EMISSIONS OFFSET PROJECT

Galilea Forest Conservation - Amé

EMISSION REDUCTIONS FROM AVOIDED DEFORESTATION - REDD+

Bogotá D.C, March 1, 2022

Monitoring report · Third verification

FUNDACIÓN FUNDAMÉ.COL · Fundación Amé

AMÉ RESERVA NATURAL

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Table of contents

List of tables

List of figures

1 Project Details

1.1 Project Overview

The grouped REDD+ project for climate change mitigation, called the Galilea Forest Conservation - Amé Emissions Offset Project, has the main objective of conserving the region's native forests by reducing Greenhouse Gas (GHG) emissions caused by deforestation, while preserving and protecting local biodiversity through inter-institutional conservation efforts. It is located in the southeastern area of the department of Tolima in the Eastern Mountain Range, in the municipalities of Villarrica (86.5%), Dolores (9.1%), Cabrera (2.9%), Prado (0.9%) and Purificación (0.6%), in 212 properties owned by multiple landowners[1].

The foundation FUNDAMÉ.COL. (commonly known as Fundación Amé)[2] is making efforts for the conservation of 13,782 hectares of forest and the restoration of 2. 144 hectares categorized as non-forest within the lots that are part of the project, through the development of activities that promote the reduction of CO2 emissions and strengthen the implementation of conservation strategies in the rural properties of the territory, in order to maintain these forests in a state of conservation, since, from a biophysical perspective, the region where the project is located is characterized by a high diversity of fauna and flora distributed in different types of ecosystems, as well as a large supply of water resources. In addition, these forests are part of the priority areas for conservation in the Andes and Amazonian foothills region, as they are located in the biological corridor that connects the Andean and High Andean forests with the moorlands of the Sumapaz National Natural Park and the Galilea Forest Regional Natural Park.[3] In addition, regarding the department, it is the last relict of primary forest in eastern Tolima and contains the source of the Negro River, one of the main tributaries of the Hidro Prado dam.[4]

The project began on September 1, 2010[5] with 12,701 hectares of forest belonging to Fundación Amé and Universidad del Tolima, and currently consists of 13,782 hectares, with a potential for expansion of 16,722 additional hectares of forest that can be included in the next monitoring audits.[6]. The sum of the current project area and the areas with potential to be included were defined as the expansion area in the project design document (see section 1.2.1 of the PD for more details).

[1] The project, in its first instance, included 202 properties. However, in subsequent verifications, 10 new areas have been added (9 in the second verification and one in the current verification) in territories located in the expansion area of the Project

[2] For the purposes of this document, it will be referred to by this name in subsequent sections.

[3] Eighty-seven percent of the project area is located within the Galilea Forest Regional Natural Park, declared as such under agreement 031 of 2019, subsequent to the certification of the second verification of the project that took place on October 11, 2019.

[4] Information obtained from the Environmental Atlas of Tolima 2014.

[5] The Project in its two past monitoring was conducted taking into account guidelines of the Protocol for Certification of Offset Programs ES-I-CC-002 version 01 of October 09, 2013 (for the first verification), the Guide for the Formulation, Validation and Verification of Climate Change Mitigation Forestry Projects version 02.0, of March 05, 2018 (for the second verification) and under the guidelines of the Colombian Technical Standard (NTC) 6208 of ICONTEC (for the second verification). In the third verification, the Project has performed the methodological gap analysis and has adjusted this report in compliance with the Program guidelines in accordance with the provisions of section 10.4 of the document Certification and Registration Program for GHG Mitigation Initiatives and Other Greenhouse Gas Projects, version 3.0 dated May 13, 2021.

[6] The Fundación Améis currently in a process of consultation and rapprochement with the other stakeholders that hold title to the territory of the project expansion area, with the objective of determining the areas that can effectively be included in the project according to the ProClima standard guidelines, and subsequently initiate the signing of conservation agreements with those that can be agreed upon and linked to conservation activities for future instances.

The objectives set out in the project design are as follows:

- Reduction of CO2 emissions by avoiding forest deforestation.
- Biodiversity protection.
- Conservation of natural water sources that benefit local communities.
- Improvement of the living conditions of rural communities located in or around the project expansion area. It is expected to generate benefits associated with the implementation of the project mainly from the socioeconomic context, with the diversification of economic activities from the implementation of sustainable production strategies, which allow stopping actions related to deforestation and land use change, taking into account that the main drivers of landscape transformation are livestock, agriculture, and extractive activities of timber and mineral products.

This report covers the monitoring activities carried out between April 01, 2019 and February 28, 2021 to avoid deforestation, a period in which, as a result of the project activities, a total of 154.111 tCO_2e. In terms of degradation, monitoring was contemplated for September 1, 2010 and February 28, 2021, a reduction of 454.365 tCO_{2e} was achieved (Table 1), of which 85% are marketable, the remainder must be held in reserve according to permanence requirements.

The results of this verification process also show that the information has been managed in accordance with the provisions of the project document, and that verifications have been made regarding the quality of the information provided by the entity operating the project, especially with respect to land tenure information.

Table 1: Estimated emission reductions during the GHG monitoring period (tCO_2e)

Estimates	Reduction of GHG emissions (tCO_2e)
Estimated net emission reductions from deforestation	154.111
Estimated net emission reductions from Degradation	454.365
Estimated net emission reductions from Deforestation and Degradation	608.476

Source: Elaborated from project information (2021).

The total net reductions from avoided deforestation correspond to a total of 608,476 tCO_{2e}, this value does not include the 15% discount attributable to the buffer for non-permanence risks.

1.2 Name of the climate change mitigation project

Emissions offsetting project: Conservation of the Galilea forest - Amé.

1.3 Location and geographical limits of the project

The project is located in the southeastern part of the department of Tolima (see Figure 1), in the eastern mountain range of the Colombian Andes, in rural areas of the municipalities of Villarrica (86.5%), Dolores (9.1%), Cabrera (2.9%), Prado (0.9%) and Purificación (0.6%), between the

coordinates 3°40'34.28" - 4°1'21.87" N and 74°30'40.27" - 74°43'58.8" W (WGS84 coordinate system). In total, it is made up of 212 lots with an area of 15,926.67 ha, of which 13,782.91 ha[7] are part of the project area[8]. The current project area is made up of lots belonging to the Amé Foundation, the University of Tolima and private individuals[9], Most of them are located in the municipality of Villarrica, which is located in the eastern part of the department of Tolima, approximately 34 km from the nearest major city (Melgar) and 161 km from Ibagué, the departmental capital. It is bordered on the north by the municipalities of Cunday and Icononzo, on the east by the department of Cundinamarca, on the west by the municipalities of Cunday, Purificación and Prado, and on the south by the municipality of Dolores. The project constitutes a border and overlap zone with the Bosque de Galilea Regional Natural Park (PNR, for its spanish acronym), where about 87% of the project area is located. The project expansion area consists of 29,884 ha of forest belonging to the Amé Foundation, Universidad del Tolima, municipalities of Dolores and Villarrica and other private landowners, whose location and geographical limits of the project are presented in section 1.2 of the PD.

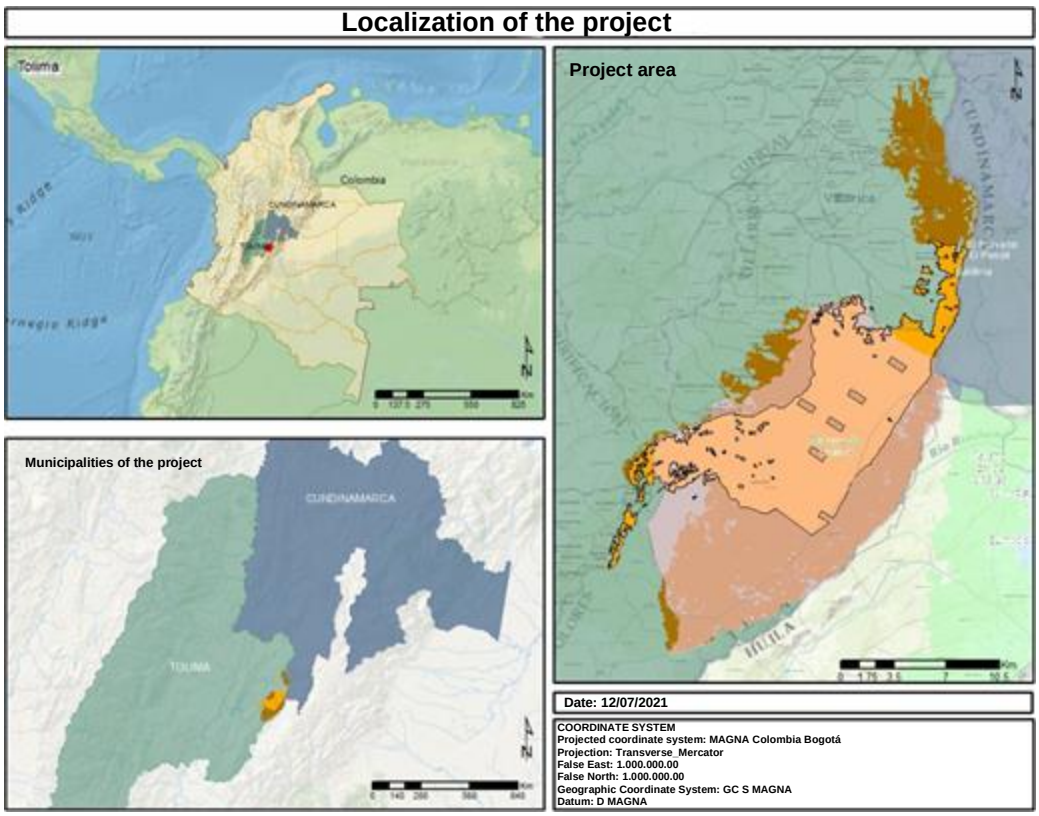


Figure 1: General location of the project

Source: Based on project information (2021).

1.4 Project design

The project has been verified as a grouped project. Taking into account the above, the project initially consisted of 202 plots, for the second verification the following were included:

[7] The project map file, in KML format, can be found in the path: [Information management [Project Boundary].

[8] The geographic location per lot is described in the file "Relación de predios_BD" in Excel format that contains the areas of eligibility for the REDD+ project on the route: [Information management [Land tenure].

[9] The supporting documents of the real estate title registrations of each property can be found in the path: [Information management [Compiled].

nine (9) properties and finally for this third verification one (1) property was included (see Table 2); the latter is located in the expansion area of the project. Areas may be added to the expansion area after the validation of the project, according to the grouping conditions.

Table 2: Geographic boundaries of the GHG Emission Reduction Project

Description	Properties(No)	Area (ha)	Area total / verification (ha)
First verification area	202	13,254.27	13.254,27
Area included in the second verification	9	472.52	13.726,79
Area included in the third verification	1	56.11	13.782,91

Source: Elaborated from project information (2021).

1.4.1 Eligibility of the addition of areas after validation

The emissions compensation project Conservation of the Galilea forest - Amé, for this verification period has a total area of 13,782.91 ha. For the addition of areas to the project, the holder took into account compliance with the eligibility conditions set forth in the methodology applied as described below:

a) Identify the expansion area of the project during the validation process and define the criteria for the addition of new areas.

The expansion area of the project consists of 29,884 ha of forest belonging to the Amé Foundation, Universidad del Tolima, municipalities of Dolores and Villarrica and other private owners. Figure 2 shows the current area of the project along with the addition of the new area, which corresponds to 56.11 ha and is within the expansion area foreseen by the project.

b) Comply with the guidelines of the Certification and Registration Program for GHG Mitigation Initiatives and other Greenhouse Gas Projects, in its most recent version.

The project owner has taken into account all the requirements for GHG mitigation initiatives. In this regard, the start date of the initiative in the added area, land tenure, methodologies for quantification and monitoring of GHG emission reductions and removals adjusted to the validated project activities, baseline scenario and additionality were considered.

c) Comply with all the provisions of the METHODOLOGICAL DOCUMENT for the AFOLU sector. Quantification of GHG Emission Reductions or Removals. REDD+ projects, in its most recent version.

The project holder has taken into account the criteria corresponding to carbon pools and GHG sources, spatial and temporal limits, the identification of the baseline scenario and also the additionality and implementation of REDD+ activities defined in the validated project, for the added area.

d) Include emission reductions only for validated REDD+ project activities. Likewise, activities to avoid deforestation and degradation described in the validated project shall be implemented in the area.

The activities proposed in the new area correspond to activities to avoid deforestation and/or degradation that are being developed in other areas of the project. These activities are beekeeping, research, conservation agreements, ecotourism and the ranger program, which are defined in the validated project document.

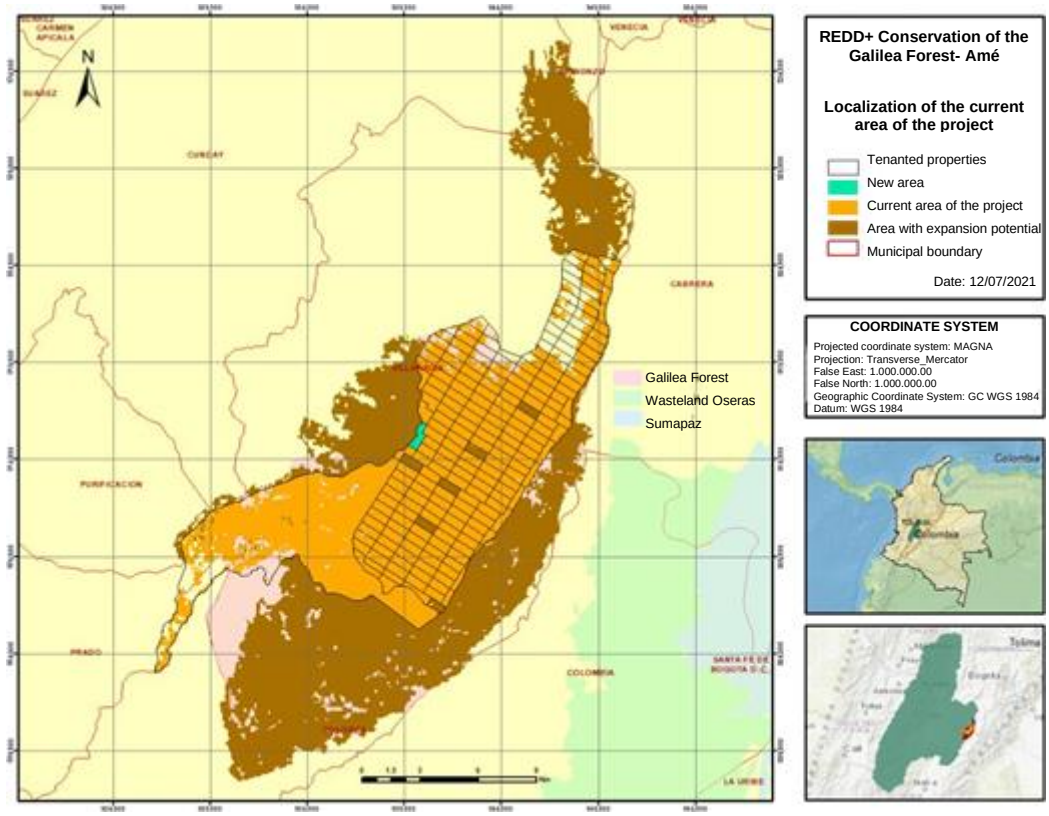


Figure 2: Location of the current project area

Source: Based on project information (2021).

e) Demonstrate that land tenure considerations, baseline scenario, additionality, causes and agents of deforestation/degradation are consistent and valid for new areas.

Land tenure: The owner has all the supporting documents that demonstrate the legal tenure of the land on which the project activities are carried out[10], thus complying with the provisions of the standard.

Baseline scenario: The operator took into account the provisions for the establishment of the baseline of the Forest Reference Emission Level (NREF, by its acronym in spanish). However, as the monitoring report covers the dates from April 1, 2019 to February 28, 2021, and taking into account that the ProClima standard in its most updated version considers that the holder establishes its baseline from the most updated NREF submitted by Colombia and evaluated by the UNFCCC and that in 2020 its period of validity expired, the holder adopted

[10] See in: [Information management [Land tenure].

for the quantification of GHG emission reductions in this monitoring report, the determinations set out in section 6.2.

Additionality: The inclusion of the new area is additional because it has the same characteristics of the properties that were already validated and complies with the provisions of Resolution 1447 of 2018 and therefore meets the additionality criteria.

Causes and agents of deforestation and/or degradation: The holder identified the causes and agents of deforestation and/or degradation in the expansion area, which correspond to expansion of the agricultural frontier, livestock production, agricultural production and timber extraction.

f) Have a start date after the start date of GHG removal activities in the areas included in the validation.

The offset program began its activities on September 1, 2010. For the area added (56.11 ha) in this third verification, the project has been implementing emission reduction activities since April 1, 2019. Evidence of the implementation of beekeeping activities since before April 2019 is presented.[11].

1.5 Project manager and other participating entities

1.5.1 Project Proponent

Name of organization	FOUNDATION FUNDAMÉ.COL – Fundación Amé
Representative	Luz Ángela Palacios
Title or Position	Legal Representative
Address	Autopista norte calle 114 - 44 office 804 · Bogotá · Colombia
Phone	+57 3134405160
Email Address	luzangela.palacios@gmail.com · http://www.fundacioname.org/
Description	Territory management entity. It is the proponent and responsible for the development of the forest conservation project, as well as for the operation and implementation of the activities in the territory.[13]

1.5.2 Entities with property rights

Name of organization [14]	ECOCARBONO S.A.S. ZOMAC
Representative	Luz Ángela Palacios
Title or Position	Legal Representative
Address	Autopista norte calle 114 - 44 office 804 · Bogotá · Colombia
Phone	+57 3134405160
Email Address	luzangela.palacios@gmail.com

[11] See in: [Information management "4_Activities "01_Apiculture "New-area-apiculture-reports.pdf].

[12] The certificates of Existence and Representation of the bidders can be found in the path: [Information Management].

[13] The University of Tolima and the other participants have signed agreements for the Fundación Améto be the entity in charge of the project. See supports in the path: [Information Management_Land Tenure Agreements].

[14] The certificates of Existence and Representation of the bidders can be found in the path: [Information Management].

Description	Entity in charge of managing the carbon credits generated by the project and their commercialization.

Name of the organization [15]	El Cielo Construcciones S.A.S
Representative	Jairo Alberto Palacios Ospina
Title or Position	Legal Representative
Contact Person	Luz Ángela Palacios
Title or Position	Assistant Manager
Address	Autopista norte calle 114 - 44 oficina 804 · Bogotá · Colombia
Phone	+57 3134405160
Email Address	luzangela.palacios@gmail.com
Description	Entity beneficiary of one hundred percent (100%) of the fiduciary rights of Patrimonio Autónomo de Acción Fiduciaria S.A. as spokesperson of Fideicomiso Fondo Ambiental, a company that is the holder of the real right of ownership of 139 of the project properties that are under the administration of Fundación Amé, El cielo Construcciones SAS has the gratuitous bailment right (bailor) and ECOCARBONO S.A.S. ZOMAC is the bailee who has granted authorization to Fundación Amé for the development of the project's activities. [16].

Name of the organization	Universidad del Tolima
Representative	Omar Albeiro Mejía Patiño
Title or Position	Rector and Legal Representative
Contact Person	Omar Aurelio Melo Cruz
Title or Position	Director of the Forestry Science Laboratory and the Bosque de Galilea Mid-Mountain Research Center
Email Address	omelo@ut.edu.co
	Strategic ally for the development of research and biodiversity activities within the framework of the project. As the owner of 74 of the properties,17 it is under a conservation agreement with Fundación Amé, and therefore the latter acts on behalf of the project as the sole proponent.

Name of the organization	Fundación ICPP
Representative	Ángela Montenegro
Title or Position	Legal Representative
	Owner of 4 of the properties under the domain of the SIGRA Foundation.18 It is under a conservation agreement with Fundación Amé, and therefore the latter acts on behalf of the project as the sole proponent.

[15] The certificates of Existence and Representation of the bidders can be found in the path: [Information Management].

[16] The information about the transfer of ownership and power of attorney rights over the administration and management of the aforementioned properties is supported by the documents presented in the route: [Management information management_Tenencia de la tierra_Tenencia de la tierra_Acuerdos].

[17] The supporting documents of the real estate title registrations of each property can be found in the route: [Information management [Land tenure].

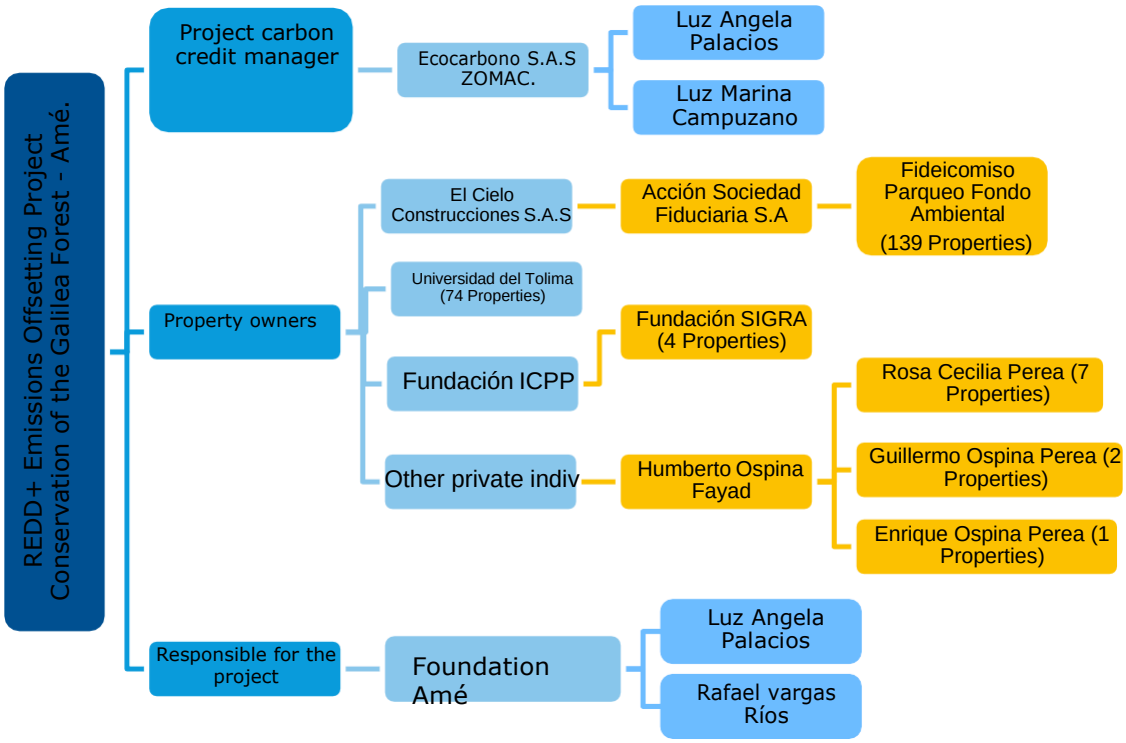
[18] The supporting documents of the real estate title registrations of each property can be found in the route: [Information management [Land tenure].

Name of the	Other private individuals
organization	Humberto Ospina Fayad
Representative	Representative of Guillermo Ospina Perea, Rosa Perea Perea Ospina and Enrique Ospina Perea
Title or Position	Private owners of 10 of the properties [19] that are part of the project as owners, they are under a conservation agreement with Fundación Amé, and the latter acts on behalf of the project as the sole proponent.

1.5.3 Other entities involved

Name of the	Corporación Autónoma Regional del Tolima (CORTOLIMA)
organization	Olga Lucía Alfonso Laninni
Representative	Director
Title or Position	Corporación autónoma Regional del Tolima. This is the environmental authority with jurisdiction in the project's area of intervention, responsible for receiving complaints and taking corrective measures when actions are being taken that go against the conservation of the forest in the project. In this sense, it is the highest environmental authority in the area of its jurisdiction over the Regional Natural Park (PNR) Forest of Galilea.

Thus, the project to reduce greenhouse gas emissions has 212 farms and was created as an initiative of the Amé Foundation. Figure 3 shows the entities involved.



[19] The supporting documents of the real estate title registrations of each property can be found in the route: [Information management [Gestión de la información_Tenencia de la tierra_Discriminados].

	Name of the project
	Role of the entity involved
	Entity involved
	Legal representative and/or owner
	Others

Figure 3: Project participants

Source: Based on project information (2021).

1.6 Land ownership

The project area is comprised of 212 properties, which are managed by the Amé Foundation, in the jurisdiction of the department of Tolima; Table 3 presents the information that supports the ownership of the project area[20]. The same is supported by the respective certificates of tradition and freedom (CTL), documents that legally guarantee the ownership of the properties[21] and that in accordance with articles 656 and 669 of the Civil Code of the United States of Colombia (Law 84 of 1873), it has rights of use, enjoyment and disposition over this real estate[22].

Table 3: Property owned by the owner

Owner	Project area in possession (ha)	Number of properties in possession
Fundación Amé [23]	9.885,54	124
Universidad del Tolima	2.565,70	60
Fundación Amé and Universidad del Tolima	717,36	14
ICPP Foundation	88,52	4
Other private individuals	472,52	9
Fundación Amé and other private individuals	56,11	1
Total	**13.782,91**	**212**

Source: Prepared from historical project information and documentary review (2021)

Accordingly, ownership of the carbon rights is demonstrable as established by ProClima in its document Standard Program for Certification and Registration of GHG Mitigation Initiatives and other Greenhouse Gas Projects v 3.0, section 10.11, because it complies with the requirements set forth therein[24] and presents full ownership of the land, presenting proof of ownership of the project vested under the terms of

[20] *The supporting documents of the real estate title registrations of each property can be found in the path: [Information management [Compiled].*

[21] The real estate registration folios from the Public Registry Office of Melgar, Tolima, which demonstrate the legal land tenure of each of the properties, can be found as supporting documents in the route: [Information management [Gestión de la información]. The Fundación Amé has conducted an inventory and update of the status of the properties in the periods 2018-2019 and 2020.

[22] According to Article 656 of Law 82 of 1873, immovables or estates or real property are those things that cannot be transported from one place to another, such as lands and mines; and those that permanently adhere to them, such as buildings and trees. In addition, plants are real property by adhesion, inasmuch as they adhere to the soil by means of their roots (Art. 657 of the same law).

[23] Under the administration of the properties of the Patrimonio Autónomo de Acción Fiduciaria SA as spokesperson of the Fondo Ambiental Trust Fund

[24] The information about the transfer of ownership and power of attorney rights over the administration and management of the aforementioned properties and therefore over the carbon rights is supported by the documents presented in the route: [Information management [Information management/3_Land tenure agreements]

the law that arises by virtue of a legal, property or contractual right in the land, vegetation or conservation or management process that generates GHG emission reductions and/or removals. Thus, Figure 4 presents the particularities of land tenure and land administration on the 212 properties.

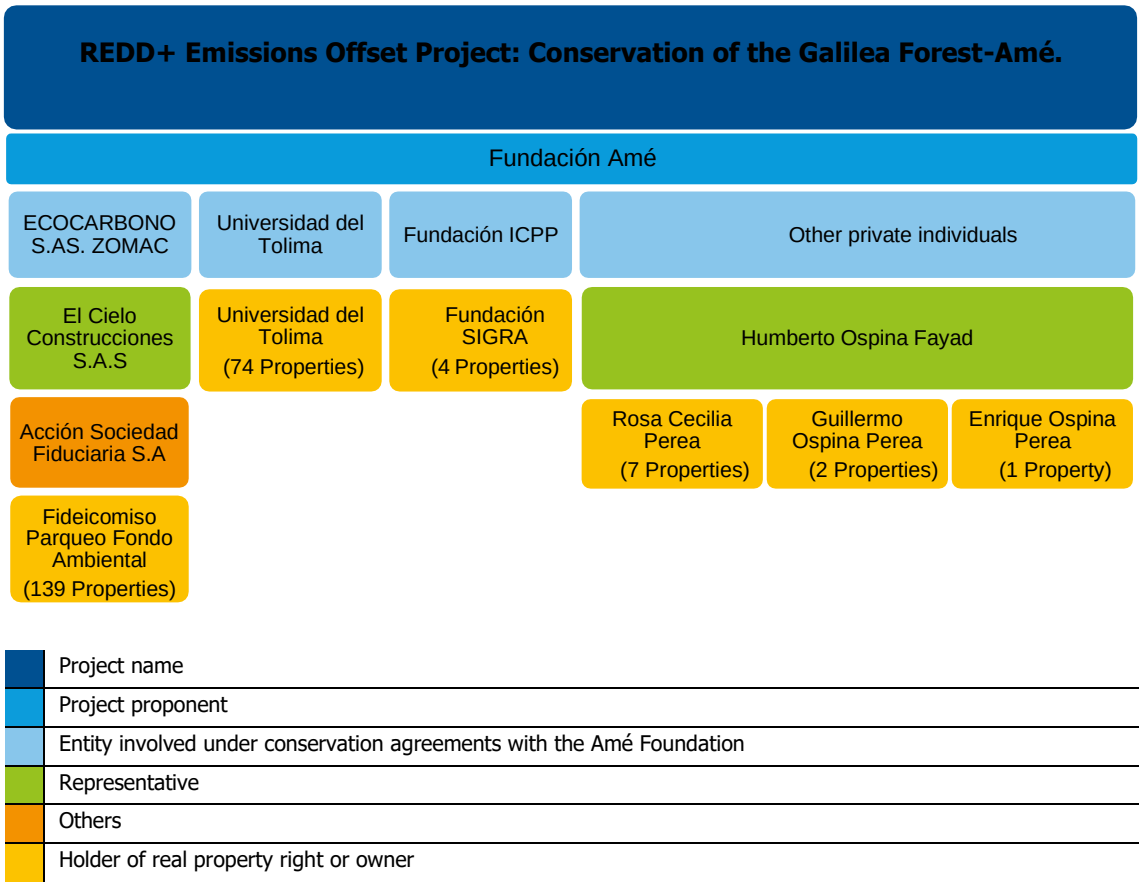


Figure 4: Owners

Source: Based on project information (2021).

1.7 Start date

The project began on September 1, 2010, after the state presence was resumed and security guarantees were provided for the owners to return to the territory, Universidad del Tolima and ASOPROBOSQUES began the process of administration and governance of the project area, developing field trips, approaches to existing settlers and meetings with the community in general to prevent the expansion of the agricultural frontier for the purpose of protecting the territory and to make it known that these lands belong to a private owner.

1.8 Project quantification and monitoring period

The quantification period of the project is 30 years, from September 1, 2010 to August 31, 2040. There is no difference between the start date of the project and the start date of the project crediting period.

The project has already conducted two verifications, as detailed in the following subsection for the period from September 1, 2010 to March 31, 2019. The third monitoring period runs from April 1, 2019 to February 28, 2021[25] The project includes deforestation and degradation monitoring for the period from September 1, 2010 to February 28, 2021, for an area of 13,782.91 ha. For this verification, a new lot of 56.11 ha (Table 4) was included in addition to the 13,726.79 ha that made up the project at the end of the second verification.

Table 4: Properties included in the third verification of the Project

Deed	Property	Coordinates		Lot area (ha)	Owner
		Latitude	Length		
366 – 33025	195	3.83711	-74.61206	56.11	Fundamé

Source: Based on information from the project (2021

1.9 Project formulation background

1.9.1 Validation and First Verification

The Project in its validation and first verification was carried out taking into account the guidelines of the Protocol for Certification of Compensation Programs ES-I-CC-002 version 01 of October 09, 2013.

- **Date Range and Areas:** September 01, 2010 - February 09, 2018 (13,254.27 ha).
- **Timeline:**
  - June 05, 2018: Date of issuance of the first monitoring report by the Colombian Institute of Technical Standards and Certification (ICONTEC) as Validation and Verification Body (OVV)26 of the project.
  - June 30, 2018: date on which certification was achieved for Project Validation.
  - August 01, 2018: Effective date of Resolution 1447 of 2018.
  - August 20, 2018: Date of issuance of the project's Verified Carbon Credits (VCCs).

1.9.2 Second Verification

The Project in its second verification was carried out taking into account the guidelines of the ICONTEC ES-I-CC-002 Protocol for the Certification of Compensation Programs ICONTEC ES-I-CC-002 Guide for the Formulation, Validation and Verification of Climate Change Mitigation Forestry Projects version 02.0, dated March 05, 2018 and under the guidelines of the Colombian Technical Standard (NTC) 6208 of ICONTEC (2016),[27] which includes Mitigation Actions in the following areas

[25] 25 February 28, 2021 corresponds to the date up to which information is available from the IDEAM data cube and the processing of satellite images. See Annex I on the monitoring of localized coverage in the route: [Information management [Annex I_Monitoring procedure_Project area and leakage belt].

[26] In the audit report carried out by ICONTEC, February 9, 2018 is mentioned as the end date of the first verification period; however, all calculations in the report were made up to 2017 and no reduction corresponding to 2018 was claimed in the first verification.

[27] Colombian Technical Standard (NTC) 6208. Mitigation Actions in the Land Use, Land Use Change and Forestry Sector (USCUSS) at the rural level, incorporating official and biodiversity considerations.

the Land Use, Land Use Change and Forestry Sector (USCUSS) at the rural level, incorporating official and biodiversity considerations.

In the second verification, nine (9) new third party lots were included, totaling 472.52 hectares, and CCVs were claimed on these lots from 2010 until the new verification dates.

- **Date Range and Areas**: September 01, 2010 - March 31, 2019 (13,726.79 ha).
    - New areas (472.52 ha): September 01, 2010 - March 31, 2019
    - First verification areas (13,254.27 ha): January 01, 2018 - March 31, 2019.

- **Timeline**
    - October 10, 2019: Date of issuance of the second monitoring report by The Spanish Association for Standardization and Certification (AENOR) as OVV
    - October 11, 2019: Certification date of the second monitoring by the ProClima standard.
    - December 2019: Date of submission of the Forest Reference Emission Level (FREL) for Colombia to the United Nations Framework Convention on Climate Change (UNFCCC).

2 Social and environmental safeguards REDD+ Colombia

In order to comply with the commitments established by the United Nations Framework Convention Against Climate Change (UNFCCC), the Government of Colombia defined the safeguards for REDD+ applicable to its national strategy as part of the adoption of the measures mentioned in paragraph 70 of Decision 1/CP.16 (UNFCCC, 2011). These apply to initiatives to reduce deforestation and forest degradation that are developed in Colombia, whether at local, regional or national scale, becoming a guide of good practices to prevent possible risks and bring the greatest amount of benefits. Those guidelines also provide general principles for REDD+ implementation, focusing on how to address transparency, stakeholder participation, protection of biodiversity and ecosystem services, respect for the rights of indigenous and local communities, and leakage, as well as other risks to environmental integrity (Camacho Henao & Guerrero, 2017).

Safeguards are considered measures aimed at preventing the affectation of essential social, economic and environmental rights, and the occurrence of negative impacts due to the design and implementation of REDD+ Measures and Actions. Its compliance implies that the people and institutions involved share the commitment to protect social and environmental values that are not usually fulfilled in the formulation and implementation of programs and projects for the reduction of deforestation (Camacho Henao & Guerrero, 2017)

Table 5 presents the identification of the main instruments available to the project to ensure compliance with each of the safeguards, based on the participatory and capacity building processes that have been developed to date.

Table 5: Main instruments identified by the project to ensure compliance with safeguards

No.	Interpretation of national safeguards	Instruments identified in the project for the respect of safeguards
01	Correspondence with international agreements signed by Colombia on forests, biodiversity and climate change.	The project is being developed within the framework of the National REDD+ Strategy (EICDGB) and the National Forestry Development Plan. Its activities are also compatible with the objectives of national forest programs and international conventions and agreements signed by Colombia for the protection of forests and biodiversity and the fight against climate change, as well as with national policies corresponding to these agreements.. In addition, project activities are developed in accordance with existing forest governance structures that are related to the zoning and management plans of National Forest Reserves and areas associated with the National System of National Parks (SINAP), the environmental determinants defined by departmental and regional environmental authorities, and some formal instances of articulation with the National Government such as the National Climate Change System (SISCLIMA) and the Intersectoral Commission for the Control of Deforestation. This articulation implies knowledge of the norms that support the stages of analysis, formulation and establishment of the Colombian legal framework for climate change and REDD+ projects.

No.	National interpretation of safeguards	Instruments identified in the project for the respect of safeguards
		A list of all national, regional and local laws, statutes and regulatory frameworks that are relevant to the project activities is detailed in Section 4 of this document.
02	Transparency and access to information	All information related to the REDD+ project is in the public domain and is duly registered in the ProClima [28] program registration platform as well as in the possession of the project proponents, who have appropriate channels and means of information to publicize the context of the project from its formulation to the implementation of the actions.. Additionally, and as part of the compliance with Resolution 1447 of 2018, the project information is duly registered in the RENARE platform for public knowledge[29].
03	Accountability	Within the framework of the implementation of the Strategy for Participation, Communication and Appropriation of Project Knowledge (EPCAC), different spaces for participation and socialization of the project have been convened with the community and institutional stakeholders identified in the stakeholder mapping (see Annex IV30 and supports[31]). At these meetings, the progress of the project was presented in relation to the implementation of the activities established to date.. For its part, the Fundación Amé plans to reinvest the resources acquired by the project in the protection of the forest and the development of its activities. This will be reported through documents such as minutes, communiqués and annual reports, in which the progress made in the management of the project will be reported, as well as the destination and management of the resources derived from the project for the next verifications.
04	Recognition of forest governance structures	From the feasibility phase, the leadership of each of the directors of the territorial governance entities is recognized, so the project activities are developed in accordance with the agreements between the owners of the land with other organizations involved in the management of the territory, such as the Regional Natural Park (PNR) Galilea Forest [32], Corporación Autónoma Regional del Tolima (CORTOLIMA) and the municipal administrations. These entities recognize that the Fundación Amé is the proponent and implementer of the project and, therefore, directly responsible for exercising governance in the properties. However, it should be noted that the project seeks to work together with the different entities (mentioned above) that have direct influence over the area, with the objective of undertaking corrective measures when the conservation of the properties is being violated and to align the lines of action in accordance with the provisions and decisions of the environmental authority.

[28] https://ProClima.net.co/iniciativa/?id=8

[29] http://renare.siac.gov.co/GPY-web/#/gpy/datbasreddreg/121/1021 .

[30] See in: [Information management [Annex IV_EPCAC].

[31] The records of the process are located in the path: [Information Management

[32] The park was declared on December 16, 2019, that is, at the end of year 9 of the project, see supports of the declaration in the route: [Information Management "Activities "Cortolima" PNR Declaration].

