AFFORESTATION OF DEGRADED GRASSLANDS IN VICHADA, COLOMBIA

Document Prepared By

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GHG Accounting/ Crediting Period	*September 15, 2016 – September 14, 2046: 30-year lifetime.*
Monitoring Period of this Report	*04 December 2020 – 08 November 2022, 2 years*
History of CCB Status	*The project was validated and first verified on 25 May 2022.* *Under second verification*
Gold Level Criteria	*The project is not applying for any Gold Level criteria*

Table of Contents

1 Summary of Project Benefits 1

1.1 Unique Project Benefits 1

1.2 Standardized Benefit Metrics 3

2 General 11

2.1 Project Description 11

2.2 Project Implementation Status 21

2.3 Stakeholder Engagement 38

2.4 Management Capacity 66

2.5 Legal Status and Property Rights 72

3 Climate 78

3.1 Monitoring GHG Emission Reductions and Removals 78

3.2 Quantification of GHG Emission Reductions and Removals 94

3.3 Optional Criterion: Climate Change Adaptation Benefits 102

4 Community 102

4.1 Net Positive Community Impacts 102

4.2 Other Stakeholder Impacts 114

4.3 Community Impact Monitoring 115

4.4 Optional Criterion: Exceptional Community Benefits 117

5 Biodiversity 118

5.1 Net Positive Biodiversity Impacts 118

5.2 Offsite Biodiversity Impacts 148

5.3 Biodiversity Impact Monitoring 152

5.4 Optional Criterion: Exceptional Biodiversity Benefits 170

6 Additional Project Implementation Information 171

7 Additonal project Impact Information 171

Appendicies ..... Error! Bookmark not defined.

Appendix 1: New Project Areas and Stakeholders ..... **Error! Bookmark not defined.**

1 SUMMARY OF PROJECT BENEFITS

The *Afforestation of Degraded Grasslands in Vichada, Colombia* project falls into the agriculture, forestry and other land use sector (AFOLU), specifically into the field of forestation, reforestation and revegetation (ARR), that is, the greenhouse gas (GHG) removal activities lead to the increase in biomass by the photosynthetic activity of plants. The project has established the *Acacia mangium* and *Eucalyptus pellita* species with the initial purpose to produce wood chips for the generation of biomass energy, although in recent years Forest First Colombia (FFC) has decided to expand its market offer by producing treated fence posts for construction and industrial lumber. Additionally, the project seeks to generate positive impacts on the communities and the environment, following sustainable models and standards, such as the Forest Stewardship Council (FSC). This section highlights the unique project's benefits (Section 1.1), which are aligned with a project's causal model, as well as with the standardized benefit metrics (Section 1.2), which allow for quantifying the benefits generated by the project. This section does not replace the development of a project-specific causal model or the monitoring and reporting of all associated project-specific impacts (positive and negative) included in sections 2 to 5 herein.

1.1 Unique Project Benefits

Outcome or Impact	Achievements during the Monitoring Period	Reference Section	Achievements during the Project Lifetime
1) Women and community empowerment.	The 2021-2022 monitoring period has been the one with the highest number of people hired (76) with a percentage of women recruited (25%). Additionally, the Social and Engagement Management Plan (2022) was designed with the objective to generate social and economic improvements for employees and nearby communities by supporting integral development, in terms of employment, education, health, capacity building, and general development of the community.	4.1.3 4.2.1	The project is highly committed to quality job creation and gender equality. That is why the percentage of women hired has been maintained between 24 and 33% throughout its lifetime.
2) Increased perception/recognition of the value of forest resources.	For the 2021-2022 period, different knowledge transfer strategies were implemented to strengthen the recognition of the importance of natural forest resources. They were aimed at FFC workers and residents of the nearby communities, being supported by entities such as the Omacha Foundation, the	2.3.3 2.3.4 2.3.7 2.3.13 4.1.3	The current staff (made up of 291 people) have been trained in project activities, including conservation actions. Additionally, several workshops and meetings have been held, mainly focusing on the importance of the forests, biodiversity management and monitoring, waste

