reduction of emissions), ODS15 (protection of forest habitat as it discourages deforestation)
Unit of measurement	Number
Monitoring methodology	The execution of project resources and the investments made in the strengthening of capacities on traditional and ancestral medicine and Western medicine are verified. The number of people who attend these capacity building sessions is quantified.
monitoring frequency	Annually
Responsible for the measurement	Carbo-Terra Yauto Community representative Entities or programs
Indicator result in the reporting period	
Documents to support the information	• Execution of project resources •Evidence of training days carried out •Minutes of training sessions •Support lists •Photographic record •Knowledge dissemination material
Observations	Use available information

Activity ID	A-10
Indicator ID	A-10.1
Indicator name	# of people who participate in meetings or workshops on housing, water and sanitation issues
Type	Result
Goal	The identification and prioritization processes are carried out in a participatory manner.
SDG to meet	ODS1 (social investment), ODS3 (health), ODS13 (reduction of emissions), ODS15 (protection of forest habitat as it discourages deforestation)
Unit of measurement	Number
Monitoring methodology	•Registration of participants •Minutes •Rapporteurships
monitoring frequency	Annually
Responsible for the measurement	Carbo-Terra Yauto Community representative

	Entities or programs
Indicator result in the reporting period	
Documents to support the information	• Photographic record and / or videos •Attendance lists to workshops and meetings summoned. •Minutes of meetings and workshops •Rapporteurship
Observations	Use available information

Activity ID	A-10
Indicator ID	A-10.2
Indicator name	# of people with access to drinking water or better quality of water
Type	Result
Goal	People in the community have access to potable water or better water quality.
SDG to meet	ODS1 (social investment), ODS6 (water), ODS13 (reduction of emissions), ODS15 (protection of forest habitat as it discourages deforestation)
Unit of measurement	Number
Monitoring methodology	The execution of project resources and the investments made in purification systems are verified. The number of people who have access to drinking water or a better quality of water.
monitoring frequency	Annually
Responsible for the measurement	Carbo-Terra Yauto Community representative Entities or programs that carry out activities
Indicator result in the reporting period	
Documents to support the information	Execution of project resources Construction of drinking water treatment systems Award contract
Observations	Use available information

Activity ID	A-10
Indicator ID	A-10.3
Indicator name	# of homes or infrastructure that have electrical energy systems
Type	Product
Goal	Access to electricity in the indigenous reservation is improved.
SDG to meet	SDG1 (social investment), SDG7 (energy), SDG13 (reduction of emissions), SDG15 (protection of forest habitat as it discourages deforestation)
Unit of measurement	Number
Monitoring methodology	The execution of project resources and the investments made in the installation of energy sources are verified. Homes that receive improvements in electricity systems are quantified.
monitoring frequency	Annually
Responsible for the measurement	Carbo-Terra Yauto Community representative Entities or programs that carry out activities
Indicator result in the reporting period	
Documents to support the information	Execution of project resources Records of installation activities of non-conventional energy sources in homes Records of installation activities of power sources unconventional energy

	Reports
Observations	Use available information

Activity ID	A-10
Indicator ID	A-10.4
Indicator name	# of actions aimed at strengthening comprehensive waste management
Type	Result
Goal	Actions are implemented to carry out adequate waste management in the reservation.
SDG to meet	ODS1 (social investment), ODS3 (Health for better sanitation), ODS6 (sanitation), ODS11 (better, healthier housing), ODS13 (reduction of emissions), ODS15 (protection of forest habitat as it discourages deforestation)
Unit of measurement	Number
Monitoring methodology	The execution of project resources and the investments made in the development of activities that allow strengthening the management of waste in the communities are verified.
monitoring frequency	Annually
Responsible for the measurement	Carbo-Terra Yauto Community representative Entities or programs that carry out activities
Indicator result in the reporting period	
Documents to support the information	Execution of project resources Records of actions implemented in order to promote comprehensive waste management Contracts Reports
Observations	Use available information

Activity ID	A-10
Indicator ID	A-10.5
Indicator name	# of homes improved/built
Type	Result
Goal	Homes for community members are improved or built.
SDG to meet	ODS1 (social investment), ODS3 (Health for better sanitation), ODS11 (better housing), ODS13 (reduction of emissions), ODS15 (protection of forest habitat as it discourages deforestation)
Unit of measurement	Number
Monitoring methodology	The number of houses improved or built is quantified
monitoring frequency	Annually
Responsible for the measurement	Carbo-Terra Yauto Community representative Entities or programs that carry out activities
Indicator result in the reporting period	
Documents to support the information	Execution of project resources Records of home improvement activities On-site visits Reports
Observations	

Activity ID	A-11
Indicator ID	A-11.1
Indicator name	# of people participating in meetings or workshops on governance or planning issues

Type	Result
Goal	The construction/updating process of the Safeguards Plan or community plans are carried out in a participatory manner.
SDG to meet	SDG1 (social and productive investment), SDG2 (social and productive investment), SDG3 (investment in health), SDG4 (investment in education), SDG5 (women's participation), SDG6 (investment in water and sanitation9, SDG8 (better employment and growth economic), ODS11 (investment in housing), ODS13 (reduction of emissions), ODS15 (protection of forest habitat as it discourages deforestation)
Unit of measurement	# of people participating in meetings or workshops on governance and planning issues
Monitoring methodology	For the measurement and reporting of this indicator, the number of participants in the related meetings or workshops is taken into account with the issues of the Indigenous Life Plan, safeguards plan or community plans.
monitoring frequency	Annually
Responsible for the measurement	Carbo-Terra Yauto Community representative Entities or programs that carry out activities
Indicator result in the reporting period	
Documents to support the information	Photographic and/or video records Attendance lists to the workshops and meetings called Minutes of meetings and workshops Reports
Observations	

Activity ID	A-11
Indicator ID	A-11.2
Indicator name	# of community plans prepared or updated
Type	Product
Goal	At least 1 community plan is prepared.
SDG to meet	SDG1 (social and productive investment), SDG2 (social and productive investment), SDG3 (investment in health), SDG4 (investment in education), SDG5 (women's participation), SDG6 (investment in water and sanitation9, SDG8 (better employment and growth economic), ODS11 (investment in housing), ODS13 (reduction of emissions), ODS15 (protection of forest habitat as it discourages deforestation)
Unit of measurement	Number of community plans
Monitoring methodology	The number of community plans that are prepared or updated within the framework of the project are quantified.
monitoring frequency	Annually
Responsible for the measurement	Carbo-Terra Yauto Community representative Entities or programs that carry out activities
Indicator result in the reporting period	
Documents to support the information	Documents of Indigenous Life Plans developed Evidence of meetings
Observations	

Activity ID	A-11
Indicator ID	A-11.3
Indicator name	# community plans in implementation
Type	Result
Goal	Actions that contribute to compliance with community development

	plans are implemented.
SDG to meet	SDG1 (social and productive investment), SDG2 (social and productive investment), SDG3 (investment in health), SDG4 (investment in education), SDG5 (women's participation), SDG6 (investment in water and sanitation9, SDG8 (better employment and growth economic), ODS11 (investment in housing), ODS13 (reduction of emissions), ODS15 (protection of forest habitat as it discourages deforestation)
Unit of measurement	Number
Monitoring methodology	For the reporting of this indicator, the number of community plans that are being implemented is taken into account.
monitoring frequency	Annually
Responsible for the measurement	Carbo-Terra Yauto Community representative Entities or programs that carry out activities
Indicator result in the reporting period	
Documents to support the information	Records of execution actions of the Life Plans Indigenous Photographic record and / or videos Reports
Observations	