No.	National interpretation of safeguards	Instruments identified in the project for the respect of safeguards
05	Strengthening of capacities	The development of some of the project's activities begins with the training of personnel, such as the beekeeping activity and the forest ranger program. For these activities, technical training has been provided to those directly involved in the development of the activities, and ongoing training has been provided to other residents to ensure that they are involved in the activities in the future. Training and coaching on each particular aspect of the activities to be developed and the basic training topics of the project will be managed periodically, while verifying the development of the activities in the project area..
06	Free, prior and informed consent	Desde su inicio, el proyecto se ha asegurado de que los actores del proyecto participen efectivamente en la toma de decisiones para su formulación. Esto ha garantizado la validación de asuntos de gran relevancia como la priorización de las actividades del proyecto. Socialization meetings were held (see Annex IV33) as strategies for information, dialogue and joint construction with the communities and territorial stakeholders. At the same time, these meetings made it possible to recognize and articulate the decision-making spaces within the organizational structure of the project. It is clarified that there are no ethnic groups living in the project area.
07	Respect for traditional knowledge	As part of the project activities and action mechanisms, respect for traditional knowledge has been established as a basic principle. Thus, cultural traditions will be taken into account in the different phases of project implementation. Similarly, it is clarified that although in the area there are some obligations in terms of legislation, which allow the development or not of certain productive activities according to the zoning and Figures of protection on land use[34]; to date, the project adopts guidelines that were already given by the conservation areas, so it does not transgress or impose restrictions on the main use of the land, provided by higher order legislative guidelines such as the Figure of special management PNR Galilea Forest[35], and in turn respects the development of the traditional subsistence practices of the rural inhabitants living in neighboring territories.

[33] See in: [Information management [Annex IV_EPCAC].

[34] 34 To date, CORTOLIMA is at the beginning of the process of participatory formulation of the Environmental Management Plan of the PNR Galilea Forest. The formulation of this planning instrument, which will be the support for all actions, projects and conservation programs generated for the protection of the PNR Bosque de Galilea, so the adoption of the EMP that will guide the planning of conservation, protection and restoration processes of the environmental components, as well as land use.

[35] 35 See communiqué of conformity of the project with the PNR Bosque de Galilea "20210616_Compatibility_ CORTOLIMA REDD+", issued by the Corporación Autónoma Regional del Tolima, located at the path: [Information Management "4_Activities_Cortolima_Announcements"].

No.	National interpretation of safeguards	Instruments identified in the project for the respect of safeguards
		Although different communities and rural inhabitants are located in the project area, by means of conservation agreements[36] and dialogue spaces, alliances have been established with some of the neighboring families of the Alto Puerto Lleras and La Colonia neighborhoods, as well as with different private landowners[37], in order to avoid the deterioration of the ecosystems in the project area due to pressures such as extensive cattle ranching and agriculture. These agreements seek to guarantee a commitment to conservation, to gradually minimize the pressure on the territory and avoid the deterioration of the forest, while recognizing the economic dependence on the productive activities of the inhabitants and respecting the development of sustainable subsistence activities within the limits of the project, unifying efforts to ensure that extractive and exploitative economic practices do not expand, without affecting the subsistence of those who already live in the territory.
08	Profit sharing	The project is developed in an area of private property, so the distribution of economic benefits is carried out among the participants who own land there, in this case the Fundación Amé, the project proponent[38] internally manages the processes under the different conservation agreements with each landowner. However, the economic benefits obtained are used to promote the start-up, implementation and maintenance of the various activities that contribute to avoiding deforestation. Thanks to this, people in the areas surrounding the project who wish to participate in the implementation of project activities will benefit economically. On the other hand, the need to invest the greatest amount of resources in the development of activities for the long-term permanence of the project is highlighted, as well as in programmed savings to generate additional profits.
09	Territorial rights	Since the feasibility phase, the project participants have demonstrated that they hold title to the land on which the project activities are carried out and for the duration of the project's accreditation period, and that they guarantee the administration of the land within the framework of the project, under the action of Fundación Amé (see Sections 1.5 and 1.6).
10	Participation	The effective participation of the project proponents in the preparation phase for project certification has been ensured through socialization, discussion and feedback spaces, which have become strategies for information, dialogue and joint construction of the project with communities and territorial stakeholders. In this way, it is intended that the findings of these approaches can be inputs to complete the project design in future verification periods.

[36] See in: [Information management [Activities] [Conservation agreements].

[37] See in: [Information management [Land tenure].

[38] In the event that new proponents join the project at a later stage, the distribution of benefits will be evaluated for future verifications to ensure that all participants have a mechanism for the distribution of project benefits.

No.	National interpretation of safeguards	Instruments identified in the project for the respect of safeguards
11	Conservation of forests and biodiversity	Since its conception, the REDD+ Conservation of the Galilea Forest Project- Amé is a financial instrument that will provide measures to promote conservation processes and the maintenance of ecosystem services at the local scale. The activities contemplated by the project have the ultimate goal of reducing deforestation in the Galilea forest, specifically in the properties owned by the private landowners that are part of the mitigation initiative, as well as the continued support for the provision of associated ecosystem services by the communities that depend on them. The implementation of the activities will not encourage the replacement of natural forests with plantations or agricultural crops at any time, nor the introduction of exotic species that threaten local biodiversity. On the other hand, and as a contribution to the SDGs, the project seeks to ensure the conservation, restoration and sustainable use of terrestrial and inland freshwater ecosystems in the project area, through the administration of strategic areas and ecosystems, exercising control, monitoring and management of natural resources. To ensure the success of the project, forest monitoring and surveillance is carried out with the monitoring of changes in forest cover in each verification period, in order to establish the effectiveness of the activities carried out and make adjustments in their design and implementation based on primary information. At the same time, the research activity in association with the Universidad del Tolima seeks to expand the knowledge of the forest and the biodiversity that inhabits it, as well as the maintenance of the ecosystem services it provides.
12	Provisión de bienes y servicios ambientales	
13	Environmental and territorial planning	The mitigation project recognizes and respects the environmental determinants defined by the departmental and regional environmental authorities, and the land management agreements and regulations, as follows: Parque Natural Regional (PNR) Galilea Forest Villarrica Land Use Planning Scheme (EOT), 2016. [39] The mitigation project was proposed in harmony with the environmental and territorial planning instruments (see section 4.1.1 below). in force in the project area (environmental determinants). In this way, the permanence of the activities is ensured.
14	Sector planning	

[39] Land Management Scheme of the Municipality of Villarrica: Municipal POT: Geographic Information System for Planning and Land Management (igac.gov.co).

No.	National interpretation of safeguards	Instruments identified in the project for the respect of safeguards
		De igual forma, se aclara que las actividades para evitar la deforestación en el área de bosque del proyecto están enmarcadas en evitar los riesgos de reversión. Es decir, se busca que las medidas sean sostenibles y no temporales buscando que exista sostenibilidad a largo plazo en las intervenciones. Es por ello por lo cual, se proyecta una activa participación y vinculación en las actividades de los habitantes del área y a las entidades territoriales.
15	Control and monitoring to avoid displacement of displacement of emissions	The mitigation project provides for forest monitoring and surveillance by monitoring changes in forest cover during each verification period in order to prevent the displacement of productive activities or deforestation agents. In fact, as part of the project activities, community surveillance and monitoring actions are proposed and implemented in the territory through the forest ranger program. These activities contribute to strengthening the exercise of governance in the territory and support the identification of alternatives that put an end to the pressures associated with deforestation in the local environment.

Source: Elaborated from project information (2021).

2.1 REDD+ environmental and social safeguards monitoring

The project holder demonstrates compliance with the 15 national REDD+ safeguards, presented below, which include indicators for monitoring, reporting and verification.

Table 6: Institutional safeguards

Safeguard	ID Ind.	Name of the indicator	Type	Goal	Unit of measure	Methodology of monitoring	Frequency of monitoring	Responsible	Result	Support Documents	Remarks
01 Correspondence with international agreements signed by Colombia on forests, biodiversity and climate change.	01	Policies that consider a regulatory framework or a legal framework that allows compliance with the correspondence with national legislation.	Management	Contribute to national commitments on forests, biodiversity, climate change and sustainable development.	Biodiversity, climate change and sustainable development policies.	The regulations applicable to project activities were reviewed. Compliance with these regulations was also monitored.	Anual	General Management Social professional	Updating the regulations applicable to project activities and monitoring compliance with them in accordance with national commitments for REDD+.	Section 5 PD. Annex II Information Management[40]. Section 4 Compliance with laws, statutes and other regulatory frameworks, of the MR.	The activities carried out in the project area during the monitoring period comply with the legal requirements for environmental conservation activities.
02 Transparency and access to information	01	Information dissemination mechanisms	Management	Ensure access to information on the activities carried out by the Fundación Amé within the framework of the REDD+ project.	Communication and information dissemination strategies.	Dissemination of information through digital media and social networks.	Semiannually	Communications professional	Permanent updating of the website (www.fundacioname.org). Creation of social networks. **Facebook:** Amé, juntos por la conservación de los bosques **Twitter:** Fundacion_AME **YouTube:** Fundación Ame	Disclosure of information[41]. Social networks. **Facebook:** Amé, juntos por la conservación de los bosques[42] **Twitter:** Fundacion_AME [43] **YouTube:** Fundación Ame	The activities validated in the project (beekeeping, research, conservation agreements, ecotourism, forest ranger program) have made it possible to monitor and comply with the safeguard.

[40] See in: [Information management in mitigation projects].
[41] See in: [Information management [7_Support Disclosure of information]
[42] (1) Amé, juntos por la conservación de los bosques | Facebook
[43] Fundación AMÉ (@Fundacion_AME) / Twitter

Safeguard	ID Ind.	Name of the indicator	Type	Goal	Unit of measure	Methodology of monitoring	Frequency of monitoring	Responsible	Result	Suppor Documents	Remarks
									Forest Reserve **Instagram:** fundacioname_ Creation of a training portfolio. Publication of a press release	Forest Reserve [44] **Instagram:** fundacioname_ [45] Training portfolio [46] Press Release - Donation of Fundamé vehicle to UT[47]	
	02	Mechanisms for transparency and timely access to information.	Management	Implementing the Strategy for Participation, Communication and Knowledge Appropriation (EPCAC) Galilea - Amé.	Number of mechanisms designed and implemented.	Review and analysis of information.	Anual.	Social professional	Construction of the Participation, Communication and Knowledge Appropriation Strategy (EPCAC).	EPCAC Document[48].	The activities validated in the project (beekeeping, research, conservation agreements, ecotourism, ranger program) have made it possible to monitor and comply with the safeguarding.

[44] Fundacion Ame Reserva Forestal - YouTube

[45] Fundación Amé (@fundacioname_) • Fotos y videos de Instagram

[46] See in: Information management [Gestión de la información "4_Actividades "02_Investigación "Bosque de Galilea.pdf"]

[47] See in[Information Management "Fundación Amé donated van to Universidad del Tolima for Galilea project - Media.pdf].

[48] See in: Information management [7_Support Annexes Annex IV_EPCAC].

Safeguard	ID Ind.	Name of the indicator	Type	Goal	Unit of measure	Methodology of monitoring	Frequency of monitoring	Responsible	Result	Support Documents	Remarks
03 Accountability	01	Spaces used in the process of reporting project achievements and progress.	Management	Socialize the progress of the project and implement strategies for transparency, access to information and participation of the local community.	Number of opportunities for socialization of the project's achievements and progress.	Participation, Communication and Project Ownership Strategy (EPCAC).	Anual	Fundación Amé Universidad del Tolima	17 meetings were held with different stakeholders from the institutional and community sectors.	Sección 3.2.2.1 EPCAC (Socialización virtual, entrevista semiestructurada de percepciones, grupo de discusión, construcción de línea base participativa)[49] Sección 2.2.1 Proceso de socialización del proyecto, del reporte de monitoreo. Informe general social (Línea base social, talleres, encuentros)[50]	The activities validated in the project (beekeeping, research, conservation agreements, ecotourism, ranger program) have made it possible to monitor and comply with the safeguard.

[49] See in: [Information management [Annex IV_EPCAC].

[50] See in: [Information management [General Report - Social.pdf].

Safeguard	ID Ind.	Name of the indictor	Type	Goal	Unit of measure	Methodology of monitoring	Frequency of monitoring	Responsible	Result	Support Documents	Remarks
04 Recognition of forest governance structures	01	Articulation projects for decision making in the project area.	Management	Articulate relations with entities and institutions involved in forest governance.	Number of projects in which the Fundación Amé is involved.	Review of supporting documentation of initiatives and projects carried out by institutions in the forest governance process.	Semiannual	General Management Social professional	Recognition of Fundación Amé as a stakeholder in the PNR Galilea Forest Environmental Management Plan. Conservation agreement between Fundación Amé and Universidad del Tolima. Declaration of Galilea Forest Regional Natural Park.	PMA Galilea Document - Fundamé[51]. UT Agreement –Fundamé [52]. Agreement 031 of December 16, 2019- The Regional Natural Park Galilea Forest [53].	The activities validated in the project (beekeeping, research, conservation agreements, ecotourism, ranger program) have made it possible to monitor and comply with the safeguard.
05 Capacity building	01	Training spaces	Management	Strengthen the technical capacities of the community in biodiversity, conservation and models of	Number of training spaces	Training proposals were planned, implemented and reviewed for both staff and technical	Semiannual.	Social professional Forestry professional Universidad del Tolima	Four (4) trainings were conducted: 1 Ranger Workshop - Amé	Ranger Workshop Report - Amé [54].	The activities validated in the project (Apiculture, research, conservation agreements, ecotourism,

[51] See in: [Information Management 7_Supports \Others_GALILEA_Cortolima_Fundamé.jpeg].

[52] See in: [Information Management "03 Conservation Agreements" - Habitat Bank "ECOCARBONO CONSERVATION AGREEMENT - UNIVERSIDAD DEL TOLIMA.pdf].

[53] See in: [Information management "4 Activities "Cortolima" PNR Declaration Agreement 031 of 2019 (PNR Declaration BG).pdf]

[54] See in: [Information management "Activities" "Ranger Program" Reports "Ranger Training Report" [pdf].

Safeguard	ID Ind.	Name of the indictor	Type	Goal	Unit of measure	Methodology of monitoring	Frequency of monitoring	Responsible	Result	Support Documents	Remarks
				sustainable production.		Staff and the local community, developed from the Aula Amé and in conjunction with the University of Tolima.			1 Birdwatching Workshop – Amé/UT 1 Beekeeping training – Amé 1 Drone coverage monitoring training Amé Personnel strengthening through the seminar "Introduction to the design of tourist trails".	Birdwatching Workshop Report - Amé/UT [55]. Beekeeping training report - Amé[56]. Amé drone coverage monitoring training report [57]. Certificates[58]	the forest ranger program) have made it possible to monitor and enforce the safeguard.

Source: Elaborated from project information (2021) and criteria established by the ProClima Program (2021).

[55] 55 See in: [Information management "Information management "Activities "04 Ecotourism "Birdwatching "Bird training report - La Colonia.pdf].

[56] See in: [Information Management "Activities "01_Apiculture "Reports "20201218_beekeeping_training.pdf]

[57] See in: [Information Management "Activities "05_Forest Ranger Program "Drone Monitoring" Training "Drone Handling".pdf]

[58] See in: [Information management "Activities "04" Eco-tourism "Trail adaptation"].

Table 7: Social and cultural safeguards

Safeguard	ID Ind.	Name of the indictor	Type	Goal	Unit of measure	Methodology of monitoring	Frequency of monitoring	Responsible	Result	Support Documents	Remarks
06 Free, prior and informed consent	1	Spaces for dialogue and consultation for the implementation of free, prior and informed consent.	Manage ment	Ensure effective participation of project owners and communities in decision making	Number of free, prior and informed consent implementation sites.	Participation, Communicatio n and Knowledge Appropriation Strategy (EPCAC, by its acronym in spanish).	Annual	Social professional Forestry professional General management	Seventeen meetings were held with different stakeholders from the institutional and community sectors. Recognition of Fundación Amé as an actor	Section 3.2.2.1 EPCAC (Virtual socialization, semi-structured perceptions interview, focus group discussion, participatory baseline construction)[59] Section 2.2.1 Project socialization process, monitoring report. General social report (social baseline, workshops, meetings) [60] Document PMA Galilea - Fundamé [61].	

[59] See in: [Information management [Annex IV_EPCAC].

[60] See in: [Information Management - General Report - Social.pdf].

[61] See in: [Information Management 7_Supports_Others_PMA Galilea_Cortolima_Fundamé.jpeg].

Safeguard	ID Ind.	Name of the indictor	Type	Goal	Unit of measure	Methodology of monitoring	Frequency of monitoring	Responsible	Result	Support Documents	Remarks
									in the Environmental Management Plan PNR Galilea Forest. Conservation agreement between Fundación Amé and Universidad del Tolima. Declaration of the Regional Natural Park of Galilea Forest.	UT - Fundamé Agreement [62]. Agreement 031 of December 16, 2019 of December 16, 2019 - Regional Natural Park Galilea Forest [63].	
07 Respect for traditional knowledge	01	Activities related to the traditional knowledge of the local community.	Manage ment	Strengthen and involve the knowledge and traditional knowledge of the participating communities in the project activities	Number of actions to strengthen and provide feedback on proposals that involve the knowledge of the	Through working groups and/or permanent dialogue, alliances were established with some families and landowners of private	Semiannual.	Social professional Forestry professional Universidad del Tolima	Five (5) villagers were involved through agreements for the conservation of the Galilea Forest. In addition, we generated	Conservation agreements [64].	The inclusion of the families present in the area and its surroundings with the purpose of involving them in the project's activities allows the traditional knowledge, such as the management

[62] See in: [Information Management "03 Conservation Agreements" - Habitat Bank "ECOCARBONO CONSERVATION AGREEMENT - UNIVERSIDAD DEL TOLIMA.pdf].
63 See in: [Information Management "Information Management" (PNR Declaratoria PNR Agreement 031 of 2019 (Declaratoria PNR BG).pdf].

[64] See in: [Information management "Activities "03_Conservation agreements].

Safeguard	ID Ind.	Name of the indictor	Type	Goal	Unit of measure	Methodology of monitoring	Frequency of monitoring	Responsible	Result	Support Documents	Remarks
					communities involved.	properties. To this end, we reviewed the supports and agreements through which the community concerned commits to conserve the forest, gradually minimizing the pressure on the territory, recognizing the economic dependence on the productive activities of the inhabitants and respecting the development of sustainable subsistence activities.			alliances with different private landowners. Archaeologi cal baseline. La Colonia social baseline. Recovery of historical memory, interviews with the community.	Agreements between property owners [65]. Línea base de biodiversidad - Componente arqueológico.[66] Informe social general. [67] Video testimonials - Traditional knowledge of the flora of Galilee.[68]	of the natural resources that farmers have developed over the course of history is preserved.

[65] See in: [Information management [Land tenure].
[66] See in: [Information management "Biodiversity baseline.pdf"]
[67] See in: [Information Management "General Report Management 2020 - Social.pdf].
[68] See in: [Information management "Traditional knowledge"]

Safeguard	ID Ind.	Name of the indictor	Type	Goal	Unit of measure	Methodology of monitoring	Frequency of monitoring	Responsible	Result	Support Documents	Remarks
						in the limits of the project.					
08 Profit sharing	01	Benefit distribution mechanisms for the territory with the development of the project's actions.	Impact	Guarantee the participation and distribution of benefits in a fair and equitable manner, with participants who own property in the project area.	Number of proposed mechanisms for the reduction of deforestation.	Through the internal management of the processes under the different conservation agreements with each owner.	Semiannual.	General Management Social professional Forestry professional	Five (5) villagers were linked through agreements for the conservation of the Galilea Forest. In addition, alliances were generated with different private landowners.	Conservation agreements [69]. Agreements with property owners [70].	The participation of landowners in the project boundaries is recognized through agreements. Likewise, the participation and distribution of benefits is carried out in a fair and equitable manner, in common agreement with the parties participating in the project.
09 Territorial rights	01	Documents proving the right to use the land of the participants in the project.	Result	Recognize private property rights.	Agreements with landowners.	Compliance with the agreements with the owners.	Annual	General Management	A review was made of the documentation supporting the tenure of the properties by each of	Certificates of freedom and tradition and signed agreements [71].	Private property rights are recognized. Likewise, there is knowledge in the forms of tenure of the

[69] See in: [Information management [Activities] [Conservation agreements].

[70] See in: [Information management [Land tenure].

[71] See in: [Information management [Compiled].

Safeguard	ID Ind.	Name of the indictor	Type	Goal	Unit of measure	Methodology of monitoring	Frequency of monitoring	Responsible	Result	Support Documents	Remarks
									of the project participants.		land on the properties where REDD+ activities are implemented.
10 Full and effective stakeholder participation	01	Spaces for participation, socialization and/or construction of the project with stakeholders to ensure governance and adequate decision making on REDD+.	Manage ment	Ensure the participation of landowners, community and institutions present to support governance and appropriate decision making in the project.	Number of socialization, discussion and feedback meetings Amé.	Meetings were held following the methodological approach of the Project's Participation, Communication and Ownership Strategy (EPCAC). A through permanent accompaniment and participation in the construction of spaces, the meetings held are recorded.	Semiannual.	Social professional	17 meetings were held with different stakeholders from the institutional and community sectors.	Section 3.2.2.1 EPCAC (Virtual socialization, semi-structured perceptions interview, focus group discussion, participatory baseline construction)[72] Section 2.2.1 Project socialization process, monitoring report. General social report (social baseline, workshops, meetings) [73]	The activities validated in the project (beekeeping, research, conservation agreements, ecotourism, ranger program) have made it possible to monitor and comply with the safeguard.

[72] See in: [Information management [Annex IV_EPCAC].

[73] See in: [Information Management "General Report - Social".pdf].

Safeguard	ID Ind.	Name of the indictor	Type	Goal	Unit of measure	Methodology of monitoring	Frequency of monitoring	Responsible	Result	Support Documents	Remarks
									Recognition of Fundación Amé as a stakeholder in the PNR Galilea Forest Environmental Management Plan. Conservation agreement between Fundación Amé and Universidad del Tolima. Declaration of Galilea Forest Regional Natural Park.	PMA Galilea Document - Fundamé [74]. UT agreement –Fundamé [75]. Agreement 031 of December 16, 2019 of December 16, 2019 - Regional Natural Park Galilea Forest [76].	

Source: Elaborated from project information (2021) and criteria established by the ProClima Program (2021).

Table 8: Environmental and territorial safeguards

[74] See in: [Information Management \7_Supports Others PMA Galilea_Cortolima_Cortolima_Fundamé.jpeg]

[75] See in: [Information Management "03 Conservation Agreements "Habitat Bank" ECOCARBONO CONSERVATION AGREEMENT - UNIVERSIDAD DEL TOLIMA.pdf].

[76] See in: [Information Management "4_Activities_NRNP Declaration" Agreement 031 of 2019 (Declaratory PNR BG).pdf].

Safeguard	ID Ind.	Name of the indictor	Type	Goal	Unit of measure	Methodology of monitoring	Frequency of monitoring	Responsible	Result	Support Documents	Remarks
11 Forest conservation and biodiversity	01	Actions aimed at the conservation of forests and their biodiversity and that support the incorporation of aspects related to the preservation of ecosystem services..	Management	Implement actions that promote conservation processes and the maintenance of ecosystem services at the local scale.	Number of actions aimed at conservation, knowledge management of the forest and its biodiversity..	Development of activities.	Annual.	Social professional Universidad del Tolima.	Implementation of research initiatives under the framework of the CIBMM Galilee Forest in conjunction with beekeeping activities, ecotourism, conservation agreements and the ranger program.	Monitoring report together with the supports of the activities implemented by the project holder. Monitoring report.[77] Activity supports.[78]	The activities validated in the project (beekeeping, research, conservation agreements, ecotourism, ranger program) have made it possible to monitor and comply with the safeguard.
12 Provision of environmental goods and services	01	Actions taken by the project to guarantee the provision of ecosystem services.	Management	Implement actions that promote conservation processes and the maintenance of ecosystem services at the local scale.	Number of actions taken by the project to guarantee the provision of ecosystem services..	Review of research products generated during the monitoring period, in partnership with Universidad del Tolima. Beekeeping, water and climate change mitigation, restoration.	Semiannual.	Profesional social Profesional forestal.	Development of activities that prevent deforestation and degradation. Biophysical baseline of the northern zone of the buffer zone of the PNR Bosque de Galilea.	Technical Documents [79]. Baseline technical document [80].	All project activities are framed within the framework of improving the provision of goods and services from the forest. Therefore, the activities validated in the project (beekeeping, research, conservation agreements,

[77] The balance of the activities validated in the project support actions aimed at the conservation and maintenance of ecosystem services in the implementation area.
[78] See in: [Information management [Activities].
[79] See in: [Information management [Activities].
[80] See in: [Information management "Biodiversity baseline.pdf"]

Safeguard	ID Ind.	Name of the indictor	Type	Goal	Unit of measure	Methodology of monitoring	Frequency of monitoring	Responsible	Result	Support Documents	Remarks
											ecotourism, forest ranger program) have made it possible to monitor and enforce the safeguard. safeguarding.
13 Environmental and territorial planning	01	Actions carried out by the project in accordance with environmental and territorial planning policies.	Manage ment	Generate proposals in line with regional conditions and promote activities aimed at avoiding deforestation through interaction between project owners and the entities in charge of environmental management of the territory.	Number of actions that contribute to the consolidation of territorial, environmenta l and sectoral planning instruments.	Synchronous and asynchronous meetings agreed and/or organized by the different entities and institutions involved in the environmental and territorial planning process.	Annual	Social profession al.	Participation of Fundación Amé as an important actor in the implementation of the PNR Bosque de Galilea Environmental Management Plan. Virtual socialization with panel of experts or key actors. Semi-structured interviews of perceptions. Discussion and training group with the proponent Construction of the baseline.	PMA Galilea Fundamé Document[81]. Participation, Communication and Knowledge Appropriation Strategy (EPCAC) [82].	Fundamé in the formulation of the PMA of the PNR Galilea Forest that is in the process of development by the agreement 0631 of 2021 between COTROLIMA and the Universidad Tecnológica de Pereira, has been invited to be part of the participatory process through economic resources for the implementation of projects within the framework of the PMA.

[81] See in: [Information Management 7_Supports_Others \PMA Galilea_Cortolima_Fundamé.jpeg]

[82] See in: [Information management [Annex IV_EPCAC.pdf].

Safeguard	ID Ind.	Name of the indictor	Type	Goal	Unit of measure	Methodology of monitoring	Frequency of monitoring	Responsible	Result	Support Documents	Remarks
									Participativa (LBP). Participación de Fundamé en formulación de PMA en el PNR Bosque de Galilea.	Oficio participación Fundamé ruta declaratoria y formulación de PMA en el PNR Bosque de Galilea.[83]	
14 Sector planning	01	Project activities in line with national legislation defining instruments for the conservation of forests and their biodiversity.	Result	Promote sustainable activities that support the conservation of the forest's biodiversity and oriented to the fulfillment of the strategies of the Environmental Management Plan.	Number of activities.	Follow-up of project activities. Monitoring report.	Annual.	Profesional social.	1 Ranger workshop 1 Birdwatching and birdwatching workshop	Ranger Workshop Report - Amé [84]. Birdwatching Workshop Report - Amé/UT [85].	Fundación Amé participates in an active and permanent manner, through spaces for consultation in accordance with environmental and territorial planning, and the provisions of the sectors involved and responsible for planning for the sustainable management of the forest.

[83] See in: [Information management [4_Activities "Short term activities" releases "18750 of 2021.pdf"].

[84] See in: [Information Management "Ranger Program Activities" Reports "Ranger Training Report.pdf"].

[85] See in: [Information management "Information management "Activities "04 Ecotourism "Birdwatching "Bird training report - La Colonia.pdf].

Safeguard	ID Ind.	Name of the indictor	Type	Goal	Unit of measure	Methodology of monitoring	Frequency of monitoring	Responsible	Result	Support Documents	Remarks
15 Control and monitoring to prevent emissions displacement	01	Identification and tracking of leaks (emission displacement).	Manage ment	Identify the possible leaks of the project, starting from the delimitation of the leakage area as provided for in the applied methodology.	Avoided emissions monitoring plan (Leakage).	Monitoring of changes in land use within the project boundaries, reporting the possible displacement of activities outside the project area.	Annual.	Forestry profession al	Changes in land use outside the project boundaries that involve emissions generated by displacement of activities in the project area.	Monitoring plan for the project area and leakage belt.[86] MR. [87]	Leakage: *"Potential emissions that would occur outside the project boundary caused by project activities. Leakage means the net change in anthropogenic emissions by GHG sources that occurs outside the project boundary, and that is measurable and attributable to the project activity.".*

Source: Elaborated based on project information (2021) and criteria established by the ProClima Program (2021).

[86] See in: [Information management [Annex I_Monitoring procedure_project area and leakage belt.pdf].

[87] The monitoring report details the monitoring of changes in land use within the project boundaries, as well as the possible displacement of activities outside the project area.

2.2 Local consultation

In order to carry out the consultation with local stakeholders of the REDD+ Galilea Forest-Amé Conservation Project, the Participation, Communication and Knowledge Appropriation Strategy (EPCAC) was designed and implemented (See Annex IV 88), whose central objectives are:

- Facilitate spaces for participation, consultation and dialogue with the direct stakeholders of the project area and other identified interested parties.
- Identify impacts and the most appropriate mitigation measures.
- Promote multiple benefits, guaranteeing the social and environmental safeguards adopted by Colombia.

This strategy consists of planned and concerted actions aimed at ensuring participation, assertive communication and adequate implementation and monitoring through participatory spaces, allowing for the reduction of both environmental and social risks. Within the framework of the REDD+ Galilea-Amé Forest Conservation Project, the EPCAC comprises four development phases: (1) preparation, (2) socialization of the project and construction of the Participatory Baseline (LBP), (3) validation and (4) return of results (see Figure 5), of which the first two have been addressed due to the different conflicts in the territory.[89].

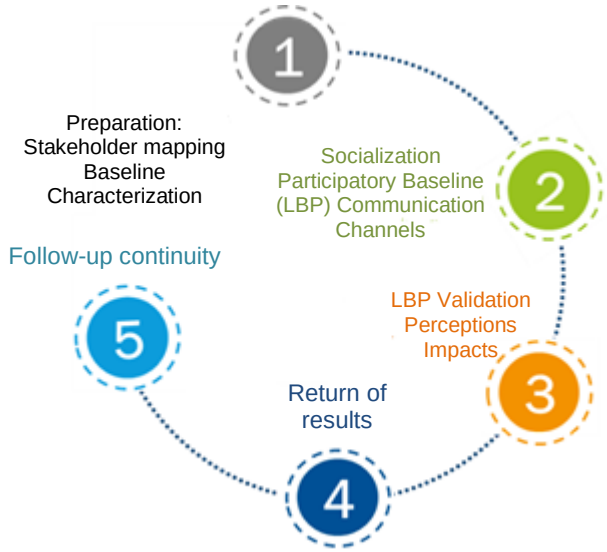


Figure 5: Stages of the project's Participation, Communication and Knowledge Appropriation Strategy

Source: Based on the project relationship proposal (2021).

Based on these objectives and the stages of the strategy designed to achieve them, the process of concertation and consultation with stakeholders in the territory began

[88] See in: [Information management [Annex IV_EPCAC].

89 For more details, see Annex III_Socioeconomic and Cultural Characterization, located in [Information Management \ 7_Supports\Annexes].

2.2.1 REDD Project Socialization Process

The following is a description of the participation and consultation activities carried out within the framework of the EPCAC. The summary of events reported for the monitoring period is also listed.

2.2.1.1 Stage 1: Stakeholder mapping

Preliminary stakeholder mapping was carried out based on the socio-cultural and territorial baseline (Annex III). [90]), in addition to the consultation of information on education and conservation processes carried out by other institutions. During this stage, the key sectors and project stakeholders were identified. As a result, a preliminary identification was obtained, which was validated in the subsequent participation spaces.

2.2.1.2 Stage 2: Socialization meetings and stakeholder interviews

Within the EPCAC, it was important to participate in inter-institutional spaces, so that collective virtual meetings were held with the institutional and academic sectors, taking into account their favorability for connection and convocation by digital means, given the conditions of isolation due to the COVID-19 pandemic. The spaces for socialization of the Project are detailed in Annex IV[91].

During these meetings, the proponents, with the support of the project developer, informed each of the identified sectors about the development of the REDD+ initiative in the territory, in order to build the mechanisms required for the proper management of the project and generate intersectoral knowledge about the existence of the project, both in the community and administrative instances, with the environmental and territorial authorities of Tolima.

[89] For more details, see Annex III_Socioeconomic and Cultural Characterization, located in [Information Management 7_Supports_Annexes].

[90] See in: [Information management [Annex IV_EPCAC].

Table 9: Socialization and consultation activities carried out under the Participation, Communication and Knowledge Appropriation Strategy of the project.

N°	Actor	Sector	Activity	Date	Results
01	Government of TolimaCORTOLIMA Dolores City Hall Villarrica City Hall Land Restitution Unit South Pole	Institutional	Socialization and appropriation of REDD+ "Galilea - Amé".	November 18, 2020	The virtual meeting allowed socializing with local and regional institutional actors, as well as with the owners of the project, the progress of the REDD+ Galilea Forest Conservation project in the framework of the implementation and application of the Strategy for Participation, Communication and Knowledge Appropriation of the REDD+ project as an initiative of the Fundación Amé and Universidad del Tolima, thus making known the context of the project, the progress and projections that have been made in the implementation phase of this and thus ensure recognition in the territory, regarding the initiative to mitigate climate change and additionally discuss some conceptual issues of REDD+ projects, climate change and its articulation with local conservation initiatives.[92]
02	CORTOLIMA	Institutional	Socialization (virtual)	November 18, 2020	The institution as the environmental authority of the department of Tolima, and as the main responsible for the Bosque de Galilea Regional Natural Park, proposes to join efforts with the REDD+ project to move forward with the Environmental Management Plan based on the participation of the proponent.
03	Villarrica City Hall	Institutional	Socialization (Virtual)	November 18, 2020	The municipal administration of Villarrica expressed its interest in working hand in hand with the project proponents, taking into account the importance and influence of the Galilea Forest within the municipality.
04	Communities (Cuindeblanco, La Colonia and Bello Horizonte)	Community	Perception interviews	December 2020 - January 2021	For this verification period, progress was only made in approaching community actors and leaders through semi-structured interviews via telephone, due to the biosecurity conditions within the framework of the COVID-19 sanitary emergency, the national strike, and different territorial situations within the security situation. The interviews revealed perceptions about the project and its importance within the conservation process of the Galilee Forest.
05	Universidad del Tolima and community (Alto Puerto Lleras)	IInstitutional / Community	Socialization	Alto Puerto Lleras (September, October and November 2020)	Progress was made in the socialization of key concepts on the topic of REDD+ with the participation of settlers from Galilea and the Alto Puerto Lleras village. Gathering perceptions and strengthening the work of socialization of activities and community integration.[93]
06	Fundación Amé and community	Institutional / Community	Hive Maintenance (Beekeeping Project)	January 05, 2019 - December 30, 2020	The maintenance of beehives is a permanent activity that is developed with the support of the community participating in the beekeeping project. It is an action that allows the strengthening of community and technical capacities of the members and beneficiaries of the project, and is consulted with them. [94]
07	Fundación Amé and community	Institutional / Community	Construction of beehive boxes - socialization of knowledge	January 29, 2021/ Veredas Puerto Lleras - Galilea	The box construction activity was a joint activity with the community in which technical training and community appropriation of technical knowledge for the improvement of the community beekeeping process was established. Two settlers from Galilea successfully changed their traditional logging activities to beekeeping.

[91] See in: [Information Management Stakeholders "Institutionality"].

[92] See in: [Information management "Stakeholders" [Socializations "Community" - Upper Puerto Lleras].

See in: [Information management "Activities "01_Apiculture "Hive maintenance reports".pdf]

N°	Actor	Sector	Activity	Date	Results
			beekeeping and capacity building		specialization of the sustainable carpentry trade in which they were trained (David and Daniel Parra).[95]
08	Fundación Amé and community	Institutional / Community	Rural Employment	January 05, 2019 - February 28, 2021	The result of this activity has been the direct and indirect employment developed by the foundation, which has allowed the integration of the communities and families of the territory of influence. We have found the appropriate way to employ the communities according to their uses and customs and forms of work, in which the "daily wage" stands out as a form of rural employment within the region. Encouraging participation through consultation by means of relationships.
09	Fundación Amé Universidad del Tolima Community	Institutional / Community	Conflict resolution	September 29, 2020 - Alto Puerto Lleras	This activity allowed the foundation to consider the needs and risks of community stakeholders. Once identified, conflicts were recognized that allowed to be addressed and in which the accompaniment was carried out. Contributing with the participation of the community in conflict resolution actions that guarantee the improvement of living conditions and the strengthening of community ties and relationships.
10	Fundación Amé Universidad del Tolima Community	Institutional / Community	REDD+ Community Perception	October 24, 2020 – Alto Puerto Lleras	This activity made it possible to socialize and consult with the community on previous and acquired knowledge about the REDD+ project, including general concepts about the conservation processes proposed by Fundación Amé. In this way, knowledge and concepts were strengthened with the community.
11	Fundación Amé and community	Institutional / Community	Specialization and community training in beekeeping	October 24, December 20, 2019 / March 16, 12 - December 18, 2020	As a result, we have found participatory ways that allow community intervention within our alternative proposals for sustainable development of communities, in order to reduce the actions of deforestation and forest degradation, in this way, the community has been trained to get involved and appropriate not only traditional knowledge, but also technical knowledge, allowing the development of a sustainable and sustainable beekeeping proposal. Participation, proposals and community training.[96]
12	Fundación Amé Universidad del Tolima Community	Institutional / Community	Women's meeting	November 07, 2020 – La Colonia	Taking into account that the community is in a strategy of participation and conservation of the Galilea forest, the importance of women in the area is socialized and their actions are recognized as hard-working, warrior, intelligent, participative and dynamic women. Likewise, it is generally emphasized that the group's participation and communication play an important role in the development of its objectives..[97]
13	Fundación Amé Universidad del Tolima Community	Institutional / Community	Common issues	November 21, 2020 – Alto PuertoLleras	Common problems affecting families in the region were identified and identified together with the community. As a result, the need to strengthen the capacities of the people who make up the community through actions and educational spaces was identified. In this way, these problems are based on basic needs that, through common actions, we have been able to address and contribute to the development of the community..[98]

[93] See in: [Information management "4_Activities "01_Apiculture "Reports "20210129_Hive construction report.pdf]

[94] See in: [Information Management "Activities "01_Apiculture "Reports"].