Outcome or Impact	Achievements during the Monitoring Period	Reference Section	Achievements during the Project Lifetime
	National Serpentarium National Serpentarium and the National Learning Service (SENA, by its acronym in Spanish), among others. Likewise, perception surveys of the project were carried out among employees and local communities.		management, and fire control and management methods.
3) Promotion of ecosystem connectivity.	2,886.94 ha have been afforested with eucalyptus (*Eucalyptus pellita*) and acacia (*Acacia mangium*). These activities increase the connectivity in the area and the restoration of degraded landscapes.	5.3	9,419.70 ha have been afforested with eucalyptus (*Eucalyptus pellita*) and acacia (*Acacia mangium*). These activities increase the connectivity in the area and the restoration of degraded landscapes, providing shelter and protection for mammals and birds.
4) Maintenance of local habitats of wildlife.	491.60 ha of threatened and fragile forest ecosystems (morichales and riparian forests) have been protected.	5.3	5,225.74 ha of threatened and fragile forest ecosystems (morichales and riparian forests) have been protected.

1.2 Standardized Benefit Metrics

Category	Metric	Achievements during Monitoring Period	Section Reference	Achievements during the Project Lifetime
GHG emission reductions & removals	Net estimated emission removals in the project area, measured against the without-project scenario	140,372 tCO_2e	3	621,697 tCO_2e
	Net estimated emission reductions in the project area, measured against the without-project scenario	Not applicable	-	Not applicable
Forest[1] cover	For REDD[2] projects: Number of hectares of reduced forest loss in the project area measured against the without-project scenario	Not applicable	-	Not applicable
	For ARR[3] projects: Number of hectares of forest cover increased in the project area measured against the without-project scenario	2,886.94 ha	-	9,419.70 ha
Improved land management	Number of hectares of existing production forest land in which IFM[4] practices have occurred as a result of the project's activities, measured against the without-project scenario	Not applicable	-	Not applicable

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

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

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

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

Category	Metric	Achievements during Monitoring Period	Section Reference	Achievements during the Project Lifetime
	Number of hectares of non-forest land in which improved land management has occurred as a result of the project's activities, measured against the without-project scenario	Not applicable	-	Not applicable
Training	Total number of community members who have improved skills and/or knowledge resulting from training provided as part of project activities	Throughout 2021 and 2022, different training sessions were conducted, with 44 of them having been aimed at employees and focused on waste management, project activities, biodiversity monitoring, and health and occupational safety. For other stakeholders, at least 14 sessions were held, covering topics such as project activities, fire management, and community engagement. Likewise, all new workers receive onboarding training from the plantation manager.	2.2.13 2.3.3 2.3.16 4.1.1 4.1.3	Since the project start date, the project proponent has carried out 180 training sessions for employees, with a total of 973 attendees (between staff and contractors). All new workers receive onboarding training from the plantation manager.
	Number of female community members who have improved skills and/or knowledge resulting from training provided as part of	The number of female staff in 2022, was 16.	2.3.13 4.1.1 4.1.3	Currently, 25% of the staff are women, who have received onboarding training from the plantation

Category	Metric	Achievements during Monitoring Period	Section Reference	Achievements during the Project Lifetime
	project activities of project activities	Additionally, four women were hired as contractors. All the employees received onboarding training from the plantation manager.		manager and attended other workshops related to different topics.
Employment	Total number of people employed in of project activities,[5] expressed as number of full time employees[6]	16 people were hired between 2021 and 2022, which represents 21% of the total number of employees currently working at FFC.	4.1.3	The total number of employees working directly on the project has increased from 4 (in 2016) to 76 (in 2022). Additionally, the project has generated 44 jobs as a contractor.
	Number of women employed in project activities, expressed as number of full time employees	25% of FFC staff are women by 2022.	4.1.3	The percentage of women hired has increased from 14% in 2016 to 25% in 2022.
Livelihoods	Total number of people with improved livelihoods[7] or income generated as a result of project activities	During the 2021-2022 period, 16 people were hired, for a total of 76 employees. 58 of the 76 direct employees are locals	4.1.1 4.1.3	The percentage of people from the local communities who have been directly hired by FFC has increased from 21% in 2016 to 77% in