Activity ID	A-12
Indicator ID	A-12.1
Indicator name	# of planning plans or territorial management of the reservation indigenous elaborated or updated
Type	Product
Goal	At least one ordering or management plan is prepared or updated Territorial.
SDG to meet	SDG13 (reduction of emissions), SDG15 (protection of forest habitat as it discourages deforestation)
Unit of measurement	Number
Monitoring methodology	Verify and quantify the number of planning or land management plans prepared or updated.
monitoring frequency	Annually
Responsible for the measurement	Carbo-Terra Yauto Community representative Entities or programs that carry out activities
Indicator result in the reporting period	
Documents to support the information	Land Management Plan Documents elaborate. Reports
Observations	

Activity ID	A-12
Indicator ID	A-12.2
Indicator name	# of planning or territorial management plans in implementation
Type	Result
Goal	The implementation of at least one planning or territorial management plan begins
SDG to meet	SDG13 (reduction of emissions), SDG15 (protection of forest habitat as it discourages deforestation)
Unit of measurement	Number of planning or land management plans that are being implemented.
Monitoring methodology	For the report of this indicator, the number of Ordinance Plans or

	territorial management that are being implemented will be taken into account.
monitoring frequency	Annually
Responsible for the measurement	Carbo-Terra Yauto Community representative Entities or programs that carry out activities
Indicator result in the reporting period	
Documents to support the information	Records of execution actions of the Plans of Territorial Ordinance Photographic record and / or videos Reports
Observations	

Activity ID	A-13
Indicator ID	A-13.1
Indicator name	People who participate in training, meetings or training days related to language, medicine and other elements that make up the cultural tradition of the community.
Type	Result
Goal	Strengthen the capacities of community members to maintain, recover and improve the elements of their culture.
SDG to meet	SDG1 (productive investment), SDG2 (productive investment), SDG8 (better employment and economic growth), SDG13 (reduction of emissions), SDG15 (protection of forest habitat as it discourages deforestation)
Unit of measurement	Number
Monitoring methodology	The number of community members who attend training sessions, meetings or training days for the management of the elements of their culture (language, ancestral medicine, among others) is quantified.
monitoring frequency	Annually
Responsible for the measurement	Carbo-Terra Yauto Community representative Entities or programs that carry out activities
Indicator result in the reporting period	
Documents to support the information	Attendance lists for training workshops Meeting minutes and photographic record of the conferences training Photographic record and/or videos Reports or reports
Observations	

Activity ID	A-13
Indicator ID	A-13.2
Indicator name	Women who participate in training, meetings or training days related to language, medicine and other elements that make up the cultural tradition of the community.
Type	Result
Goal	Strengthen the capacities of women in the communities to maintain, recover and improve the elements of their culture.
SDG to meet	ODS1 (productive investment), ODS2 (productive investment), ODS5 (women's participation), ODS8 (better employment and economic growth), ODS13 (reduction of emissions), ODS15 (protection of forest habitat as it discourages deforestation)
Unit of measurement	Number
Monitoring methodology	The number of women members of the community who attend training sessions, meetings or training days for the management of the elements

	of their culture (language, ancestral medicine, among others) is quantified.
monitoring frequency	Annually
Responsible for the measurement	Carbo-Terra Yauto Community representative Entities or programs that carry out activities
Indicator result in the reporting period	
Documents to support the information	Attendance lists for training workshops Meeting minutes and photographic record of the conferences training Reports or reports
Observations	

Activity ID	A-14
Indicator ID	A-14.1
Indicator name	# of people who participate in awareness raising, meetings or training sessions.
Type	Result
Goal	Strengthen the capacities of women in the communities to maintain, recover and improve the elements of their culture.
SDG to meet	SDG13 (reduction of emissions), SDG15 (protection of forest habitat as it discourages deforestation)
Unit of measurement	Number
Monitoring methodology	Number of community members who attend sensitizations, meetings or training days on biodiversity monitoring and deforestation control.
monitoring frequency	Annually
Responsible for the measurement	Carbo-Terra Yauto Community representative Entities or programs that carry out activities
Indicator result in the reporting period	
Documents to support the information	•Attendance lists to the workshops, the awareness days for the identification of the causes and agents of deforestation, management of natural resources, management of equipment and techniques for monitoring biodiversity, conflict resolution •Minutes of the meeting and photographic record of the training sessions for the identification of the causes and agents of deforestation, management of natural resources, management of equipment and techniques for monitoring biodiversity, conflict resolution
Observations	

Activity ID	A-14
Indicator ID	A-14.2
Indicator name	# of women who participate in sensitizations, meetings or training days
Type	Result
Goal	Strengthen the capacities of women in the communities to monitor biodiversity and control deforestation.
SDG to meet	ODS5 (women's participation), ODS13 (reduction of emissions), SDG15 (protection of forest habitat as it discourages deforestation)
Unit of measurement	Number
Monitoring methodology	Number of women from the community who attend awareness raising sessions, meetings or training sessions on biodiversity monitoring and deforestation control.
monitoring frequency	Annually
Responsible for the measurement	Carbo-Terra

	Yauto Community representative Entities or programs that carry out activities
Indicator result in the reporting period	
Documents to support the information	• Attendance lists for training sessions to identify the causes and agents of deforestation, natural resource management, equipment management and techniques for monitoring biodiversity, conflict resolution •Minutes of the meeting and photographic record of the training sessions for the identification of the causes and agents of deforestation, management of natural resources, management of equipment and techniques for monitoring biodiversity, conflict resolution
Observations	

Activity ID	A-14
Indicator ID	A-14.3
Indicator name	# of community groups tasked with protecting or monitoring biodiversity
Type	Product
Goal	Formalize the groups for monitoring and follow-up of biodiversity.
SDG to meet	SDG13 (reduction of emissions), SDG15 (protection of forest habitat as it discourages deforestation)
Unit of measurement	Number
Monitoring methodology	Number of documents for the constitution and formalization of groups for monitoring and follow-up of biodiversity.
monitoring frequency	Annually
Responsible for the measurement	Carbo-Terra Yauto Community representative Entities or programs that carry out activities
Indicator result in the reporting period	
Documents to support the information	•Formalization documents and constitution of the group of community members in charge of protecting the forest Meeting minutes
Observations	

Activity ID	A-14
Indicator ID	A-14.4
Indicator name	# of members belonging to the monitoring group that receive incentives for biodiversity monitoring
Type	Product
Goal	Offer incentives for the active participation of community members in biodiversity monitoring activities.
SDG to meet	SDG13 (reduction of emissions), SDG15 (protection of forest habitat as it discourages deforestation)
Unit of measurement	Number
Monitoring methodology	For the measurement and reporting of this indicator, the incentives offered for monitoring activities are identified and the number of beneficiaries is quantified.
monitoring frequency	Annually
Responsible for the measurement	Carbo-Terra Yauto Community representative Entities or programs that carry out activities
Indicator result in the reporting period	

Documents to support the information	• List of members •Support of the incentives delivered. • Photos and videos •Meeting minutes.
Observations	

Activity ID	A-14
Indicator ID	A-14.5
Indicator name	Scheduling the planning of the activities of the biodiversity monitoring group
Type	Product
Goal	Implement the programming of monitoring activities.
SDG to meet	SDG13 (reduction of emissions), SDG15 (protection of forest habitat as it discourages deforestation)
Unit of measurement	Number
Monitoring methodology	It is verified if there is evidence of the implementation of the programming of monitoring activities by the groups involved.
monitoring frequency	Annually
Responsible for the measurement	Carbo-Terra Yauto Community representative Entities or programs that carry out activities
Indicator result in the reporting period	
Documents to support the information	• Evidence of the implementation of the activities programmed for the group of community members in charge of protecting the forest •Meeting minutes to define the schedule of activities to be carried out by the group of community members in charge of protecting the forest •Activity schedules. •Reports
Observations	