[95] See in: [Information Management "General Report Management 2020 - Social.pdf].

[98] See in: [Information management "Stakeholders" "Community outreach" - "UT Alto Puerto Lleras"].

N°	Actor	Sector	Activity	Date	Results
14	Fundación Amé Universidad del Tolima Community	Institucional / Comunitario	Birdwatching and birdwatching training - La Colonia District Village	December 20, 2020	Training in birdwatching and birdwatching took place in the village of La Colonia. The department of Tolima is a destination of great importance for bird watching tourism because of its great biodiversity and even more so the Galilea Forest in which more than 300 species of birds have been reported, many of them categorized as endangered, endemic and of interest for bird watching tourism since some of them have geographic distribution areas limited to the forests of the western slopes of the eastern mountain range in Tolima. The training showed this alternative as a possible source of benefits for the community, since nature tourism activities favor the provision of multiple services such as ecotourism, providing space for learning about the biodiversity of local avifauna and its conservation through knowledge.[99]
15	Fundación Amé Universidad del Tolima Community	Institucional / Comunitario	Community Conservation Agreements Amé3	January and February 2021	The conservation agreements resulted in the signing of a considerable number of voluntary agreements and pacts with families of the Galilea forest. The families linked to the conservation process led and proposed by the Amé Foundation, express their commitment as foresters of this important natural ecosystem, agreeing to be part of the conservation process of the Galilea Forest, participating voluntarily in the activities proposed by the Foundation, aimed at environmental preservation and community development of the families of this region of the eastern part of the department of Tolima.[100]
16	Fundación Amé Community	Institucional / Community	Drone coverage monitoring training	February 18, 2021	This activity was carried out after consultation with the community in which they expressed their desire to know and learn about this monitoring proposal. Training was provided on how to use a drone to monitor forest cover in order to train the community as part of the forest ranger program. [101]
17	Fundación Amé Community	Community	Community beekeeping proposal - Beekeeping expert advice.	March 22-26 – Vereda Galilea and Puerto Lleras	A community proposal was developed for a visit and advice from a beekeeping expert for the evaluation and technical restructuring of the Apícola Amé project based on a community approach. The audit conducted by the beekeeper Fray in Puerto Lleras and Galilea was carried out and, as a result, proposals and strategies were presented to increase production yields and expand participation in new links in the sector's value chain and markets.[102]

Source: Prepared based on project information (2021) and criteria established by the ProClima Program (2021).

[99] See in: [Information management "Activities" [Birdwatching].

[100] See in: [Information management "Activities" "03 Conservation agreements"]

[101] See in: [Information Management "Activities" "Forest Ranger Program" "Drone Monitoring"].

[102] See in: [Information Management "4_Activities "01_Apiculture "Reports "20210305_Audit diagnosis.jpg]

2.2.2 Mechanism for Questions, Complaints, Inquiries and Suggestions

One of the ways to achieve transparency and inclusion of citizens' opinions regarding a service, process or project of a public or private institution is the mechanism for receiving Questions, Complaints, Queries and Suggestions (PQCS, by its acronym in spanish). For the establishment of the mechanism, we initially inquired about the procedure followed each time the community submits a complaint to Fundación Amé, in order to ensure that the instrument was oriented to collect and respond to the concerns and suggestions, comments and/or compliments of those interested in this process and that, at the same time, it would be linked to the processes carried out in the territory. As a result, the structure for the operation of the communication mechanism for the project was proposed. The details of this are specified in Annex IV[103].

Currently, the Participation, Communication and Knowledge Appropriation Strategy EPCAC, which includes the PQCS mechanism, is being finalized. On the other hand, progress has been made in the development of the means for receiving information, as a result of the participatory local consultation exercise, which has contributed as an input to this strategy.

- Telephone customer service: 3227915771
- WhatsApp service line: (57) 3227915771
- Virtual consultation and attention window through e-mail fundacioname1@gmail.com or on the website Home (fundacioname.org)

In order to guarantee consultation spaces and under the criterion of making communication with the community and other stakeholders more flexible, in addition, under the conditions presented by the post-pandemic rural contexts of the region, the aforementioned means were defined. For the current monitoring report, no petitions, complaints, consultations or requests were presented in the development of the Participation, Communication and Knowledge Appropriation Strategy.

[103] See in: [Information management [Annex IV_EPCAC].

3 Project permanence

According to ProClima's Methodological Document, which establishes the parameters for monitoring the permanence of REDD+ projects, the project holder evaluated the risks related to the implementation of activities taking into account the following dimensions:

3.1 Risks of participation of local communities

- **Involvement of local communities and stakeholders:** There was no risk, since all the activities implemented are proposed and developed by the community, respecting traditional knowledge and guaranteeing compliance through conservation agreements.

3.2 Social risks

Risks related to conflicts between stakeholders in the region where the project is being developed and public order problems were identified.

- **Conflict between stakeholders in the region:** No risk was reported for this monitoring period, however, through our social team in the field we propose to mediate dialogue and agreement processes between the community and institutions.

- **Public order problems:** If there were risks of security alerts that limited entry to the territory. Our team has attended the communiqués issued by the institutional entities and as a mitigation measure we seek to strengthen the social fabric through the Aula Amé.

On the other hand, there were no risks related to land tenure, non-appropriation of project activities and governance deficits, taking into account the following considerations:

- **Land tenure:** There was no risk, as the project proponent is the owner of the area and, therefore, the holder of the land use rights. Fundación Amé has all the documents [104] that demonstrate the legal tenure of the land on which the project activities are developed.

- **Participation of local communities and stakeholders:** There was no risk, as all activities implemented are proposed and developed by the community respecting traditional knowledge and ensuring compliance through conservation agreements.

- **Non-appropriation of the project activities:** There was no risk, since the project proponent is the owner of the area, therefore, the appropriation of the activities is guaranteed and additionally the project in the implementation of these has allied with the local community through conservation agreements, giving the possibility that they are the proponents in the formulation of projects and are linked to these obtaining socioeconomic benefits.

[104] See in: [Information management [Land tenure].

- **Governance deficit:** There was no risk because the project develops its activities in alignment with local, regional and national governance figures such as SINAP, in order to generate synergies in the instruments and thus achieve greater effectiveness in conservation processes. Likewise, the project is positively articulated with the different planning instruments in the territory, specifically taking as a guideline for land use planning at the regional and local level the Land Use Planning Scheme (EOT) of the Municipality of Villarrica (2003), as well as the stipulations projected under the PNR Bosque de Galilea.[105].

3.3 Natural and anthropogenic hazards

Risks associated with the development of project activities and the natural conditions of the area were identified.

- **Rainfall:** If there were risks related to heavy rainfall periods, this affected the beekeeping activity causing swarming of the bees, i.e., they migrated to areas with better flowering and more favorable climatic conditions affecting the growth of the hives and bee productivity in the Galilea forest. With the above, we have proposed a strategy of adaptation and mobilization of hives to warmer climates.

  On the other hand, the ranger program's control and surveillance activities were affected because the heavy rains did not allow them to carry out field visits. Therefore, the timing of activities was adjusted and, as a mitigation measure, special equipment was provided for the rainy season..

For risks related to the loss of forest cover due to natural events such as floods and fires, no risks were found for this period, but the following considerations were taken into account:

- **Floods:** There was no risk, according to the reported control and surveillance activities of the community forester program linked to the project. As a mitigation measure, environmental education and risk prevention workshops are being held.

- **Fires:** There was no risk for the current monitoring period as reported by the control and surveillance activities of the ranger program. However, there is a risk of fire from anthropogenic sources, associated with the process of slash and burn that some farmers do for the establishment of pastures or crops. Likewise, it is clarified that, in the absence of such disturbance, footnote No. 48 (p. 55) in the ProClima methodological document, which states that, in the event of the presence of fires, the affected area must be identified, the CO_2 and CH4 emissions must be estimated and included in the quantification of emissions for the monitoring period, which under these conditions is not used, is not contemplated.

3.4 Financial risks

There were no financial risks, since the owner has the necessary cash flow available to guarantee the development of the project's activities, as evidenced by the budget availability certificate.

[105] See supporting documents in the path: [Information Management Support Ordering Compatibility]..

3.5 Deduction for non-permanence risk

Regarding the justification of the permanence monitoring results with the deduction for non-permanence risk of 15% of the calculated emissions reduction, the project complies with the provisions of section 10.7 (Leakage and non-permanence for GHG removal activities and for REDD+ projects) of the Certification Program106 considering that the amount of verified emissions reduction corresponds to the total emissions reduction generated by the project activities. During the registration process in the platform, the discount was made automatically. Table 10 lists the mitigation measures for each of the risks.

[106] "In any case, holders of GHG mitigation initiatives or other GHG projects must, once the GHG reductions or removals have been quantified (based on the selected quantification methodology), deduct and maintain a reserve of 15% of the total quantified GHG reductions or removals for each verified period. As a risk management measure, such reserve has the function of ensuring that if events occur that require replenishment."

Table 10: Monitoring of REDD+ project permanence risk

Risks	Name of the risk	Risk monitoring indicator	Mitigation measure	Reporting procedure	Result
Participation of local communities	Participation of local communities in project activities.	Community activities in the project area.	Local hiring and day labor. Community training. Conservation alliances with the communities. Socioeconomic benefits from the activities developed by the community.	Documentary review. ● Contracts and wages.[107] ● Trainings[108] ● Conservation agreements.[109] ● Support for Beekeeping Reports.[110] ● Audiovisual record.[111]	There was no risk
Social Risks	Conflict between stakeholders in the region where the project is developed.	Number of conflicts identified.	To be mediators of dialogue and consultation processes between the community and institutions.	Register, review, attend and follow up on identified conflicts. ● Initiatives supported by Fundación Amé, the community and institutions..[112] ● Audiovisual record.[113]	There was no risk
	Public order problems	Security alerts limiting entry into the territory	Promote spaces for dialogue, conciliation and strengthening of the social fabric through the Amé classroom. Involve the communities as much as possible in the development of project activities.	Recording, reviewing and monitoring the spaces provided in the Amé classroom. ● Reports of activities to strengthen the social fabric through the Amé Classroom..[114]	There was a risk. Institutional Communication Universidad del Tolima due to the alert of

[107] See in: [Information management [Information management "01_Activities"/Apiculture "Contracts"]; See under: [Information management [Biodiversity baseline]; See in: [Information management [Information management [Activities "Biodiversity baseline" - Restoration and conservation]; See in: [Findings Support Findings Support Petty cash]; See in: [Findings Support Petty cash]; See in: [Findings Support Petty cash].

[108] See in: [Information management [Fundame Training Support].

[109] See in: [Information management "Activities "03_Conservation agreements "Community"].

[110] See in: [Information Management "Activities "01_Apiculture" Reports].

[111] See in: [Information Management - Audiovisual Media - Galilee Forest].

[112] See in: [Information management "4_Activities "04_Ecotourism" Environmental classroom and social fabric memory "Report.pdf"].

[113] See in: [Information Management - Audiovisual Media - Galilee Forest].

[114] See in: [Information management "Activities" "Eco-tourism" Environmental classroom and Memory of the social fabric "Environmental classroom".pdf].

Risks	Name of the risk	Risk monitoring indicator	Mitigation measure	Reporting procedure	Result
			Include social leaders in project activities. Attention to security alerts and adjust the timing of project activities in accordance with the limitations of entry to the territory.	Respond to security alerts from the community. Respond to communiqués issued by the local mayor's office and institutional entities.	public order in the area. [115]
	Land tenure	Documents proving the legal ownership of the properties.	To have property taxes in good standing.	Documentary review. • Up to date Certificates of Tradition and Freedom.[116] • Peace and safekeeping of property taxes.[117]	There was no risk.
	Non-ownership of project activities.	Activities implemented in the project.	Conservation partnerships with the community.	Documentary review. • Signed conservation agreements..[118]	There was no risk.
	Governance deficit,	Status of compliance with governance instruments.	Compliance with laws and statutes	Documentary review. • Section 4. Compliance with laws, statutes and other regulatory frameworks.	There was no risk
Natural and anthropic risks	The rainy season associated with the imbalance between phenology and bee dynamics.	Status of the apiaries and hives of the honey production project.	Adaptation strategies for production such as the application of medicines, artificial feeding and mobilization of hives to warm climates.	Record and review beekeeping activity reports for timely decision making. Adjust the timing and activities related to beekeeping according to the rainy season.	If there was a risk. Management Report: Beekeeping 2020. [120]

[115] See in: [Information management [7_Other_Supports_20210715_Communiqué_Mobility Galilee forest - official.pdf]
[116] See in: [Information management [Land tenure_BD_CTL.pdf].
[117] See in: [Information Management 3_Land Tenure "Peace and Clearance Certificate .jpg].
[118] See in: [Information management "Activities "03_Conservation agreements "Community"].
[120] See in: [Information Management "4_Activities "01_Apiculture "Reports "20201223_Annual_Report_2020.pdf]

Risks	Name of the risk	Risk monitoring indicator	Mitigation measure	Reporting procedure	Result
				• Audiovisual record.[119]	
	The rainy season restricts the movement of rangers	Number of tours conducted by the forester program.	Provision of equipment for forest rangers during the rainy season. Adequacy of trails	Adjust the timing of ranger program activities according to the rainy season. • Audiovisual record.[121]	If there was a risk. Six (6) control and surveillance tours were conducted by the ranger program. ranger program. [122]
	Floods	Number of stream/river overflows reported by ranger program.	Environmental education and risk prevention workshops. Follow-up on ranger program reports.	Review reports and alert reports from rangers for timely decision making.. • Ranger training. [123] • Audiovisual record.[124]	There was no risk.
	Fires caused by anthropogenic sources.	Number of anthropogenic fire outbreaks identified.	Promote awareness of the risks of burning for land preparation. Control and monitor through the "Forest Ranger Program. Monitor cover with drones.	Review reports and alert reports by rangers for timely decision making. • Ranger report[125] • Coverage monitoring with drones.[126]	There was no risk.
Financial Risks	Cash flow.	Funds available to carry out project activities.	The project holder currently guarantees that it has 40% of the funds necessary for the development of the project activities.	Review and evaluate financial management and the permanence of funds for the development of activities. • Certification of budget availability.[127]	There was no risk.

[119] See in: [Information Management - Audiovisual Media - Galilee Forest].
[121] See in: [Information Management - Audiovisual Media - Galilee Forest].
[122] See in: [Information Management "Activities "05_Coast Guard Program" Reports "Activities Report.pdf"]
[123] See in: [Information Management "Ranger Program Activities" Reports "Ranger Training Report.pdf"].
[124] See in: [Information Management - Audiovisual Media - Galilee Forest].
[125] See in: [Information Management "Activities" "Ranger Program" Reports].
[126] See in: [Information Management "Activities "Forest Ranger Program "Drone Monitoring"."
[127] See in: [Findings Fundamé Supports Findings Certificate_Budget Availability.pdf].

Source: Prepared from project information (2021).

4 Compliance with laws, statutes and other regulatory frameworks

4.1 National Laws, Statutes and other regulatory frameworks related to mitigation projects

The project is being developed in compliance with Colombian laws applicable to the forestry sector and the implementation of forest mitigation projects. Its activities are executed in accordance with the REDD+ actions defined by the United Nations Framework Convention on Climate Change (UNFCCC) in paragraph 70 of Decision 1/CP.16, under which Colombia has submitted three National Communications (in 2001, 2010 and 2015)128. The country has also recently signed the Paris Agreement (Paris 2015, COP21[129]).

Thus, the regulations applicable to this emissions reduction initiative are limited to laws, decrees, resolutions and other national and sectoral regulations related to forests, climate change, natural resource management and conservation, special protection areas and biodiversity associated with private property, as well as national forestry programs and international agreements on these issues. In this regard, an evaluation of the regulations applicable to the project's activities was carried out and compliance will be monitored periodically as the project progresses[130].

The main laws and decrees that regulate environmental conservation in the country are listed in section 5 of the PD. The activities carried out in the project area during the monitoring period comply with the legal requirements for environmental conservation activities. In addition, during 2018, Resolution 1447 of 2018, which regulates the system of monitoring, reporting and verification of mitigation actions at the national level, became effective, the project complied with the relevant articles of this resolution. Next, Table 11 presents the regulatory framework for the development and implementation of the project. It also explains how the associated activities are compatible with the objectives of sustainable management and conservation of natural resources, on which the REDD+ Galilea Forest-Amé Conservation project has focused its efforts since its inception.

Table 11: Compliance with regulations

Regulations	Description	Project compliance
Political Constitution of Colombia [131]	The Political Constitution of 1991, the maximum normative compendium within the set of national laws. Articles 2, 8, 38, 79, 80 and 95 specify the duty of each member of society to protect the nation's cultural and natural wealth and to ensure the conservation of	As a constitutional state, Colombia is governed by the laws of a political constitution. In compliance with the aforementioned articles, the REDD+ Galilea-Amé Forest Conservation Project promotes the conservation of forests and their biodiversity and, consequently, ensures the preservation of ecosystem services associated with forest ecosystems that are closely linked to the provision of water, the improvement of air quality, and the maintenance of habitat for native and migratory species, among others.

[128] http://www.cambioclimatico.gov.co/comunicacion-nacional-bur-2015

[129] https://unfccc.int/resource/docs/2015/cop21/eng/l09r01.pdf

[130] Annex II, Information management, mentions the procedure for updating and periodically reviewing compliance with applicable regulations for project development. See document at: Management information "Annex II_Information management in mitigation projects".

[131] Asamblea Constituyente. Constitución Política de La República de Colombia. Colombia; 1991. http://www.secretariasenado.gov.co/senado/basedoc/constitucion_politica_1991.html.

Regulations	Description	Project compliance
	a healthy environment.	
National Development Plan 2018-2022 "Pact for Colombia, Pact for Equity". [132]	It contains a section entitled "Pact for Sustainability: Producing by conserving and conserving by producing", whose central axis consists of consolidating actions that make possible a balance between conservation and production, so that the country's natural wealth is preserved as a strategic asset of the nation.	The REDD+ project is part of the mitigation actions in the Land Use, Land Use Change and Forestry (USCUSS) sector that are advanced in the regional and national environment, within the framework of the National Development Plan 2018-2022, so that the activities of this project meet the objectives of this project.
National Strategy for Reducing Emissions from Deforestation and Forest Degradation REDD+ (ENREDD+)133 Colombian Strategy for Low Carbon Development (ECDBC) Integral Strategy for Deforestation Control and Forest Management (EICDDGB)	The National REDD+ Strategy is part of the actions on Climate Change foreseen in the National Development Plan 2010-2014, by the National Government headed by the Ministry of Environment and Sustainable Development. This strategy seeks to reduce the impacts of climate change caused by deforestation and forest degradation in Colombia. The ECDBC is a program that seeks to decouple national economic growth from the growth of GHG emissions, maximizing the carbon efficiency of the country's economic activity and contributing to national social and economic development. And the EICDGB is the country's commitment to reduce deforestation and forest degradation through sustainable management.	REDD+ projects are a strategy for climate change mitigation through improved forest governance, forest conservation and sustainable management, actions that are carried out in light of international, national and local policies. The Galilea-Amé Forest Conservation REDD+ Project is governed under the National REDD+ Strategy (ENREDD+) and the Colombian Low Carbon Development Strategy (ECDBC), and follows the principles and objectives of the National Climate Change Policy and the National Forestry Policy. The above are derived from international commitments and ratifications signed by the Government of Colombia. The mitigation project is part of the Comprehensive Strategy for the Control of Deforestation and Forest Management (EICDGB), which seeks to halt deforestation and forest degradation, addressing the complexity of the causes that generate it and based on the recognition of the representativeness of these strategic ecosystems for the country, due to their socio-cultural, economic and environmental importance, their potential as a development option in the framework of the peace-building process, and their contribution to mitigating and adapting to climate change.
Law 2 of 1959	Whereby norms on national forestry economy are dictated and	The seven (7) forest reserve areas established by the issuance of Law 2a of 1959, are oriented to the development of the forest economy and the protection of soils, water and wildlife. The

[132] https://colaboracion.dnp.gov.co/CDT/Prensa/Ley1955-PlanNacionaldeDesarrollo-pacto-por-colombia-pacto-por-la-equidad.pdf

[133] Ministry of Environment and Sustainable Development, Institute of Hydrology, Meteorology and Environmental Studies. Estrategia Integral de Control a La Deforestación y Gestión de Los Bosques. Bogotá D.C.; 2017.

Regulations	Description	Project compliance
	conservation of renewable natural resources	The project aims to conserve the natural forest ecosystem delimited as a PA.
Decree 2811 of 1974	Whereby the National Code of Renewable Natural Resources and Environment is issued.	The project is in line with the National Code of Renewable Natural Resources and the Environment through compliance with the National Climate Change Policy, avoiding environmental deterioration of the territory through the conservation of renewable natural resources. In the 2019-2021 period, no forest harvesting was carried out. On the contrary, the activities were focused on forest conservation research.
Decree 622 of 1977	About National National Parks (PNN, by its acronym in spanish).	Regarding the delimitation of the project area, the Colombian National Natural Parks system presents areas within the jurisdiction of the Bosque de Galilea National Park. Therefore, for the execution of the project activities, the Fundación Améhas been linked to the strategies determined by CORTOLIMA regarding the Environmental Management Plan (PMA) of the National Park and is awaiting its formulation for the implementation of the project activities.
Law 99 of 1993 [134]	Whereby the Ministry of the Environment and the National Environmental System (SINA) are created.	The REDD+ project is governed by the guidelines of the national regulations issued by the Presidency of the Republic and the Ministry of the Environment (now the Ministry of the Environment and Sustainable Development), as well as by the regulations, guidelines and directives of the Tolima Regional Autonomous Corporation (CORTOLIMA), which has jurisdiction in the project area.
CONPES[135] No. 2834 of 1996	Approving the "Forestry Policy", which seeks to achieve the sustainable use of forests, in order to conserve them, consolidate the incorporation of the forestry sector in the national economy and contribute to the improvement of the quality of life of the population.	In the 2019-2021 period, no forest harvesting was carried out. When productive activities that require logging permits are developed, these will be processed with the responsible entities and an update of this table will be presented at each follow-up audit.
CONPES[136] No. 3582 of 2009	Biodiversity is considered a strategic area and recognizes the need for	Activities during the monitoring period focused on research, beekeeping production and forest conservation, which will be carried out in the next two years.

[134] Presidency of the Republic of Colombia. Law 99 of 1993. Colombia; 1993. http://www.secretariasenado.gov.co/senado/basedoc/ley_0099_1993.html. Revisado: 19 de febrero de 2020.

[135] (National Council of Economic and Social Policy)

[136] (National Council of Economic and Social Policy)

Regulations	Description	Project compliance
	the advance in the knowledge and sustainable use of this resource.	in line with the provisions of CONPES No. 3582 of 2009
Decree 2372 of 2010	Regulates the National System of Protected Areas.	The project considers the special management areas delimited within the National System of Protected Areas.
Kyoto Protocol 1997	International treaty adopted in 2012. This protocol commits industrialized countries to stabilize greenhouse gas emissions.	The GHG reductions resulting from the reduction of deforestation rates in the project area, contribute to achieving the commitments made by Colombia on April 22, 2016, through the reduction of GHG emissions by 20% with respect to the projections made until 2030, or 30% if the country has international cooperation.
Paris Agreement 2015	International treaty adopted in 2015 during the UNFCCC COP21. It is a universal and binding agreement that seeks to enhance the implementation of the Convention. It aims to strengthen the global response to the threat of climate change, in the context of sustainable development and efforts to eradicate poverty.	
Resolution 1447 of 2018	Regulates the Monitoring, Reporting and Verification System for mitigation actions in the national order, the GHG Emissions Reduction and Removal Accounting System, the operation of the National Registry of Greenhouse Gas Emissions Reduction (RENARE). This resolution was published in July 2018 and the platform in September 2020.	The project assesses compliance with the criteria established by this resolution (see section 4.2 for more details on the project's compliance with the resolution's requirements) and was registered on September 25, 2020. (http://renare.siac.gov.co/GPY-web/#/gpy/datbasreddpre/121/1021).
CONPES[137] No. 3700 of 2011	Institutional strategy for the articulation of climate change policies and actions in Colombia	The project, as an instrument for climate change management, is being developed in accordance with the structures of the National Climate Change System (SISCLIMA) and the Intersectoral Commission for the Control of Deforestation. Likewise, its development is articulated with the National Policy on Climate Change (PNCC), which aims to guide and articulate all national efforts by means of different mechanisms
Decree 1076 of 2015	Por medio del cual Esta versión incorpora las modificaciones introducidas al Decreto	

[137] (National Economic and Social Policy Council)

Regulations	Description	Project compliance
	Sole Regulatory Body of the Environment and Sustainable Development Sector	such as the Colombian Low Carbon Development Strategy (ECDBC), the National Climate Change Adaptation Plan (PNACC) and the Integral Strategy for the Control of Deforestation and Forest Management (EICDGB), to comply with the Nationally Determined Contributions (NDC) committed before the UNFCCC, in terms of climate change mitigation, for the reduction of Greenhouse Gases in the national context.
Decree 1655 of 2017	Establishes the organization and operation of the National Forest Information System, the National Forest Inventory and the Forest and Carbon Monitoring System, which are part of Colombia's Environmental Information System, and establishes other provisions.	
Law 1931 of 2018	Whereby guidelines for climate change management are established". This created the National Climate Change Information System, whose purpose is to provide transparent and consistent data and information over time for decision-making related to climate change management. In turn, it seeks to reduce the country's vulnerability to the effects of climate change and promote the transition to a competitive, sustainable economy and Low Carbon Development (LCD).	
Resolution 831 of 2020	Whereby Resolution 1447 of 2018 is amended and other determinations are made.	The project complies with the provisions of the articles of the aforementioned resolution, namely: Article 1: The OVV in charge of the processes for the present validation and verification of the project, as well as for the next monitoring periods, shall comply with the requirements mentioned in the Article guaranteeing the corresponding accreditation and its scope for the evaluation of the GHG mitigation activities. Article 2: The emission reduction project intends to report and cancel in RENARE the emission reductions generated from 2019 onwards, so that the mitigation results of the

Regulations	Description	Project compliance
		GHGs are guaranteed not to be more than 5 years old in accordance with the stipulated. Article 3: The project uses the ProClima methodology: AFOLU Sector Methodological Document *"Quantification of GHG Emission Reductions from REDD+ Projects v2.2"* Version 2.2 of February 5, 2021[138]. Article 4: The project was registered on September 25, 2020 and is awaiting the corresponding data update following a regular conduit of the platform for each of the phases, as well as the response times of the entities in charge and the official entry into operation of such platform. (http://renare.siac.gov.co/GPY-web/#/gpy/datbasreddpre/121/1021).

Source: Prepared based on existing legislation applicable to the sector (2021).

The project complies with this regulatory framework because conservation is one of the mechanisms through which GHG emissions are expected to be reduced, according to the scope of AFOLU. The REDD+ Galilea-Amé Forest Conservation project, implemented by the Amé Foundation, carries out its activities in alignment with local, regional and national governance figures, such as SINAP, in order to generate synergies in the instruments and thus achieve greater effectiveness in conservation processes.

The development of productive activities will include consultation of the environmental legislation that must be complied with, and in each follow-up audit a report will be presented on the identification of such requirements and compliance with them, as in the case of: i) labor conditions for temporary workers; ii) licenses that must be processed to technify honey extraction in the project area; iii) licenses required to carry out ecotourism in the project area including domestic use for infrastructure construction and identification of the carrying capacity of the ecotourism project and iv) any other requirements defined by CORTOLIMA for the project area in overlap with the PNR.

4.1.1 Compliance with regional and local land-use planning regulations

The mitigation project is positively articulated with the different planning instruments in the territory. Specifically, taking as a guideline for land-use planning at the regional and local level the Land-use Planning Scheme (EOT) of the Municipality of Villarrica, 2003, as well as the stipulations projected under the Regional Natural Park Bosque de Galilea. [139].

[138] This methodology is available online at: https://ProClima.net.co/wp-content/uploads/2021/06/Documento-metodol%C3%B3gico-Proyectos-REDD_v2.2.pdf

[139] See supporting documents in the path: [Information Management Support Ordering Compatibility].

4.2 Resolution 1447 of 2018

The National Registry for the Reduction of Greenhouse Gas Emissions (RENARE) was created by Law 1753 of 2015 and is regulated by Resolution 1447 of August 01, 2018140 issued by the Ministry of Environment and Sustainable Development (MADS). The Law aims to regulate and standardize the Monitoring, Reporting and Verification System for national mitigation actions, particularly in relation to the GHG Emissions Reduction and Removal Accounting System and the National Registry of Greenhouse Gas Emissions Reduction (RENARE), which includes the National Registry of Programs and Projects of actions for the Reduction of Emissions due to Deforestation and Forest Degradation in Colombia (REDD+). The project's compliance with the applicable regulatory provisions is shown in the table below.

Table 12: Compliance with Resolution 1447, RENARE

Article	Description of RENARE	Compliance
Article 4. MRV system for mitigation actions at the national level	To monitor, report and verify GHG mitigation actions, in accordance with the principles of the MRV System for mitigation actions at the national level and the accounting rules established in Resolution 1447.	The project is currently in the process of registration, in the formulation phase, on the RENARE platform, which was launched on September 8, 2020. The project proponent will register and update the project monitoring information in order to comply with the MRV System principles once the project is implemented.
Article 6. Components of the MRV System of mitigation actions at the national level.	It must be ensured that the validation and verification processes are carried out by independent third parties.	The project will undergo verification processes by a Validation and Verification Body (VVO) that meets the requirements specified in the resolution.
Article 10. Greenhouse Gas Emission Reductions (RENARE). Greenhouse Gas Emission Reductions Registry (RENARE)	Every holder of a GHG mitigation initiative in the national territory must register it in the RENARE, starting from the feasibility phase.	The project is registered in the RENARE platform, in the formulation phase, and has the required attachments. The project proponent will be responsible for the accuracy of the information provided, in addition to the application of the principles of the MRV System for the country.
Article 13. Phases of the initiative in RENARE	In the feasibility phase, the initiative holder shall provide information related to participants, objective, scope, geographic location, emission and removal sources, GHG emission reduction or removal activities, expected co-benefits and detailed identification of activities in the case of a REDD+ project or program.	The project is registered in the RENARE platform in the formulation phase. According to the RENARE Technical Guide v 1.0, the owner of the initiative must register information for each of the phases, therefore, in this case, the owner must register all the information corresponding to the formulation phase in order to move on to the implementation phase. In this way, the owner must attach the required supports that guarantee that the program has been consulted with the community, that it is

[140] Ministry of Environment and Sustainable Development. Resolution 1447 of 2018; 2018:1-34..

Article	Description of RENARE	Compliance
	In the formulation phase it is necessary to establish the baseline and its validation mechanisms, GHG mitigation targets, expected co-benefits, indicators for monitoring and reporting the implementation of the initiative, detailed design of REDD+ activities and environmental and social safeguards. In the implementation phase, information should be provided on the progress of the indicators for monitoring and reporting the implementation of the initiative and the process for verifying the mitigation results of the initiative.	The REDD+ initiative must be articulated with the guidelines defined in the environmental and territorial planning and management instruments and other information regarding compliance with social and environmental guarantees and safeguards in the territory. In addition, it must take into account within the development of the measures of its REDD+ type initiative, guarantee the social and environmental safeguards of the territory in accordance with the Cancun Safeguards Framework, including the participation of communities and the distribution of multiple benefits. Taking into account the above, the holder has the required documentation, however, to request the passage to the implementation phase it only requires the Certificate of presence and existence of ethnic communities, support that it does not have, since currently the Ministry of the Interior does not issue such document. Through consultation with the entity in charge of RENARE's management [141], who escalated the consultation to the Ministry of the Interior, to date, there has been no response to this request or the procedure required to replace the certificate and continue with the change of phase in the platform.
Article 39. Use of methodologies for the formulation and implementation of REDD+ projects	Implementation of methodologies for REDD+ projects, in accordance with the characteristics specified in the resolution..	The mitigation initiative implements the methodology of the ProClima program: AFOLU Sector Methodological Document *"Quantification of GHG Emission Reductions from REDD+ Projects v2.2"* Version 2.2 from February 5, 2021 [142]. This methodology contemplates the procedures, models, parameters and data to quantify GHG removals attributable to project activities, taking into account national policies on emission reductions
Article 40. Maximum GHG mitigation potential for REDD+ projects, subject to	The MADS and the Instituto de Hidrología, Meteorología y Estudios Ambientales (IDEAM), through RENARE, will establish the maximum GHG mitigation potential subject to national accounting. national accounting. In case of not	Regarding the maximum GHG mitigation potential for REDD+ projects, given that a (Forest Reference Emission Level) is currently available. NREF [143] applicable to the region of

[141] See in: [Information Management "Presence_communities_support" Response_RENARE_Existence_communities.pdf]

[142] This methodology is available online at:https://ProClima.net.co/wp-content/uploads/2021/06/Documento-metodol%C3%B3gico-Proyectos-REDD_v2.2.pdf

[143] https://redd.unfccc.int/submissions.html?country=col

Article	Description of RENARE	Compliance
national accounting	If there is a Forest Reference Emission Level (FREL) submitted by Colombia to the United Nations Framework Convention on Climate Change (UNFCCC) applicable to the REDD+ project area, the maximum GHG mitigation potential applicable to the mitigation results will be established from its validated baseline.	reference of the project and submitted by Colombia to the UNFCCC, from the year 2020 the baseline of the project is governed from the guidelines set out in this document, while the previous years are governed following the determinations of the Maximum Mitigation Potential (MMP) of the project built from the revalidation of the historical period of deforestation in the territory (which was made with the information of the Forest and Carbon Monitoring System - SMByC) and the carbon stock of the NREF.
Article 41. Establishment of baselines for REDD+ projects.	The REDD+ project holder shall establish its baseline based on the most updated NREF formally submitted by Colombia and evaluated by the UNFCCC, including the geographic area of the project, REDD+ activities, carbon pools and periods in which the initiative is intended to be implemented.	Given that there is currently available a NREF[144] applicable to the project's reference region, the initiative adjusts its baseline following the guidelines set out in this document, taking into account the historical analysis of deforestation, and with information provided by the Forest and Carbon Monitoring System (SMByC) to comply with the article. The project is governed by the maximum GHG mitigation potential established by MADS and IDEAM through RENARE for the years prior to 2020..
Article 42. Establishment of mitigation targets for REDD+ projects**.**	The REDD+ project holder shall establish GHG mitigation targets oriented towards compliance with those indicated in the Comprehensive Strategy for the Control of Deforestation and Forest Management and other national climate change strategies.	The project's goals are aligned with those contained in the Comprehensive Strategy for Deforestation Control and Forest Management (see section 4.1) and the other national goals related to climate change presented by the country before the UNFCCC, specifically with respect to: • Zero gross deforestation: The project aims to avoid deforestation by 99.6%. • Increased quality of life for the local population: The project creates benefits in access to priority resources. • Reduced GHG emissions, measured in tons of CO2e emissions, as a result of avoided deforestation relative to the without-project scenario. • Sustainable Development Goals: see section 6.6 below for more detail).

[144] https://redd.unfccc.int/submissions.html?country=col

Article	Description of RENARE	Compliance
Article 43. Criteria for additionality of REDD+ projects	The REDD+ project holder shall demonstrate the net benefit to the atmosphere in terms of GHG emission reductions or removals, accounting that the mitigation outcome would not have occurred in the absence of the initiative. GHG removals that occur when natural forest remaining as natural forest sequesters carbon dioxide are not considered additional and are therefore not eligible for national accounting.	The project was validated and verified for the first time under the ICONTEC ES-I-CC-002 Compensation Program Certification protocol version 1 2013/10/09. That guidance document did not include an additionality analysis for the projects. However, the project is additional considering the need for resources to support the territorial entities, in this case CORTOLIMA with the implementation of the Environmental Management Plan of the Bosque de Galilea Regional Natural Park, declared on December 19, 2019, in accordance with the current monitoring period. In compliance with the additionality criteria according to RENARE, the project is not carried out in areas with offset activities or ineligible because they have stable forests. Likewise, it does not include payment for environmental services programs for GHG reduction and capture.
Article 44. Validation and Verification Criteria for REDD+ Projects	Validation and verification criteria for REDD+ projects.	The project will be audited by an external entity that meets the requirements to be a Validation and Verification Body (VVO).145 In this regard, the project proponent will take the necessary steps to contract the VVO, in accordance with the guidelines established in Article 44 of the resolution.
Article 45. Registration of REDD+ projects	The owners of REDD+ projects must report in RENARE information regarding compliance with environmental and social safeguards, especially with respect to project participants; land ownership and tenure conditions in the area of intervention; consent of owners, possessors or occupants of the land where the initiative will be implemented; and compatibility with land management and planning instruments.	The project holder has registered the REDD+ project through RENARE, following the provisions in Chapter 2 of Title I of Resolution 1447 of 2018. However, in accordance with Art. 13 mentioned above and according to communiqué issued by the Ministry of Environment and Sustainable Development, shared by ASOCARBONO:[146] (…)To date, during the process of registering initiatives in the stabilization phase of the RENARE platform, opportunities for improvement have been identified and have been implemented as a stage

[145] Hace referencia al Organismo de Validación y Verificación en los procesos de certificación de reducciones y/o remociones de GEI.
[146] Ver en: [Gestión de la información\7_Soportes\Otros\Boletin Asocarbono_RENARE.pdf]

Artículo	Descripción del RENARE	Cumplimiento
		prior to the implementation of the RENARE platform; therefore, the platform will only be officially launched until it is certain that the necessary technical conditions are in place to fully approve the different phases of the initiatives registered up to the corresponding stage In view of the above, we hereby clarify that the official communication referred to in Article 4 of Resolution 831 of 2020, which refers to the implementation of RENARE, has not been issued, therefore, the term of three (3) months for reporting and updating the information of the initiatives in RENARE and the registration in RENARE of the cancellations provided for the non-causation during the transition regime established in the paragraph of the fourth article of Decree 926de 2017, has not started. (...) Therefore, until the official announcement of the launching of the platform is generated, no modifications or other provisions may be made to the platform.

Source: Elaborated based on the provisions of Resolution 1447 of 2018 (2021).