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

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

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

Category	Metric	Achievements during Monitoring Period	Section Reference	Achievements during the Project Lifetime
		(corresponding to 77% of the total hired people). Local hiring has contributed to improving territorial economic dynamics while increasing family income, which is reflected, in turn, in the consumption of local goods and services.		2022. This implies that livelihoods are improved by providing stable jobs.
	Number of women with improved livelihoods or income generated as a result of project activities	25% of FFC staff are women by 2022. They and their families are improving their livelihoods by accessing stable jobs.	4.1.3	The number of women hired has increased from 14% in 2016 to 25% in 2022.
Health	Total number of people for whom health services were improved as a result of project activities, measured against the without-project scenario	The 450 inhabitants of La Venturosa and the 158 indigenous people from the Morichalito community were benefited through the support provided by project to the local health center in 2021 and 2022.	4.1.3	The 450 inhabitants of La Venturosa and the 158 indigenous people from the Morichalito community were benefited through the support provided by the project to the local health center in 2021 and 2022.
	Number of women for whom health services were improved as a result of project activities,	Approximately 47.6%[8] of the La Venturosa population are	4.1.3	Women of La Venturosa (47.6% of the total population) and the 76 families

[8] DANE, 2020. Census 2018 Puerto Carreño Municipality

Category	Metric	Achievements during Monitoring Period	Section Reference	Achievements during the Project Lifetime
	measured against the without-project scenario	women, that is, 211. At Morichalito community, the reported 76 families are being benefited by the project.		of the Morichalito community are benefited through the annual support provided to the health center.
Education	Total number of people for whom access to, or quality of, education was improved as a result of project activities, measured against the without-project scenario	Not applicable	-	Not applicable
	Number of women and girls for whom access to, or quality of, education was improved as a result of project activities, measured against the without-project scenario	Not applicable	-	Not applicable
Water	Total number of people who experienced increased water quality and/or improved access to drinking water as a result of project activities, measured against the without-project scenario	Not applicable	-	Not applicable
	Number of women who experienced increased water quality and/or improved access to drinking water as a result of project activities, measured against the without-project scenario	Not applicable	-	Not applicable
Well - being	Total number of community members whose well-being[9] was	During the 2021-2022 period, 16	4.1.3	The 58 people from the local

[9] Well-being is people's experience of the quality of their lives. Well-being benefits may include benefits reported in other metrics of this table (e.g. Training, Employment, Health, Education, Water, etc.), but could also include other

Category	Metric	Achievements during Monitoring Period	Section Reference	Achievements during the Project Lifetime
	improved as a result of project activities	people were hired, most of which were from local communities, reaching 58 local employees (77%). This contributes both to the local economy boost and the well-being improvement, considering the increased family income and technical knowledge (which leads to higher professional competitiveness).		communities who have been hired directly by FFC are improving their well-being by accessing stable jobs and training programs.
	Number of women whose well-being was improved as a result of project activities	The 16 women directly hired by FFC started to improve their well-being.	4.1.3	The percentage of women directly hired by FFC has increased from 14% in 2016 to 25% in 2020. This corresponds to 16 women, who are improving their well-being.

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

Category	Metric	Achievements during Monitoring Period	Section Reference	Achievements during the Project Lifetime
Biodiversity conservation	Change in the number of hectares significantly better managed by the project for biodiversity conservation,[10] measured against the without-project scenario	During this verification period 2,886.94 ha were afforested with eucalyptus (*Eucalyptus pellita*) and acacia (*Acacia mangium*) and 491.60 ha of threatened and fragile forest ecosystems have been protected. These activities increase the connectivity in the project area and the restoration of degraded landscapes.	5	9,419.70 ha have been afforested with eucalyptus (*Eucalyptus pellita*) and acacia (A*cacia mangium*) and 5,225.74 ha of threatened and fragile forest ecosystems have been protected. These activities increase the connectivity in the project area and the restoration of degraded landscapes.