Activity ID	A-14
Indicator ID	A-14.6
Indicator name	Tours or expeditions carried out to monitor biodiversity
Type	Product
Goal	Tours or expeditions carried out to monitor biodiversity.
SDG to meet	SDG13 (reduction of emissions), SDG15 (protection of forest habitat as it discourages deforestation)
Unit of measurement	Tours or expeditions carried out to monitor biodiversity
Monitoring methodology	The development of routes or expeditions in the area of the indigenous reservation is verified in order to identify and/or monitor the biodiversity and the state of the forest cover present in the territory.
monitoring frequency	Annually
Responsible for the measurement	Carbo-Terra Yauto Community representative Entities or programs that carry out activities
Indicator result in the reporting period	
Documents to support the information	• Evidence of the development of routes and/or expeditions in the territory •Meeting minutes to define the schedule of tours and/or expeditions •Family group activity schedules protectors of the forest •Reports of programs or entities •Audiovisual record
Observations	

Activity ID	A-15

Indicator ID	A-15.1
Indicator name	# of hectares of forest in the project area
Type	Impact
Goal	Monitor the change of land use from forest to other uses in the project area during the project implementation period.
SDG to meet	SDG13 (reduction of emissions), SDG15 (protection of forest habitat as it discourages deforestation)
Unit of measurement	Number
Monitoring methodology	Evaluation of forest and non-forest maps according to the PROCLIMA methodology
monitoring frequency	Annually
Responsible for the measurement	Carbo-Terra Yauto Community representative
Indicator result in the reporting period	
Documents to support the information	• Cartographic products • Calculations of deforestation rates • Analysis of deforestation occurred
Observations	

Activity ID	A-15
Indicator ID	A-15.2
Indicator name	# of tons of CO2 not emitted
Type	Impact
Goal	Avoid CO2 emissions associated with deforestation and degradation.
SDG to meet	SDG13 (reduction of emissions), SDG15 (protection of forest habitat as it discourages deforestation)
Unit of measurement	tCO2
Monitoring methodology	For the measurement and reporting of this indicator, the area of standing forest present in the territory of the indigenous reservation is identified and estimated using GIS and satellite images from remote sensors. Subsequently, the applicable emission factor is used
monitoring frequency	Annually
Responsible for the measurement	Carbo-Terra
Indicator result in the reporting period	
Documents to support the information	•Use of IDEAM forest maps (SMByC) •Use of FREL emission factors •Calculation supports •Maps
Observations	

Activity ID	A-15
Indicator ID	A-15.3
Indicator name	# of people employed full-time by project activities
Type	Impact
Goal	Employ community members in biodiversity monitoring and follow-up activities
SDG to meet	SDG13 (reduction of emissions), SDG15 (protection of forest habitat as it discourages deforestation)
Unit of measurement	Number
Monitoring methodology	Number of people employed full-time by project activities related to the component of monitoring.
monitoring frequency	Annually
Responsible for the measurement	Carbo-Terra Yauto

	Community representative
Indicator result in the reporting period	
Documents to support the information	• Contracts concluded with members of the community •Payment records
Observations	

Activity ID	A-15
Indicator ID	A-15.4
Indicator name	# of hectares of standing forest in leakage area
Type	Impact
Goal	Monitor the progress of deforestation and its changes in coverage in the area of leakage
SDG to meet	SDG13 (reduction of emissions), SDG15 (protection of forest habitat as it discourages deforestation)
Unit of measurement	hectares
Monitoring methodology	Evaluation of forest and non-forest maps according to the PROCLIMA methodology.
monitoring frequency	Annually
Responsible for the measurement	Carbo-Terra Yauto Responsible delegate representing the reservation
Indicator result in the reporting period	
Documents to support the information	•Cartographic products. •Calculations of deforestation rates. •Analysis of deforestation occurred
Observations	

Activity ID	A-15
Indicator ID	A-15.5
Indicator name	# meetings with public or private entities to review deforestation trends in project limits
Type	Result
Goal	Strengthen the processes of regional articulation of the reservation and identify opportunities to improve the exercise of governance based on joint management with private and public entities.
SDG to meet	SDG15 (protection of forest habitat)
Unit of measurement	Number
Monitoring methodology	Number of meetings that are held with the objective of reviewing the problem of deforestation inside and outside the limits of the project, either with public or private entities.
monitoring frequency	Annually
Responsible for the measurement	Safeguard Carbo-Terra Yauto
Indicator result in the reporting period	
Documents to support the information	•Photographic record and / or videos. •Meeting attendance lists. •Meeting minutes. •Other supports of the meetings.
Observations	

Activity ID	A-15
Indicator ID	A-15.6

Indicator name	# of hectares subject to restoration actions
Type	Impact
Goal	Develop restoration actions in intervened areas.
SDG to meet	SDG13 (reduction of emissions), SDG15 (protection of forest habitat as it discourages deforestation)
Unit of measurement	Area (ha)
Monitoring methodology	Restoration actions carried out by community members
monitoring frequency	Annually
Responsible for the measurement	Carbo-Terra Yauto Responsible delegate representing the reservation
Indicator result in the reporting period	
Documents to support the information	•Social mapping. •Meeting minutes with the community. •Photographic record. •Report of field visits. •Verification and satellite measurement with GIS tools.
Observations	

Activity ID	A-16
Indicator ID	A-16.1
Indicator name	# of people who participate in awareness raising, meetings or training sessions
Type	Result
Goal	Strengthen the capacities of community members to manage administrative, legal and financial aspects.
SDG to meet	ODS1 (productive projects), ODS2 (productive projects), ODS8 (productive projects), ODS13 (reduction of emissions), ODS15 (protection of forest habitat))
Unit of measurement	Number
Monitoring methodology	Number of community members who attend training sessions for the management of production systems and business plans, including administrative, legal and financial aspects, as well as the strengthening of forest governance management and the value is reported obtained
monitoring frequency	Annually
Responsible for the measurement	Carbo-Terra Yauto Community representative
Indicator result in the reporting period	
Documents to support the information	•Photographic record and / or videos •Attendance lists for workshops, awareness days •Meeting minutes and photographic record of the conferences training.
Observations	

Activity ID	A-16
Indicator ID	A-16.2
Indicator name	# of women who participate in sensitizations, meetings or training days
Type	Result
Goal	Strengthen the capacities of women members of the communities to manage administrative, legal and financial aspects.
SDG to meet	ODS1 (productive projects), ODS2 (productive projects), ODS8 (productive projects), ODS13 (reduction of emissions), ODS15 (protection of forest habitat))
Unit of measurement	Number
Monitoring methodology	Number of women members of the community who attend training sessions for the management of productive systems and business plans,

	including administrative, legal and financial aspects, as well as the strengthening of forest governance management and reporting of the obtained value
monitoring frequency	Annually
Responsible for the measurement	Carbo-Terra Yauto Community representative
Indicator result in the reporting period	
Documents to support the information	•Photographic record and / or videos •Attendance lists for workshops, awareness days •Meeting minutes and photographic record of the conferences training.
Observations	

Activity ID	A-17
Indicator ID	A-17.1
Indicator name	# of people who participate in meetings, workshops or training sessions on communication issues
Type	Result
Goal	The processes of identification and prioritization of social investment in the field of communications are carried out in a participatory manner and the capacities of the members that are required in this area are strengthened.
SDG to meet	ODS1 (social investment), ODS11 (connectivity), ODS13 (reduction of emissions), ODS15 (protection of forest habitat as it discourages deforestation)
Unit of measurement	Number
Monitoring methodology	Number of community members who attend training sessions on communication issues
monitoring frequency	Annually
Responsible for the measurement	Carbo-Terra Yauto Community representative
Indicator result in the reporting period	
Documents to support the information	•Attendance •Meeting minutes with the community
Observations	Photographic record