4.2.1 Presence of indigenous and/or black communities

According to cartographic information from the Geographic Information System for Planning and National Land Management (SIG-OT)147 on the boundaries of Indigenous Reservations148 and Afro-Colombian Community Councils149 (updated in 2018), it was found that there is no overlap between the project expansion area or the leakage belt with any of these (Figure 6). The nearest indigenous reservation is located more than 6 km from the southern boundary of the project area (Figure 7).

147 Official cartographic information updated to 2018 and downloaded from the portal of the Sistema de Información Geográfica para la Planeación y el Ordenamiento Territorial Nacional SIG-OT. Available at:: http://sigotvg.igac.gov.co:8080/

148 The Digital Map of Indigenous Reservations, published in the Geographic Information System for Planning and Land Management - SIGOT, which shows the location of the polygons corresponding to the Indigenous Reservations legally constituted by the National Land Agency -ANT (entity that through Decree 2363 of 2015 assumes the obligations of INCODER, which through Decree 1300 of 2003 assumed in turn the obligations of INCORA) in the Colombian territory. Year 2018.

149 The Digital Map of Lands of Black Communities, published in the Geographic Information System for Planning and Land Management - SIGOT, which shows the location of the polygons corresponding to the lands of black communities legally constituted by the National Land Agency -ANT (entity that through Decree 2363 of 2015 assumes the obligations of INCODER, which through Decree 1300 of 2003 assumed in turn the obligations of INCORA) in the Colombian territory. Year 2018

Additionally, it is argued that the certifications requested by RENARE to demonstrate or not the presence of indigenous and/or black communities no longer exist. In October 2020, upon making the aforementioned request, from the Ministry of the Interior we were informed that the certificate of presence of ethnic groups was replaced by the certificate of timeliness and appropriateness of the Prior Consultation, given the entry into force of Decree 2353 of December 26, 2019, by which the structure of said Ministry was modified and determined the functions of some of its dependencies.

In line with the above, the RENARE Administration was asked to clarify the certification required for the registration of the initiative, considering that in order to demonstrate the presence of indigenous communities it may be sufficient for project proponents to provide documents proving the land tenure status of the land or areas that will be part of the mitigation initiative, and that to date there is no legal support that requires project proponents to consult on whether prior consultation is required for REDD+ projects.

To this request, RENARE management responded with the following considerations:

- **Law 1753 of 2015:** *(…)"The Ministry of Environment and Sustainable Development or whoever takes its place, will design and guide the implementation of the National Strategy for Reducing Emissions from Deforestation and Forest Degradation, REDD+, in coordination with other ministries and public entities and the private sector within the framework of the national climate change policy" (...).*

- **Resolution 1447 of 2018:**

Article 4: (…) *"The MRV system of mitigation actions at the national level is administered by the Institute of Hydrology, Meteorology and Environmental Studies - IDEAM, under guidelines and orientations of the Directorate of Climate Change and Risk Management of the Ministry of Environment and Sustainable Development or whoever takes its place." (…)*

(…) "It is part of the MRV System of mitigation actions at the national level: The National Registry of GHG Emissions Reduction (RENARE)". (…)

Article 10, Paragraph 1: (...) *"The registration of GHG mitigation initiatives in RENARE does not exempt the holder of the initiative from obtaining permits, authorizations, concessions, licenses and/or any other requirement established by the regulations in force to implement the initiative* (...).

Article 10, Paragraph 2: (...) *"the holders of GHG mitigation initiatives shall be responsible for the veracity of the information provided by RENARE and shall apply the MRV principles. The registration of information in RENARE does not imply responsibility of any kind on the part of the Ministry of Environment and Sustainable Development before the holder of the initiative or third parties (...) "*

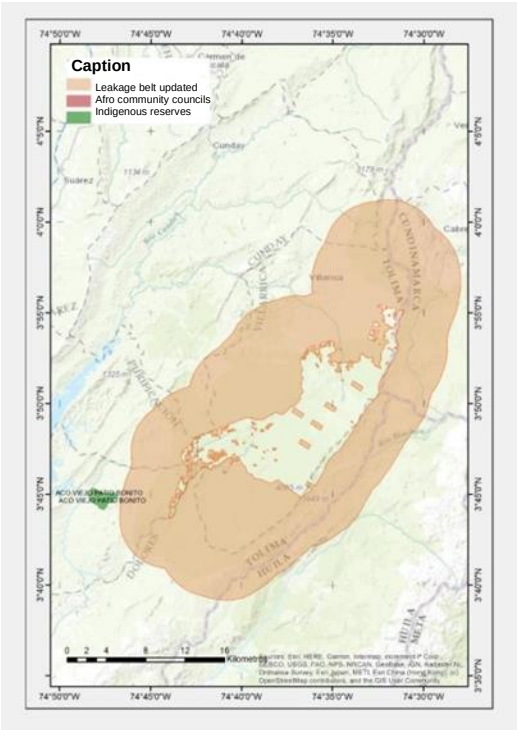
Article 11, *(…) "RENARE will be administered by IDEAM in accordance with the guidelines of the Ministry of Environment and Sustainable Development (...) "*

In view of the above, it was informed that IDEAM, as administrator of the RENARE platform, will ensure that the response or solution being evaluated by the Ministry of Environment and Sustainable Development (MADS), the entity to

which this consultation is referred by competence.; but to date no notification or concept on this matter has been received.

Once the platform defines the procedure to be followed, the proponent will make the necessary arrangements to obtain the applicable certifications considering the provisions of Article 10 of Resolution 1447 of 2018.

Once the platform defines the procedure to be followed, the proponent will make the necessary



gestiones para obtener las certificaciones aplicables considerando lo dispuesto en el artículo 10 de la Resolución 1447 de 2018.

Figure 6: Overlap of the geographical limits of the project with indigenous reservations or Afro-Colombian community councils

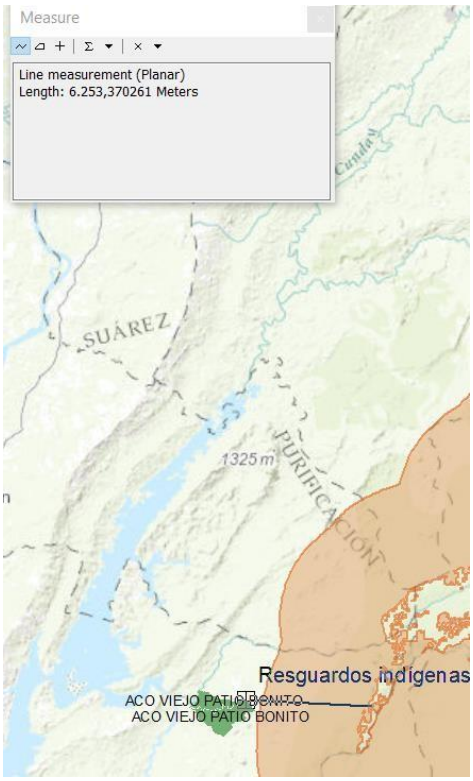


Figure 7: Distance between the project area and the nearest indigenous reservation.

5 Application of the methodology

5.1 Methodology title and reference

For the quantification of emission reductions in the previous verifications, the guidelines of the Guide for the Formulation, Validation and Verification of Climate Change Mitigation Forestry Projects and the Colombian Technical Standard (NTC) 6208 of ICONTEC were followed.[150]

For the present verification the project uses the ProClima methodology: Methodological Document sector AFOLU *"Quantification of GHG Emission Reductions from REDD+ Projects v2.2"* Version 2.2 of February 5, 2021151 in accordance with the requirements of the Program.

However, although the project has migrated to the ProClima standard and methodology, there are some elements (such as the additionality assessment) that continue to comply with the provisions of the Guide with which the project was validated. This, giving scope to the provisions of ProClima.

5.2 Applicability of the methodology

Table 13 describes compliance with the methodology.

Table 13: Applicability of the methodology

Condition of applicability	Description of compliance
The areas within the geographical boundaries of the project correspond to the forest category (as defined by the Forest and Carbon Monitoring System) at the start of project activities and ten years prior to the project start date;	Based on the definition and the categories allowed, only those areas that meet the condition of forest are included. [152] for Colombia[153], i.e., they are larger than 1 ha, with canopy cover greater than 30% and tree height greater than 5 m. Thus, the project area includes four forest types: ● Premontane rainforest ● Low montane rain forest ● Very humid low montane forest ● Very humid premontane forest Through a forest/non-forest cover analysis for the period 2000-2010 in the project area, the permanence of more than 10 years of forest cover was demonstrated.

[150] Colombian Technical Standard (NTC) 6208. Mitigation Actions in the Land Use, Land Use Change and Forestry Sector (USCUSS) at the rural level, incorporating official and biodiversity considerations.

[151] This methodology is available online at: https://ProClima.net.co/wp-content/uploads/2021/06/Documento-metodol%C3%B3gico-Proyectos-REDD_v2.2.pdf

[152] Global forest definition and specified ranges: UNFCCC (2002) Report of the Conference of the Parties on its seventh session, held at Marrakesh from 29 October to 10 November 2001 (FCCC/CP/2001/13/Add.1, UNFCCC, Marrakesh, Morocco, 2001). https://unfccc.int/resource/docs/cop7/13a01.pdf Y Glossary CDM terms https://cdm.unfccc.int/Reference/Guidclarif/glos_CDM.pdf

[153] Under the Kyoto Protocol's Clean Development Mechanism (CDM), participating countries can choose from the ranges specified by the UNFCCC in 2002 to establish a definition of "forest" adapted to their needs.
Some of these values are shown in Sasaki, N., & Putz, F. E. (2009). Critical need for new definitions of “forest” and “forest degradation” in global climate change agreements. *Conservation Letters, 2(5)*, 226-232 y en https://cdm.unfccc.int/DNA/bak/allCountriesARInfos.html. The designated value for Colombia is summarized in the following link: https://cdm.unfccc.int/DNA/bak/ARDNA.html?CID=49

Condition of applicability	Description of compliance
	the forest vegetation cover in some areas and the loss that has since occurred in many other nearby locations (see project design document). Thus, only forests classified under such characteristics of permanence (at least 10 years) until the project start date were included as stable forest, i.e., these represent the project area for the quantification of carbon credits to be issued, which includes the new areas for the present verification.
The identified causes of deforestation include: expansion of the agricultural frontier, mining, timber extraction and infrastructure expansion.	See section 3.3 and 3.5 of the Project Design Document (PD).
The causes of forest degradation identified include: selective logging, firewood extraction, forest fires, forest grazing and expansion of the agricultural frontier - illicit crops.	Forest degradation in Colombia is due to selective logging, fuelwood collection and forest fires. The analysis of causes is presented in section 10.1.2 of the RM.
No reduction in deforestation or degradation is expected to occur in the absence of the project.	In the absence of the project, the land use on the areas would be used for extensive cattle ranching and other agricultural and/or extractive uses. Therefore, in the absence of the project, there would be no reduction in deforestation because the most likely land use would be forest harvesting and would not allow the establishment of arboreal vegetation. Logging is the second main cause of deforestation and the first cause of degradation, since it is the first phase of intervention in the area's forests, and is carried out for three purposes: i) as a method of appropriating land that the local population considers wasteland, ii) commercialization of timber for different purposes, and iii) local use of the wood. The lack of tools and incentives to undertake conservation projects and land use problems in the region are some of the causes that lead local people to cut down the forest. Logging for timber marketing significantly reduced the abundance of timber species, including *Tabebuia rosea, Juglans neotropica, Aniba perutilis, Nectandra spp., Nectandra acutifolia, Cedrela sp. and Cinchona pubescens.*
It is possible that in deforested areas carbon stocks in soil organic matter, litter and dead wood may decrease, or remain stable.	Without project implementation, the plausible land uses for the project correspond to extensive cattle ranching, so the content of dead wood carbon pools and litter could not increase in the absence of project implementation.
The quantification of GHGs other than CO2 should be included in the quantification of emissions caused by forest fires during the monitoring period.	During the monitoring period, there have been no forest fire events that should be considered in the quantification.

Condition of applicability	Description of compliance
The activities constituting the REDD+ project will not result in the violation of any applicable law.	The project complies with national legislation (see section 4).

Source: Prepared based on the criteria established by the ProClima Program (2021).

6 Deviations from the project description

6.1 Updating the project área

During this monitoring period, a new lot located on the expansion area of the project was annexed (Figure 2), with an area of 56.11 ha, so that the quantification of the GHG emissions reduction of this new lot will start from the date of this verification (April 1, 2019).

6.2 Revalidation of baseline deforestation history

Through resolution 1447 of 2018 the Ministry of Environment and Sustainable Development (MADS) and the Institute of Hydrology, Meteorology and Environmental Studies (IDEAM), determined that in the development of projects for the purposes of accounting for emissions reductions and GHG removals, a baseline must be established from the country's most updated Forest Reference Emission Level (NREF) that has been submitted by Colombia and evaluated by the United Nations Framework Convention on Climate Change (UNFCCC)[154]. Thus, taking into account Article 40 and 41 of Resolution 1447 of 2018, projects must update their baseline according to the new NREF, therefore, given that a NREF applicable to the project's reference region in the Andes biome is currently available, and taking into account that the existing baseline met its reference validity period (10 years) in 2020, the need arises to make the relevant revalidation adjustments.

Notwithstanding the above, the period from April 1 to December 31, 2019, is still included within the validity framework of the initial baseline [155], and therefore, the quantification of GHG emission reductions in this period will be carried out with the application of the project baseline.[156] (2000-2010) for the remaining period of validity, provided that the assumptions used therein correspond to the carbon stock defined by the country's NREF, so that emission reductions generated after December 31, 2019 must be accounted for, following the revalidation of the deforestation history for the period 2010- 2018 (according to the data available in the SMByC) and the application of the country's NREF carbon stock for the region where the project is located, which covers all reductions resulting from the implementation of the project in 2020 and beyond.

Following the determinations set out in section 13.2.1 of the ProClima Methodology, this project uses a subnational reference level, in which the location of deforestation is not considered in the quantification of emission reductions, but rather has a single emission factor associated with above-ground and below-ground biomass storage and in turn uses a historical average approach for estimating the rate of deforestation. The subnational baseline scenario is consistent with the historical average approach proposed by this methodology for projecting future deforestation.

According to this approach, the reference rate for the deforestation projection is a continuation of the average annual rate measured over the historical period (2010-2018)

[154] According to the provisions of Article 29, Article 40 and Article 41 of Resolution 1447 of 2018.

[155] The initial baseline of the project was constructed based on the 2000-2010 historical deforestation in the territory and is valid for 10 years from the end of the analysis period..

[156] The project had an estimated deforestation rate of 2.87% for the period 2000-2010.

within the reference region. This rate, estimated based on the Puyravaud equation,[157] is 0,65 %[158], and the deforestation projection in the project area in the baseline scenario was calculated taking into account the historical analysis of land use changes performed in the NRE.

The annual base deforestation area that applies in year t within the project area is calculated using Equation 3, Historical Approach, as follows:

$$CSB_t = AP_{t-1} \times TDRR_t$$

Where:

CSB_t:	*Annual area deforested at time t within the project area (ha)*
AP_{t-1}:	*Forest area in the project area at time t-1 (in ha))*
$TDRR_t$:	*Applicable deforestation rate within the reference region in year t (%)*
t:	*1. 2. 3... T years of the project's credit generation period (20 years), without dimensions.*

Additionally, the reference level incorporates an adjustment for national circumstances. According to UNFCCC guidelines, for the calculation of mitigation results in the case of Colombia, it was defined as 8.1% of the average deforestation value in the Andes region. This adjustment is based on the socio-political scenario of the end of the armed conflict in Colombia, which allows access to areas previously inaccessible due to the negotiation process and the resulting agreement between the Colombian State and the FARC, which would stimulate deforestation.[159], however, for the project, the adjustment for national circumstances is omitted until the guidelines for its application in subsequent verifications are determined.

6.2.1 Baseline Update

Considering project conditions, regulatory changes and GHG Mitigation Program rules, an update of the Baseline would be expected for the next project verification.

6.3 Carbon pools and sources of GHG emissions

According to the Methodology, the estimation of carbon changes in the project must consider, as a minimum, aboveground and belowground biomass pools or sinks, while the other pools are subject to the characteristics of the project area. For this reason, for the Galilee-Amé Forest Conservation REDD+ Project, in order to adopt a conservative approach for the calculation of the reduction of

[157] For more details, see the document at: Management information\7_Supports\Estimations\Puyravaud

[158] See attached Excel file containing the historical deforestation analyses for the Galilee-Ame Forest Conservation REDD project, located in the path: [Information Management - Carbon Estimates - Calculation of post carbon emissions_expost_VCS_NREF_ProClima] in the spreadsheet "Historical Deforestation".

[159] Institute of Hydrology, Meteorology and Environmental Studies. Estimated national circumstances adjustment for the 2018-2022 Forest Reference Emission Level presented at: https.://redd.unfccc.int/files/31122019_anexo_circunstancias_nref_nal_v7.pdf

emissions, and in compliance with the provisions of the methodology and the national NREF [160], area biomass pools from non-tree vegetation and those generated by dead wood and litter from both the baseline and project scenarios were not taken into account. Table 14 details the relevant carbon pools (considered by the ProClima Methodology and the national NREF) for quantifying carbon stock changes within the project boundary in both the baseline and project scenarios, and Table 15 shows the emission sources and non-CO2 GHGs associated and accounted for.

Table 14: Carbon deposits in the Project

Carbon sink carbon sink	Included?	Justification
Aerial biomass	Trees: Included	This is the main source of carbon affected by project activities. The largest amount of carbon is found in this pool, so it is always considered significant and mandatory in the selection, according to the methodology. This sinkhole is considered by the national NREF and has therefore been included in the project accounting
	Non-woody vegetation: Excluded	Inclusion is optional, according to the methodology, and is dependent on the final land use. It is excluded for the project area, since the final land use (after the change) does not correspond to the establishment of permanent crops. Similarly, it is not included in the national NREF because no information is available **(MADS & IDEAM, 2019)**.
Subway biomass	Included	Optional, according to the methodology. It is included and considered due to the carbon contained in the roots and its application in the national NREF. In addition, it represents 20% of the carbon stock in aboveground biomass.
Leaf litter	Excluded	Dead wood and litter are not removed from the soil. However, the organic carbon content in this pool is not increased by project implementation relative to the baseline scenario Likewise, it is not significant for REDD projects, according to methodological requirements, and is not included in the national NREF since there is no information available **(MADS & IDEAM, 2019)**
Dead wood	Excluded	Optional reservoir, in accordance with the methodological requirements of the NREF, is not included in the national NREF due to the lack of available information. **(MADS & IDEAM, 2019)**
Soil organic carbon	Included	Optional, according to the methodology. However, according to the national NREF, the change in carbon content in this pool is significant, so it should be included assuming that the soil carbon content is expelled in equal proportions over 20 years, once the deforestation event occurs **(MADS & IDEAM, 2019)**.
Lumber products	Excluded	Not included in the national NREF because no information is currently available. **(MADS & IDEAM, 2019)**. Consequently, in order to adopt a conservative approach, the following are excluded.

Source: Elaborated based on the criteria established by the ProClima Program (2021).

Table 15: Emission sources and GHGs selected for quantification.

Sources	GEI	Selected	Justification
Woody biomass combustion	CO_2	No	It is accounted for as changes in the carbon stock.
	CH_4	Yes	It will be counted in the case of biomass burning as part of the activities.
	N_2O	Yes	It will be counted in the case of biomass burning as part of forestry activities.

Source: Elaborated based on the criteria established by the ProClima Program (2021).

[160] https://redd.unfccc.int/files/02012019_nref_colombia_v8.pdf

6.4 Adjustments to project activities

Initially, nine project activities were considered; for the second monitoring period, the donation strategy was completed, and of the remaining eight, two were included in other activities (establishment of the butterfly farm, environmental classroom and museum of memory) and one was eliminated (adaptation of the historic trail). For the present monitoring, a change has been generated in the implementation of the schedule, due to the difficulties that have been generated in terms of implementation, namely:

1. Declaration of the Bosque de Galilea National Park, since the park's environmental authority has reiterated to the Fundación Améthe need to reconsider the development of many of the activities included in the initial implementation schedule.[161]
2. Unfavorable weather conditions for the implementation of the projected plans within the framework of beekeeping activities and adaptation of the genetics of bees introduced in the project area because they are species from other regions and the conditions allowed to advance in the improvement of genetics and make captures of endemic bees from the forest that are more adapted to the environment to continue growing.[162]
3. Declaration of the sanitary emergency due to the Coronavirus COVID-19. [163]
4. Post-conflict situation in the territory.

In accordance with the above, the activities are conditioned by the determinations of the EMP construction process and by other territorial and sanitary emergency conditions in the country, therefore, some of the strategic lines that make up the work plan of the PD were reconsidered due to the need to adapt many of the actions and objectives of the work plan in accordance with what was established by the Corporación Autónoma Regional del Tolima (CORTOLIMA), and in response to the reality of the territorial context of conflict and violence that the territories have suffered and the conditions that still currently mediate their development. These adjustments will guarantee the viability of the Galilea Forest Conservation Project- Amé.

From Fundación Amé we hope to articulate sustainable productive processes mediated by environmental education and research, with innovative and sustainable proposals and ideas that will reduce the activities that lead to deforestation and forest degradation, thus promoting rural development projects in the rural communities of the Galilea Forest. Therefore, the project in its subsequent verifications will be responsible for implementing the activities described in Table 16, in line with the five main activities that were projected from the second verification.

[161] The project has had to adjust execution activities and projected timeframes, and in turn, the foundation has expressed its interest and intention to participate in the construction process of the park's EMP, whose objective is to consolidate the framework for action and planning of possible activities within the declared area and the projection of the buffer zone in a participatory manner. For more details, see communiqué "20210707_PMA y desarrollo de actividades en campo_Fundamé" issued by CORTOLIMA, located at the following link: [Information Management "4_Activities_Cortolima_Comunicados"].

[162] See diagnostic report, generated by an external professional beekeeper, regarding the conditions of the activity. This document is located in the path: [Information Management \4_Activities\01_Apiculture\Reports].

[163] See provisions of the national government under Resolution 385 of March 12, 2020. The document is located in the path: [Information Management \7_ Supports \Others].

Table 16: Project activities

N° Activity (ID)	Main activity	Secondary activity	Type	Goal	Unidad de medida	Responsible
01	Beekeeping	NA	Result	Technification of honey extraction and marketing. This activity will depend on the success of the inclusion of the community as honey producers and the environmental conditions of the territory.	• Number of hives collected. • Maintenance activities of the hives. • Number of liters delivered to the Amé Foundation. • Number of people employed on a temporary and permanent basis. • Identification of areas for expansion of the beekeeping project. **Commercialization** Record of the quantity of liters sold.	Fundación Amé.
02	Research	Research	Research	Raising awareness about the importance of the forest as a provider of different ecosystem services for the community, including water use in the watershed.	• Publications and research products generated. • Creation of the CIBMM. • Projects approved by the central research committee of the CIBMM where the Universidad del Tolima and Fundación Amé participate jointly. Degree Work and internships. Scientific reports and Publications	Graduate Works, Fundación Amé in alliance with the Universidad del Tolima.

N° Activity (ID)	Main activity	Secondary activity	Type	Goal	Unidad de medida	Responsible
		Monitoreo de la degradación[164]	Result	Propose, implement and develop a degradation degradation monitoring strategy for the Galilea Forest and its area of influence.	Semiannual report of activities	Fundación Amé in alliance with the Universidad del Tolima.
		Restauración Ecológica[165]	Product	Carry out ecological restoration of the properties, through forest vegetation enrichment schemes, in succession areas, to encourage the arrival of pioneer species.	Semiannual report of activities	Fundación Amé in alliance with the Universidad del Tolima.
03	Conservation agreements	NA	Result	Expand the project area and encourage conservation in the territory.	Number of people involved in conservation agreements (landowners and local inhabitants) and benefits generated.	Fundación Amé.
04	Ecotourism	Ecotourism	Product	Promote ecotourism as a scheme for environmental education in the territory.	• Semi-annual report of activities carried out. • Number of people sensitized, costs of people sensitized, costs and revenues.	Fundación Amé in alliance with the Universidad del Tolima.
		Adequacy of trails [166]	Impact	Recovery and adaptation of trails to allow guided visits and the optimal development of ranger tours.	Progress report of activities	Fundación Amé in alliance with the Universidad del Tolima.
		Mobile environmental classroom and memory of the social fabric [167]	Impact	Strengthen the social fabric of the community through memory, bearing in mind that communities and families in this region of the	Progress report of activities and semiannual and semiannual reports, as well as the	Fundación Amé in alliance with the Universidad del Tolima.

[164] Additional activity planned to be included for future verifications. Its application is optional and depends on the conditions and progress in the territory under the pilot implementation test. See proposal in the route: [Information Management 4_Activities "4_Activities "2_Research_Degradation"].

[165] This activity replaced the planned butterfly farm.

[166] The strategic trails within the project area are planned to be upgraded, not only the historic trail, as mentioned in the verification report for the second monitoring of the project.

[167] The environmental classroom has been readjusted and therefore will no longer be a fixed installation, but will include actions in different institutions and communities. Although this activity no longer seeks to establish a fixed training center, the project proponent wishes to preserve the concept of the environmental classroom, through an itinerant modality in which different meetings will be held with communities, rural schools, schools, Community Action Boards (JAC) and other relevant actors in the sector.

N° Activity (ID)	Main activity	Secondary activity	Type	Goal	Unidad de medida	Responsible
				department, are and have been direct victims of the armed conflict.	record of meetings with stakeholders.	
05	Ranger program	Rangers	Impact	train settlers or other people from the community around the project area to carry out the project:: ● Control and surveillance work in areas with greater possibility of access to deforestation. ● Accompaniment on ecological trails. ● Surveillance and control.Monitoreo de coberturas con drones.	Progress report of activities and semi-annual reports, as well as records of people in training.	Fundación Amé in alliance with the Universidad del Tolima.
		Coverage monitoring with drones	Result	Identify changes in specific points of the forest cover subject to degradation and deforestation processes that are only observable from the sky, with high spatial resolution remote sensing images.	Semiannual report with: ● Date of flights performed ● Description of flight findings ● Storage of the images taken Dissemination of the results on the AME Foundation website.	Fundación Amé.

Source: Prepared based on historical project information and according to adjustments made by the Fundación Amé

Fundación Amé is actively participating with the Corporación Autónoma Regional del Tolima on the activities and their execution, so as soon as there is clarity on the provisions of the EMP, the implementation schedule will be updated with the new projected lines of action.

6.4.1 Preliminary Schedule of Activities

Table 17: Timetable for the execution of activities

ID [168]	Año																												
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
1																														
2																														
3																														
4																														
5																														

Source: Prepared based on project activities implemented or proposed by Fundación Amé(2021).

[168] 1: Beekeeping; 2: Research; 03: Conservation agreements; 4: Ecotourism; 5: Ranger program.

6.5 Social conditions in the project area

The impact of economic activities and population growth, described in section 3.4 of the PD where they are reflected in the production dynamics in the project intervention zone, are complemented by information on the social context of the territory. This information is compiled in Annex III[169] where the relevant aspects related to population and economic behavior are described.

6.6 Sustainable Development Goals

According to the 2030 Agenda Transforming Colombia, the fundamental basis for ensuring sustainable development lies in the conservation and sustainable use of natural resources, so environmental sustainability is based not only on reducing damage to ecosystems, but also on the efficient management of ecosystem services that favor human development by increasing economic opportunities and social and ecological resilience. In this sense, the management of ecosystem goods and services is represented in the Sustainable Development Goals (SDGs), associated with water, climate, biodiversity and oceans, and from these, a series of interactions are generated that make it possible to meet other major global goals such as the eradication of hunger, poverty reduction and the quality of health services, among others.

In line with the 2030 Agenda, the fulfillment of the 17 SDGs represents the easiest way to enhance sustainable development at the national level since, as they are constructed in a universal manner, the participation of various stakeholders is guaranteed to achieve their success. Furthermore, these goals place special emphasis on the inclusion of vulnerable and excluded groups, through the pursuit of the fulfillment of human rights and social equality. Finally, by having a transdisciplinary scope, they recognize needs in social, economic and environmental terms and promote human development together with environmentally sustainable practices.

In this sense, in order to achieve the goals set under the SDGs, it is important to define their fulfillment through intersectoral, multilevel and participatory public policies, with a multidimensional approach. In Colombia, the implementation of the SDGs is a fundamental part of national action plans and policies such as, for example, the National Development Plan (NDP) 2018-2022 "Pact for Colombia, Pact for Equity", which presents the structural and transversal government guidelines to comply with the agreements and commitments adopted under the SDGs, and highlights the goals set at the environmental, social and economic levels framed in the global commitment to improve the quality of life of all people.

The CONPES 3918 document of 2018 sets out the strategy for the implementation of actions that will help Colombia achieve its goals, prioritizing 147 targets and 156 indicators, from which the country will measure its progress; and additionally, the Ministry of Environment and Sustainable Development (MADS), published an update of the proposed targets for the Nationally Determined Contribution (NDC) until 2030, with the objective of making them more congruent with the country's vision, and to have synergy between national, regional and local initiatives with respect to Colombia's priorities in the pursuit of sustainable development. Table 18 presents the sustainable development objectives and indicators of greatest relevance for the country, in interrelation with the goals adopted by the NDC, grouped by priority sectors of the economy, among which climate change considerations are included.

[169] See in: [Information management [Annex III_Socioeconomic and cultural characterization].

Table 18: National Sustainable Development Goal targets and indicators

ODS	National indicator	NDC sectoral goals
	Multidimensional poverty index (%)	Protected areas Environment
	Under-five mortality rate due to malnutrition (per 100,000 children under 5 years of age)	Health Agriculture and rural development 10 agricultural sub-sectors Agro-climatic technical roundtables
	Maternal mortality rate (per 100,000 live births)	Health
	Higher education coverage rate (%)	N/A
	Women in management positions in the Colombian government (%)	N/A
	Adequate access to potable water (%)	Water resources management Housing, Water and basic sanitation Health Agriculture and rural development Environment
	Electricity coverage (% of dwellings)	Transportation Environmental management and control of projects (ANLA) Mines and Energy
	Labor formality rate (% of employed population)	Mines and Energy Transportation
	Households with Internet access (%)	Mines and Energy Transportation Industry, commerce and tourism
	GINI Coefficient	N/A

ODS	Indicador nacional	Metas sectoriales de la NDC
	Urban households with quantitative housing deficit (%)	Housing, city and territory Transportation Environmental management and control of projects (ANLA) Early warning system monitoring network Environment
	Recycling rate and reuse of solid waste (%)	Industry, commerce and tourism Transport 10 agricultural sub-sectors Agro-climatic technical roundtables Agriculture and rural development
	Reduction of total GHG emissions (%)	It is linked to all NDC goals: Housing, City and Territory Water and Basic Sanitation Health Industry, commerce and tourism Transportation Agriculture and rural development Environment
	Thousands of hectares of marine protected areas	Mines and Energy Protected areas Environment
	Thousands of hectares of protected areas	Water resource management Mining and Energy Transportation Paramo delimitation Protected areas Environment
	Homicide rate (per 100,000 inhabitants)	N/A
	Monitoring scheme for all resources, public and private, national and international, that contribute to the achievement of the proposed goals. proposed	N/A

Source: Prepared based on document CONPES 3918 of 2018 and the national targets and indicators with respect to the SDGs set by the National Planning Department from the Technical Secretariat SDG Commission) (2020.).

Taking into account the above, the Galilea Forest Conservation Emissions Offset Project- Amé has promoted the reduction of climate risks, increased ecosystem protection, improved quality of life and the preservation of ecosystem services such as biodiversity and carbon sequestration, while seeking to contribute as far as possible to meeting the 2030 goals proposed by the Ministry of Environment and Sustainable Development (MADS), within the framework of the implementation of the five main activities proposed. The project's commitments with respect to its contribution to the priority activities for sustainable development are summarized in Table 19. It should be noted that the monitoring of contributions will be carried out in coordination with the monitoring of project activities.

Table 19: National targets and indicators of the Sustainable Development Goals according to project scope

Expected achievement of the project	ODS	Target associated with the SDG	Indicator	Expected project contribution
Encourage research and education as development axes within the framework of the project.		4.7 - Global Citizenship Education: To ensure that all students acquire the knowledge and skills necessary to promote sustainable development, including through education for sustainable development and sustainable lifestyles.	Number of number of training spaces on topics related to conservation, knowledge of diversity and development of productive practices. development of sustainable productive practices. practices.	Conservation through research has been the main activity of the project proponent, which will continue during the life of the project and with which it is expected to strengthen the capacities of different research groups and rural inhabitants, as well as support continuing education in the area with the implementation of mobile environmental classrooms with the support of Universidad del Tolima in a strategic alliance.
Support the involvement of women during the implementation of project activities..		5.5 Equal Opportunity and Participation in Leadership Positions: Ensure women's full and effective participation and equal leadership opportunities at all decision-making levels in political, economic and public life.	5.5.2. Number of women in senior management positions in the project.	The Project expects to gradually generate job opportunities in the local environment, in which women can be involved in the implementation of the activities.
Promote the care of water sources as a tool to preserve and protect the territory.		6.6 Protect and restore freshwater ecosystems: Protect and restore water-related ecosystems, including forests, mountains, wetlands, rivers, aquifers and lakes.	Actions focused on the knowledge of the hydrography over which the project area has influence. area has influence.	The project will contribute to the conservation of water resources, on the effluents that flow under the area of influence, avoiding third party interventions and monitoring the quality of the resource.
Contribute to the improvement of the social dynamics and livelihoods of people close to the		8.5 Decent work and equal pay:	Number of jobs created.	The Project expects to gradually generate job opportunities in the local environment, with the objective of implementing the

Expected achievement of the project	ODS	Target associated with the SDG	Indicator	Expected project contribution
project, through the promotion of local employment.		Full and productive employment and decent work for all women and men, including youth and persons with disabilities, as well as equal pay for work of equal value.		implementación de actividades de conservación y productivas sostenibles.
Advance in the recovery and maintenance of forest cover in the territory, especially in areas degraded by natural or anthropic agents, as a measure to mitigate and adaptation to climate change.		13.2 Integrate climate change measures: Incorporate climate change measures into national policies, strategies and plans.	Actions implemented that prevent emissions from emissions from deforestation and deforestation and forest degradation.	The project through conservation activities will achieve a reduction of GHG emissions, gradually contributing to the national goal of 20% reduction by 2030, in accordance with the commitments of the Paris Agreement.
Strengthen environmental management activities through local governance by managing financial resources for silvopastoral activities, as well as reforestation and forest regeneration		15.1 Conserve and Restore Terrestrial and Freshwater Ecosystems: Ensure the conservation, restoration, and sustainable use of terrestrial and inland freshwater ecosystems and their services, particularly forests, wetlands, mountains, and drylands, consistent with obligations under international agreements. 15.2 Manage all forests sustainably: Promote the implementation of sustainable management of all types of forests, halt deforestation, restore degraded forests, and significantly increase afforestation and reforestation globally.	Number of hectares hectares whose deforestation has been avoided. 15.2.1 Progress in sustainable forest management.	The project is a climate change mitigation initiative where, thanks to the implementation of conservation activities, the region's forests are protected over the years and the risk of deforestation present in the territory is avoided.

Expected achievement of the project	ODS	Target associated with the SDG	Indicator	Expected project contribution
		15.3 Halt desertification and restore degraded land: Combat desertification, rehabilitate degraded land and soils, including land affected by desertification, drought and floods, and strive for a land degradation-neutral world. 15.A Increase Financial Resources to Conserve and Sustainably Use Ecosystem and Biodiversity: Mobilize and significantly increase financial resources from all sources to conserve and sustainably use biodiversity and ecosystems.	Forest degradation monitoring initiatives 15.a.1.a Research assistance supported through resources for the knowledge of biological diversity and ecosystem services of the forest.	

Source: Prepared from historical project information (2021).

6.7 Quantification of Degradation in project areas

For this verification, the quantification of degradation in the project areas is included in section 10 of this Monitoring Report, which presents the technical description for the quantification in accordance with the requirements of the AFOLU sector Methodological Document Quantification of GHG Emission Reductions from REDD+ Projects v2.2 February 5, 2021.

The degradation is quantified in this verification from the project start date (September 1, 2010) and this verification (February 28, 2021).

7 Monitoring the status of implementation of project activities

This section shows the balance of the implementation status of activities for the third verification period of the project, from April 1, 2019 to February 28, 2021[170].

7.1 Beekeeping

Fundación Amé has established 8 apiaries, distributed as follows (see Figure 8): 4 in the Alto Torres and Puerto Lleras zone and another 4 inside the Galilea forest, thus achieving the establishment of 58 hives and 33 nucleus holders distributed in the 8 apiaries (see Table 20). At the same time, 4 families of the inhabitants of the territory have been linked in 2019 and two more in 2021, for the development of the activities and the maintenance of the productive system[171].

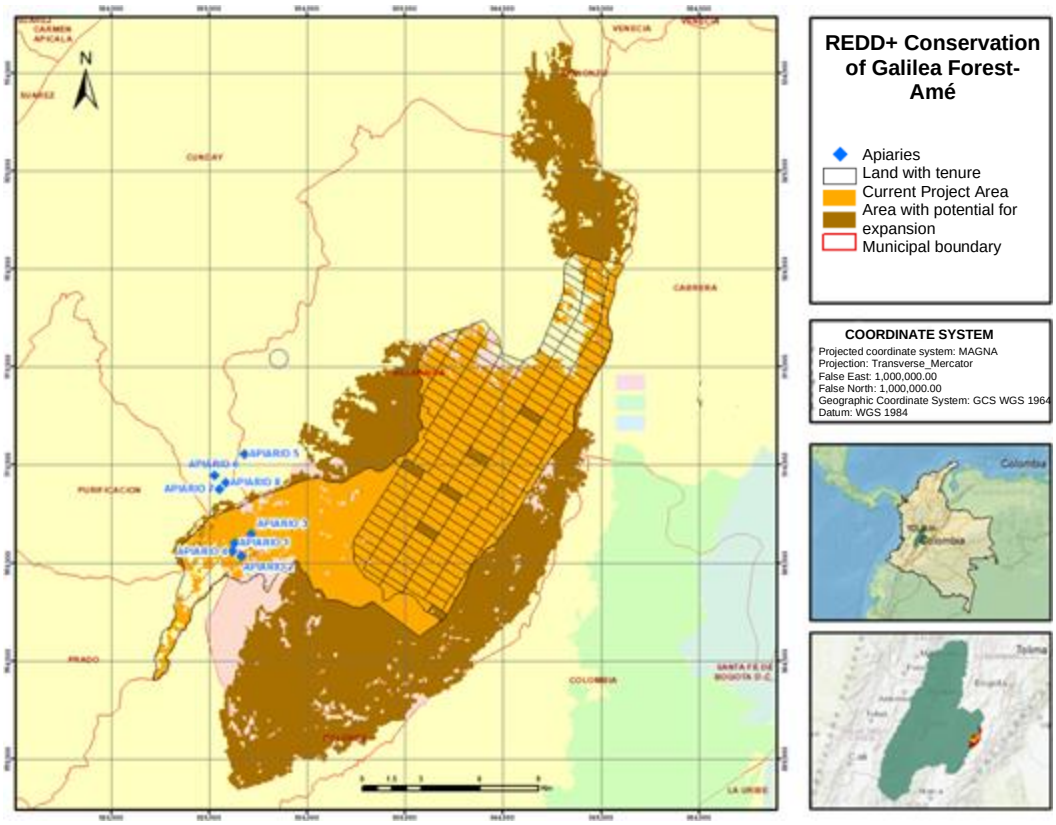


Figure 8: Location of apiaries

Source: Based on Fundación Amé records and historical project information (2021).