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

Category	Metric	Achievements during Monitoring Period	Section Reference	Achievements during the Project Lifetime
	Number of globally Critically Endangered or Endangered species[11] benefiting from reduced threats as a result of project activities,[12] measured against the without-project scenario	For wild flora, 44 species were identified in the Least Concern (LC) category and one species in the Near Threatened (NT) one, according to the IUCN's Red List. Regarding fauna, five species were identified as Vulnerable (VU): *Myrmecophaga tridactyla, Tayassu pecari, Priodontes maximus, Tapirus terrestris,* and *Leptonycteris curasoae*; and one species as Endangered (EN): *Pteronura brasiliensis*.	5	For wild flora, 44 species were identified in the Least Concern (LC) category and one species in the Near Threatened (NT) one, according to the IUCN's Red List. Regarding fauna, five species were identified as Vulnerable (VU): *Myrmecophaga tridactyla, Tayassu pecari, Priodontes maximus, Tapirus terrestris,* and *Leptonycteris curasoae;* and one species as Endangered (EN): *Pteronura brasiliensis.*

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

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

2 GENERAL

2.1 Project Description

2.1.1 Implementation Description

The *Afforestation of degraded grasslands in Vichada, Colombia* grouped project aims to remove greenhouse gases (GHG) through the commercial afforestation of degraded grasslands in the municipalities of Puerto Carreño and La Primavera, in the department of Vichada, Colombia. The species planted include *Acacia mangium* (Aman) and *Eucalyptus pellita* (Epel), with a recent focus on eucalyptus hybrids due to their optimal growth given their improved genetic material. Although the project's original goal was to produce wood chips for energy generation, it has recently expanded the final use of its products to include lumber and treated fence posts, therefore increasing market alternatives and ensuring the project's long-term viability. The project has also monitored the local flora and fauna, fostered ecosystem connectivity, and created more than 100 full-time jobs in an area that has historically experienced economic hardship. The project contributes to the achievement of the national Sustainable Development Goals (SDG) of gender equality, decent work and economic growth, climate action and life on land.

The project crediting period is 30 years, from September 15, 2016 to September 14, 2046. The first VCS/CCB verification covers the period between September 15, 2016 and December 03, 2020, when 6,533,7 ha were planted. The removals certified in the first verification event were 482,168 tCO_2e, including the discount of the credits allocated in the AFOLU Pooled Buffer Account (18% for the project area under the influence of indigenous communities and 16% for the rest of the project area).

The current Monitoring Report corresponds to the second verification period, i.e., from December 04, 2020 to November 08, 2022. Forest First (FFC) currently owns 41,193.81 ha, of which 26,995.18 ha are eligible. During this period, FFC established 2,886.94 ha with *E. pellita* and hybrids of this species, reaching a total planted area of 9,419.70 ha with the potential to remove an average of 1,537,588 tCO_2e per year (LTA) and 58,428,357 tCO_2e during the entire crediting period (*ex-ante*). Additionally, according to the established management plan, FFC carried out activities of maintenance, fire control and road maintenance, as well as harvesting and re-establishment to ensure the permanence of the project.

During this second verification period, 6,913.44 ha were verified, removing 139,529 tCO_2e in total. This estimation considers a discount of the credits allocated in the AFOLU Pooled Buffer Account (17% for the project area under the influence of indigenous communities and 15% for the rest of the project area). Greenhouse gas (GHG) emissions from the baseline quantified based on the AR-ACM0003 A/R Large-scale Consolidated Methodology.

2.1.2 Project Category and Activity Type

The project corresponds to VCS sectoral scope 14 "Agriculture, Forestry and Other Land Use", specifically to the Afforestation, Reforestation, and Revegetation (ARR) category. It is a grouped project that aims to recover degraded grasslands that are expected to remain degraded or continue to degrade by livestock in the absence of the project.

2.1.3 Project Proponent(s)

Organization name	Forest First Colombia S.A.S.