Activity ID	A-17
Indicator ID	A-17.2
Indicator name	# of people with access to communication services
Type	Result
Goal	Access to communication services for community members is improved.
SDG to meet	ODS1 (social investment), ODS11 (connectivity), ODS13 (reduction of emissions), ODS15 (protection of forest habitat as it discourages deforestation)
Unit of measurement	Number
Monitoring methodology	The number of people with access to communication services is recorded
monitoring frequency	Annually
Responsible for the measurement	Carbo-Terra Yauto Community representative Entities and Programs that carry out the activity
Indicator result in the reporting period	
Documents to support the	• Social mapping.

information	• Entity reporting • Community report
Observations	

Activity ID	A-17
Indicator ID	A-17.3
Indicator name	# of communication elements or infrastructure installed or Improved
Type	Result
Goal	The infrastructure to provide communication services to the members of the communities is improved.
SDG to meet	ODS1 (social investment), ODS11 (connectivity), ODS13 (reduction of emissions), ODS15 (protection of forest habitat as it discourages deforestation)
Unit of measurement	Number
Monitoring methodology	The elements are counted, infrastructure installed, improved in operation that allows access to the communications of the members of the community
monitoring frequency	Annually
Responsible for the measurement	Carbo-Terra Yauto Community representative Entities and Programs that carry out the activity
Indicator result in the reporting period	
Documents to support the information	• Social mapping. • Entity reporting • Community report
Observations	

Activity ID	A-18
Indicator ID	A-18.1
Indicator name	# of people who participate in awareness raising, meetings or training sessions
Type	Result
Goal	Strengthen the capacities of the communities in relation to traditional and ancestral knowledge, councils and indigenous organization.
SDG to meet	ODS1 (social investment), ODS11 (organization), ODS13 (reduction of emissions), ODS15 (protection of forest habitat as it discourages deforestation)
Unit of measurement	Number
Monitoring methodology	Number of people from the community who attend sensitizations, meetings or training days for traditional and ancestral strengthening of the councils and the organization
monitoring frequency	Annually
Responsible for the measurement	Carbo-Terra Yauto Community representative Entities and Programs that carry out the activity
Indicator result in the reporting period	
Documents to support the information	• Meeting minutes with the community • Attendance lists
Observations	

Activity ID	A-18
Indicator ID	A-18.2

Indicator name	# of women who participate in sensitizations, meetings or training days
Type	Result
Goal	Strengthen the capacities of women from the communities in relation to traditional and ancestral knowledge, councils and indigenous organization
SDG to meet	ODS1 (social investment), ODS11 (organization), ODS13 (reduction of emissions), ODS15 (protection of forest habitat as it discourages deforestation)
Unit of measurement	Number
Monitoring methodology	Number of women from the community who attend sensitizations, meetings or training days for traditional and ancestral strengthening of the councils and the organization
monitoring frequency	Annually
Responsible for the measurement	Carbo-Terra Yauto Community representative
Indicator result in the reporting period	
Documents to support the information	• Meeting minutes with the community • Attendance lists •Photographic record.
Observations	

Activity ID	A-18
Indicator ID	A-18.2
Indicator name	# of women who participate in sensitizations, meetings or training days
Type	Result
Goal	Strengthen the capacities of women from the communities in relation to traditional and ancestral knowledge, councils and indigenous organization
SDG to meet	ODS1 (social investment), ODS11 (organization), ODS13 (reduction of emissions), ODS15 (protection of forest habitat as it discourages deforestation)
Unit of measurement	Number
Monitoring methodology	Number of women from the community who attend sensitizations, meetings or training days for traditional and ancestral strengthening of the councils and the organization
monitoring frequency	Annually
Responsible for the measurement	Carbo-Terra Yauto Community representative
Indicator result in the reporting period	
Documents to support the information	• Meeting minutes with the community • Attendance lists •Photographic record.
Observations	

Activity ID	A-18
Indicator ID	A-18.3
Indicator name	# of grandfathers and grandmothers and/or maloqueros supported
Type	Result
Goal	Support grandparents and grandmothers and maloqueros in the traditional and ancestral strengthening
SDG to meet	SDG1 (social investment), SDG13 (reduction of emissions), SDG15 (protection of forest habitat as it discourages deforestation)
Unit of measurement	Number

Monitoring methodology	Number of grandfathers, grandmothers and maloqueros who are supported in traditional and ancestral strengthening
monitoring frequency	Annually
Responsible for the measurement	Carbo-Terra Yauto Community representative
Indicator result in the reporting period	
Documents to support the information	• Evidence of traditional strengthening activities and ancestral Photographic record
Observations	

Activity ID	A-18
Indicator ID	A-18.4
Indicator name	Document of community statutes prepared
Type	Product
Goal	At least 1 community statute document prepared
SDG to meet	SDG1 (social investment), SDG13 (reduction of emissions), SDG15 (protection of forest habitat as it discourages deforestation)
Unit of measurement	Number of documents prepared
Monitoring methodology	The number of documents produced is counted
monitoring frequency	Annually
Responsible for the measurement	Carbo-Terra Yauto Community representative Entities or programs
Indicator result in the reporting period	
Documents to support the information	•Prepared documents •Community report •Evidence of meetings for the preparation of community bylaws document
Observations	

Activity ID	A-18
Indicator ID	A-18.5
Indicator name	Malocas built or adequate
Type	Result
Goal	Build malocas or adapt existing ones for traditional and ancestral strengthening
SDG to meet	SDG1 (social investment), SDG 11 (Sustainable cities and communities)
Unit of measurement	Number of malocas
Monitoring methodology	The malocas built or improved are counted
monitoring frequency	Annually
Responsible for the measurement	Carbo-Terra Yauto Community representative Entities or programs that carry out the activity
Indicator result in the reporting period	
Documents to support the information	•Photos and videos •Support of maintenance activities or construction. •Contracts •Investment support
Observations	

11.4 REDD+ Safeguards Monitoring

The monitoring plan for each applicable safeguard is presented below:

Safeguard ID	SVG-1
Indicator ID	SVG-1.1
Indicator name	Correspondence with national legislation
Type	Result
Goal	100%
Unit of measurement	Percentage
Monitoring methodology	Verification of current regulations is carried out and it is verified that the proposed activities comply with it. To monitor and report this indicator, the following equation will be used: $\frac{\#\ Correspondence\ with\ national\ legislation}{\#\ total\ activities} \times 100\%$
monitoring frequency	Annually or when there is a change in project activities
Responsible for the measurement	• Carbo-Terra • Yauto
Indicator result in the reporting period	
Documents to support the information	• Regulatory support documents • Analysis of legal correspondence by the project activities. • Attendance lists, meeting minutes, photographic record and • recordings of meetings with the community
Observations	All project activities have been carried out in compliance with regulations and pertinent legal aspects

Safeguard ID	SVG-2
Indicator ID	SVG-2.1
Indicator name	Transformation and access to information
Type	Result
Goal	100%
Unit of measurement	Percentage
Monitoring methodology	Access to information in appropriate language and media for the community will be verified. The number of community leaders who have access to the documents developed will be verified. To monitor this safeguard and report this indicator, the following equation will be used: $\frac{\#\ of\ community\ leaders\ with\ access\ to\ information}{\#\ of\ total\ community\ leaders} * 100\%$
monitoring frequency	Annually
Responsible for the measurement	• Carbo-Terra • Yauto
Indicator result in the reporting period	

Documents to support the information	• Meeting minutes • Acts of socialization • Workshop attendance lists • Community interviews and surveys
Observations	Leaders are provided with information in appropriate language and media.