As a result of the project's expansion strategy (see Figure 9), families from other villages in the area of influence have been involved in the socialization and training processes, in order to increase the installed capacity and the number of responsible inhabitants in the next verifications. It is important to highlight that the development of this activity has been

[170] In addition, the report lists some training activities carried out in March 2021, under the forest ranger program.
[171] See support information in the path: [Information management [Activities].

limited by the environmental conditions of the territory [172], which has generated delays in the coupling and conditioning of the hives. In total, the apiaries have produced 642 kilograms of honey (see Table 21) that is subsequently marketed by Ecocarbono173 and at the same time, strategies have been generated for the creation of visual advertising material in order to sell the products obtained from the activity.174 However, due to the fact that there is still not enough production, Fundación Amé is strengthening the productive and community link technically so that once the proposal is strengthened and the production process is successfully advanced, the construction of the collection center can be carried out.

Table 20: Apiaries and hives of the honey production project

Apiary	Location	Family in charge	Coordinate	Number of hives	Number of cores	Total
1	Galilea Forest	Parra Family	N. 03°47.429 W. 074°41.810	12	4	16
2	Galilea Forest	Parra Family	N. 03°47.071 W. 074°41.633	14	2	16
3	Galilea Forest	Parra Family	N. 03°47.666 W. 074°41.374	9	2	11
4	Galilea Forest	Parra Family	N. 03°47.192 W. 074°41.896	10	2	12
5	PuertoLleras District Village	Parra Family	N. 03°49.897 W. 074°41.547	6	11	17
6	PuertoLleras District Village	Rodrigu ez Family	N. 03°49.297 W. 074°42.386	4	2	6
7	PuertoLleras District Village	Diaz Family	N. 03°48.925 W. 074°42.257	1	4	5
8	PuertoLleras District Village	Rubio Family	N. 03°49.106 W. 074°42.064	2	6	8
Total				**58**	**33**	**91**

Source: Prepared based on historical project information and documentary review provided by the Fundación Amé(2021).

Figure 9: Photographic records

[172] See diagnostic report, generated by an external professional beekeeper, regarding the conditions of the activity. This document is located in the path: [Information Management 4_Activities\01_Apiculture\Reports].

[173] Media: [Information Management "4_Activities "01_Apiculture "Sales"].

[174] The following path presents the initial marketing proposal for the commercialization of the products: [Information management \4_ Activities \01_Apiculture Marketing Project_Marketing.pdf].

Source: Fundacion Amé records (2019-2021).

Table 21: Honey production

N° honey crops.	Date	Production kg	Number of hives producing honey
1	12-mar-19	97	12
2	17-oct-19	420	26
3	8-feb-20	642	34

Source: Prepared based on historical project information and documentary review provided by Fundación Amé (2021).

The supports of the execution of the activities correspond to the management files elaborated periodically, in which the different actions, findings, approaches with the community and others are described[175].

[175] See execution reports in the path: [Information management [Activities].

Table 22: Balance of the Apiculture activity.

ID Ind.	Indicator	Type	Goal	Unit of measure	Monitoring methodology	Frequency of monitoring	Responsible for measurement	Results	Supports	Observaciones
01	Construction of hive boxes.	Producto	Build 40 technified hive boxes by 2023 supporting the extraction of bee products in order to improve the productivity and sustainability of beekeeping activities based on work with the community..	Number of boxes built.	Periodic field visits were made to supervise the construction of the boxes and photographic records were taken of the process.	Annual	Community beekeeping leader Professional forester General management	Actualmente el proyecto cuenta con 120 cajas construidas.	Hive construction report. [176]	The activity will depend on the success of the inclusion of the community. Likewise, the construction of hive boxes for the beekeeping project is subject to climatic and environmental conditions and the technical decisions of the community beekeeping proposal that will be presented in the current period (2021 - 2022).
02	Maintenance of hives.	Result	Strengthen the conditions of the hives installed in the field in order to improve the productivity and sustainability of the beekeeping activity	Number of hives checked.	Permanent activities of supervision, revision and feeding of the established hives.	Monthly.	Community beekeeping leader Professional forester General management	64 colmenas revisadas y alimentadas.	Report of activities. [177]	Climatic conditions (rainy periods) condition the activity, the hives are not checked under these conditions.
03	Bee production	Product	To have by 2023 a stable production of honey (400 kilograms), propolis (5 liters) and pollen (3	Kilograms (kg) of honey produced Liters (l) of propolis produced	Ongoing supervision, review and recording of production was carried out in order to production of	Annual	Community beekeeping leader Professional forester General management	To date, 1,162 kg of honey have been produced for subsequent commercializatio n. For the	Report. [178]	The quantities of honey, propolis and pollen produced depend on the climatic conditions in the region.

[176] See in: [Information Management Information Management "Activities "01_Apiculture "Reports "20210129_Hive construction report.pdf]

[177] See in: [Information management "4_Activities "01_Apiculture "Reports "20201223_Annual_Report_2020.pdf]

[178] See in: [Information Management "4_Activities "01_Apiculture "Reports "20200016_Meetings and honey production.pdf"

ID Ind.	Indicator	Type	Goal	Unit of measure	Monitoring methodology	Frequency of monitoring	Responsible for measurement	Results	Supports	Observaciones
			kilograms) with potential for commercialization .	Kilograms (kg) of pollen produced	honey for each of the apiaries. A report was also prepared showing the information resulting from the activity.			reporte de monitoreo actual se produjeron 642 Kg de miel.		
04	Permanently and temporarily employed personnel.	Impact	Generate direct and indirect employment for farming families in and around the project area in beekeeping activities.	Number of direct and indirect jobs generated.	Review of contracts and personnel employed in connection with the activity.	Semiannual	Professional forestry General Management	During the monitoring period the contracts of three (3) permanent employees in the beekeeping activity were renewed; in addition, personnel were hired through the daily wage payment mechanism to carry out activities such as capturing beehives, feeding transporting beehives, maintenance of pastures, etc. The contracts were also renewed. maintenance of pastures,	Contracting documents.[179]	The rural employment activity is transversal to the REDD+ project, starting with the beekeeping activity. The type of contracting and hiring of personnel varies depending on the social and economic dynamics of the region, as well as cultural and religious aspects.

[179] See in: [Information Management "Activities "01_Apiculture "Contracts"].

ID Ind.	Indicator	Type	Goal	Unit of measure	Monitoring methodology	Frequency of monitoring	Responsible for measurement	Results	Supports	Observaciones
								alimentación y cuidado de animales de transporte, y oficios varios.		
05	Technical and community beekeeping training	Result	Conduct four (4) technical training sessions for individuals and families linked to the Amé community beekeeping project.	Number of trainings conducted.	Review of training sessions conducted in the community. The training sessions were carried out through theoretical and practical sessions, supported by pedagogical and didactic material.	Annual	Forestry professional General Management	One (1) course was conducted 1 Community training in basic beekeeping.	Report "Community training in basic beekeeping"[180] Audiovisual recording. [181]	Due to the national contingency caused by Covid - 19, the number of training sessions planned was not carried out..
06	Marketing of honey, propolis and pollen produced by the community.	Result	To market the products produced by the beekeeping community.	Number of products sold.	Registration and review of product sales.	Annual	General Management	228 Kilograms of honey 4 Squares of honey 380 Jars of honey	Sales invoices. [182]	
07	Surveys conducted to identify potential areas for the beekeeping project.	Result	Identify potential areas for the expansion of the Amé beekeeping project.	Number of areas identified.	Registration and review of activity reports.	Semiannual	Forestry Professional	1 Survey conducted in the vicinity of the Puerto Lleras trail.	Activity report.[183]	

Source: Prepared based on historical project information and documentary review provided by Fundación Amé (2021).

[180] See in: [Information Management "4_Activities "01_Apiculture "Reports "20201218_Apiculture_Training.pdf].
[181] See in: [Information Management "Activities "01_Apiculture" Photographic Record".
[182] See in: [Information Management "Activities "01_Apiculture "Sales HONEY BILLS.pdf".
[183] See in: [Information Management "4_Activities "01_Apiculture "Reports" New Area Tour.pdf].

7.2 Research

Conservation through research has been the main activity of the project proponent and will continue throughout the life of the initiative..

Figure 10: Photographic records

Source: Records of Fundación Amé (2019-2021)

Table 23: Balance of research activity

ID Ind.	Indicator	Type	Goal	Unit of measure	Monitoring methodology	Frequency of monitoring	Responsible for measurement	Results	Supports	Observaciones
1	Creation and implementation of activities of the Galilea Forest Biodiversity Research Center (CIBMM).	Result	Consolidate the activities of the CIBMM Bosque de Galilea as a leading center in academic, research and social projection processes through the managemen t of the region's biodiversity.	Number of documents supporting the creation and implementation of activities developed by the CIBMM Galilea Forest	Review of documents that support the creation and implementation of activities of the CIBMM Galilea Forest.	Annual	Universidad del Tolima	Creación del Centro de Investigación en Biodiversidad de Media Montaña Bosque de Galilea.	Documento del CIBMM Bosque de Galilea y alianza estratégica entre la Universidad del Tolima y la Fundación Amé. [184] Oficio dirigido a la Alcaldía de Villarrica a ser partícipe de los procesos llevados a cabo por la Universidad del Tolima en el territorio. [185] Informe de gestión. [186]	Ninguna
2	Research products generated.	Result	Generate knowledge of the biological diversity (fauna and flora) of the Galilee forest and the importance of its services.	Number of research products generated	Review of research products generated by the Faculty of Forestry Engineering of the Universidad del Tolima with support from Fundación Amé.	Annual	Universidad del Tolima	Characterization and baseline of the biophysical components (physical, vegetation, fauna and wildlife, hydrobiological and archaeological) of the buffer zone of the northern zone of the Galilea Forest National Park.	Technical document Biodiversity baseline.. [187]	La presentación de los documentos y/o textos científicos están sujetos a los tiempos y periodos de revisión del ejercicio investigativo por parte de la Universidad del Tolima.

[184] See in: [Information Management "Activities" "Research" Galilee Forest - Alliance.pdf].

[185] See in: [Information management "Activities "02_Research" High Mountain Research Center_Letter.jpeg].

[186] See in: [Information Management "General Report Management 2020.pdf].

[187] See in: [Information management "Biodiversity baseline.pdf"]

ID Ind.	Indicator	Type	Goal	Unit of measure	Monitoring methodology	Frequency of monitoring	Responsible for measurement	Results	Supports	Observaciones
			ecosystemic.		se cuantificaron y relacionaron en el actual período de reporte.			Construction of the social baseline for the villages of Alto Puerto Lleras and La Colonia in the municipality of Villarrica, Tolima.	Social baseline. [188]	
3	Academic products generated.	Product	Generar conocimientos sobre la diversidad biológica (fauna y flora) del bosque de Galilea y la importancia de sus servicios ecosistémicos.	Number of graduate work, internships, scientific reports and/or publications	Review of academic products generated by the Faculty of Forestry Engineering of Universidad del Tolima with the support of the Fundación Amébere quantified and listed in the current reporting period.	Annual	Universidad del Tolima Fundación Amé	Consolidation of the research proposal "Impact of anthropic disturbances and climate variability in the reconversion of landscapes altered by humans towards the addition of biodiversity in the Galilea forest and its area of influence", attached to the Master's Degree in Environmental Management and Environmental Impact Assessment of the Faculty of Forestry Engineering of the Universidad del Tolima. Application to the XV World Forest Congress through the abstract "Melliferous production and conservation of the Andean forest: the case	Research proposal. [189] WFC 2021 Summary[190] Support accepted summary. [191]	None

[188] See in: [Information Management "General Report Management 2020 - Social.pdf].

[189] See in: [Information Management Information Management "Activities" "Research" Articles Education Proposal Master's Degree in Environmental Management and Environmental Impact Assessment - Tatiana Montañez.pdf]

[190] See in: [Information Management "Activities" - WFC Korea - GALILEA.pdf]

[191] See in: [Information management "Activities" "Research" articles "Education" approved summary support WFC Korea.PNG].

ID Ind.	Indicator	Type	Goal	Unit of measure	Monitoring methodology	Frequency of monitoring	Responsible for measurement	Results	Supports	Observaciones
								of the Galilea forest, Eastern Colombian Andes - South America". The abstract was also accepted by the organizing body and the complete paper and/or poster is currently being prepared for presentation at the event. Creation of a training portfolio within the framework of the project.	Training portfolio. [192]	
4	Forest degradation monitoring initiatives.	Result.	Propose, implement and develop the degradation monitoring strategy for the Galilee forests and its area of influence.	Number of documents supporting the Galilea forest degradation monitoring initiative.	Review of documents generated by the Forestry Engineering Faculty of Universidad del Tolima.	Annual	Universidad del Tolima Fundación Amé	Proposal for monitoring the degradation of the Galilee forest.	Technical proposal document for degradation monitoring. [193]	None
5	Initiatives to implement restoration strategies.	Result	Construct and implement the baseline for the ecological restoration process in the area. the area of	Number of documents and/or files that support the baseline initiative for the process of	Review of documents generated by the School of Forestry Engineering of the	Annual	Universidad del Tolima Fundación Amé	Characterization and baseline of the biophysical components (physical, vegetation, fauna and wildlife, hydrobiological and archaeological) of the area.	Biodiversity Baseline Document. [194]	None

[192] See in: [Information Management Information Management "Activities" "Research" Galilee Forest Training Portfolio.pdf].

[193] See in: [Information Management Information Management "Activities" "Research" "Degradation" MONITORING PROPOSAL.pdf]

[194] See in: [Information management "Biodiversity baseline.pdf"]

ID Ind.	Indicator	Type	Goal	Unit of measure	Monitoring methodology	Frequency of monitoring	Responsible for measurement	Results	Supports	Observaciones
			buffering of the PNR Bosque de Galilea.	ecological restoration.	Universidad del Tolima.			buffer of the northern zone of Bosque de Galilea NRP. Technical proposal - restoration. Database for the establishment of a permanent pilot monitoring plot (1 hectare). Forestry measurements protocol. Protocol for nursery establishment and management.	Technical proposal - restoration. [195] Database for the assembly and establishment of permanent pilot monitoring plots. [196] Photographic record assembly and establishment of ppm. [197] Protocol for forest measurements. [198] Protocol for nursery establishment and management nursery. [199]	
6	Personnel employed permanently and temporarily.	Impact	Link technical personnel and	Number of professionals .	Review of contracts and personnel	Semiannual	Universidad del Tolima	For the monitoring period	Contracting Baseline. [200]	None

[195] [Information Management "Activities" Research "Ecological Restoration" Technical Proposal - Universidad del Tolima.pdf].

[196] See in: [Information Management Information Management - Pilot Plot P11 - La Colonia.xlsx].

[197] See in: [Information management "Activities" "Research" "Ecological Restoration" "Pilot Plots" "Registration"].

[198] See in: [Information Management "Activities" "Research" Ecological Restoration "Technical Protocol, Forestry Measurements.pdf"]

[199] See in: [Information Management "Activities" "Research" Ecological Restoration "Nursery Technical Protocol, Establishment and Management of Nursery".pdf]

[200] See in: [Information management "Biodiversity baseline"].

ID Ind.	Indicator	Type	Goal	Unit of measure	Monitoring methodology	Frequency of monitoring	Responsible for measurement	Results	Supports	Observaciones
			professional in the research exercise of generating knowledge of the biological diversity (fauna and flora) of the Galilea forest, the importance of its ecosystem services and the social dynamics present in the project area..		linked in connection with the activity.		Fundación Amé	fourteen (14) professionals where vinculated..	CIBMM Procurement Documents. [201]	
7	Instrumentation and equipment of laboratories of the Forestry Engineering Faculty of the Universidad del Tolima.	Products	Consolidate the carbon sequestration, degradation and restoration monitoring processes that will consolidate the CIBMM through through the	Number of elements equipped	Inventory of equipment and instruments donated by Fundamé to Universidad del Tolima.	Annual	Universidad del Tolima Fundación Amé	1 Hypsometer 10 Diameter tapes 1 Photographic equipment (Camera, microphone, tripod) 1 Vehicle	Photographic record of equipment. [202] Purchase invoices. [203] Vehicle donation. [204]	None

[201] See in: Information management [Information management "Activities" "Research" "Procurement" - Restoration and Conservation

[202] See in: [Information management "Activities" "Research" Equipment and instrumentation "Photographic record"].

[203] See in: [Information management "Activities" "Research" "Equipment and instrumentation" "Sales invoices"].

[204] See in: Information management "4_Activities "06_Benefits University of Tolima" donation letter.pdf]

ID Ind.	Indicator	Type	Goal	Unit of measure	Monitoring methodology	Frequency of monitoring	Responsible for measurement	Results	Supports	Observaciones
			Strengthening of the instrumental base of the laboratories available at the University of Tolima for the technical and scientific support of the PDD components that require it in the REDD+ project. Galilea Forest.						Press release vehicle donation.. [205]	

Source: Elaborado a partir de la información histórica del proyecto y revisión documental suministrada por la Fundación Amé (2021)

[205] See in: [Information management "4_Activities "06_Benefits" University of Tolima "20201221_Donation letter.pdf"]

7.3 Conservation agreements

For the current monitoring period, five (5) conservation agreements were signed, in which the families neighboring the project area express their commitment as forest rangers of this important natural ecosystem and agree to be part of the conservation process of the Galilea Forest, voluntarily participating in the activities proposed by the Fundación Améaimed at environmental preservation and community development of families in the region. Table 24.

Figure 11: Photographic record

Source: Fundación Amérecords (2019-2021).

Table 24: Balance of conservation agreement activity

ID Ind.	Indicator	Type	Goal	Unit of measure	Monitoring methodology	Frequency of monitoring	Responsible for measurement	Results	Supports	Observaciones
01	Conservation agreements	Impact	Broaden the participation of stakeholders in the project area and encourage the conservation of the forest and the territory.	Number of Amé conservation agreements signed	Socialization of conservation agreements and registration of persons involved in the activity.	Semiannual	General Management Field work team	For the monitoring five (5) conservation agreements were signed.	conservation agreements signed. [206]	For this activity a conservation commitment agreement is defined, which the families and settlers sign voluntarily. This agreement is transversal to the REDD+ activities proposed and developed by the Amé Foundation.

Source: Based on historical project information and documentary review provided by the Fundación Amé(2021).).

[206] Ver en: Gestión de la información\4_Actividades\03_Acuerdos de conservación]

7.4 Ecoturism

Fundación Amé is currently working on the development of the activity and to date it has acquired a 24-hectare plot of land where the construction of a cabin is planned to establish the Foundation's office in the territory that will allow the management of the project. At the same time the study of soils and topographic conditions related to the land for the construction was carried out, and finally the reports with the elaboration of the corresponding plans for the construction of the infrastructure[207].

Despite having the architectural files for the construction of the planned collection center, no progress has been made in the construction and general work proposed in the framework of this activity, as it is conditioned by the determinations specified by the PNR from the PMA, and given that this instrument is under construction and that the Regional Autonomous Corporation of Tolima has recommended to the Fundación Aménot to develop any type of productive activity on the polygon of the special management area; The implementation and development of the planned actions are at a standstill and awaiting the area's management plan, which will allow for clear instructions and make the established activities viable, but which depends largely on the progress of those responsible for this process. Nevertheless, Fundación Amé intends to advance in the integral study of the ecotourism proposal and to link its field of action with the Regional Autonomous Corporation (CAR) to support the construction of the EMP[208]. Thus, it is clear that the general progress of this activity has been subject to the Environmental Management Plan that the environmental authority must define, and in which the company will participate in its construction.

Meanwhile, progress has been made in the framework of the strategic alliance with the University of Tolima, through a training course in bird watching and avitourism that was given to the community of the village of La Colonia, under the implementation of a training strategy for the monitoring of wildlife and fauna in the Galilea Forest[209].

In relation to the secondary activity of the Environmental Classroom and Memory of the social fabric, although this activity no longer seeks to establish a fixed training center, the Fundación Améintends to preserve the concept of the environmental classroom, through an itinerant modality in which different approaches will be made with the communities and rural dwellers. The execution of the activity began in November 2020 through meetings with the communities of the Alto Puerto Lleras and La Colonia villages and the realization of different socialization, awareness and training workshops within the framework of the project and the conservation objectives.[210]

Although the activity of trail adaptation is also limited by the construction of the PMA for the special management area, progress has been made in the training of personnel in charge, with a course on Introduction to the Design of Tourist Trails, under an agreement with the Universidad Externado de Colombia. [211] It should be noted that this activity has been adjusted since the second monitoring period of the project.

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[207] Ver soportes de implementación en la ruta: [Gestión de la información\4_Actividades\04_Ecoturismo\Centro de acopio].

[208] See communication supports held with CORTOLIMA in the route: [Information Management "Activities "Cortolima Communications"].

[209] See implementation supports on the route: [Information management [Information management "Activities "04 Eco-tourism "Birdwatching"].

[210] See implementation supports in the route: [Information management [Gestión de la información [Aula ambiental y Museo de la memoria].

[211] See supports of the course in the route: [Information management [Management of the information "04_Activities "04_Ecotourism "Adequacy of trails].

The historic trail will not be upgraded; instead, several trails will be upgraded for ecotourism activities. However, due to the health contingency caused by the COVID-19 pandemic, and in addition to waiting for the response from the environmental authority on the Environmental Management Plan and other provisions, it has not been possible to move forward on the action plan, in conjunction with the main actors involved in the process (community and Universidad del Tolima), for the start of this activity.

Table 25 summarizes the general implementation progress achieved in ecotourism activities.

Figure 12: Photographic record

Source: Fundación Amérecords (2019-2021)

Table 25: Balance of ecotourism activities

ID Ind.	Indicator	Type	Goal	Unit of measure	Monitoring methodology	Frequency of monitoring	Responsible for measurement	Results	Supports	Remarks
01	Ecoturism	Impact	Promote ecotourism as a scheme for environmental education in the territory.	Number of actions aimed at building a community model of ecotourism and care of protected areas.	Reports general activity and training reports.	Semiannual	Profesional forestal Profesional Social	During the monitoring period, training was conducted in conjunction with Universidad del Tolima on fauna and wildlife monitoring (birds).	Report technical report "Birdwatching " training.[212]	This activity is subject to the formulation process of the Environmental Management Plan, led by CORTOLIMA and the UTP.
2	Adequacy of trails	Impact	Restore and adapt the trails to allow guided visits and the optimal development of ranger trails..	Number of actions aimed at the recovery and adaptation of ecological trails.	Supervision and review of activities focused on the activity.	Semiannual	Profesional forestal Profesional Social	Three (3) professionals linked to the project were trained through the seminar "Introduction to the design of tourist trails" offered by Universidad Externado.	Certificates of the seminar "Introduction to the design of tourist trails".[213]	This activity is subject to the Environmental Management Plan formulation process, led by CORTOLIMA and the UTP.
3	Mobile environmental classroom and memory of the social fabric	Impact	Strengthen the social fabric of the community through environmental education and the recovery of memory, taking into account that the communities and families of this region of the department of the department, are and	Number of actions aimed at environmental education and strengthening the social fabric.	Supervision and review of activities focused on the activity..	Semiannual	Social professional	Environmental workshops Universidad del Tolima. Action plan "Mobile Environmental Classroom and memory of the social fabric".	Report Environmental Classroom Universidad del Tolima.[214] Minutes of meetings.[215]	None.

[212] See in: [Information management "Activities" "Eco-tourism" Bird watching "Bird training report - La Colonia.pdf"]

[213] See in: [Information management "Activities" "Ecotourism" "Trail adaptation"].

[214] " G:My unit AméFundFundación Amé3rd Verification "Information management" Activities "Eco-tourism Environmental classroom and Memory of the social fabric.pdf".

[215] "G:My unit AméFundFundación Amé3rd Verification "Information management" Activities "Eco-tourism" Environmental classroom and Memory of the social fabric "Meeting minutes".pdf "

ID Ind.	Indicator	Type	Goal	Unit of measure	Monitoring methodology	Frequency of monitoring	Responsible for measurement	Results	Supports	Remarks
			have been direct victims of the armed conflict.						Report Amé Classroom.[216]	

Source: Prepared based on historical project information and documentary review provided by Fundación Amé (2021).

[216] ""G:Unit Fundación Amé3rd Verification "Information management" Activities "Eco-tourism" Environmental classroom and Memory of the social fabric "Report.pdf". "

7.5 Ranger program

As part of the control and surveillance work of the forest ranger program, different patrols have been carried out (see Figure 13) with inhabitants of the Puerto Lleras area, with the objective of going around and bordering some water sources for monitoring, verification points on properties where some settlers are reclaiming land, find pleasant places for the ecotourism project and identify possible points of deforestation, in addition to creating awareness in the communities about the importance of the cloud forest, and a recognition of the existence of a private area with a conservation interest.

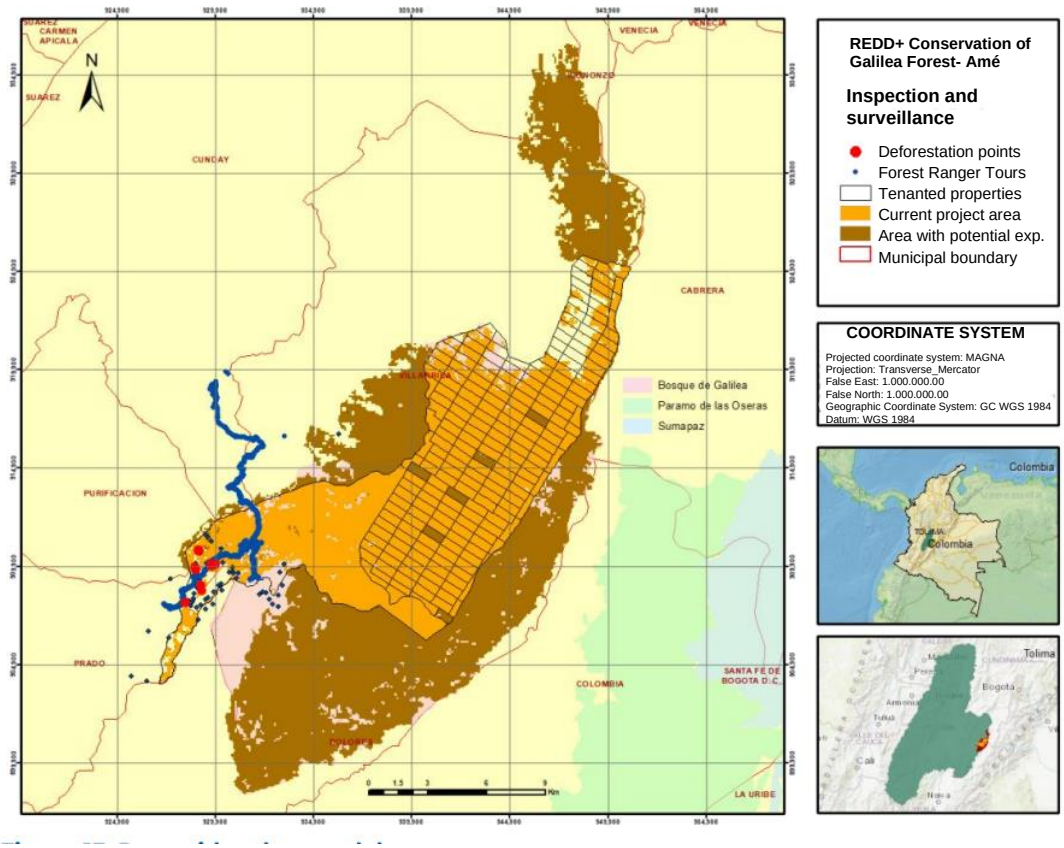

Figure 13: Ranger walks

Source: Based on historical information of the project and documentary review provided by the Amé Foundation. (2021)

In 2021, agreements were signed with the families involved in the honey production activities, so that they in turn play the role of forest guards (see Figure 14). The secondary activity of monitoring the forest cover with drones was proposed from the design of the project with the purpose of identifying changes in specific points of the forest cover, where the territory was subject to degradation and deforestation processes, disturbance events due to forest fires and encroachment into the territory. Currently, the acquisition of the equipment (DJI Drone) on November 19, 2019 has been reported, as well as evidence of some flights made between late 2019 and early 2020, and a training session on drone management with some inhabitants of the territory, who participate in the activity as forest rangers. Table 26.

Figure 14: Photographic records

Source: Fundación Amérecords (2019-2021).

Table 26: Balance of the activity of the forester program

ID Ind.	Indicator	Type	Goal	Unit of measure	Monitoring methodology	Frequency of monitoring	Responsible for measurement	Results	Supports	Remarks
01	Rangers	Impact	Train the local local community around the project area as forest guards, through forest ranger training, cover monitoring with drones, and control and surveillance patrols.	Number of training conducted. Number of control and surveillance tours.	Records of coverage monitoring with drones, photographic records.	Semiannual	Universidad del Tolima Fundación Amé	A training session for forest training for park rangers and six (6) control and surveillance tours were conducted.	General report of the activity, register of people trained, minutes of activities. Supporting documents for the two forest ranger training activities and tours are attached. [217] Ranger training. [218]	None.
2	Monitoring coverage with drones	Result	Identify changes in specific points of the forest cover subject to degradation and deforestation processes that are only observable from the sky, with high spatial resolution remote sensing images.	Number of drone monitoring flights	Records of surveys, monitoring of forest cover, identification of deforestation points, etc..	Semiannual	Fundación Amé	Two flights were conducted to monitor forest cover and identify deforestation sites.	Activity report, audiovisual record, geodatabase with tracks and points of interest for the activity. The ranger's report is attached with the respective monitoring activity with a drone. [219]	None.

Source: Prepared based on historical project information and documentary review provided by Fundación Amé (2021).

[217] . See in: [Information management "Activities "05_Coast Guard Program" Reports "Activities Report".pdf].

[218] See in: [Information Management "Ranger Program Activities" Reports "Ranger Training Report".pdf].

[219] See in: [Information management "Activities "05_Coast Guard Program" Reports "Activities report.pdf"]

7.6 Monitoring of benefits achieved

The project will bring social benefits to the communities surrounding the project area, mainly by generating opportunities and diversifying economic activities in the area, as well as biodiversity benefits and ecosystem services related to the physical environment through soil improvement.

The project is not applying for a special benefit category. The benefits recorded in the monitoring report correspond to RENARE requirements.

7.6.1 Social benefits Complementary activities

Interest group	Local communities to the project area
Action	Generation of opportunities and improvement of living conditions.
Type of benefit, cost and risk	Direct benefit generated to communities through improvements in living conditions due to employment opportunities. [220] and the profits received from the sale of the products of the beekeeping activities implemented by Fundación amé, which generates an economic dynamic in the area. The benefit is positive as it contributes to the economic stability of the workers. Meanwhile, the Foundation has contributed to improving the quality of life of some of the residents who have participated in the initiative by donating materials and labor for the improvement of their homes. [221].
Monitoring and indicator	Outcome indicator: Number of families participating in the project under conservation agreements: 6 families. Support to families for home improvement: 2 families

Interest group	Local communities to the project area
Action	Diversification of economic activities
Type of benefit, cost and risk	Direct benefit to the communities through the transformation of agricultural production practices. The benefit is positive by contributing to the generation of jobs in the region.
Monitoring and indicator	General result indicator. Currently, the project has achieved the effective involvement of 6 families, transforming their productive activities..

Interest group	Universidad de Tolima
Action	Improvement of the conditions for the exercise of research actions in the territory.
Type of benefit, cost and risk	Direct benefit to researchers through improved mobility in the field. The benefit is positive by promoting research activities through the contribution of means of transportation for researchers in the field.
Monitoring and indicator	Overall performance indicator.

[220] See route participants: [Information management "Activities" "Apiculture" "Participants"].
[221] See supports in the path: [Information Management "Activities" "06_Community Donation"].

	Fundacion Amé donated a vehicle that will be used for the mobility of students and researchers who carry out actions in the Galilea forest under the REDD+ project. [222] Involvement of professionals in project activities. Currently, the project has achieved the effective involvement of a group of professionals that support the project's research activities.

7.7 Sustainable Development Goals Monitoring

Taking into account the SDG targets and indicators, the Galilee-Amé Forest Conservation Project has promoted the reduction of climate risks, the conservation of forest stands in the region, the improvement of the quality of life and the preservation of ecosystem services such as biodiversity and carbon storage. In the local environment, it contributes to progress towards meeting the 2030 targets for quality education (SDG 4), gender equality (SDG 5), clean water and sanitation (SDG 6), decent work and economic growth (SDG 8), climate action (SDG 13) and life of terrestrial ecosystems (SDG 15). Table 27 presents the monitoring for the indicators of the Project's priority sustainable development activities.

222 The supports of the official delivery of the vehicle donated by Fundación Amé to Universidad del Tolima are shown in the route: [Information Management "Activities "06_Co-benefits"].

Table 27: Description of the project's contributions to the Sustainable Development Goals in the monitoring period.

ODS	Target associated with the SDG	Description	Indicator	Contribution
	4.7 - Global Citizenship Education: To ensure that all students acquire the knowledge and skills necessary to promote sustainable development, including through education for sustainable development and sustainable lifestyles.	Conservation through research has been the main activity of the project proponent and in this way has strengthened the capacities of different research groups and rural inhabitants, with the support of the Universidad del Tolima in a strategic alliance.	Number of training opportunities on topics related to conservation, knowledge of diversity and development of sustainable production practices.	Different trainings have been carried out: 1 in bird watching 1 in trail management 1 in forest rangers. Numerous capacity building workshops with the communities. 2 scientific publications (1 graduate work proposal and 1 application to the XV World Forestry Congress).
	5.5 Equal Opportunity and Participation in Leadership Positions: Ensure women's full and effective participation and equal leadership opportunities at all decision-making levels in political, economic and public life.	The project is concerned about women's rights and therefore supports the involvement of women during the process of implementing activities.	5.5.2. Number of women in senior management positions in the project.	The team has 6 professionals (women) who work in management positions, forestry engineering, social communication and accounting.
	6.6 Protect and restore freshwater ecosystems: Protect and restore water-related ecosystems, including forests, mountains, wetlands, rivers, aquifers, and lakes.	As part of the project activities, additional monitoring and control activities are carried out to monitor the quality of water resources in the surrounding tributaries, and the physical characteristics (color, turbidity, level, temperature and precipitation) of the water sources located in the project area, which in turn flow into the Negro River, are constantly verified In this way, the project contributes to the	Actions focused on the knowledge of the hydrography over which the project area has an influence.	The water network that runs through the municipality of Villarrica belongs to the basins of the Cuinde Negro River, whose watershed covers more than 50% of the municipality, the Negro River, 35%, and the Riachón River, 10%. The Negro river is of special interest for the program and its zone of influence, since its waters originate in the upper zone of the current program area, crossing a large part of its territory and

ODS	Target associated with the SDG	Description	Indicator	Contribution
		conservation of water resources, avoiding interventions by third parties, guaranteeing the withdrawal distance to rivers and streams, among others.		supplying the Prado reservoir,[223] Like the Negro River, the Cunday River and the Prado River also drain the reservoir. On the other hand, the project, through the hydrobiological study conducted by Universidad del Tolima, of La Volcana stream in the vicinity of La Colonia, characterized the hydrobiological communities and biological indices to determine water quality by means of benthic macroinvertebrates.[224]
	8.5 Decent work and equal pay: Full and productive employment and decent work for all women and men, including youth and persons with disabilities, as well as equal pay for work of equal value.	The project has generated local employment through the development of sustainable production activities. This contributes to improving the social dynamics and livelihoods of people near the project.	The project has generated local employment through the development of sustainable production activities. This contributes to improving the social dynamics and livelihoods of people near the project.	Three (3) permanent employees have been hired in the beekeeping activity, as well as personnel through the daily wage payment mechanism. [225] On the other hand, fifteen (15) professionals were hired. The first team was made up of forestry professionals, biologists and an archeologist, who were in charge of carrying out the baseline survey of the biophysical components of the buffer area in the northern zone of the Bosque de Galilea National Park. On the other hand, a team of professionals from the Universidad del Tolima was consolidated in charge of carrying out the initiative to implement

[222] Information obtained from Technical Document I "Climate, hydrology and surface water characterization studies" of the Villarrica Land Use Planning Scheme 2003 - Page 51, Hydrological study

[223] Ver en: [Gestión de la información "Biodiversity baseline.pdf"]

[224] Ver en: [Gestión de la información "Actividades" "Apicultura" Contratos].

ODS	Target associated with the SDG	Description	Indicator	Contribution
				restoration and conservation strategies under the framework of the Galilee Forest CIBMM.[226] [227][228]
	13.2 Integrate climate change measures: Incorporate climate change measures into national policies, strategies and plans.	The project is an initiative to adapt to climate change through the implementation of activities to reduce deforestation and conserve the forest. These actions reduce GHG emissions, contributing to the national goal of reducing them by 20% by 2030, in accordance with the scenario set out in the Paris Agreement commitments.	Actions implemented that avoid emissions from deforestation and forest degradation.	The activities validated in the project, such as beekeeping, research, conservation agreements, ecotourism and the forest ranger program, are actions that have reduced GHG emissions due to deforestation and forest degradation in the project area. Thus, as part of the measures to adapt to climate change, the project has focused its efforts on maintaining the ecosystems present in the area through research activities as part of the generation of knowledge on biological diversity and conservation of the forest's ecosystem services. As an adaptation measure in conjunction with the Universidad del Tolima, a proposal was consolidated for the implementation of restoration and conservation strategies[229] in the area of influence of the Galilea Forest National Park, in the northern zone, where the project has areas where the project is located.