Contact person	Jairo Vargas
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2.1.4 Other Entities Involved in the Project

Organization name	South Pole Carbon Asset Management S.A.S.
Role in the project	South Pole will be the entity in charge of the preparation and supervision of the VCS+CCB project verification before Verra by ensuring compliance with the standards.
Contact person	Maria Fernanda Buitrago
Title	Senior Lead, ARR and IFM Projects
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2.1.5 Project Start Date (G1.9)

According to the rules of the *VSC Standard V4.3*, the project start date is defined as the date on which activities that lead to GHG emission removals began to be implemented. In this sense, the project start date is September 15, 2016, when the first stands (A227B in Muco A) were planted.

2.1.6 Project Crediting Period (G1.9)

The project crediting period is 30 years, starting on September 2016 and ending on September 14, 2046.

2.1.7 Project Location

The total project area spans over 41 farms, which are located between the Bita and Meta rivers, in the municipalities of Puerto Carreño and La Primavera, Vichada, Colombia (Figure 1 and Table 1). The environmental authority with jurisdiction in this territory is the Regional Autonomous Corporation of the Orinoquia (Corporinoquia). The total planted and eligible area is 9,419.70 ha, of which 6,532.76 ha correspond to the first instance and 2,886.94 ha to the second instance[13]. In this verification period, 6,913.44 ha were verified, that is, the areas planted between 2016 and 2020.

[13] The KML file with the total area to be verified is in the folder Support documents\General Section\GIS\KML.