Safeguard ID	SVG-3
Indicator ID	SVG-3.1
Indicator name	Accountability
Type	Product
Goal	Submit an accountability report within 6 months after the verification process
Unit of measurement	Number
Monitoring methodology	For the measurement of this indicator, the generation of accountability reports by the project implementer. In the same way, reporting and accountability sessions will be held with the interested parties.
monitoring frequency	Within 6 months after verification processes
Responsible for the measurement	• Carbo-Terra • Yauto
Indicator result in the reporting period	
Documents to support the information	• Meeting minutes, attendance list and photographic record of the information spaces • Accountability reports
Observations	

Safeguard ID	SVG-4
Indicator ID	SVG-4.1
Indicator name	Recognition of forest governance structures
Type	Impact
Goal	Recognize compliance with the forest governance structures established by the reservation authorities and their agreement with those established by other institutions present in the territory, such as the National Natural Parks of Colombia.
Unit of measurement	Compliance
Monitoring methodology	It will be verified that the REDD+ actions are developed in accordance with the forest governance structure associated with territorial jurisdiction by the indigenous reservation and the forest governance structures established by other institutions present in the territory.
monitoring frequency	Annually
Responsible for the measurement	• Carbo-Terra • Yauto
Indicator result in the reporting period	
Documents to support the information	• Documents of forest governance structures for each reservation • Meeting minutes and attendance lists. • Documents prepared by institutions on forest governance. • Administrative acts of territorial ordering
Observations	Currently, the reservation has a forest governance structure that is led within the framework of its own government structure.

Safeguard ID	SVG-5
Indicator ID	SVG-5.1
Indicator name	Capacity building
Type	Result
Goal	Increase the technical, legal and administrative capacities of the

	members of the indigenous reservation.
Unit of measurement	Number of sessions carried out
Monitoring methodology	Thematic training days (technical, legal and administrative) will be held and tests will be applied at the end of the training days in order to evaluate the adoption of knowledge by the members of the community and the results obtained will be reported.
monitoring frequency	Annually
Responsible for the measurement	• Carbo-Terra • Yauto • SENA, SINCHI, Research Centers
Indicator result in the reporting period	
Documents to support the information	• Community questionnaires • Photographic record of property visits • Attendance lists to training workshops, meeting minutes and photographic record
Observations	From the fifth year

Safeguard ID	SVG-6
Indicator ID	SVG-6.1
Indicator name	Free, Prior and Informed Consent
Type	Result
Goal	Guarantee the realization of consultation spaces in accordance with the national provisions on consultation and prior, free and informed consent established in the legislation and jurisprudence, as well as the guidelines given by the Ministry of the Interior and control agencies for relations with indigenous communities.
Unit of measurement	Number
Monitoring methodology	Consultation sessions will be held with the interested parties and the number of sessions carried out will be reported.
monitoring frequency	Annually
Responsible for the measurement	• Carbo-Terra • Yauto
Indicator result in the reporting period	
Documents to support the information	Evidence of relationship and consultation with the communities (minutes of meetings, lists of participants, photographic record)
Observations	

Safeguard ID	SVG-7
Indicator ID	SVG-7.1
Indicator name	Respect for traditional knowledge
Type	Result
Goal	Guarantee that the ways of understanding and relating to the environment of the communities have been taken into consideration and respected, so that the traditions, uses and customs of the communities are not affected.
Unit of measurement	Number
Monitoring methodology	The consultation days with the interested parties will be quantified, the proposal will be validated for the development of the deforestation with the community and the number of days carried out will be reported.
monitoring frequency	Annually
Responsible for the measurement	• Carbo-Terra • Yauto
Indicator result in the reporting period	
Documents to support the information	Evidence of relationship and consultation with the communities (minutes of meetings, lists of participants, photographic record)
Observations	

Safeguard ID	SVG-8
Indicator ID	SVG-8.1
Indicator name	profit sharing
Type	Result
Goal	Guarantee the distribution of 100% of the benefits derived from the implementation of policies, measures and actions to reduce deforestation and that are generated from traditional knowledge, innovations and practices for the conservation and sustainable use of forests, their diversity and ecosystem services are distributed fairly and equitably to the members of the indigenous reservation linked to the project.
Unit of measurement	Currency
Monitoring methodology	Considering that there is a previously defined resource distribution scheme, a record will be kept of the resources received by the indigenous reservation and the population members of these.
monitoring frequency	Annually
Responsible for the measurement	• Carbo-Terra • Yauto • Representatives of the indigenous reservation
Indicator result in the reporting period	
Documents to support the information	•Resource distribution agreement defined and signed •Financial supports or economic transactions
Observations	The distribution of the resources will be made once the operating expenses of the project are covered

Safeguard ID	SVG-9
Indicator ID	SVG-9.1
Indicator name	territorial rights
Type	Result
Goal	Guarantee respect for the collective and individual territorial rights of the indigenous reservation. As well as its use and cultural, economic and spiritual significance
Unit of measurement	Compliance or non-compliance
Monitoring methodology	The regulations issued in terms of territorial rights for the protection are reviewed and their respect is verified.
monitoring frequency	Annually
Responsible for the measurement	• Carbo-Terra • Yauto
Indicator result in the reporting period	
Documents to support the information	• Territory titling resolutions in favor of the indigenous reservation
Observations	

Safeguard ID	SVG-10
Indicator ID	SVG-10.1
Indicator name	Stake
Type	Result
Goal	Guarantee the full and effective participation of the actors involved to guarantee governance and adequate decision-making on REDD+
Unit of measurement	Compliance or non-compliance
Monitoring methodology	The participation of the actors involved will be verified to guarantee governance and adequate decision-making in the spaces designated for this purpose, in accordance with the provisions of national regulations and local forms of participation.
monitoring frequency	Annually

Responsible for the measurement	• Carbo-Terra • Yauto
Indicator result in the reporting period	
Documents to support the information	Evidence of relationship, participation and consultation with the communities (minutes of meetings, lists of participants, photographic record)
Observations	

Safeguard ID	SVG-11
Indicator ID	SVG-11.1
Indicator name	Conservation of forests and their biodiversity
Type	Impact
Goal	Guarantee that the project is not detrimental to the conservation of forests and the biodiversity that they house.
Unit of measurement	Compliance or non-compliance
Monitoring methodology	The forest area present in the project area will be verified through the use of Geographic Information Systems.
monitoring frequency	Annually
Responsible for the measurement	• Carbo-Terra • Yauto
Indicator result in the reporting period	
Documents to support the information	•Generation of cartographic products •On-site observations
Observations	

Safeguard ID	SVG-12
Indicator ID	SVG-12.1
Indicator name	Provision of environmental goods and services
Type	Impact
Goal	Guarantee that ecosystem services (supply, support, regulation and cultural) are not directly or indirectly affected, for example: water supply, soil, biodiversity, among others, by the execution of project activities.
Unit of measurement	Compliance or non-compliance
Monitoring methodology	Cover present in the territory of the reservation will be monitored. Additionally, biodiversity monitoring activities will be carried out and reports will be generated as a result of these activities.
monitoring frequency	Annually
Responsible for the measurement	• Carbo-Terra • Yauto
Indicator result in the reporting period	
Documents to support the information	•Generation of cartographic products •Biodiversity monitoring reports •On-site observations
Observations	