[225] See in: [Information management "Biodiversity baseline"].
[226] See in: [Information management "Activities" "Research" "Contracting" - Restoration and conservation].
[227] See in: [Information Management Support Fundamé Contracting Social Contract.pdf].
[228] See in: [Information Management "Activities "02 Research "Ecological Restoration "Technical Proposal - University of Tolima.pdf"."

ODS	Target associated with the SDG	Description	Indicator	Contribution
				establecimiento de una parcela permanente de monitoreo, se inició en el año 2020 el piloto para monitoreo de biodiversidad de flora arbórea nativa, apoyados de igual forma en la conservación de fauna como principales agentes dispersores de semillas de los bosques.
	15.1 Conserve and Restore Terrestrial and Freshwater Ecosystems: Ensure the conservation, restoration, and sustainable use of terrestrial and inland freshwater ecosystems and their services, particularly forests, wetlands, mountains, and drylands, consistent with obligations under international agreements. 15.2 Manage all forests sustainably: Promote the implementation of sustainable management of all types of forests, halt deforestation, restore degraded forests, and significantly increase afforestation and reforestation globally.	In implementing its activities, the project avoids deforestation and forest degradation.	Number of hectares whose deforestation has been avoided. 15.2.1 Progress in sustainable forest management.	The project conserves 13,782.91 ha of forest and has avoided deforestation of 399.74 ha between 2019 and 2021. Conservation activities (forest rangers) and ecological knowledge (beekeeping, research, conservation agreements and ecotourism) contribute to the maintenance of the strategic ecosystems of the Andean forest, wetlands that are located within and in proximity to the project, and whose interrelationship allows the generation of ecosystem services that benefit the communities in the project's area of reference. Through its participation as an important actor in the implementation of the Environmental Management Plan of the PNR Galilea Forest, Fundación Amé has shown through the implementation of its activities the sustainable management of natural resources. Through Universidad del Tolima, the initial monitoring proposal was presented.

ODS	Target associated with the SDG	Description	Indicator	Contribution
	15.3 Halt desertification and restore degraded land: Combat desertification, rehabilitate degraded land and soils, including land affected by desertification, drought and floods, and strive for a land degradation-neutral world. 15.A Increase Financial Resources to Conserve and Sustainably Use the Ecosystem and Biodiversity: Mobilize and significantly increase financial resources from all sources to conserve and sustainably use biodiversity and ecosystems.		Forest degradation monitoring initiatives.. 15.a.1.a Research assistance supported through resources for the knowledge of biological diversity and ecosystem services of the forest.	degradation of the Galilea forest and its area of influence. The above with a view to measuring degradation through remote sensing to identify the factors involved in degradation such as logging, fires and the extent of affected areas, and simultaneously measure degradation through field data to evaluate variations in the carbon stored in the forests over time. Fundación Amé in alliance with the Universidad del Tolima has strengthened one of its activities, research. Through the CIBMM Bosque de Galilea and the proposals generated from the academic unit, it has supported the work that generates knowledge on biological diversity and conservation of ecosystem services of the forest. The project has supported the creation of the Biodiversity Research Center of the Middle Mountain Forest of Galilea as an initiative of Universidad del Tolima, as well as the construction and publication of the book of birds of Tolima - Galilea led by one of the researchers of Universidad del Tolima and the support of the postgraduate thesis of one of the students of the Master in Environmental Management and Environmental Impact Assessment of the Faculty of Forestry Engineering of Universidad del Tolima. .

Source: Prepared based on project contributions to the Sustainable Development Goals in accordance with historical project information provided by the Fundación Amé(2021)

8 Monitoring of GHG Emission Reductions Achieved

8.1 Data available for verification

The data and parameters that were available at the time of validation and that will remain fixed throughout the project's credit generation period are presented below.

Data / Parameter	AP
Unit	Hectares (ha)
Description	Project area at start date
Source	Information on Colombia's forest area and its changes, provided by IDEAM through the SMByC (2000 and 2010) and satellite images. provided by IDEAM through the SMByC (2000 and 2010) and satellite images.
Value applied	13.782,91 ha
Justification for the choice of the parameter or description of the measurement methods or procedures applied.	The boundaries of the project area were defined based on cartographic information obtained through the processing and analysis of satellite images and the use of secondary information, combining the collection of remote sensing images (optical and radar) in order to categorize the information that in the satellite images was considered lost (without information) due to the presence of clouds; as well as inputs from the Forest/Non Forest layers generated by the Forest and Carbon Monitoring System (SMByC) of the Institute of Hydrology, Meteorology and Environmental Studies (IDEAM).[230] The processing of the information sources and the cartographic cross-referencing of the different years have obtained the areas of stable forest for the emissions reduction project and the monitoring of the loss of cover. The area was calculated based on the Colombian MAGNA coordinate system.
Purpose	• Estimated emission reductions in the baseline scenario and the project scenario. • Projected deforestation and degradation in the project area in the baseline scenario
Comments	See project design document

Data / Parameter	$ARef_{t1}$
Unit	Hectares (ha)
Description	Reference Area in 2010
Source	Information on Colombia's forest area and changes in forest area, provided by IDEAM through the SMByC (2010 and 2018) and satellite images.
Value applied	48481,14 ha
Justification for the choice of the parameter or description of the measurement methods or procedures applied.	The boundaries of the reference area were defined based on the cartographic information obtained through the processing and analysis of satellite images and the use of secondary information, combining the collection of remote sensing images (optical and radar) in order to categorize the information that in the satellite images was considered lost (without information) due to the presence of clouds; as well as inputs from the Forest/Non-forest layers generated by the

[232] The layers were downloaded from the Colombian Environmental Information System (SIAC). Available at: http://www.siac.gov.co/catalogo-de-mapas

	by the Forest and Carbon Monitoring System (SMByC) of the Institute of Hydrology, Meteorology and Environmental Studies (IDEAM). [231] The processing of the information sources and the cartographic cross-referencing of the different years made it possible to obtain the areas of forest in the reference area to estimate the baseline of emissions reduction and the monitoring of the loss of cover in the starting year. The area was calculated based on the MAGNA coordinate system of Colombia.
Purpose	• Estimated emission reductions in the baseline scenario and the project scenario. • Projected deforestation and degradation in the project area in the baseline scenario
Comments	See historical deforestation in the calculation sheet.

Data / Parameter	$ARef_{t2}$
Unit	Hectares (ha)
Description	Reference Area 2018
Source	Information on Colombia's forest area and changes in forest area, provided by IDEAM through the SMByC (2010 and 2018) and satellite images.
Applied value	46028,70 ha
Justification for the choice of the parameter or description of the measurement methods or procedures applied.	The boundaries of the reference area were defined based on cartographic information obtained through the processing and analysis of satellite images and the use of secondary information, combining the collection of remote sensing images (optical and radar) in order to categorize the information that in the satellite images was considered lost (without information) due to the presence of clouds; as well as inputs from the Forest/Non Forest layers generated by the Forest and Carbon Monitoring System (SMByC) of the Institute of Hydrology, Meteorology and Environmental Studies (IDEAM).[232] The processing of the information sources and the cartographic cross-referencing of the different years allow obtaining the areas of forest in the reference area to estimate the baseline of emission reduction and monitoring of the loss of cover in the year 2018 corresponding to the final year of the analysis period. The area was calculated based on the MAGNA coordinate system of Colombia.
Purpose	• Estimated emission reductions in the baseline scenario and the project scenario. • Projected deforestation and degradation in the project area in the baseline scenario.
Comments	See historical deforestation in the deforestation calculation sheet.

Data / Parameter	AE
Unit	Hectares (ha)
Description	Expansion área
Source	Information on Colombia's forest area and its changes, provided by IDEAM through the SMByC (2000 and 2010) and satellite images.
Applied value	29.884 ha
Justification for the choice of the parameter or description of the	The limits of the expansion area were defined based on the processing and analysis of forest/non-forest cartographic information generated by IDEAM's SMByC.

[231] The layers were downloaded from the Colombian Environmental Information System (SIAC). Available at: http://www.siac.gov.co/catalogo-de-mapas

[232] The layers were downloaded from the Colombian Environmental Information System (SIAC). Available at: http://www.siac.gov.co/catalogo-de-mapas

measurement methods or procedures applied.	
Purpose	Delineation of the potential area to be incorporated into the project over the life of the loan..
Comments	The 2010 layer was improved through the use of remote sensing (optical and radar) in order to categorize the information that in the satellite images was considered lost (no information) due to the presence of clouds.

Data/Parameter	$TDRR_t$
Unit	Annual percentage (%/year)
Description	Average deforestation rate in the reference region between 2000 and 2010 and its revalidation in the period 2010-2018.
Source	Calculated
Applied value	2000-2010: 2,87 %/year 2010-2018: 0,65 %/year
Justification for the choice of the parameter or description of the measurement methods or procedures applied.	It comes from the processing and analysis of the biennial forest cover change maps, which are generated by the Forest and Carbon Monitoring System (SMByC) as a result of the monitoring of forest cover every two years, between 2000-2010 and 2010-2018. The baseline values are selected to comply with the provisions of MADS Resolution 1447 of 2018 on mitigation actions at the national level. In this, Article 21 mentions that the MADS will formally submit to the UNFCCC a reference level of national coverage that includes, at a minimum, deforestation reduction activity and carbon pools originating from above and below ground biomass. This reference level will be used to account for the mitigation results of REDD+ projects from 2018 onwards, according to the provisions of Articles 29 and 41 of the same resolution. The deforestation rate was estimated using the equation proposed by Puyravaud (2003), considered for the projection of the deforested area under the historical average approach.
Purpose	Estimated emission reductions in the baseline scenario of the project project baseline scenario.
Comments	The selection of this scenario is also in line with the historical average approach proposed by the Methodology for projecting future deforestation. According to this approach, the reference rate for deforestation projection is assumed to be a continuation of the average annual rate measured during the historical period within the reference region. Therefore, the deforestation projection for the project area in the baseline scenario was calculated taking into account the historical analysis of land use change conducted for the NREF . See section 3.4.1.2 of the DD and 5.2 of this document.

Data/Parameter	$\Delta Cp_{t=t*}$
Unit	Tons of carbon dioxide equivalent per hectare (tCO2e/ha)
Description	Factor of change in the value of carbon dioxide equivalent contained in total biomass per hectare applicable in year t. in total biomass per hectare applicable to year t.

Source	For the Andes biome, Colombia defined a Forest Reference Emission Level (NREF) and established an average carbon value of CBFeq [233], plus COS.
Applied value	348.63 tCO_2e/ha
Justification for the choice of the parameter or description of the measurement methods or procedures applied.	Corresponds to the forest emission factor in the Andes biome within which the project area is located. For estimating the carbon stock change factor ($\Delta Cp_{t=t*}$) in units of carbon dioxide equivalent (CO_2e), the amount of carbon was multiplied by a factor of CO_2e (FCO_2e) of 3.667 (IPCC, 2003, 2006, (2019). The selection of the baseline values is done to comply with the provisions of MADS Resolution 1447 of 2018 on mitigation actions at the national level.
Purpose	The forest reference emission level (NREF) was submitted by Colombia in December 2019 and submitted to the technical assessment process of the United Nations Framework Convention on Climate Change (UNFCCC). This level is part of the step-by-step approach assumed by the country for the development of the NREF, in line with the Decision 1/CP.16.
Comments	NA

Data/Parameter	DBT_{CO2eq}
Unit	Tons of carbon dioxide equivalent per hectare (tCO_2e/ha)
Description	Carbon dioxide equivalent in total biomass difference per hectare; includes 1 primary degradation and 2-secondary degradation.
Source	Biomass Map 2010 prepared by IDEAM and established an average carbon value according to the type of ecosystem and the transitions of primary degradation and secondary degradation $DCBT_i$ [234].
Applied value	$DBT_{CO"eq} = 33.95\ tCO2e/ha$ Primary degradation (Core - patch): 33.95 tCO_2e/ha Secondary degradation (Patch - perforated) 53.15 tCO_2e/ha[235]
Justification for the choice of the parameter or description of the measurement methods or procedures applied.	Corresponds to the forest emission factor of the 2010 Biomass map for the ecosystems and transitions Primary degradation (Core - patch and Secondary degradation (Patch - perforated). For estimating the carbon stock change factor DBT_{CO2eq} in units of carbon dioxide equivalent (CO2e), the amount of carbon was multiplied by a CO2e factor (FCO2e) of 3.667 (IPCC, 2003, 2006, (2019). The selection of the baseline values is made to comply with the provisions of Resolution 1447 of 2018 of the MADS on mitigation actions at the national level.
Purpose	Estimate emissions from primary and secondary degradation in the baseline and project scenarios.
Comments	Given the conditions of the baseline area, project area and leakage belt in the baseline, secondary degradation was not considered for the quantification of total degradation.

[233] Carbon stocks in aboveground and belowground biomass.

[234] Carbon stocks in aboveground and belowground biomass.

[235] Given the conditions of the baseline area, project area and leakage belt in the baseline, secondary degradation was not considered for the quantification of total degradation.

8.2 Data and parameters monitored

Data/Parameter	AP_t
Unit	Hectares (ha).
Description	Project area at time t.
Source	IDEAM and Satellite Image Processing.
Description of the applied measurement and processing methods	The boundaries of the project area are defined based on the property of the Amé Foundation, the University of Tolima and other individuals, the eligible forest area is selected thanks to the processing and analysis of forest/non-forest mapping information generated by the Forest and Carbon Monitoring System (SMByC) of IDEAM.
Frequency of monitoring	Each verification
Applied value	<table><tr><th>Monitoring</th><th>PA</th></tr><tr><td>1 (2010 – 2017)</td><td>13.254,27</td></tr><tr><td>2 (2018 – 2019)</td><td>13.726,79[236]</td></tr><tr><td>3 (2019 – 2021)</td><td>13.782,91[237]</td></tr></table>
Monitoring equipment or instruments	Remote sensing data (provided by IDEAM and SMByC) GIS software.
Control de calidad (QA/QC)	Cross-checking of GIS analysis.
Purpose	Estimated emission reductions in the baseline scenario and the project scenario.
Estimation method	Corresponds to that area of eligible forest according to the national definition.
Comments	Section 3.2 of the PD and 1.6.2 of the second monitoring report.

Data/Parameter	CSB_m
Unit	Hectares per year (ha/year).
Description	Annual change in the area covered by forest in the project area, i.e., the area deforested at time t within the project area attributed to the implementation of project activities; in ha.
Source	Calculated from the Forest/Non-forest layers provided by IDEAM through the SMByC, available for the period of verification or elaboration of Forest/Non-forest layers, under supervised classification processes of satellite images, when IDEAM information is not available.
Description of the applied measurement and processing methods	It comes from the processing and analysis of forest cover change maps generated by the Forest and Carbon Monitoring System (SMByC), resulting from forest cover monitoring. For the years where the aforementioned inputs are not available, a cartographic processing was carried out for the classification of satellite images according to the availability of remote sensing sources.
Frequency of monitoring	Each verification.
Applied value	

[236] The project area increased in the second verification due to the signing of conservation agreements that allowed the inclusion of new lots (see section 2.1.3 of the second monitoring report).

[237] The project area is increased by the inclusion of a new lot (see Project Area Update section)..

	Year of the project		**Actual Deforestation**
	Year of the project (t)	**Calendar year**	**CSB_m**
			ha
	10	2019	0,73[238]
	11	2020	0,97
	12	2021	0,00[239]
	Total		**1,70**
	Annual Average		**0,89**
Monitoring equipment or instruments	Remote sensing data (provided by IDEAM) GIS software.		
Quality control (QA/QC)	IDEAM generates the annual report of changes in forest cover at the national level. This report is considered as a QA/QC of the process (see Annex [240]).		
Purpose	Estimated emission reductions in the baseline scenario.		
Method of estimation	see Annex I[241].		
Comments	The value for the year 2019 (time t10) was adjusted for the months that were analyzed in the monitoring as well as for the year 2021.		

Data/ Parameter	CSBf		
Unit	Hectáreas por año (ha/año).		
Description	Annual change in the area covered by forest in the leakage area, i.e., the area deforested at time t within the leakage area attributed to the displacement of deforestation by the implementation of project activities; in ha.		
Source	Calculated from the Forest/Non-forest layers provided by IDEAM through the SMByC, available for the period of verification or elaboration of Forest/Non-forest layers, under supervised classification processes of satellite images, when the information from IDEAM is not available.		
Description of the applied measurement and processing methods	It comes from the processing and analysis of forest cover change maps generated by the Forest and Carbon Monitoring System (SMByC), resulting from forest cover monitoring. For the years where the aforementioned inputs are not available, a cartographic processing was performed for the classification of satellite images according to the availability of remote sensing sources.		
Frequency of monitoring	Each verification.		
Applied value	**Year of the project**		**Real deforestation**
	Year of project (t)	**Calendar year**	**CSB_f**
			ha
	10	2019	10,62[242]

[238] Corresponds to the deforestation that occurred during the 9 months of 2019 counted between April 1 and December 31.

[239] Corresponds to the deforestation that occurred during the 2 months of 2021 covered by the monitoring period, counted between January 1st and February 28th..

[240] See in: [Information management [Annex I_Monitoring procedure_Project area and leakage belt].

[241] See in: [Information management [Annex I_Monitoring procedure_Project area and leakage belt].

[242] Corresponds to the deforestation that occurred during the 9 months of 2019 counted between April 1 and December 31.

		11	2020	14,16
		12	2021	0,00[243]
		Total		**24,78**
		Annual average		**12,91**
Monitoring equipment or instruments	Remote sensing data (provided by IDEAM) GIS software			
Quality control (QA/QC)	IDEAM generates the annual report of changes in forest cover at the national level. This report is considered a QA/QC of the process (see Annex I [244]).			
Purpose	Estimated emission reduction in the baseline scenario.			
Method of estimation	see Annex I [245].			
Comments	The value for the year 2019 (time t10) was adjusted for the months that were analyzed in the monitoring as well as for the year 2021.			

Data/ Parameter	$DFP_{REDD+project,year}$
Unit	Hectares per year (ha/year).
Description	Annual change due in core to forest patch polygons due to fragmentation in the project area, i.e., primary degradation at time t within the project area attributed to the implementation of project activities; in ha. .
Source	Calculated from the Forest/Non-forest layers provided by IDEAM through the SMByC, available for the period of verification or elaboration of Forest/Non-forest layers, under supervised classification processes of satellite images, when IDEAM information is not available. .
Description of the applied measurement and processing methods	It comes from the processing and analysis of forest cover change maps generated by the Forest and Carbon Monitoring System (SMByC), resulting from forest cover monitoring through fragmentation *(Landscape Fragmentation Tool).* For the years in which the aforementioned inputs were not available, a cartographic processing was carried out for the classification of satellite images according to the availability of the sources of the data. according to the availability of remote sensing sources.
Frequency of monitoring	Each verification
Applied value	

Year of the project		**Projected annual primary degradation in the project area in the scenario with REDD+ project**
Year of the project (t)	**Calendar year**	**$DFP_{REDD+Project\ year}$** **ha**
1	**2010**	0,06[246]
2	**2011**	0,18
3	**2012**	0.00
4	**2013**	0,16
5	**2014**	0,93
6	**2015**	4,82

[243] Corresponds to the deforestation that occurred during the 2 months of 2021 covered by the monitoring period, counted between January 1st and February 28th.

[244] See in: [Information management [Annex I_Monitoring procedure_Project area and leakage belt].Ver en: [Gestión de la información\7_Soportes\Anexos\Anexo I_Procedimiento de monitoreo_Area de proyecto y cinturon de fugas].

[245] Corresponds to the deforestation that occurred during the 9 months of 2019 counted between April 1 and December 31

[246] Corresponds to the deforestation that occurred during the 2 months of 2021 covered by the monitoring period, counted between January 1 and February 28.

7	**2016**	22,69
8	**2017**	10,66
9	**2018**	0.00
10	**2019**	0.00
11	**2020**	0.00
12	**2021**	0.00 [247]
Total		**39.51**
Annual Average		**3.76**

Monitoring equipment or instruments	Remote sensing data (provided by IDEAM) - Landscape Fragmentation Tool - GIS software.
Quality control (QA/QC)	IDEAM generates the annual report of changes in forest cover at the national level. This report is considered as a QA/QC of the process (see Annex I[248]).
Purpose	Estimated emission reductions in the project scenario.
Method of estimation	see Annex I [249].
Comments	The value for the year 2010 (time t10) was adjusted for the months that were analyzed in the monitoring as well as for the year 2021.

Data/ Parameter	$DFP_{f,year}$
Unit	Hectares per year (ha/year)
Description	Annual change due in core to forest patch polygons due to fragmentation in the leakage area, i.e., primary degradation at time t within the leakage area attributed to the implementation of project activities; in ha.
Source	Calculated from the Forest/Non-forest layers provided by IDEAM through the SMByC, available for the period of verification or elaboration of Forest/Non-forest layers, under supervised classification processes of satellite images, when the information from IDEAM is not available. .
Description of the measurement and processing methods used	It comes from the processing and analysis of forest cover change maps generated by the Forest and Carbon Monitoring System (SMByC), resulting from forest cover monitoring through fragmentation *(Landscape Fragmentation Tool).* For the years in which the aforementioned inputs were not available, a cartographic processing was carried out for the classification of satellite images according to the availability of the sources of the data. .
Frequency of monitoring	Each verification

Applied value

Year of the project		**Projected annual primary degradation in the project area in the scenario with REDD+ project**
Year of the project (t)	**Calendar year**	**$DFP_{REDD+project\ year}$** **ha**
1	**2010**	0,37 [250]
2	**2011**	1,11
3	**2012**	9,92

.

[247] See in: [Information management [Annex I_Monitoring procedure_Project area and leakage belt].

[248] See in the pathway: [Information management_Carbon estimates_Degradation].

[249] Corresponds to the deforestation that occurred during the 9 months of 2019 counted between April 1 and December 31

[250] Corresponds to the deforestation that occurred during the 9 months of 2019 counted between April 1 and December 31

		4	**2013**	120,13
		5	**2014**	0,00
		6	**2015**	17,12
		7	**2016**	43,30
		8	**2017**	42,15
		9	**2018**	89.02
		10	**2019**	27,92
		11	**2020**	0.00
		12	**2021**	0.00 [251]
		Total		**351,04**
		Annual average		**33.43**
Monitoring equipment or instruments	Remote sensing data (provided by IDEAM) - Landscape Fragmentation Tool - GIS software			
Quality control(QA/QC)	IDEAM generates the annual report of changes in forest cover at the national level. This report is considered a QA/QC of the process (see Annex I252).			
Purpose	Estimated emission reductions in the project scenario.			
Estimation method	see Annex I [253].			
Comments	The value for the year 2010 (time t10) was adjusted for the months that were analyzed in the monitoring as well as for the year 2021.			

[251] Corresponds to the deforestation that occurred during the 2 months of 2021 covered by the monitoring period, counted between January 1st and February 28th..

[252] See in: [Information management [Annex I_Monitoring procedure_Project area and leakage belt].

[253] See in pathway: [Information management_Carbon estimates_Degradation].

9 Quantification of GHG Emission Reduction

9.1 Baseline emissions

9.1.1 Historical annual deforestation in the scenario without REDD+ projects

For the quantification of deforestation, the deforestation rate was calculated using the formula given by Puyravaud (2003). This formula expresses the percentage of forest area decreased per year, with the following equation:

$$TDRR_t = \left(\frac{1}{(t_2 - t_1)}\right) \times ln\ ln\ \left(\frac{A_2}{A_1}\right) \times 100$$

Where:

$\boldsymbol{TDRR_t}$:	*Annual reference deforestation rate; %*
$\boldsymbol{t_1}$:	*Year of beginning of reference period*
$\boldsymbol{t_2}$:	*Year end of reporting period*
$\boldsymbol{A_1}$:	*Forested area of the area under control at the initial moment; ha*
$\boldsymbol{A_2}$:	*Forested area of the area under control at the end of the year; ha*

9.1.2 Quantitative projection of future deforestation

In accordance with section 13.2.1 of the AFOLU Sector Methodology Document Quantification of GHG Emission Reductions from REDD+ Projects v2.2 February 5, 2021, of ProClima according to which the country reference level conditions254 should be used, this project, in the framework of the third verification, uses the subnational reference level considerations issued under the NREF[255], in which the location of deforestation is not considered in the quantification of emission reductions, but has a single emission factor associated with aboveground and belowground biomass storage. The Methodology also suggests the use of a historical average deforestation approach to estimate the amount of future deforestation, which is consistent with the subnational baseline scenario. According to this approach, the reference rate for projecting deforestation is a continuation of the average annual rate measured during the historical period within the reference region. This rate, estimated based on the Puyravaud equation,256 is 2.87% in the period 2010-2019 and 0.65% in the period 2010-2019. %[257] for the subsequent years, between 2020 and 2021, and the deforestation projection in the project area in the baseline scenario was calculated taking into account the historical analysis of land use changes conducted in the NREF.

The area of annual base deforestation that applies in year t within the project area is calculated using the Methodology, as follows:

$$CSB_{lb} = AP_{t-1} * TDRR_t$$

[254] In Colombia, Resolution 1447 decrees that all REDD+ projects must use the baseline for the quantification and estimation of emissions.

[255] https://redd.unfccc.int/files/02012019_nref_colombia_v8.pdf

[256] For more details, see the document in: [Information Management 7_Supports Estimates \Puyravaud

[257] See attached Excel file containing the historical deforestation analyses for the Galilee-Amé Forest Conservation REDD project, located in the path: [Information Management - Carbon Estimates - Calculation of post emissions - VCS_NREF_ProClima] in the spreadsheet "Historical Deforestation"

Where

$CSBS_{lb}$: *Annual area deforested at time t within the project area (in ha)*

AP_{t-1}: *Area of forest in the project area at time t-1 (in ha)*

$TDRR_t$: *Applicable deforestation rate within the reference region in year t (%)*

t: *1. 2. 3... T years of the project's credit generation period (20 years), dimensionless.*

Additionally, the reference level incorporates an adjustment for national circumstances. According to UNFCCC guidelines, for the calculation of mitigation results in the case of Colombia, it was defined as 8.1% of the average deforestation value in the Andes region. This adjustment is based on the socio-political scenario of the end of the armed conflict in Colombia that allows access to areas previously inaccessible due to the negotiation process and the resulting agreement between the Colombian State and the FARC, which would stimulate deforestation258 , however, for the project the adjustment is omitted due to national circumstances until the guidelines for its application in subsequent verifications are determined. Figure 16 shows the reference area, project area, leakage area and deforestation for the monitoring period[259].

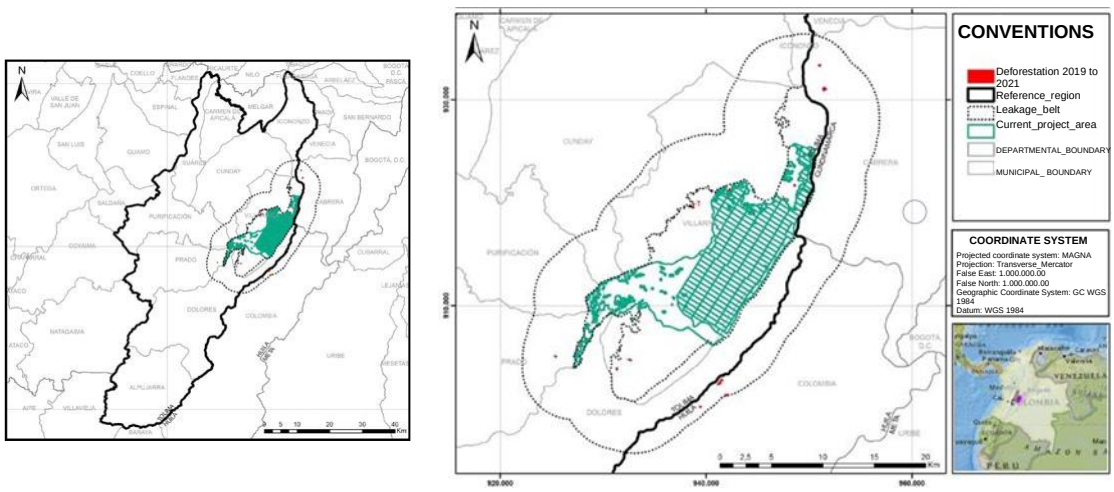

Figure 16: Reference area; the project area, leakage area and deforestation for the monitoring period.

Source: Based on historical information of the project and documentary review provided by the Fundación Amé(2021)

[258] Institute of Hydrology, Meteorology and Environmental Studies. Estimated National Circumstances Adjustment for Forest Reference Emission Level 2018-2022 presented at: https://redd.unfccc.int/files/31122019_anexo_circunstancias_nref_nal_v7.pdf

[259] See Figure in path: [Information Management 5-Monitoring].

9.1.2.1 Project Area

According to the coverage analysis conducted for the monitoring period, it is evident that the area of stable forest in the monitoring period corresponds to 13,782.91 ha, which correspond to the beginning of 2019, since this interpretation corresponded to the period (from January to March 2019), in this first period there is a loss of 13.5 ha, however, since it is a deforestation outside the monitoring period, it is not estimated, since it would be in the previous monitoring.

On the other hand, the subsequent period corresponded from April to December 2019, where due to changes in cover, it was possible to determine a deforestation of 1.7 ha, which are within the monitoring period. Table 28.

Table 28: Coverage monitoring corresponding to the monitoring period.

Projected year		Stable Forest (ha)		Actual Deforestation (ha/year)		Accumulated deforestation (ha/year)	
				AP	Af	PA	Af
Project year (t)	Calendar year	AP $_{t-1}$	Af $_{t-1}$	$CSB_{im,m}$	$CSB_{m,f}$		
10	2019	13.782,91	21.835,06				
10	2019	13.769,39	21.835,06	0,73	10,62	0,73	10,62
11	2020	13.767,69	21.810,28	0,97	14,16	1,70	24,78
12	2021	13.767,69	21.810,28	0,00	0,00	1,70	24,78

Source: Prepared from spatial processing of information from the Forest and Carbon Monitoring System, IDEAM and satellite images.

According to the above, it is not that the 13.5 ha are obviated, but that they are outside the monitoring period, so for the 2019 monitoring from April to December (9 months) and from January to December 2020 (12 months) it was necessary to perform the proration corresponding to the deforestation.

The area that would be deforested annually in the project area, in the absence of mitigation activities in the baseline scenario in this monitoring period, is presented in Table 29. It is important to clarify that the annual deforestation area projected in the baseline for the project is recalculated at each monitoring if the project area changes due to the inclusion of new areas belonging to the expansion area and the relevant national adjustments to the NREF are included.

Table 29: Áreas deforestadas por año en el área del proyecto bajo el escenario de línea base[260]

Projected year		Stable Forest (ha)	Actual Deforestation (ha/year)	Accumulated deforestation (ha/year)
Project year (t)	Calendar year	AP $_{t-1}$	CSB $_{lb\ t}$	CSB $_{lb}$
10	2019	13.486	297	297
11	2020	13.398	88	385
12	2021	13.384	14	399

Source: Prepared from historical project information (2021).

260 See supports in the path: [Information management: [Carbon estimations: Calculation of emissions_expost_VCS_NREF_ProClima].

9.1.2.2 Leakage belt

According to numeral 8.1.1.c) of the MD, the leakage belt can be updated at each verification in consideration of the corresponding project area.

The leakage belt corresponded to forest areas outside the project boundary that met similarity requirements with respect to the project expansion area.

For the delimitation of this area, a cost raster was initially carried out, taking into account the factors shown in Table 30, including their weighted weight.:

Table 30: Variables for the cost raster.

Factor	Weighted weight (%)
Slope	30
Distance to population centers	30
Distance to roads	20
Distance to drainage networks	20

Prior to the cost raster, the variables used were reclassified on a scale of values ranging from one to seven based on the following criteria:

- for distances, the closer the greater the risk, and
- for slope, the lower the higher the risk; in addition,
- a pixel size of 100x100 meters was delimited.

Once the cost raster was generated, the next step was to generate a buffer of 5 km from the limits of the expansion area of the project and select the forest areas that were in this delimitation (Figure 17 lower left part), then, among these areas were selected those with a classification lower than 3 in the final cost raster (Figure 17 upper left part); being these the ones that are more easily deforested (Figure 17 right part).

Finally, both the project area and the previously selected areas were classified into a set of ranges according to their altitude (Table 31) and slope (Table 32) to verify that the defined similarity conditions were met. Since the conditions were met, this area was the leakage belt.

Subsequent to this analysis, the project area underwent several adjustments, so that from this point on, the leakage belt was adjusted, intercepting the cost raster final result layers and the forest/non-forest layer of the applicable period. This is why the initial analysis only considered 9,015.7 ha of forest with respect to the area of forest reported in the carbon estimates for the current monitoring period.

Table 31: Altitude classification

Range (msnm)	Project		Leakage belt	
	Area (ha)	%	Area (ha)	%

<500	0,00	0,00	0,00	0,00
500-1000	0,00	0,00	55,39	0,61
1000-1500	1.159,08	4,41	1.306,60	14,49
1500-2000	11.883,60	45,26	1.826,78	20,26
2000-2500	10.135,34	38,60	3.296,81	36,57
2500-3000	3.031,43	11,55	2.516,54	27,91
3000-3500	45,09	0,17	13,56	0,15
3500-4000	0,00	0,00	0,00	0,00
Total	26.253,65	100	9015,70	100

Table 32: Percentage slope classification

Slope %	Project		Leakage belt	
	Area (ha)	%	Area (ha)	%
< 15	10.186,70	38,80	3.467,68	38,46
> 15	16.066,95	61,20	5.548,02	61,54
Total	**26.253,65**	**100,00**	**9.015,70**	**100,00**

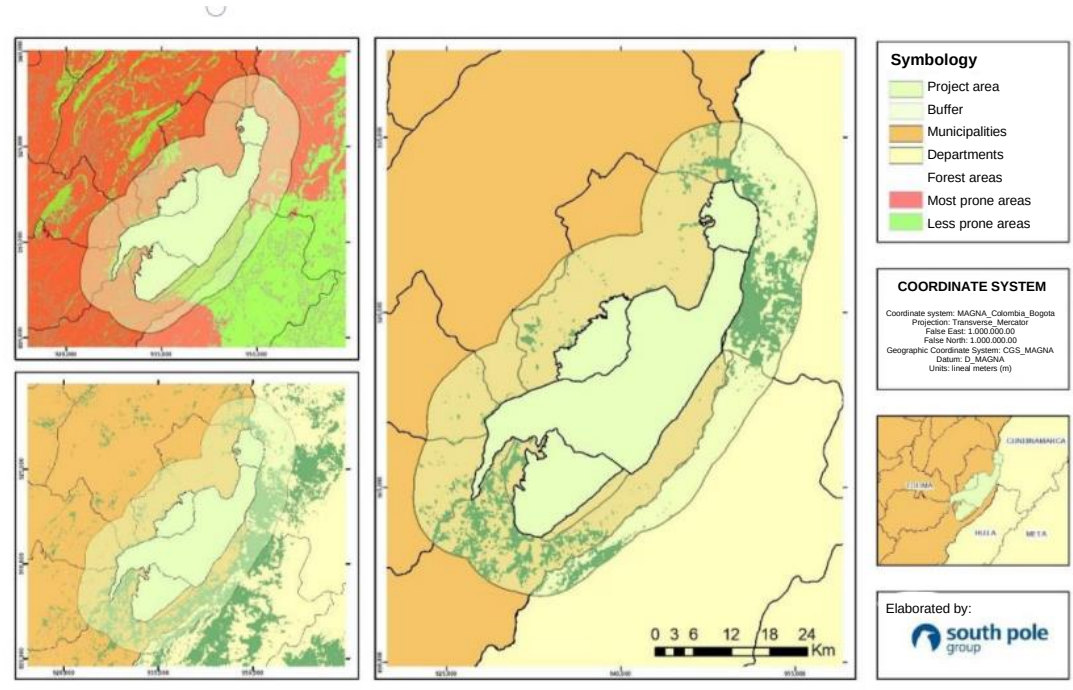

Figure 17: Delimitation of the leakage belt, top left cost raster classification, bottom left forest areas and right leakage belt.

Source: Based on historical information of the project and documentary review provided by the Fundación Amé(2021).

Table 33 shows the area that would be deforested annually in the leakage belt in the absence of mitigation activities in the baseline scenario in this monitoring period

Table 33 Areas deforested per year in the leakage belt under the baseline scenario [261]

Projected year		Projected stable Forest (ha)	Actual Deforestation (ha/year)	Accumulated deforestation (ha/year)
Year of the project (t)	Calendar Year	Af_{t-1}	$CSB_{f\,t}$	CSB_{f}
10	2019	21.364	471	471
11	2020	21.226	139	609
12	2021	21.203	23	632

Source: Prepared from historical project information (2021).

9.2 Identification of forest classes in the areas to be deforested in the baseline scenario and post-deforestation land use classes in the project area.

The national NREF for the Andean biome defines an average change factor of 348.63 tCO2eq ha[1] that is 100% released at the time of deforestation and, in addition, does not consider increases in average post-deforestation cover carbon stocks associated with specific land cover or land use or activity data linked to these changes. Therefore, the project considers the same assumptions for the quantification of changes in carbon stocks for the project area in the baseline scenario, accepting as activity data only the change in the area covered by forest, i.e. in areas in which forest is detected on the first date and non-forest on the second date, so that there is certainty that the deforestation event occurred in the time period analyzed.

9.2.1 Emission factor

The national NREF defines the carbon contents for the five biomes of Colombia, the total biomass was estimated from the sum of aboveground and belowground biomass per hectare for each of the five natural regions. Subsequently, the carbon content of the total biomass for each of the natural regions was determined as the product of the total biomass and the carbon fraction of dry matter suggested by the IPCC (2019) Guidelines (0.47). For the estimation of the deforestation emission from the soil pool the national NREF assumes a gross emission where the soil carbon content is emitted in equal proportions over 20 years once the deforestation event happens. Table 34 presents the NREF emission factors for the Andean biome used to estimate GHG emission reductions from REDD+ Galilea-Amé forest conservation

261 See supports in the path: [Information management: [Carbon estimations: Calculation of emissions_expost_VCS_NREF_ProClima]

Table 34: Natural forest emission factors in the Andean biome

Biomass area (tCO_2e/ha)	Subway biomass (tCO_2e /ha)	Total biomass (tCO_2e /ha)	Annual rate of soil carbon emitted over 20 years (tCO_2e /ha)
265,39	60,32	325,71	23

Source: Prepared (2021), based on (MADS & IDEAM, 2019).