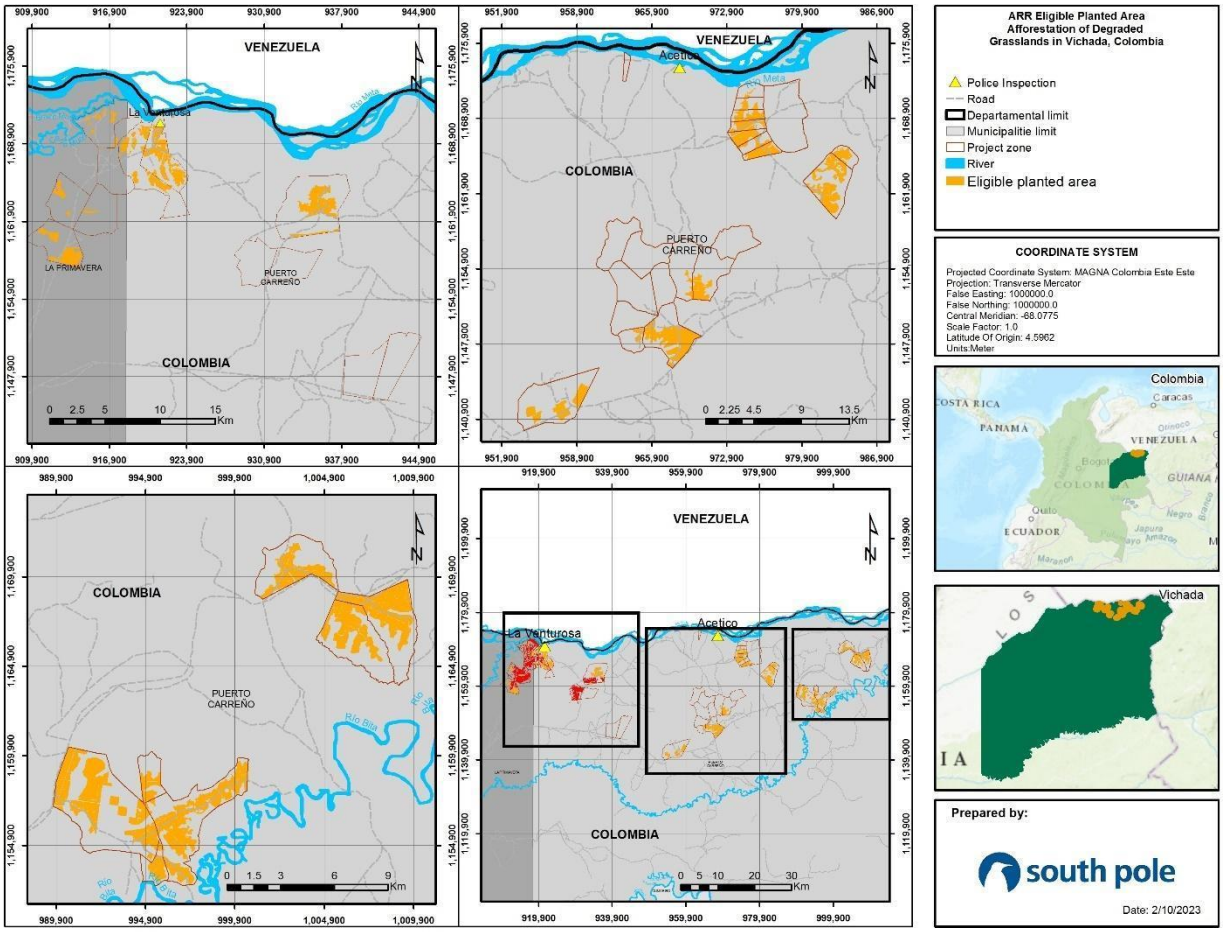


Figure 1. Project location

Source: South Pole, 2023, based on information provided by FFC

Table 1. Coordinates and distribution of the project area

Farm	ID	Latitude	Longitude	Instance*	Total area (ha)	Eligible area (ha)	Planted and eligible area (ha)
La Delicia	540-1031	5.9412	-68.3698	First and second	1,583.01	1,379.58	898.40
Paraíso TAD	540-1219	6.0093	-68.0992	First and second	1,483.30	1,040.42	798.45
La Diamantina	540-1373	5.8866	-68.466	Second	2,431.30	1,778.33	466.18
Tierradentro	540-1374	6.0169	-68.1441	First and second	2,233.70	1,951.09	953.82
Cuernavaca	540-1691	6.1379	-68.0478	First	963.48	623.67	356.84
La Josa	540-2202	6.1068	-68.0032	First	1,075.75	896.34	612.72
Llano Lindo	540-2209	6.1001	-68.0172	First and second	1,075.23	829.31	447.65

Farm	ID	Latitude	Longitude	Instance*	Total area (ha)	Eligible area (ha)	Planted and eligible area (ha)
El Paraíso I	540-221	6.1133	-68.7842	First and second	1,412.25	920.08	625.89
El Paraíso II	540-222	6.1021	-68.7949	First and second	1,764.19	981.35	412.15
Las Margaritas	540-2453	5.9432	-68.5939		1,295.79	1,237.90	
Garza Morena	540-2550	6.0417	-68.8714	First	1,296.84	737.32	380.35
San Cristóbal	540-2921	6.1406	-68.8307	Second	1,295.44	353.46	121.11
Los Palmares	540-2949	6.111	-68.8216	Second	1,296.58	348.17	21.32
Los Yaguaros	540-3433	5.9375	-68.6196		1,274.52	1,158.72	
El Toro 2-1	540-4453	6.136	-68.3039	First	302.99	161.26	76.88
El Toro 2-2	540-4454	6.1262	-68.3049	First	302.97	232.38	193.12
El Toro 2-7	540-4476	6.0963	-68.2921	First and second	303.47	268.63	240.94
El Toro 2-6	540-4477	6.1029	-68.2986	First and second	302.99	217.55	93.01
El Toro 2-5	540-4478	6.1083	-68.3062	First and second	303.00	289.20	231.74
El Toro 2-4	540-4479	6.1177	-68.3052	First	302.97	264.29	206.07
Paraíso PC	540-4494	6.0268	-68.7086		1,117.07	170.11	
Los Cuatro Amigos	540-4664	5.9554	-68.4026		777.28	485.59	
La Victoria	540-4670	5.9371	-68.4024	First	441.78	240.79	77.63
La Orqueta	540-4671	5.9806	-68.4009		1,298.78	917.05	
La Fe	540-4740	6.0187	-68.4139		1,003.94	557.57	
Carraito	540-4770	5.9815	-68.3759		728.33	590.96	
El Comienzo	540-4785	5.9975	-68.3582	First	1,158.77	817.36	59.88
El Barajuste	540-4786	5.9931	-68.3355	First	1,217.34	993.01	272.01
Paraíso LP	540-4823	6.0762	-68.8627	First and second	1,155.17	496.40	94.71
El Triunfo	540-4837	6.0085	-68.3907		1,134.52	791.16	
La Fortaleza	540-4841	6.0195	-68.3153		899.97	531.94	
Llano Lindo	540-5679	6.1459	-68.7764		4.99	4.45	
El Toro 301	540-5757	6.0914	-68.2223	First and second	301.02	212.68	133.21
La Cordobeza	540-5763	6.0677	-68.8382	First	1,259.43	327.72	25.53
La Pista	540-6297	6.0244	-68.6778	Second	1,032.07	1,021.48	0.36
Las Malvinas	540-6298	6.1672	-68.407		110.71	109.25	
Hato Nuevo	540-643	6.0722	-68.6623	First and second	2,914.76	1,389.93	625.40
Tierradentro 2	540-6508	6.0314	-68.1206	First	294.54	237.26	117.24