Safeguard ID	SVG-13
Indicator ID	SVG-13.1
Indicator name	Environmental and territorial ordering
Type	Result
Goal	Guarantee the consolidation of regulation instruments territorial and environmental under an approach of conservation and sustainable management of the forest, recognizing the proper forms of ordering of the territory of the indigenous reservation and of territorial ordering defined by other institutions.
Unit of measurement	Compliance or non-compliance

Monitoring methodology	It will be verified that the project promotes the consolidation of environmental and territorial ordering instruments under a conservation and sustainable forest management approach, abiding by the proper forms of government and interests of the communities of the indigenous reservation that participates in the project and the forms of organization identified in the territorial context.
monitoring frequency	Annually
Responsible for the measurement	• Carbo-Terra • Yauto
Indicator result in the reporting period	
Documents to support the information	•Generation of cartographic products •Biodiversity monitoring reports •On-site observations
Observations	

Safeguard ID	SVG-14
Indicator ID	SVG-14.1
Indicator name	sectoral planning
Type	Result
Goal	Guarantee that REDD+ actions are articulated with legislation related to forests and their biodiversity, as well as territorial planning instruments such as the Municipal Development Plan, Departmental Development Plan, Action Plan of the Environmental Corporation and the PNN Management Plan Chiribiquete mountain range.
Unit of measurement	Compliance
Monitoring methodology	Community members and Carbo-Terra will verify that REDD+ actions are articulated with legislation related to forests and their biodiversity
monitoring frequency	Annually
Responsible for the measurement	• Carbo-Terra • Yauto
Indicator result in the reporting period	
Documents to support the information	Work plans or evidence of actions carried out that recognize current legislation and territorial planning instruments that converge in the territory.
Observations	Planning activities must incorporate the guidelines of the different territorial planning instruments at the municipal and regional level, and ensure that the actions of the monitoring project are developed within the framework of the project.
Safeguard ID	SVG-15
Indicator ID	SVG-15.1
Indicator name	Control and forest surveillance to prevent the displacement of emissions
Type	Result
Goal	Guarantee the development of community monitoring and control actions to reduce the displacement of emissions and identify the events that originate them.
Unit of measurement	Number
Monitoring methodology	Community members will conduct tours and activities to identify events that may lead to the displacement of emissions. Likewise, the protocols defined will be executed with the aim of mitigating the situation.
monitoring frequency	Annually
Responsible for the measurement	• Carbo-Terra • Yauto
Indicator result in the reporting period	
Documents to support the information	•Reports of the tours carried out •Records of emissions displacement events identified

	•Protocol execution reports to deal with events emissions displacement •Georeferenced satellite images.
Observations	Monitoring activities will be developed within the framework of the project.

11.5 Project permanence

The following table presents the risks of non-permanence identified, as well as the level of risk, mitigation measures, monitoring indicators, and the reporting procedure in case any of these situations occur.

Table 26. Permanence risk analysis.

Riesgo	Nivel de Riesgo	Medidas de Mitigación	Indicadores de Monitoreo	Procedimiento de Reporte	Frecuencia de monitoreo
Fires	Low	- Visual detection of fires during tours carried out by members of the community - Interpretation of satellite images. - 15% buffer - Define a mechanism of communication and request for support with entities that respond to emergencies (Corpoamazonia, Firefighters, Army, National Unit for Disaster Risk Management - UNGRD).	M.1. # of fires detected M.2. # of hectares affected by fires M.3. tCO2 emitted by incidence of fires. M.4. tCH4 emitted by incidence of fires.	1. Communicate to the Captain of the Reservation the detection of a fire, its location and approximate extension. 2. Record fire information on a document: People who detected the fire, Date of Occurrence, Location, Extension, Duration of the event. 3. Event report to CARBO-TERRA and local institutions of emergency care (Corpoamazonia, UNGRD, Fire Department, etc.) 4. Estimation of the affected area through satellite images and field verification (if possible). 5. Quantification of CO2 and CH4 emissions associated with the fire. 6. Discount emissions generated from the 15% buffer during the monitoring period of the corresponding REDD+ activities.	Annual
Floods	Low	- Visual detection of floods during movements of community members. - Interpretation of satellite images. - 15% buffer. - Define a mechanism of communication and request for support with entities that respond to emergencies (CAR, Fire Department, Army, Disaster Risk Management - UNGRD).	M.5 # of hectares affected by floods	1. Communicate to the Captain of the Reservation the detection of a flood, its location and approximate extension. 2. Record the flood information in a document: People who detected the event, Date of Occurrence, Location, Extension. 3. Report the event to CARBO-TERRA and local institutions of attention to emergencies. 4. Estimation of the affected area by means ofsatellite images and field verification (only if possible). 5. Quantification of associated CO2 emissions to the flood. 6. Discount emissions generated from the 15% buffer during the activity monitoring period REDD+ that corresponds	Anual
Disputes over possession of the earth	Low	- 15% buffer.	M.6 # of hectares object of dispute for possession of the land	1. The Captain of the Indigenous Reservation will identify the actors who wish to claim the rights of the lands titled as territory of Indigenous reservation. 2. Report the intention of a third party to claim title rights of the earth. 3. Follow the regular procedures and land channels to settle disputes over land tenure. 4. Record the information in the project monitoring and verification reports.	Annual

Riesgo	Nivel de Riesgo	Medidas de Mitigación	Indicadores de Monitoreo	Procedimiento de Reporte	Frecuencia de monitoreo
				Subtract the forest areas that were claimed and granted to a third party and exclude emissions reductions associated with REDD+ project of the 15% buffer.	
Conflicts between actors of the project	Half	- Definition of a forum for dialogue and mechanisms for conflict resolution among the actors of the project. - 15% buffer.	M.7 # of hectares deforested because of the conflicts between actors of the project.	1. The Captain and/or Governor of the RI will report to CARBO TERRA and to the instance of dialogue defined the conflict situation, the actors involved and the possible implications on forest cover. 2. Address the situation of conflict following the mechanisms for conflict resolution between project stakeholders. 3. Calculate the deforested forest areas associated with the conflict. 4. Subtract the emissions generated by the loss of forest as a result of the conflict from the total emission reductions obtained during the corresponding monitoring period of the 15% buffer	Annual
No appropriation of the activities of the project	Half	- Implementation of the activities defined and agreed with the community, according to the stages that are defined. -Monitoring progress and expected results at each stage. - Definition e implementation of improvement actions to address the problems of appropriation of the activities identified. - Provide constant support to the actors involved in the project. - Buffer of 15% of the project's emission reductions.	M.8. # of activities REDD+ that cannot be implemented due to low appropriation by stakeholders of the project. M.9. # of hectares of forest deforested due to low ownership of project activities.	1. Review the results obtained from the activities and stages of implementation and identify problems of ownership by the project stakeholders. 2. Quantify the hectares of forest deforested and estimate the CO2 emissions associated with the non-appropriation of project activities. 3. Discount the emissions generated from the 15% buffer during the monitoring period of the REDD+ activities.	Annual
Governance deficit	Half	- Updating or elaboration of the Indigenous Life Plan and implementation of prioritized activities. - Development of the Territorial Management Plans of the Indigenous Reservation. - Capacity building for the management of traditional production systems. - Buffer of 15%.	M.10. # of hectares of forest deforested due to low territorial governance.	1. Review the results obtained from the activities associated with the territorial governance component and implementation stages and identify problems of ownership by project stakeholders. 2. Quantify the hectares of forest deforested and estimate the CO2 emissions associated with the governance deficit. 3. Discount the emissions generated from the 15% buffer during the monitoring period of the REDD+ activities.	Annual
Community involvement	Half	- Ensure the active participation of all community members involved in project activities. - Socialize the progress of project activities according to the defined planning. - Ensure the participation of	M.11. # of community members participating in project activities. M.12. # of hectares of forest deforested due to lack of community participation.	1. Verify the participation of community members in socialization, training and decision making spaces. 2. Quantify the hectares of forest deforested and estimate the CO2 emissions associated with the low participation of the community in the REDD+ project. 3. Discount the emissions generated from the 15% buffer during the monitoring period of the	Annual

Riesgo	Nivel de Riesgo	Medidas de Mitigación	Indicadores de Monitoreo	Procedimiento de Reporte	Frecuencia de monitoreo
		community members who are required to participate in the project's decision-making processes. - Buffer of 15%.		corresponding REDD+ activities.	