Emission factors were calculated from 301 sampling points established in the National Forest Inventory (NFI) during the period 2015-2018. The national NREF does not consider the carbon content of litter and dead wood debris, since the country currently does not have sufficient information to estimate these sinks.

With the following subnational NREF considerations in mind, the use of different emission factors is not necessary[262]

- The reference level does not consider carbon contents in litter and dead wood debris, as the country does not currently have sufficient information to estimate these sinks. In summary, the only carbon pool considered by the reference level is aboveground and belowground biomass
- The carbon contained in above-ground and below-ground forest biomass is fully released at the time of deforestation, making the post-deforestation carbon stock change factor ($\Delta Cpz,t$) equal to zero
- The country reference level only defines carbon contents in aboveground biomass, belowground biomass and soil organic carbon, whose estimates were made at the national level and in each of Colombia's biomes, measured in tons of carbon per hectare (tC/ha). These data were compiled by the SMByC in the framework of the reference level proposal (MADS & IDEAM, 2019)[263].
- The NREF assumes that all carbon contained in the aboveground and belowground biomass pool is emitted in the same year that the deforestation event occurs. For the case of estimating emissions from deforestation of the soil pool, it is assumed that the soil carbon content (COS) is emitted in equal proportions for 20 years after the deforestation event occurs.

9.3 Calculation of carbon stocks

The quantification of emission reductions associated with changes in carbon values within the project area for year t was performed following the guidelines of section 13.4 of the ProClima Methodology under the AFOLU sector Methodological Document Quantification of GHG Emission Reductions from REDD+ Projects v2.2 February 5, 2021. The values and assumptions used for the calculation of carbon stocks correspond to those set out in the NREF and described in the previous section. The change in carbon stocks

[262] According to Resolution 1447 of 2018, emission reduction projects, which are developed in the country must use the values established by the most recent NREF.

[263] The reference level proposal for Colombia details the methodology used for the estimation of emission factors with respect to included sinks, forest stratification, field data compilation, data preparation, estimation of total biomass by forest type and included gases, as well as the ProClima methodology under the AFOLU sector Methodological Document Quantification of GHG Emission Reductions from REDD+ Projects v2. 2 February 5, 2021. See supports in the path: [Information Management Information Management - Supports - Estimates].

(annual emission) was calculated by multiplying the annual area deforested by the proposed change factors by the subnational reference level following the equations:

$$EA_m = CSB_m * \Delta CT_{eq}$$

Donde:

EA_m:	*Annual emission under the scenario with project at time t; tCO2e/ha*
CSB_{lb}:	*Annual deforestation in the area covered by forest; ha*
ΔCT_{eq}:	*Factor of change in total carbon dioxide equivalent value of sinks; tCO2e/ha.*

The validated leakage belt was updated to include those areas of forest in the expansion area where deforestation had not been considered for monitoring. At the same time, the leakage monitoring data was adjusted in the calculation of emission reductions.

Project activities do not contemplate an increase in GHG emissions with respect to the baseline, as activities have been carried out to prevent deforestation and disturbance events. Therefore, it is considered that the activities implemented in the leakage management areas do not contribute to an increase in emissions.

$$EA_{f,t} = (CSB_{f,t} * \Delta CT_{eq}) - EA_{lb,f,t}$$

Donde:

$EA_{f,t}$:	*Annual emissions in the leakage area at time t; tCO2e/ha*
$CSB_{f,t}$:	*Annual deforestation in the area covered by forest in the area of leakage; ha*
ΔCT_{eq}:	*Change factor in total carbon dioxide equivalent value of sinks; tCO2e/ha.*
$EA_{lb,f,t}$:	*Annual emission from deforestation in the leakage area in baseline scenario t; tCO2e/ha*

As can be seen, the above formula considers leakage emissions as the difference between monitored leakage minus leakage in the baseline scenario, and given that the result for each of the project years is less than the baseline leakage, emissions in the leakage area would be negative, i.e., although the adjustment was made in the leakage area and a small increase in deforestation is evident, when estimating emissions; the project did not increase emissions in the leakage belt perCIBMM than expected with the baseline projections, therefore, leakage in the project scenario would be zero.

9.4 Quantification of net GHG emission reductions attributable to the implementation of REDD+ activities

To estimate the emissions reductions attributable to the project, the total emissions due to carbon content avoided by the land use change were multiplied by the years of the analysis period. The net emissions reduction of the project was calculated using the following equation.

$$RE_{mt} = (t_2 - t_1) \times (EA_{lb} - EA_m - EA_f)$$

Where:

$\boldsymbol{RE_{mt}}$:	*Net emission reductions attributed to deforestation avoided by the project's mitigation actions in year t; tCO2e.*
$\boldsymbol{t_1}$:	*Initial year of the reference period*
$\boldsymbol{t_2}$:	*End year of the reference period*
$\boldsymbol{EA_{lb}}$:	*Annual emissions from deforestation under the baseline scenario over time. time t; tCO_2e*
$\boldsymbol{EA_m}$:	*Annual deforestation emissions under the project scenario over time. t; tCO_2e*
$\boldsymbol{EA_f}$:	*Annual emission from deforestation under the project scenario in the leakage area, over timet; tCO_2e*

In order to ensure the permanence of the mitigation activities for the duration of the project, a reserve of 15% of the total quantified emission reductions was set, which cannot be traded. This percentage will cover aspects related to the permanence and risk of the activities, in case the replenishment of credits placed in the market is required and partly guarantee the uncertainty in the quantification of emissions reductions, in accordance with the requirements of section 10.8 of the ProClima standard version 3.0 of May 13, 2021.

Thus, the results of mitigation or reduction of marketable emissions (REC) to be generated by the project were calculated considering the equations shown below and Table 35 presents the removals per year and accumulated in accordance with the requirements of section 13 of the methodological document.

$$REC_{mt} = RE_{mt} \times (1 - RF_t)$$

$$RED_{mt} = RE_{mt} \times RF_t$$

Where:

$\boldsymbol{REC_{mt}}$:	*Emission reductions marketable in year t; tCO2e*
$\boldsymbol{RE_{mt}}$:	*Net emission reductions attributed to deforestation avoided by the project's mitigation actions in the year t; tCO_2e*
$\boldsymbol{RED_{mt}}$	*Number of loans discounted due to risk of non-permanence in the tiempo t; tCO_2eq*
$\boldsymbol{RF_t}$	*Discount factor for non-permanence risks; dimensionless*

Table 35: Net GHG emission reductions attributable to the project's REDD+ activities[264]

Project year		Net emissions reduction	Emissions reserve for non-permanence risk permanence	Tradable emission reductions (REC by its Spanish acronym)	
Project year (t)	Calendar year	RE_{mt}	RED_{mt}	REC_{mt}	REC_{m}
		tCO_2e	tCO_2eq	tCO_2eq	tCO_2eq
10	2019	103.325	15.499	87.826	87.826
11	2020	36.960	5.544	31.416	119.242
12	2021	13.826	2.074	11.752	130.994
Total		**154.111**	**23.116,65**	**130.994,00**	
Annual		**80.266**	**12.040**	**68.226**	

Source: Prepared from historical project information (2021).

The estimates of net GHG reductions attributed to the project are made following the guidelines of the ProClima methodology under the AFOLU sector Methodological Document Quantification of GHG Emission Reductions from REDD+ Projects v2.2 5 February 2021. Considering the data and parameters monitored during the progress of the Galilea-Amé Forest Conservation REDD+ Project, comparing the emissions of the baseline and the scenario with project, a net reduction of 154,111 tCO2e is reported for the period between September 2019 and February 2021 (1.92 years).

[264] The database with the quantification of the Project's mitigation results can be consulted in the Excel file *Calculo_emisiones_expost_VCS_NREF_ProClima* located in the path: [Information Management\2_ Carbon Estimates].

10 Quantification of GHG Emission Reductions due to Degradation

10.1 Degradation considerations at the beginning of the project

1.1.1 Spatial and temporal limits of degradation

The spatial limits for the quantification of degradation correspond to the same limits determined for deforestation, consisting of the project area, the leakage belt, and the reference area. The reference area includes the project areas and the leakage belt.

The reference area is a spatial delineation of analytical domain from which information is extracted about changes in agents and causes of degradation, and patterns of land use and land cover change. The project area is the portion of territory or areas under control of the project proponent and where the project proponent carries out project activities. The leakage belt is the portion of territory surrounding or adjacent to the project area where baseline activities may be displaced because of activities implemented in the project.

The surface extensions of these spatial boundaries are:

Table 36: Area of spatial boundaries

Spatial boundary	Area (ha)
Total Reference Area	368.293,2
Total Leakage Belt	67158,4
Project Area Validation 2021*	13782,9

* Correspond to the same limits determined for deforestation.

The baseline identifies the historical degradation dynamics in the absence of the project, quantifying the transitions between degradation categories in the reference area and the leakage belt to project them annually into the future in the project area.

The temporal limits are the historical reference period and the monitoring periods. The baseline historical reference period is 10 years prior to the project start year, between 2000 and 2010, with three observations over time (coverage maps) 2000, 2005 and 2010. The monitoring periods are the years during the lifetime of the project that serve as observations to certify GHG emission reductions.

The time limits of the project are as follows:

Table 37: Years of time limits

Analysis Level	Years
Baseline	2000, 2005, 2010
Monitoring	2010,2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019, 2020, 2021

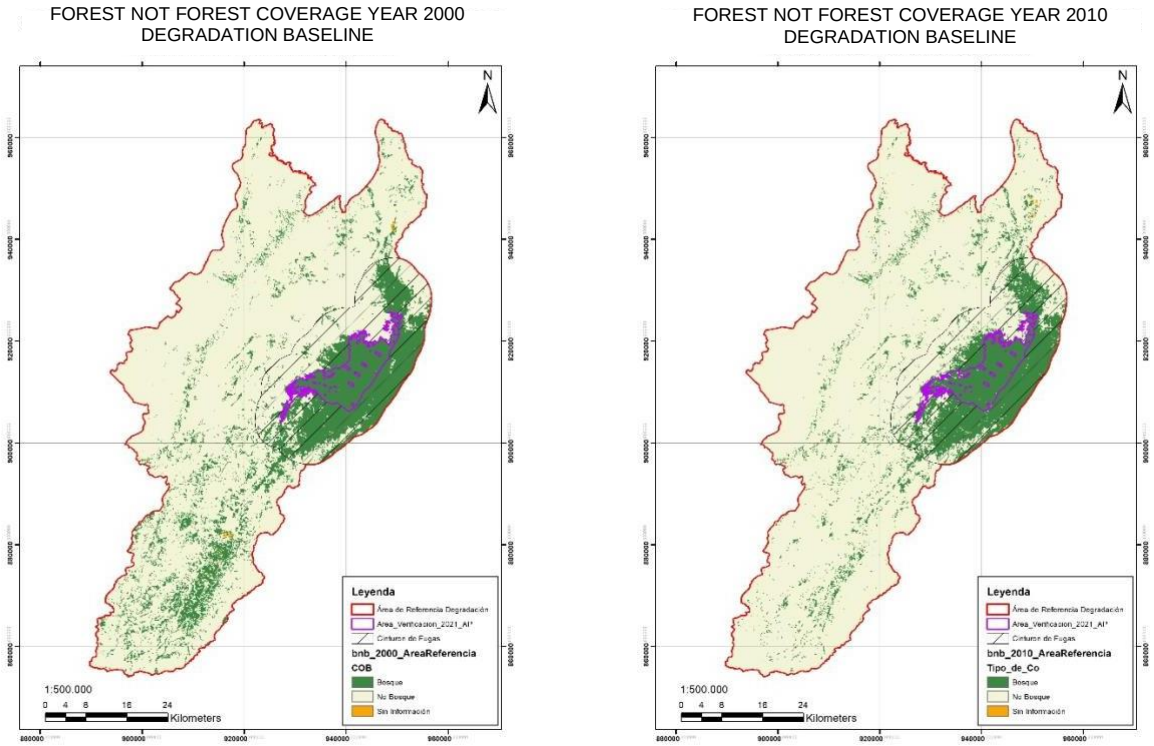

Figure 18: 2000 and 2010 Baseline Non- Forest Forest Maps

Source: Based on historical information of the project and documentary review provided by the Fundación Amé (2021).

1.1.2 Causes and Agents of degradation

According to IPCC (1997)[265], degradation in a forest environment could apply to forest productivity (products and services), genes, tree vigor and quality, species composition, soils, water, nutrients, and the landscape. As widely used by forest scientists, forest degradation implies a long-term loss of productivity that is difficult to assess, especially when applied to soils, water, and landscape. However, it is possible to have a decline in productivity without a substantial loss of carbon, and it is possible to have a loss of carbon (e.g., selective logging) without a decline in productivity. A change in species composition may not degrade a forest in terms of productivity. In addition, several existing definitions of forest degradation are not limited to human-induced activities. (IPCC, 2003[266]).

Normal forest management operations such as thinning, harvesting and regeneration, while reducing canopy cover, may not reduce the productivity or carbon storage capacity of the forest and, in fact, may increase it. Therefore, reduction of upper storeys alone may not imply forest degradation. (IPCC, 2003).

[265] Intergovernmental Panel on Climate Change (IPCC). (1997). Houghton J.T., Meira Filho L.G., Lim B., Treanton K., Mamaty I., Bonduki Y., Griggs D.J. and Callander B.A. (Eds). Revised 1996 IPCC Guidelines for National Greenhouse Inventories. IPCC/OECD/IEA, Paris, France.

[266] Intergovernmental Panel on Climate Change (IPCC). (2003). Definitions and Methodological Options to Inventory Emissions from Direct Human-induced Degradation of Forests and Devegatation of Other Vegetation Types. 2003 - Edited by Jim Penman, Michael Gytarsky, Taka Hiraishi, Thelma Krug, Dina Kruger, Riitta Pipatti, Leandro Buendia, Kyoko Miwa, Todd Ngara, Kiyoto Tanabe and Fabian Wagner. Published by the Institute for Global Environmental Strategies (IGES) for the IPCC ISBN 4-88788-004-9.

The identification and characterization of the possible causes of forest degradation in Colombia is a complex issue because degradation is a process that acts at scales in space and time, and many of its causes are highly related to deforestation. According to a recent study conducted by IDEAM, about 12% of forest degradation in the country tends to eventually end in deforestation. (IDEAM, 2018)[267].

In order to talk about forest degradation, it is important to have in context the definition of forest used in the country's official studies and reports, since, depending on this definition, the concept of degradation is greatly influenced.

The definition of forest adopted by Colombia under the Kyoto Protocol is consistent with that defined by the UNFCCC in its decision 11/CP.7 as: land occupied mainly by trees, which may contain shrubs, palms, guaduas, herbs and lianas, in which tree cover predominates with a minimum canopy density of 30%, a minimum canopy height (in site) of 5 m at the time of identification and a minimum area of 1.0 hectare. Tree cover of commercial forest plantations, palm crops and trees planted for agricultural production are excluded (Cabrera et al., 2011, Galindo et al., 2014b), quoted by IDEAM (2018), and constitutes the official definition of forest for Colombia.

Deforestation and/or forest degradation agents refer to individuals, social groups or institutions (public or private) that, influenced or motivated by a series of factors or underlying causes, make the decision to degrade or convert natural forests towards other coverages and uses, and whose actions are manifested in the territory through one or more direct causes (González et al., 2017), quoted by IDEAM (2018).

According to IDEAM (2018), forest degradation in Colombia is due to selective logging (from 15 to 50 million MgCO2e per year), between 0 and 10% to fuelwood collection (0 to 0.05 million MgCO2e per year) and between 0 and 10% to forest fires (0 to 0.05 million MgCO2e per year).

In this sense, the direct and indirect causes of degradation were identified and typified for Colombia's forests. Table 38.

Table 38: Direct and indirect causes of degradation in Colombia

Cause type	Cause	Description
DIRECTS	Selective logging	Illegal timber extraction degrades forests by generating changes in their structure and composition, causing direct effects on the habitat of wild biota, the functioning of hydrological systems and even the quality and economic value of forest resources. In addition, there are impacts associated with the creation of the necessary infrastructure for timber extraction and hauling. The opening of roads and the extraction stage are considered to favor access to these areas and may have adverse effects on water resources.
	Extraction of firewood	Natural forests are the main source of energy for rural communities. Therefore, logging for fuelwood supply generates high and constant pressure on forest ecosystems, increasing their fragility

[267] Armenteras, D., González, TM., Meza, M., Ramírez-Delgado, J.P., Cabrera, E., Galindo, G., Yepes, A. (Eds). 2018. *Causes of Forest Degradation*
Forestal Degradation in Colombia: a first approximation. Universidad Nacional de Colombia Bogotá Headquarter, Institute of Hydrology, Meteorology and Environmental Studies of Colombia-IDEAM, UN-REDD Program. Bogotá D.C., Colombia.,105 pp.

Cause type	Cause	Description
		and contributing to the degradation of the resource base. (Palmberg, 1981). In Colombia, 55.1% of the rural population and 2.6% of the population located in municipalities depend on firewood as a primary source of domestic energy for cooking and heating (DANE, 2008). It is estimated that approximately 8.46 million m3 of wood are extracted for energy purposes, which represents about 83% of the total wood extracted from forests (SIAC, 2006, mentioned in Aristizábal, 2010). The methods used by rural communities to obtain firewood and charcoal are outdated and unsustainable, which is why they are not only considered to contribute to poverty, but are also the cause of forest degradation (May 2013) as they affect soil protection and runoff regulation
	Forest fires	Recent studies have identified fire as an important direct cause of tropical forest degradation (Brando et al., 2014; Budiharta et al., 2014; Bustamante et al., 2015; Hosonuma et al., 2012; Matricardi et al., 2010; Souza et al., 2013). Human actions have altered natural fire regimes, and both the intensity, size and frequency of fires have increased in many regions of the world, especially in tropical forests (Thompson et al.,2013). Fires cause changes in forest structure through increased mortality of tree species, changes in canopy cover, and impoverishment of local biodiversity. In Colombia, fires have been associated with deforestation processes (Armenteras & Retana, 2012) but they are also susceptible to being degraded by fires that escape from agricultural or pasture management zones.
	Forest grazing	Extensive cattle raising is not only related to deforestation due to the change of forest land use to expand pasture areas but is also one of the main causes of tropical forest degradation (Lanly, 2003). The monoculture of grasses for grazing increases the pasture matrix and generates a more abrupt border between forest relicts and adjacent grasslands. Cattle trampling compacts soils and modifies their hydraulic characteristics, affecting the root development of tree species and generating susceptibility to their easy removal (Vargas, 2011). Also, the introduction of cattle in forests prevents post-fire recovery, affecting the resilience of the ecosystem, possibly producing an impact on the quality and quantity of fuels, as well as preventing the regeneration of woody species and favoring the abundance of exotic species (Blackhall & Raffaele, 2005).
	Expansion of the agricultural and cattle-raising frontier - illicit crops	These crops consist of plots with an average size of 0.1 ha to 0.5 ha and can even be found in protected areas; in the National Natural Parks System, by 2014 there was a cultivated area of approximately 5,000 ha (UNODC, 2015). Forest degradation is accentuated by the synergy between illicit activities. The monitoring of the regions affected by illicit crops in Colombia carried out by

Cause type	Cause	Description
		the Integrated Illicit Crop Monitoring System - SIMCI (Spanish acronym) has detected a relationship between the areas affected by coca crops and the illicit extraction of minerals (largely from gold mining), mainly in alluvial lands on margins and terraces adjacent to bodies of water in the departments of Antioquia, Chocó, Bolívar, Putumayo, Cauca and Nariño (UNODC, 2015). This dynamic generates major impacts on natural cover by intensifying and accelerating the processes of deforestation and habitat fragmentation, increasing the impacts.
INDIRECT	Technological and economic factors	Colombia's progressive incursion into international markets, in which the national economy is increasingly dictated by the global macroeconomic environment, has had a strong influence on the dynamics of deforestation throughout the territory (González et al., 2011), and very possibly in forest degradation, because this also encourages the proliferation of illegal economies related to illegal logging and trade of valuable species.
	Political and institutional factors	Among the political and institutional factors that have the greatest impact on forest degradation are economic development policies and infrastructure development.
	Cultural factors	In general, deforestation and degradation processes take place when the agent assigns a positive or negative value to forests. For example, forest associated with valuable timber trees that can be harvested through selective logging, but without an associated management/harvesting plan. Another example is the use of the forest under a strategic vision, where the location or structure of the forest offers an advantage for the development of a particular activity, which may or may not have a direct relationship with the forest cover. The maintenance of the forest to camouflage illicit activities (e.g., illicit crops) is an example of this. In both cases the valuation depends mainly on socio-cultural factors.
	Demographic factors	In tropical countries with developing economies, the areas of many of their forests are subject to the influence of a series of demographic factors that directly affect local populations. This is corroborated by the positive relationships found between deforestation rates and variables such as population growth in rural areas throughout the world.
	Biophysical Factors	Anthropic factors play an important role in land use changes. However, it is important to consider that the territory has its own characteristics that condition the type of land cover that can occur in each place and the feasibility of its conversion (deforestation/degradation).

Source: IDEAM, 2018

1.1.3 Regional Actors, Causes and Agents

Actors

As reported in the Project Document[268] for the study area, the following stakeholders are identified: i) public, private, educational, or external charitable institutions that

[268] AME & South Pole. 2018. Emissions Offset Program Conservation of the Galilea-Amé Forest. May 4, 2018 Document prepared by South Pole Carbon Asset Management S.A.S.

do presence in the territory, ii) associations formed in the community and iii) local experts. Table 39.

Table 39: Social actors presented in the area

Institutions	Associations	Community (local experts)
Universidad del Tolima Cunday City Hall CORTOLIMA Government of Tolima Educational institutions in the rural districts Alto Puerto Lleras,Cuatro Mil y Galilea Enertolima	Community Action Boards Fundación reiniciar Association (in the process of being created) for the defense of water and environment Committee of coffee growers Committee of cocoa growers Committee of banana growers Cattle raising farmers Committee for the defense of the mountain range Committee of Banana Growers Committee of Luleros Asojuntas Cunday Guanabaneros	People who live for a long period of time in the area and manage conventional agricultural practices.

Source: Based on historical information of the project and documentary review provided by the Fundación Amé (2021).

The following were identified as conflicts of these actors, which lead to unsustainable use of the forest under conservation, leading to deforestation and degradation.

- The local community of the Galilea Forest is interested in the conservation of the natural resources of the Alto Torres, Cuatro Mil, Galilea and Puerto Lleras trails. Agricultural producers take advantage of the natural forest in these areas to grow crops.

- The Committee of Coffee Growers and the Committee of Producers seek to orient their productive processes in a way that allows them to conserve the Galilea Forests and at the same time, to use them appropriately. In turn, the small and medium-sized producers are interested in accessing the land informally through the establishment of pastures and crops.

Degrading agents

The agents of deforestation identified in the Project Document have the same influence on forest degradation, since these activities are related and are usually sequential, i.e. prior to deforestation, forest degradation has been carried out mainly by selective logging of valuable timber species.

Some agricultural producers, cattle raisers and the local population are the main agents of deforestation and degradation, because it is caused by the expansion of the agricultural frontier, for the establishment of crops and pastures, and by the extraction of timber from the forest for land appropriation, local use or for trade[269].

[269] Gómez. E. J., Pastrana G. E., (2016). Community conservation strategies as a contribution to the sustainable environmental development of the Galilea Forest, in the east of the department of Tolima. Universidad Nacional del Tolima.Department of Forest Engineering. In the prospective section, the local community identified the following for the rural district Puerto

Causes of degradation

- Timber harvesting

Logging is the second main cause of deforestation and the first cause of degradation, as it is the first phase of intervention in the area's forests and is carried out for three purposes: i) as a method of appropriating land that the local population considers wasteland [270], ii) commercialization of timber for different purposes, and iii) local use of the timber. The lack of tools and incentives to undertake conservation projects and land use problems in the region are some of the causes that lead the local population to cut down the forest[271].

Logging for timber marketing has significantly reduced the abundance of timber species, including *Tabebuia rosea*, *Juglans neotropica*, *Aniba perutilis*, *Nectandra spp.*, *Nectandra acutifolia*, *Cedrela sp*. and *Cinchona pubescens*. Figure 19.

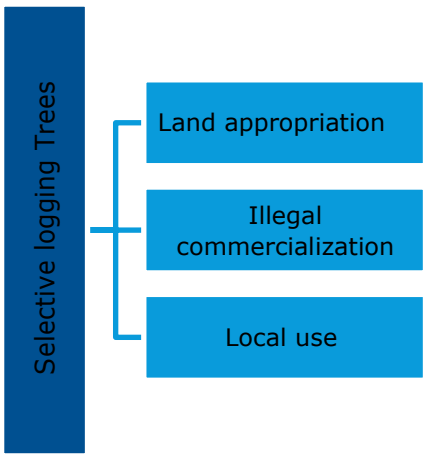

Figure 19. Causes of degradation

1.1.4 Chain of events leading to degradation

The main causes that have led to deforestation and degradation in the reference area are the expansion of the agricultural frontier and logging for different purposes, with cattle raisers, farmers and the local population being the agents that make decisions on land use.

The population of the reference area has unsatisfied basic needs, which represents a situation of poverty. The sources of income are derived from the economic activities carried out on their land, which in many cases is less than 5 ha, which is why if they want to increase their income, they must look for additional areas for production. Both cattle raisers and farmers do not have technical assistance that would allow them to develop cleaner production systems, and the soil characteristics do not favor them because they are poor and stony. In addition to this, there is

Lleras, Alto Puerto Lleras y Galilea, the areas where there are currently crops or pastures for cattle raising, which 20 years ago were natural forest. In addition, he assures that, even though during a period the population decreased due to the armed conflict, in recent years it has increased.

[270] Conversations with villagers during field visits to the project for the construction of the Project Document.

[271] Gómez E. J. & Pastrana G. E. (2016). Community conservation strategies as a contribution to the sustainable environmental development of the Galilea Forest, in the east of the department of Tolima.

the road network of the municipalities that make up the reference area and future projects to open roads to facilitate access to the forests. Figure 20.

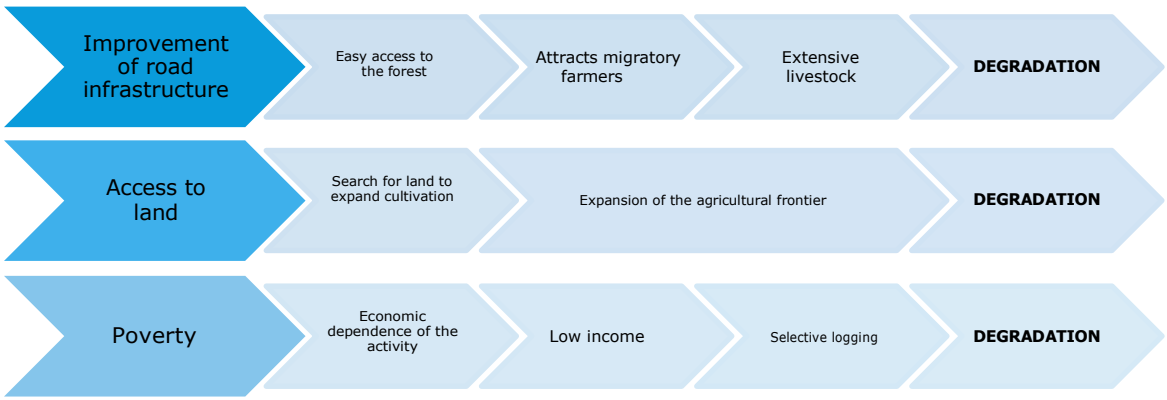

Figure 20. Chain of events leading to degradation.

1.1.5 Methodological steps - degradation - outline

The spatialization of degradation was developed following the methodological scheme described by IDEAM (2018) [272] in the document Estimation of forest degradation in Colombia through a fragmentation analysis, as well as the methodological guidelines of the ProClima Standard.

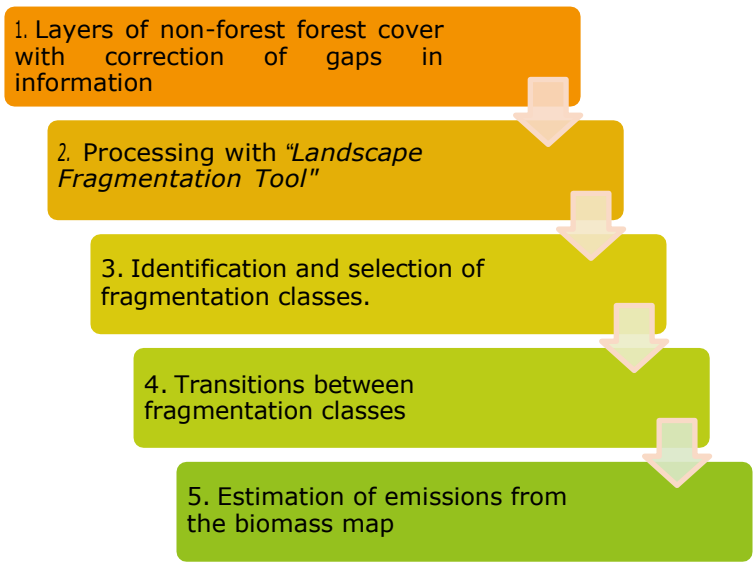

Figure 21: Methodological scheme, adapted from Ramirez et al, 2018

To the non-forest forest cover layers elaborated by IDEAM, a correction of information gaps by clouds was made, using secondary information from the CORINE LAND COVER COLOMBIA land cover. Then, using the *Land*

[272] Ramírez-Delgado J.P., Galindo G.A., Yepes A.P., Cabrera E. Estimation of forest degradation in Colombia through fragmentation analysis. Institute of Hydrology, Meteorology and Environmental Studies– IDEAM, Ministry of Environment and Sustainable Development– MADS, UN-REDD Colombia Program. Bogotá, 2018.

Fragmentation Tool[273] the forest fragmentation classes were classified and then the transitions between fragmentation classes for the different time periods defined in the temporal boundaries were analyzed. Finally, with these results of the transitions, the emissions estimate was constructed, considering the biomass contents in the forest types for the year 2010 of the different fragmentation classes.

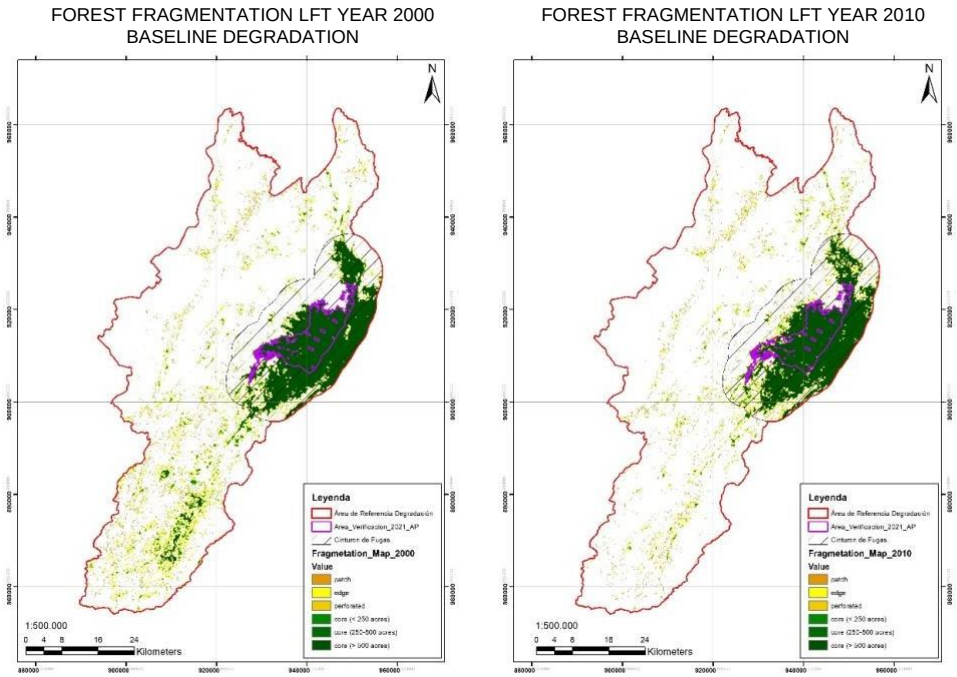

Figure 22: Fragmentation maps of the 2000 and 2010 baseline.

Source: Based on historical information of the project and documentary review provided by the Fundación Amé (2021).

[273] Vogt, P., K. Riitters, C. Estreguil, J. Kozak, T. Wade, J. Wickham. 2007. Mapping spatial patterns with morphological image processing. Landscape Ecology 22: 171-177.

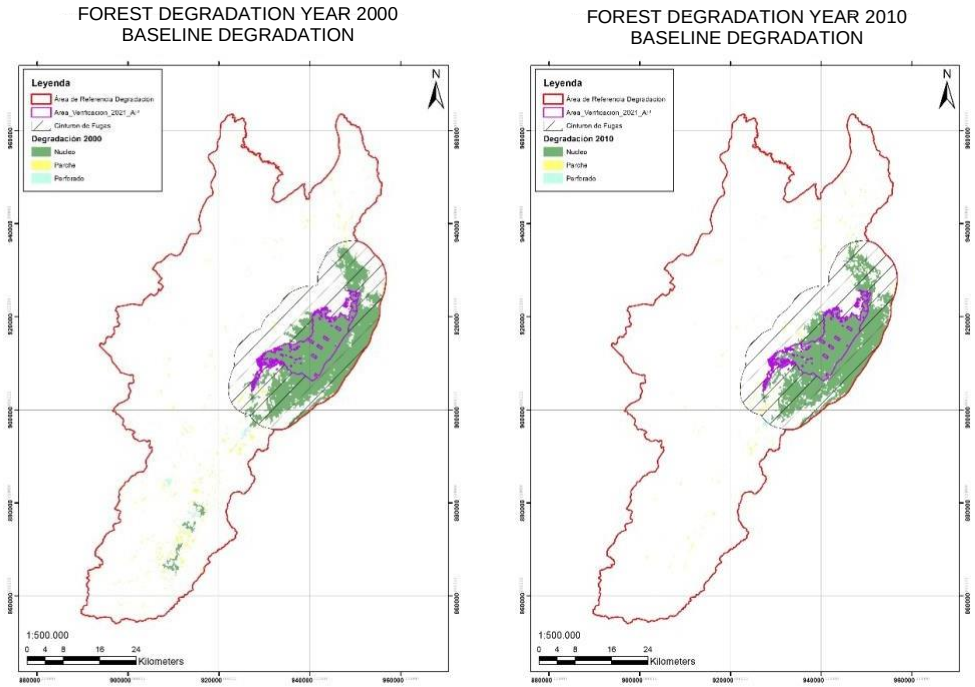

Figure 23: Degradation maps of the 2000 and 2010 baseline.

Source: Based on historical information of the project and documentary review provided by the Fundación Amé (2021).

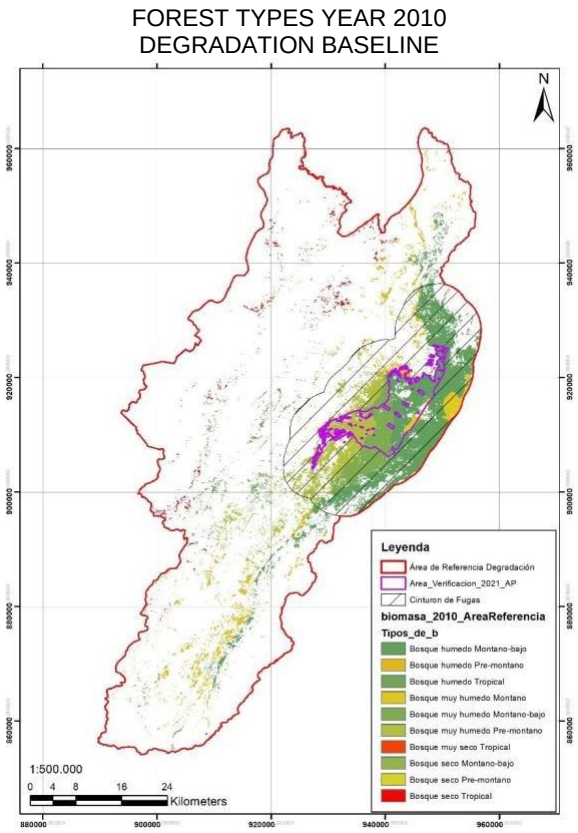

Figure 24: Forest type maps of the baseline year 2010

Source: Prepared based on historical project information and documentary review provided by the Fundación Amé (2021)

Using the same methodology as the baseline, the monitoring areas for the years 2010 to 2021 were analyzed.