11.5. Project emissions

During project implementation, activity data and emission factors are monitored in accordance with the provisions of section 10.1. Management of uncertainty. Project emissions will be estimated following the procedure and equations presented in section 10.

11.5.1. Activity data

11.5.1.1. Annual deforestation in the project area

It is estimated with the following equation:

$$CSB_{proy,año} = \left(\frac{1}{t_2 - t_1}\right) \times \left(A_{REDD+proy,1} - A_{REDD+proy,2}\right)$$

Where:

$CSB_{proy,año}$= Annual change in the area covered by forest in the project area (ha)^{2}

t2 = Final year of the monitoring period

t1 = Starting year of the monitoring period

$A_{REDD+proy,1}$ = Forest area in the project area at the beginning of the monitoring period (ha)

$A_{REDD+proy,2}$= Forest area in the project area at the end of the monitoring period (ha)

11.5.1.2. Annual deforestation in the leak area

It is calculated from the following equation:

$$CSB_{f,año} = \left(\frac{1}{t_2 - t_1}\right) \times \left(A_{f,1} - A_{f,2}\right)$$

Where:

$CSB_{f,año}$= Annual change in the area covered by forest in the leakage area (ha)

t_2 = Final year of the monitoring period

t_1 = Starting year of the monitoring period

Af,1= Forest area, in the area of leakage at the beginning of the monitoring period (ha)

Af,2= Forest area in the area of leakage at the end of the monitoring period (ha)

11.5.1.3. *Annual degradation in the project area*

It is estimated with the following equations:

$$DFP_{REDD+proy,año} = \left(\frac{1}{t_2 - t_1}\right) \times \left(A_{núcleo} - A_{núcleo-parche}\right)$$

Where:

$DFP_{REDD+proy,año}$= Annual primary degradation in the project area (ha)

t_2= Final year of the monitoring period

t_1= Starting year of the monitoring period

$A_{núcleo}$ = Project area in core class at the start of the monitoring period (ha)

$A_{núcleo-parche}$ = Project area that changes from kernel to patch at the end of the monitoring period (ha)

$$DFS_{REDD+proy,año} = \left(\frac{1}{t_2 - t_1}\right) \times \left(A_{perforado} - A_{perforado-parche}\right)$$

Where:

$DFS_{REDD+proy,año}$ = Annual secondary degradation in the project area (ha)

t_2 = Final year of the monitoring period

t_1 = Starting year of the monitoring period

$A_{núcleo}$ = Area of the project in class drilled at the beginning of the monitoring period (ha)

$A_{núcleo-parche}$ = Project area that changes from perforated to patch at the end of the monitoring period (ha)

11.5.1.4. Annual degradation in the leakage area

It is estimated with the following equations:

$$DFP_{f,año} = \left(\frac{1}{t_2 - t_1}\right) \times \left(A_{núcleo,f} - A_{núcleo-parche,f}\right)$$

Where:

$DFP_{f,año}$	=	Annual primary degradation in leakage area (ha)
t_2	=	Final year of the monitoring period
t_1	=	Starting year of the monitoring period
$A_{núcleo,f}$	=	Leakage area in core class at the beginning of the monitoring period (ha)
$A_{núcleo-parche,f}$	=	Leakage area that changes from core to patch at the end of the monitoring period (ha)

$$DFS_{f,año} = \left(\frac{1}{t_2 - t_1}\right) \times \left(A_{perforado,f} - A_{perforado-parche,f}\right)$$

Where:

$DFS_{f,año}$	=	Annual secondary degradation in the leakage area (ha)
t_2	=	Final year of the monitoring period
t_1	=	Starting year of the monitoring period
$A_{núcleo,f}$	=	Leakage area in drilled class at the beginning of the monitoring period (ha)
$A_{núcleo-parche,f}$	=	Leakage area that changes from perforated to patch at the end of the monitoring period (ha)

11.5.2. GHG emissions in the monitoring period

11.5.2.1. Deforestation

The annual emission from deforestation in the project area is calculated from the following equation:

$$EA_{REDD+proy,año} = DEF_{REDD+proy,año} \times tCO_{2eq}$$

Where:

$EA_{REDD+proy,año}$	=	Annual emission in the project area (tCO2/ha)
$DEF_{REDD+proy,año}$	=	Annual deforestation in the project area (ha)
tCO_{2eq}	=	Total carbon dioxide equivalent (tCO2e/ha)

The annual emission from deforestation in the leakage area is calculated from the following equation:

$$EA_{f,año} = \left(DEF_{f,año} \times tCO_{2eq}\right) - EA_{lb,f,año}$$

Where:

$EA_{Rf,año}$	=	Annual emission in the leak area (tCO2/ha)
$DEF_{f,año}$	=	Annual deforestation in the leakage area (ha)
tCO_{2eq}	=	Total carbon dioxide equivalent (tCO2e/ha)
$EA_{lb,f,año}$	=	Annual emission from deforestation in the leakage area in the baseline scenario (tCO2e)

11.5.2.2. Degradation

The annual emission from degradation in the project area is calculated from the following equation:

$$EA_{REDD+proy,año} = \left(DFP_{REDD+proy,año} \times DTBCO_{2eq,1}\right) + \left(DFS_{REDD+proy,año} \times DTBCO_{2eq,2}\right)$$

Where:

$EA_{REDD+proy,año}$	=	Annual emission in the project area for the monitored period (tCO2/ ha)
$DFP_{REDD+proy,año}$	=	Annual primary degradation in the project area (ha)
$DTBCO_{2eq,1}$	=	Equivalent carbon dioxide content in the total biomass difference per hectare in the primary degradation class (tCO2e/ha)
$DFS_{REDD+proy,año}$	=	Annual secondary degradation in the project area (ha)
$DTBCO_{2eq,2}$	=	Equivalent carbon dioxide content in the total biomass difference per hectare in the secondary degradation class (tCO2e/ha)

La emisión anual por degradación en el área de fugas se calcula a partir de la siguiente ecuación:

$$EA_{f,año} = \left(DFP_{f,año} \times DTBCO_{2eq,1}\right) + \left(DFS_{f,año} \times DTBCO_{2eq,2}\right)$$

Where:

$EA_{f,año}$	=	Annual emission in the leak area for the monitored period (tCO2/ha)
$DFP_{f,año}$	=	Annual primary degradation in leakage area(ha)
$DTBCO_{2eq,1}$	=	Equivalent carbon dioxide content in the total biomass difference per hectare in the primary degradation class (tCO2e/ha)
$DFs_{f,año}$	=	Annual secondary degradation in the leakage area (ha)
$DTBCO_{2eq,2}$	=	Equivalent carbon dioxide content in the total biomass difference per hectare in the secondary degradation class (tCO2e/ha)

11.5.3. Quantification of project emissions reduction

11.5.3.1. Deforestation

The reduction of emissions from avoided deforestation, in the monitoring period, is estimated according to the equation:

$$RE_{DEF,REDD+proy} = (t_2 - t_1) \times \left(EA_{DEF,lb,año} - EA_{DEF,REDD+proy,año} - EA_{DEF,f,año}\right)$$