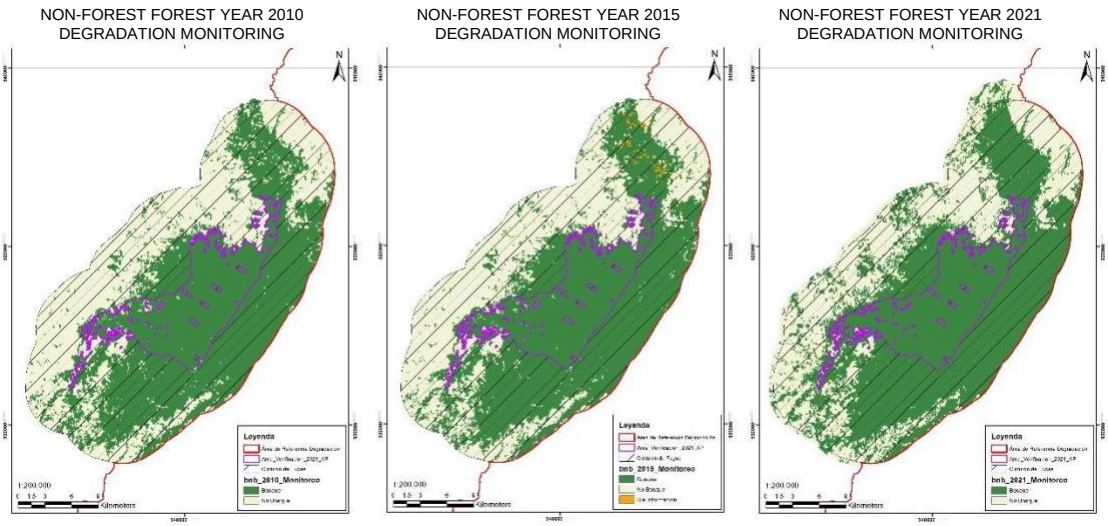

Figure 25: Non-Forest Monitoring Maps of years 2010, 2015, 2021

Source: Based on historical information of the project and documentary review provided by the Fundación Amé (2021)

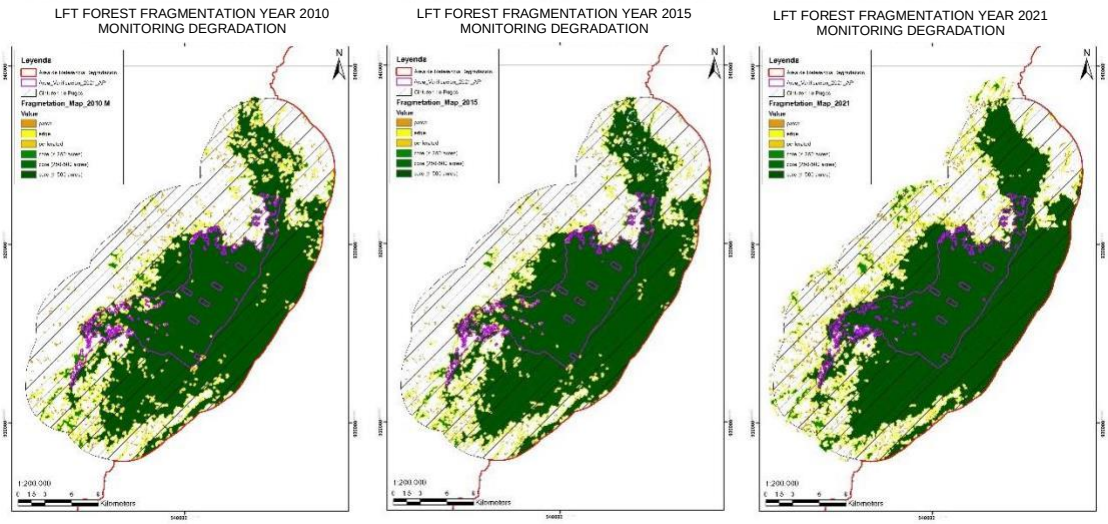

Figure 26: Fragmentation Monitoring Maps for years 2010, 2015, 2021

Source: Based on historical information of the project and documentary review provided by the Fundación Amé (2021)

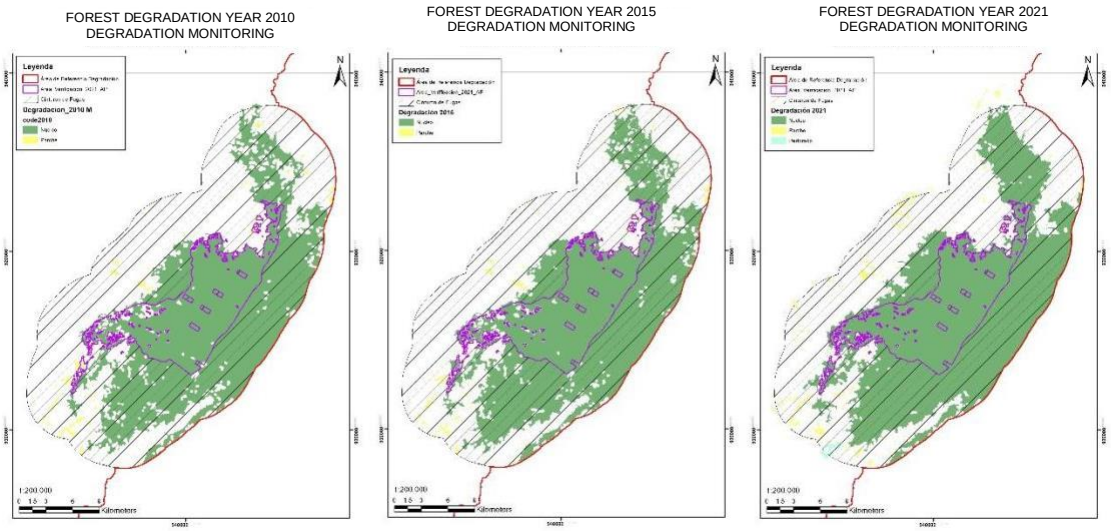

Figure 27: Degradation monitoring maps for years 2010, 2015 and 2021

Source: Based on historical information of the project and documentary review provided by the Fundación Amé (2021)

1.2 Baseline emissions

1.2.1 Methodology for estimating degradation in the scenario without REDD+ projects

To determine degradation, the AFOLU sector Methodological Document Quantification of GHG Emission Reductions from REDD+ Projects v2.2 5 February 2021, from ProClima, which refers to the methodology for estimating forest degradation in Colombia according to the Forest and Carbon Monitoring System (SMByC), was considered. The following steps were considered:

a. Layers of forest cover used.

The coverage layers used to determine degradation correspond to the official IDEAM layers for the baseline and monitoring period, which were validated and verified in the processes with the OVV within the registration program. Additionally, the information generated for monitoring was used to estimate deforestation in the different monitoring periods of the project.

b. Forest fragmentation

The fragmentation results classify the polygons into three categories, which are defined below as adapted by Ramírez-Delgado J.P *et al* (2018) de Shapiro et al., 2016:

Core: Forest fragments with a minimum area of 202 hectares.

Drilled: Boundary of non-forest areas surrounded by forest fragments between 101 and 202 hectares, at 100 m from the forest edge.

Patch: Forest fragments smaller than 101 hectares.

To determine forest fragmentation in the baseline scenario, the Landscape Fragmentation Tool was used to obtain the following results for each year evaluated, as suggested by the AFOLU sector Methodological Document Quantifying GHG Emission Reductions from REDD+ Projects v2.2 5 February 2021, of ProClima. Table 40 shows the results for year 1 corresponding to the year 2000, the intermediate year corresponding to 2005 and year 2 which would be 2010, which corresponds to the year where the biomass values are taken to estimate degradation.

Table 40: Fragmentation classes in the reference area

Class	Area (ha)		
	Year 2000	Year 2005	Year 2010
Core	41.218,66	39.989,09	37.886,10
Drilled	4.222,45	2.559,95	2.070,28
Patch	446,01	315,42	105,77
Total	45.887,13	42.864,47	40.062,15

Source: Based on historical information of the project and documentary review provided by the Fundación Amé (2021)

c. Transition between fragmentation classes.

Considering primary degradation (change from core to patch) and secondary degradation (drilling to patch), changes were estimated for each of the years analyzed in the baseline scenario for the baseline. Table 41 and Table 42

Table 41: Transition fragmentation classes 2000-2005 in reference area (ha)

Transition (ha)	Classes Year 2005	Patch	Drilled
Classes Year 2000	Core		
Core	38.129,60	421,03	152,85
Patch	91,43	1.675,14	0,09
Drilled		38,31	138,98

Source: Based on historical information of the project and documentary review provided by the Fundación Amé (2021)

Table 42: Transition fragmentation classes 2005-2010 in reference area (ha)

Transition (ha)	Classes Year2010		
Classes Year 2005	Core	Patch	Drilled
Core	37.139,70	140,93	105,77
Patch	15,38	1.564,07	
Drilled		118,41	

Source: Based on historical information of the project and documentary review provided by the Fundación Amé (2021)

The transition of classes in the reference scenario between 2000, 2005 and 2010 shows changes from core areas to drilled areas and patches, which reveals a process of forest degradation, largely explained by the pressure to which these coverages are subjected due to agricultural activities.

The greatest transition of polygons is observed in the period 2000 -2005 where a large part of the area went from core to patch, which speaks of a great intensity in the intervention of the forests.

According to the analysis in the leakage area, it was possible to determine the transition for this study area. Table 43 and Table 44.

Table 43: Transition fragmentation classes 2000-2005 in leakage area (ha)

Transition (ha)	Classes Year2005		
Classes Year2000	Core	Patch	Drilled
Core	25.654,89	171,71	151,61
Patch	65,34	379,71	0,09
Drilled			

Source: Based on historical information of the project and documentary review provided by the Fundación Amé (2021)

Table 44: Transition fragmentation classes 2005-2010 in leakage area (ha)

Transition (ha)	Classes Year 2010		
Classes Year2005	Core	Patch	Drilled
Core	24.739,68	137,72	24,50
Patch	11,59	497,60	
Drilled		91,82	

Source: Based on historical information of the project and documentary review provided by the Fundación Amé (2021)

In the leakage area, the analysis for the years 2000, 2005 and 2010, the transitions between polygons are mostly from core to patch with a low transition from patch to drilled, which can be explained by intense intervention in the area. The change from drilled to patch, on the other hand, is minimal, which can be explained by the high deforestation that occurs in the area, where forests change in a very short time to non-forest cover.

1.2.2 Annual historical degradation in the project area and baseline leakage

For the quantification of deforestation, the formula suggested in the AFOLU sector Methodological Document Quantification of GHG Emission Reductions from REDD+ Projects v2.2 5 of February 2021, from ProClima was used. This formula expresses historical primary degradation per year, with the following equations:

$$DFP_{lb,\text{year}} = \left(\frac{1}{t_2 - t_1}\right) \times (A_{\text{core},lb} - A_{\text{core}-par,lb})$$

Where:

$\boldsymbol{DFP_{lb,\text{year}}}$: | *Annual historical primary degradation in baseline; ha*

t_1:	*Year of beginning of reference period; year*
t_2:	*End of reporting period; year*
$A_{\text{core, } lb}$:	*Area of the reference region in core class year of the start of the reference period; ha*
$A_{\text{core}-par, lb}$:	*Area of the reference region that goes from core to patch in the final year of the reference period; ha*

$$DFS_{lb, \text{year}} = \left(\frac{1}{t_2 - t_1}\right) \times (A_{\text{drilled, } lb} - A_{\text{drilled}-par, lb})$$

Where:

$DFP_{lb, \text{year}}$:	*Historical annual secondary degradation in baseline; ha*
t_1:	*Year of beginning of reference period; year*
t_2:	*End of reporting period; year*
$A_{\text{drilled, } lb}$:	*Area of the reference region in drilled class year of start of the reference period; ha*
$A_{\text{drilled}-par, lb}$:	*Area of the reference region that changes from drilled to patch in the final year of the reference period; ha*

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

Where:

$DFP_{lb, f, \text{year}}$:	*Annual historic primary degradation in the leakage area; ha*
t_1:	*Year of beginning of reference period; year*
t_2:	*End of reporting period; year*
$A_{\text{core, } lb, f}$:	*Leakage area in core class year of start of reporting period; ha*
$A_{\text{core}-par, lb, f}$:	*Leakage area moving from core to patch in the final year of the reporting period; ha*

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

Where:

$DFP_{lb, \text{year}}$:	*Annual historical secondary degradation in the leakage area; ha*
t_1:	*Year of beginning of reference period; year*
t_2:	*End of reporting period; year*
$A_{\text{drilled, } lb, f}$:	*Area of leakage in drilled class year of beginning of reporting period; ha*
$A_{\text{drilled}-par, lb, f}$:	*Area of leakage going from drilled to patch in the final year of the reporting period; ha*

Considering the results of the areas by fragmentation class for each year evaluated, the annual historical primary and secondary degradation in the project area was determined in the baseline. Table 45.

It is evident that the areas of greatest transition correspond to primary degradation. Secondary degradation showed much lower values for the project area in the baseline.

Table 45: Annual historical primary and secondary degradation in the project area in the baseline.

Year	DFPREDD+proj, year	DFSREDD+proj, year
2010	406,57	2,89
2011	406,57	2,89
2012	406,57	2,89
2013	406,57	2,89
2014	406,57	2,89
2015	406,57	2,89
2016	406,57	2,89
2017	406,57	2,89
2018	406,57	2,89
2019	406,57	2,89
2020	406,57	2,89
2021	406,57	2,89

Source: Based on historical information of the project and documentary review provided by the Fundación Amé (2021)

Likewise, the results of the areas by fragmentation class for each year were determined for the annual historical primary and secondary degradation in the leakage area in the baseline. Table 46.

As for the results of the baseline degradation in the leakage belt, the most representative values correspond to primary degradation, while secondary degradation for leakage yielded negative values, so there would be no baseline for secondary degradation for the leakage area, therefore, this will not be quantified for the project.

Table 46: Annual historical primary and secondary degradation in the baseline leakage area.

Year	$DFP_{f,year}$	$DFS_{f,year}$
2010	2.951,59	-8,26
2011	2.951,59	-7,44
2012	2.951,59	-6,69
2013	2.951,59	-6,02
2014	2.951,59	-5,42
2015	2.951,59	-4,88
2016	2.951,59	-4,39
2017	2.951,59	-3,95

Year	$DFP_{f,year}$	$DFS_{f,year}$
2018	2.951,59	-3,56
2019	2.951,59	-3,20
2020	2.951,59	-2,88
2021	2.951,59	-2,59

Source: Based on historical information of the project and documentary review provided by the Fundación Amé (2021)

According to the results found in the reference area, project area and leakage area to estimate the areas of secondary degradation, it is evident that the change in the areas of the project that go from drilled to patch, are minimal and in the estimation of the projection for these areas there are even negative values. This allows to conclude that secondary degradation according to the dynamics of the area is minimal, since most of the changes in the structure and fragmentation are due to the direct transition from core to patch areas, i.e., the level of intervention has been so strong that there is no evidence of a progressive transition between these areas and that the changes in coverage are due to deforestation and primary degradation. In the support folder[274] the layers are presented showing the low areas of perforations in each of the analyses.

According to the above, only the estimation of primary degradation will be considered for the project, i.e., the changes in each of the areas of analysis from core to patch.

1.2.3 Projected annual degradation in the project area and leakage area in the REDD+ project scenario

According to section 13.2.12 of the Methodology Methodological Document AFOLU sector Quantification of GHG Emission Reductions from REDD+ Projects v2.2 February 5, 2021, of ProClima, which states that the country's reference level conditions should be used[275], therefore the degradation analysis was performed with official IDEAM layers and the biomass map of 2010. In this same sense, the historical average approach was used to determine degradation and estimate future degradation, which is in accordance with the methodology proposed by ProClima and the one used at the national level by IDEAM.

The following equations were used to estimate the projected primary degradation in the project area, which are described in the methodology:

$$DFP_{REDD+proy,\,\text{year}} = DFP_{lb} x\ (1 - \%DFP)$$

Where:

$DFP_{REDD+proy,\,\text{year}}$:	*Annual primary degradation of 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 the implementation of REDD+ activities.*

[274] See supports in pathway: [Information Management\8_ Degradation_ Info_Support_Degradation_Shapefile]

[275] In Colombia, Resolution 1447 decrees that all REDD+ projects must use the baseline for the quantification and estimation of emissions.

Understanding that degradation is considered the first phase of deforestation according to criteria developed by IDEAM (2018), it is understood that the decrease in degradation is correlated with the effectiveness of the implementation of actions to avoid deforestation. According to the result of the monitoring carried out by the project, it has been estimated that this effectiveness is higher than 95%. Hence, the Projection of the decrease in degradation due to the implementation of REDD+ activities (%DFP) will be conservatively determined at 5%.

For the estimation of the projected primary degradation in the leakage area, the following equation was used, which are described in the methodology:

$$DFP_{f,\text{year}} = DFP_f x\ (1 + \%E_f)$$

Where:

$DFP_{f,\text{year}}$:	*Annual primary degradation of the leakage area in the with-project scenario; ha.*
DFP_f:	*Annual historical primary degradation of the leakage area in the without-project scenario; ha.*
$\%E_f$:	*Projected increase in emissions in the leakage area due to the implementation of REDD+ activities. The use of a default value of 5% is accepted.*

The area that would be degraded annually in the project area and leakage area in the scenario with REDD+ project is presented in Table 47. It is important to clarify that the annual degradation area projected in the baseline for the project is recalculated at each monitoring if the project area changes due to the inclusion of new areas belonging to the expansion area.

Table 47: Degraded areas per year in the project area under the baseline scenario[276]

Year	$DFP_{lb,year}$	$DFP_{REDD+proj,year}$	$DFS_{REDD+proj,year}$	$DFP_{f,lb,year}$	$DFP_{f,year}$	$DFS_{f,year}$
2010	4.065,67	406,57	0	2.683,26	2.951,59	0
2011	4.065,67	406,57	0	2.683,26	2.951,59	0
2012	4.065,67	406,57	0	2.683,26	2.951,59	0
2013	4.065,67	406,57	0	2.683,26	2.951,59	0
2014	4.065,67	406,57	0	2.683,26	2.951,59	0
2015	4.065,67	406,57	0	2.683,26	2.951,59	0
2016	4.065,67	406,57	0	2.683,26	2.951,59	0
2017	4.065,67	406,57	0	2.683,26	2.951,59	0
2018	4.065,67	406,57	0	2.683,26	2.951,59	0
2019	4.065,67	406,57	0	2.683,26	2.951,59	0
2020	4.065,67	406,57	0	2.683,26	2.951,59	0

276 See supports in the pathway: [Information Management\2_ Carbon Degradation Estimates]

Year	$DFP_{lb,year}$	$DFP_{REDD+proj,year}$	$DFS_{REDD+proj,year}$	$DFP_{f,lb,year}$	$DFP_{f,year}$	$DFS_{f,year}$
2021	4.065,67	406,57	0	2.683,26	2.951,59	0

Source: Prepared from historical project information (2021).

1.3 Identification Biomass map.

The values of the national biomass map correspond to 2010, the date that was considered in the analysis to determine the degradation in the reference area. According to the life zone where the project is located, it was possible to determine the following biomass data for the project's forest cover. Table 48.

Table 48: Forest biomass values according to the Biomass map of 2010[277]

CLASS AND TYPE OF FOREST	AREA (ha)	% AREA	BIOMASS MEDIA (t/ha)
Core	37.886,10	100,0%	195,54
Humid forest Montane-lowland	21.028,85	55,5%	295,10
Premontane rainforest	411,01	1,1%	114,10
Very humid montane forest	1.864,16	4,9%	125,50
Very humid montane forest lowland	7.208,34	19,0%	260,10
Very humid forest Premontane	5.655,01	14,9%	182,90
Not assigned on the map *	1.718,73	100,0%	195,54
Patch	2.070,28	1,0%	179,53
Humid forest Montane-lowland	616,62	29,8%	295,10
Humid forest Premontane	480,11	23,2%	114,10
Tropical rainforest	75,63	3,7%	264,10
Very humid montane forest	0,09	0,0%	125,50
Very humid montane forest lowland	0,95	0,0%	260,10
Very humid Premontane Rainforest	655,24	31,6%	182,90
Very dry forest Tropical	0,09	0,0%	98,20
Dry forest Tropical	64,86	3,1%	96,20
Not assigned on the map *	176,69	8,5%	179,53
Drilled	105,77	100,0%	204,60

[277] See supports in the pathway: [Information Management\2_ Carbon Degradation Estimates]

CLASS AND TYPE OF FOREST	AREA (ha)	% AREA	BIOMASS MEDIA (t/ha)
Montane-low humid forest	92,13	87,1%	295,10
Humid forest Premontane	13,64	12,9%	114,10

* The average value of the category was taken for biomass. Source: Biomass Map 2010.

It should be clarified that the project considers the same assumptions for the quantification of changes in carbon pools for the project area in the baseline scenario, accepting as activity data only the change due to fragmentation between each year of analysis to measure degradation.

1.3.1 Emission factor

The estimation of the emission factors is based on the biomass contents present in the project area and determined in Table 48, which are assigned to each fragmentation class (core, drilling and patch). Subsequently, considering that the biomass by degradation decreases when there is a transition between these classes, the biomass values are obtained when going from core to patch and from drilled to patch. Table 49 presents the average aerial biomass for each fragmentation class.

Table 49: Aerial biomass by fragmentation class

Biomass by fragmentation	Average biomass per class (tC/ha)
Core	195,540
Drilled	204,600
Patch	179,525

Source: Prepared from biomass map 2010.

Subsequently, the carbon content of the total biomass was determined using the belowground biomass to aboveground biomass ratio (0.23-ton $d.m^{-1}$) for each of the natural regions, with the product of total biomass and the carbon fraction of dry matter suggested by the IPCC (2019) Guidelines (0.47), carbon and CO2 equivalent contents were estimated.

Table 50 presents the aboveground biomass and CO2e emission factors for the Andean forests for estimating GHG emission reductions from REDD+ Galilea-Amé Forest Conservation degradation, according to the difference by fragmentation area type.

Table 50: Difference in aerial biomass and CO2e by fragmentation type

ID Transition	Transition fragment classes	Total biomass ($DCBT_i$)	Total biomass (DBT_{iCO2EQ})
1	Core - patch	9,25	33,95
2	Patch - drilled	14,49	53,15

Source: Prepared from biomass map 2010.

1.4 Annual Emissions from Degradation

The quantification of emission reductions associated with changes in carbon values within the project area for year t was performed following the guidelines of section 13.4.2 of the ProClima Methodology under the AFOLU Sector Methodology Document Quantification of GHG Emission Reductions from REDD+ Projects v2.2 5 February 2021. The values and assumptions used for the calculation of carbon stocks correspond to the emission factors calculated in the previous section. Annual emissions were calculated by multiplying the primary annual degraded areas by the emission factors following the equations:

$$EA_{d,\,lb,\,\text{year}} = (DFP_{lb,\,\text{year}}\ x\ DCBT_{DP}) + (DFS_{lb,\,\text{year}}\ x\ DCBT_{DS})$$

Where:

$EA_{d,\,lb,\,\text{year}}$: *Annual emission to degradation, in the baseline scenario; tCO2e/ha*

$DFP_{lb,\,\text{year}}$: *Annual primary degradation in the baseline scenario; ha*

$DCBT_{DP}$: *Carbon dioxide equivalent contained in the difference of total biomass per hectare of the primary degradation class; tCO2e/ha*

$DFS_{lb,\,\text{year}}$: *Annual secondary degradation in the baseline scenario; ha*

$DCBT_{DS}$: *Carbon dioxide equivalent contained in the difference of total biomass per hectare of the secondary degradation class; tCO2e/ha.*

$$EA_{d,\,REDD+,\,\text{year}} = (DFP_{REDD+proj,\,\text{year}}\ x\ DCBT_{DP}) + (DFS_{REDD+proj,\,\text{year}}\ x\ DCBT_{DS})$$

Where:

$EA_{d,\,REDD+,\,\text{year}}$: *Annual emission in the scenario with project; tCO2e/ha*

$DFP_{REDD+proj,\,\text{year}}$: *Annual primary degradation in the with-project scenario; ha*

$DCBT_{DP}$: *Carbon dioxide equivalent contained in the difference of total biomass per hectare of the primary degradation class; tCO2e/ha*

$DFS_{REDD+proj,\,\text{year}}$: *Annual secondary degradation in the with-project scenario; ha*

$DCBT_{DS}$: *Carbon dioxide equivalent contained in the difference of total biomass per hectare of the secondary degradation class; tCO2e/ha*

$$EA_{d,\,f,\,\text{year}} = (DFP_{f,\,\text{year}}\ x\ DCBT_{DP}) + (DFS_{f,\,\text{year}}\ x\ DCBT_{DS})$$

Where:

$EA_{d,\,f,\,\text{year}}$: *Annual emission in the leakage area; tCO2e/ha*

$DFP_{f,\,\text{year}}$: *Annual primary degradation around leakage; ha*

$DCBT_{\text{year}}$: *Carbon dioxide equivalent contained in the difference of total biomass per hectare of the primary degradation class; tCO2e/ha*

$DFS_{f,\text{year}}$: *Annual secondary degradation in the leakage area; ha*

$DCBT_{DS}$: *Carbon dioxide equivalent contained in the total biomass difference per hectare of the secondary degradation class; tCO2e/ha*

These equations are used to determine the total emissions attributable to the project after discounting the emissions projected in the baseline due to primary degradation.

1.5 *Ex-ante* quantification of net GHG emission reductions attributable to the implementation of REDD+ activities.

To estimate the ex-ante emission reductions attributable to the project, the total emissions due to carbon content avoided by degradation were multiplied by the first years of the project crediting period. The net emission reduction due to avoided degradation of the project was calculated using the following equation.

$$RE_{DEG,\,REDD+proj} = (t_2 - t_1) \times (EA_{DEG,\,lb,\,\text{year}} - EA_{DEG,\,redd+proj,\,\text{year}} - EA_{DEG,f,\text{year}})$$

Where:

$\boldsymbol{RE_{DEG,\,REDD+proj}}$:	*Net emission reductions from degradation avoided by the project's mitigation actions in year t; tCO2e.*
$\boldsymbol{t_1}$:	*Initial year of the reference period*
$\boldsymbol{t_2}$:	*Year-end of reporting period*
$\boldsymbol{EA_{DEG,\,lb,\,\text{year}}}$:	*Annual emission of degradation in the baseline scenario at time t; tCO2e*
$\boldsymbol{EA_{DEG,\,redd+proj,\,\text{year}}}$:	*Annual emission of degradation under the scenario with project at time t; tCO2e*
$\boldsymbol{EA_{DEG,\,f,\,\text{year}}}$:	*Annual degradation emission under the scenario with project in the leakage area, at time t; tCO2e*

Table 51 shows the quantifications of the net reduction of GHG emissions from degradation for the project crediting period, according to the projections made and which will be monitored as the project progresses in the implementation of REDD+ activities.

Table 51. *Ex-ante* quantification of net GHG emission reductions attributable to Avoidance of Degradation by project activities[278]

Project year (t)	Calendar year	$EA_{DEG,\,lb,year}$	$EA_{DEG,\,REDD+proj,year}$	$EA_{DEG,\,f,year}$	$EA_{DEG,\,REDD+proj}$
		tCO2eq	tCO2eq	tCO2eq	tCO2eq
1	2.010[279]	46.006	2.300	33.399	10.306
2	2.011	138.017	6.901	100.198	30.919
3	2.012	138.017	6.901	100.198	30.919
4	2.013	138.017	6.901	100.198	30.919
5	2.014	138.017	6.901	100.198	30.919
6	2.015	138.017	6.901	100.198	30.919

[278] See supports in the pathway: [Information Management\2_ Carbon/ Degradation Estimates]

[279] Proration 2010 - 4 months (September to December)

Project year (t)	Calendar year	$EA_{DEG, lb,year}$	$EA_{DEG, REDD+proj,year}$	$EA_{DEG, f,year}$	$EA_{DEG, REDD+proj}$
		tCO2eq	tCO2eq	tCO2eq	tCO2eq
7	2.016	138.017	6.901	100.198	30.919
8	2.017	138.017	6.901	100.198	30.919
9	2.018	138.017	6.901	100.198	30.919
10	2.019	138.017	6.901	100.198	30.919
11	2.020	138.017	6.901	100.198	30.919
12	2.021[280]	23.003	1.150	16.700	5.153
Total		**1.449.182**	**72.459**	**1.052.074**	**324.648**
Annual Average		**120.765**	**6.038**	**87.672**	**27.054**

1.6 Emissions Monitoring period

1.6.1 Degradation in the project area and leakage area in the scenario with REDD+ project in the Monitoring Period (2010 - 2021)

In accordance with section 13.2.12 of the *Methodology Methodological Document AFOLU sector Quantification of GHG Emission Reductions from REDD+ Projects v2.2 5* February 2021, ProClima monitored degradation for the project area and leakage area based on fragmentation analysis for each year. For this, the images of forest - non-forest were considered for each year from the start date of the project until the monitoring year. As for the information, it was not possible to have images for the 2011 period due to the availability of the layers generated by IDEAM, so the monitoring used the 2010 - 2012 period and was divided by prorating for the monitoring period. Thus, the analysis for 2010 considered the last four months of the year (September to December) and for the year 2021, it considered the first two months of the year, i.e., until February 28, 2021.

For the estimation of primary degradation in the monitoring period (2010-2021), the change in the reported areas that went from core to patch was considered, it should be clarified that, although in the transitions areas from drilling to patch were identified for some periods, their representativeness was very low, so the monitoring of secondary degradation as identified in the baseline was not carried out. Table 52 shows the monitoring period areas for the project area and Table 52 shows the monitoring areas for the leakage area.[281]

Table 52. Monitoring degradation project area period 2010 - 2021[282]

2010		2012		2013	
Class	**Area (ha)**	**Class**	**Area (ha)**	**Class**	**Area (ha)**
Core	12.482,26	Core	12.801,16	Core	12.795,02
Patch	84,18	Patch	56,29	Patch	56,26
Drilled		Drilled		Drilled	

[280] Proration 2021 - 2 months (January to February)

[281] See supports in the pathway: [Information management\8_ Info_Support_Degradation__Shapefile]

[282] See supports in the pathway: Information management \8_ Info_Support_Degradation__Shapefile]

2014		2015		2016	
Class	**Area (ha)**	**Class**	**Area (ha)**	**Class**	**Area (ha)**
Core	12.694,28	Core	12.668,01	Core	12.085,76
Patch	51,98	Patch	51,60	Patch	57,50
Drilled		Drilled		Drilled	
2017		**2018**		**2019**	
Class	**Area (ha)**	**Class**	**Area (ha)**	**Class**	**Area (ha)**
Core	11.744,36	Core	11.435,88	Core	13.531,34
Patch	78,66	Patch	80,60	Patch	38,26
Drilled		Drilled		Drilled	
2020		**2021**			
Class	**Area (ha)**	**Class**	**Area (ha)**		
Core	13.529,33	Core	13.529,33		
Patch	38,26	Patch	38,26		
Drilled		Drilled			

Source: Prepared from historical project information (2021).

Table 53. Leakage degradation area monitoring period 2010 - 2021[283]

2010		2012		2013	
Class	**Area (ha)**	**Class**	**Area (ha)**	**Class**	**Area (ha)**
Core	25434,194	Core	28023,048	Core	27807,890
Patch	847,988	Patch	725,408	Patch	688,685
Drilled	24,496	Drilled		Drilled	
2014		**2015**		**2016**	
Class	**Area (ha)**	**Class**	**Area (ha)**	**Class**	**Area (ha)**
Core	26893,236	Core	26733,706	Core	27149,503
Patch	756,963	Patch	739,375	Patch	846,908
Drilled	197,387	Drilled		Drilled	
2017		**2018**		**2019**	
Class	**Area (ha)**	**Class**	**Area (ha)**	**Class**	**Area (ha)**
Core	26393,218	Core	25751,448	Core	30481,079
Patch	767,236	Patch	809,242	Patch	1027,532
Drilled		Drilled		Drilled	122,888
2020		**2021**			
Class	**Area (ha)**	**Class**	**Area (ha)**		
Core	30448,162	Core	30448,162		

[283] See supports in the pathway: [Information management\8_ Info_Support_Degradation__Shapefile]

Patch	1027,352	Patch	1027,352
Drilled	122,888	Drilled	122,888

Source: Prepared from project monitoring information

To adjust the *ex-ante* emissions in the baseline for primary degradation, the Prop DFPlb, yr/Acore, lb factor was used, whose value was estimated at 10%. The purpose of this factor is to estimate proportionally the primary degradation in the project area in the baseline according to the values of the reference area, since in the *ex-ante* estimates these values are magnitudes of area (ha) and in the estimates for the *ex* post calculation, the primary degradation in the line in the monitoring period was recalculated proportionally.

According to the results of the monitoring conducted in the project areas and leakage area, it has been estimated that the effectiveness of the decrease in degradation is very low, since it is correlated with the effectiveness of the implementation of actions to avoid deforestation and the implementation of REDD+ activities. Therefore, despite only identifying primary degradation, the values reported are low compared to the projections established in the baseline, even finding periods with values of zero. Table 54.

Table 54: Areas of primary degradation per year in the project area under the project area monitoring scenario and leakage areas[284]

Year	DFPREDD+proj, year	DFPf, year
2010	0,06	0,37
2011	0,18	1,11
2012	0	9,92
2013	0,16	120,13
2014	0,93	0
2015	4,82	17,12
2016	22,69	43,30
2017	10,66	42,15
2018	0	89,02
2019	0	27,92
2020	0	0
2021	0	0

Source: Prepared from project monitoring information (2021).

Notwithstanding, the project contemplates the leakage area, it should be highlighted that its delimitation according to the multicriteria spatial analysis considered a buffer of between 2 and 4 kilometers from the limits of the project area.

In this sense, the leakage belt corresponded to the forest areas outside the project boundary that met similarity requirements with respect to the project expansion area. However, the deforestation and degradation that occurred in this zone did not necessarily

[284] See supports in the pathway: [Information management \2_ Carbon estimates/degradation]

be attributed to leaks to the project since the settled communities have their own productive dynamics unrelated to the development of the project.

Therefore, in the quantification of emissions within the area of leaks in the monitoring, only 30% will be considered, supported by the implementation of the activities described in section 7 of this monitoring report.

1.7 *Ex* post quantification of net GHG emission reductions attributable to the implementation of REDD+ activities.

Project activities do not contemplate an increase in GHG emissions with respect to the baseline since activities have been carried out to prevent degradation and disturbance events. Therefore, it is considered that the activities implemented in the leakage management areas do not contribute to an increase in emissions. Emission reductions from degradation in the monitoring period were estimated according to the guidelines established by the AFOLU sector Methodological Document Quantifying GHG Emission Reductions from REDD+ Projects v2.2 5 February 2021, from ProClima.

To ensure the permanence of the mitigation activities for the length of the project, a reserve of 15% of the total quantified emission reductions was established, which cannot be traded. This percentage will cover aspects related to the permanence and risk of the activities, in case the replacement of credits placed in the market is required and to partially guarantee the uncertainty in the quantification of the emission reductions, in accordance with the requirements of section 10.8 of the ProClima standard version 3.0 of May 13, 2021.

In this way, the results of mitigation or marketable emission reductions (REC) for degradation generated by the project were calculated considering the following equations

Table 55 presents the removals per year and cumulative removals according to the requirements of section 13 of the methodology document.

$$REC_{mt} = RE_{DEG,\,REDD+proj,\,t} \times (1 - RF_t)$$

$$RED_{mt} = RE_{DEG,\,REDD+proj,\,t} \times RF_t$$

Where:

$\boldsymbol{REC_{mt}}$:	*Emission reductions tradable in year t; tCO2e*
$\boldsymbol{RE_{DEG,\,REDD+proj,\,t}}$:	*Net emission reductions attributed to degradation avoided by project mitigation actions in year t; tCO2e*
$\boldsymbol{RED_{mt}}$	*Number of credits discounted for risks of non-permanence at time t; tCO2eq*
$\boldsymbol{RF_t}$	*Discount factor for non-permanence risks; dimensionless*

Table 55: Net primary degradation emission reductions of GHGs attributable to project REDD+ activities [285]

Project year		Net emissions reduction	Reserve for non-permanence risk	Reduction of tradable emissions (REC)	
Project year (t)	Calendar year	RE_{mt}	$RED_{mt}*$	REC_{mt}	REC_{m}
		tCO_2e	tCO_2eq	tCO_2eq	tCO_2eq
1	2010	6.963	1.044	5.919	5.919
2	2011	13.919	2.088	11.831	17.750
3	2012	42.763	6.414	36.349	54.099
4	2013	41.614	6.242	35.373	89.472
5	2014	42.474	6.371	36.103	125.575
6	2015	42.080	6.312	35.767	161.342
7	2016	39.257	5.889	33.369	194.711
8	2017	38.534	5.780	32.753	227.464
9	2018	37.386	5.608	31.777	259.241
10	2019	68.866	10.330	58.536	317.777
11	2020	69.009	10.351	58.657	376.434
12	2021	11.501	1.725	9.777	386.211
Total		**454.365**	**68.155**	**386.211**	
Annual		**43.273**	**6.491**	**36.782**	

Source: Prepared from historical project information (2021).

The estimates of net GHG reductions attributed to the project are made following the guidelines of the ProClima methodology under the AFOLU sector Methodological Document Quantification of GHG Emission Reductions from REDD+ Projects v2.2 5 February 2021. Considering the data and parameters monitored during the progress of the Galilea-Amé Forest Conservation REDD+ Project, comparing the emissions of the baseline and the scenario with project, a net reduction of 454,365 tCO2e is reported for the period between September 2010 and February 2021 (10.5 years).

The value exceeds the reduction expected in the *ex-ante* estimates, since, as could be seen in the monitoring of the project, the implementation of actions since 2010 has also impacted the degraded areas, even reaching very low values in the project area and the leakage belt.

On the other hand, it is noteworthy that according to IDEAM (2018), in the Andean region of Colombia, the area under deforestation according to the estimates made was always less than the area under degradation during all the periods evaluated, with an average difference of 28.44%. This situation is evident in the project area where the estimates for primary degradation reach significant values in the estimates.

[285] The database with the quantification of the Project's mitigation results can be consulted in the file Calculation_ emissions_expost_NREF_ProClima_ Degradation-D1 located in the pathway: [Information Management\ 2_ Carbon Estimates_Degradation].

2 Reducing GHG Emissions from Deforestation and Degradation

The estimates of net GHG reductions attributed to the project are made following the guidelines of the ProClima methodology under the AFOLU sector Methodological Document Quantification of GHG Emission Reductions from REDD+ Projects v2.2 5 February 2021. Considering the estimates of net reductions from deforestation and net reductions from degradation, total removals were estimated for the project during the progress of the Galilea-Amé Forest Conservation REDD+ Project. Table 56.

Tabla 56: Net reduction in emissions from deforestation and degradation attributable to project REDD+ activities[286]

Project year		Net emissions reduction Deforestation	Net Emission Reduction from Degradation	Net Emission Reduction Deforestation + Degradation
Project year (t)	Calendar year	REmt	REmt	REmt
		tCO_2e	tCO_2e	tCO_2e
1	2010	0	6.963	6.963
2	2011	0	13.919	13.919
3	2012	0	42.763	42.763
4	2013	0	41.614	41.614
5	2014	0	42.474	42.474
6	2015	0	42.080	42.080
7	2016	0	39.257	39.257
8	2017	0	38.534	38.534
9	2018	0	37.386	37.386
10	2019	103.325	68.866	172.191
11	2020	36.960	69.009	105.969
12	2021	13.826	11.501	25.327
Total		**154.111**	**454.365**	**608.476**
Annual		**80.266**	**43.273**	

Source: Prepared from historical project information (2021).

The total net reductions by avoiding deforestation correspond to a total of 608,476 tCO2e, this value does not include the 15% discount attributable to the buffer for non-permanence risks.

[286] The database with the quantification of the Project's mitigation results can be consulted in the file: Calculation_ emissions_expost_NREF_ProClima_ Degradation-D1 located in the pathway: [Information Management\ 2_ Carbon Estimates_Degradation].

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