Where:

$RE_{DEF,REDD+proy}$	=	Reduction of emissions from avoided deforestation in the scenario with the project (tCO2e)
t_2	=	
t_1	=	Starting year of the reference period
$EA_{DEF,lb,año}$	=	Annual emission from deforestation in the baseline scenario basis (tCO2e)
$EA_{DEF,REDD+proy,año}$	=	Annual emission from deforestation in the project area (tCO2e)
$EA_{DEF,f,año}$	=	Annual emission from deforestation in the leakage area (tCO2e)

11.5.3.2. Degradation

The reduction of emissions due to avoided degradation is estimated from the following equation:

$$RE_{DEG,REDD+proy} = (t_2 - t_1) \times \left(EA_{DEG,lb,año} - EA_{DEG,REDD+proy,año} - EA_{DEG,f,año}\right)$$

Where:

$RE_{DEG,REDD+proy}$	=	Reduction of emissions from avoided degradation in the scenario with the project (tCO2e)
t_2	=	Final year of the reference period
t_1	=	Starting year of the reference period
$EA_{DEG,lb,año}$	=	Annual emission from degradation in the baseline scenario basis (tCO2e)
$EA_{DEG,REDD+proy,año}$	=	Annual emission from degradation in the project area (tCO2e)
$EA_{DEG,f,año}$	=	Annual emission from degradation in the leak area (tCO2e)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11.5.3.3. *Reduction of total project emissions*

The total reduction in emissions from avoided deforestation and degradation is estimated from the following equation:

$$RE_{tot+proy} = RE_{DEF,REDD+proy} + RE_{DEG,REDD+proy}$$

Where:

$RE_{tot+proy}$	=	Reduction of total emissions from deforestation and degradation avoided in the scenario with project (tCO2e)
$RE_{DEF,REDD+proy}$	=	Reduction of emissions from avoided deforestation in the scenario with the project (tCO2e)
$RE_{DEG,REDD+proy}$	=	Reduction of emissions due to degradation avoided in the scenario with the project (tCO2e)

11.6. Quality control and assurance procedures

Annex 5 presents the procedure to be carried out to ensure the quality of the information and that the GHG emission estimates reflect the characteristics of the project, in a precise, consistent, complete and transparent manner.

11.7. Sources of cartographic information

The information regarding the delimitation of the Monochoa Indigenous Reserve was taken from the page of the National Land Agency (Agencia Nacional de Tierras, 2021).

The base cartography at a scale of 1:100,000, which was used in the development of the products, was taken from the databases of the Agustín Codazzi Geographic Institute (Agustín Codazzi Geographic Institute, 2021), available on its website. Within this GDB is the following information: Departmental limits; Municipal limits; Hydrography; infrastructures; pathways.

The images in TIFF format of Forest no Forest for the years 2007, 2014, 2017 and 2018, were downloaded from the pages of the Environmental Information System of Colombia (SIAC) (Colombian Environmental Information System, 2021) and the Institute of Hydrology, Meteorology and Environmental Studies (IDEAM) (Institute of Hydrology, Meteorology and Environmental Studies, 2021), it is important to clarify that the entity in charge of preparing this information was IDEAM.

On the other hand, for the analysis of the land covers identified in the study area, the shape of the land covers of the Amazon of the years 2010 and 2018 was taken as a reference (Sistema de Información Ambiental de Colombia,

2021), prepared by the Amazon Institute for Scientific Research (SINCHI).

Regarding the satellite images used in the project, they were downloaded from 2008 to 2021, this information was obtained from the United States Geological Survey (USGS) website (United States Geological Survey, 2021), the which are a Landsat mosaic taking into account the area of the reference, project and leakage zones.

12.Risk Management

The risk assessment was carried out based on the *PMBOK® Guide* (Guide to the Fundamentals for Project Management) for the social, environmental and financial dimension. The evaluation of the identified risks is presented below, considering their probability and impact:

Qualification (Probability x Impact)	Risk Classification	
	Value	Level
9	**3**	**High**
6	**3**	**High**
4	**2**	**Medium**
3	**2**	**Medium**
2	**1**	**Low**
1	**1**	**Low**

Dimension	Risk	Probability	Impact	Qualification	Classification
Social	Forced displacements of community members	1	3	3	Medium
	Weakening of the governance structures defined by the indigenous reserve	1	3	3	Medium
	Community dissatisfaction with the implementation of the REDD+ project.	1	3	3	Medium
	Economic dependence on income generated by the commercialization of CCVs	1	2	2	Low
	Cultural changes (e.g., loss of traditional IR practices)	1	1	2	Low
Environmental	Extreme weather events (e.g. floods, landslide events, etc.)	1	2	2	Low
	Displacement of deforestation and degradation actions due to project implementation	2	2	2	Medium
	Fires of anthropogenic origin	2	2	4	Medium
	Expansion of the agricultural and livestock frontier	2	2	4	Medium
	Pests and diseases in production systems	1	2	2	Low

Dimension	Risk	Probability	Impact	Qualification	Classification
	Changes in land use in the project area	3	2	4	Medium
Financial	The project reaches break-even point after more than 7 years	1	2	2	Low
	Market price sensitivity	1	3	3	Medium
	Annual budget deficit	1	3	3	Medium
	Delays in the execution of project activities due to poor budget programming	1	2	2	Low
	The project ensures a financing rate of less than 50%.	1	3	3	Medium
	Financial viability of the project	1	2	2	Low

Below are the mitigation measures defined to mitigate the risks identified and presented in the Table 28:

Risk	Mitigation measures
Forced displacements of community members	• Strengthening of the governance structures defined by the RI • Operation of the PQR Attention Mechanism (early alerts). • Strengthening of capacities for conflict management with community members.
Weakening of the governance structures defined by the indigenous reserve	Implementation of the Governance component whose actions are aimed at strengthening government structures.
Community dissatisfaction with the implementation of the REDD+ project.	Operation of the PQR Mechanism (early alerts and design of actions to make the pertinent adjustments).
Economic dependence on income generated by the commercialization of CCVs	The development of an alternative livelihoods component ensures that there is no room for economic dependency.
Cultural changes (e.g., loss of traditional IR practices)	Execution of activities aimed at strengthening traditional practices and knowledge transfer (e.g., strengthening traditional medicine, conservation of indigenous languages, among others).
Extreme weather events (e.g. floods, landslide events, etc.)	• Project area monitoring • Development of passive restoration actions
Displacement of deforestation and degradation actions due to project implementation	• Monitoring of vegetation cover in the leakage area defined for the project.
Fires of anthropogenic origin	• - Project area monitoringSistema de alertas y detección temprana
Expansion of the agricultural and livestock frontier	• - Land management • - Activities to improve the yield per unit area of productive systems. • - Community agreements

Risk	Mitigation measures
Pests and diseases in production systems	Technical assistance for the management of production systems
Changes in land use in the project area	• - Project area monitoring • - Land use planning
The project reaches break-even point after more than 7 years	Project breaks even before the seventh year of implementation
Market price sensitivity	Regulated prices for carbon tax management
Annual budget deficit	Within the framework of the implementation of the project, it was defined that the Annual Investment Plan will be prepared annually, the ceiling of which must not exceed the available budget amount.
Delays in the execution of project activities due to poor budget programming	Within the framework of the implementation of the project, it was defined that the Annual Investment Plan will be prepared annually, the ceiling of which must not exceed the available budget amount.
The project ensures a financing rate of less than 50%.	The project has secured more than 85% of the required financing.
Financial viability of the project	The project has positive financial indicators and presents a sustainable cash flow for its implementation period (NPV>0 and IRR>12%).

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