Farm	ID	Latitude	Longitude	Instance*	Total area (ha)	Eligible area (ha)	Planted and eligible area (ha)
Tierradentro 5	540-6581	5.987	-68.1189	First	211.11	151.48	109.14
El Toro 2	540-975	6.1471	-68.3023	First	302.97	92.17	20.82
El Toro 3	540-976	6.068	-68.2364	First and second	1,529.49	1,187.78	747.13
				Total	**41,193.81**	**26,995.18**	**9,419.70**

*First instance: It refers to the area planted in the first verification period (from September 15, 2016 to December 03, 2020); Second instance: It refers to the area planted the in the current verification period (from December 04, 2020 to November 08, 2022).
The reported coordinate system is Magna Sirgas / Colombia East East Zone (EPSG:3118).
Source: South Pole, 2023, based on information provided by FFC.

2.1.8 Title and Reference of Methodology

The project belongs to the AFOLU sectoral scope, specifically to the category of afforestation, reforestation, and revegetation (ARR), that is, GHG removal activities occur through the biomass increase obtained by the photosynthetic activity of plants. According to the *VCS Standard v4.4*, the methodology applied in this verification is AR-ACM0003 A/R Large-scale Consolidated Methodology – Afforestation and reforestation of lands except wetlands. Version 2.0[14], and its associated methodological tools, which are listed below:[15]

1. AR-AM Tool 02: Combined tool to identify the baseline scenario and demonstrate additionality in A/R CDM project activities. Version 1.0
2. AR-AM Tool 08: Estimation of non-CO_2 GHG emissions resulting from burning of biomass attributable to an A/R CDM project activity. Version 4.0
3. AR-AM Tool 12: Estimation of carbon stocks and change in carbon stocks in dead wood and litter in A/R CDM project activities. Version 3.1
4. AR-Tool 14: Estimation of carbon stocks and change in carbon stocks of trees and shrubs in A/R CDM project activities. Version 4.2
5. AR-AM Tool 15: Estimation of the increase in GHG emissions attributable to displacement of pre-project agricultural activities in A/R CDM project activity
6. AR-AM Tool 16: Tool for estimation of change in soil organic carbon stocks due to the implementation of A/R CDM project activities. Version 1.0

2.1.9 Other Programs (G5.9)

The project ensures that no double-counting activities are taking place. For this, the project excludes the areas under the carbon national standard, which are validated by Cercarbono with the name of *Proyecto forestal de mitigación de Cambio climático "Forestal de La Orinoquía"* and ID 8[16], ensuring the complete

[14] This methodology is available online at: https:\\cdm.unfccc.int\methodologies\ARmethodologies\approved
[15] These documents are available online at: https:\\cdm.unfccc.int\methodologies\DB\C9QS5G3CS8FW04MYYXDFOQDPXWM4OE
[16] https:\\www.ecoregistry.io\projects\8

independence from this and any other carbon project scheme. Additionally, both projects will be registered and constantly updated in the RENARE (National Registry for the Reduction of Greenhouse Gas Emissions) platform[17], which is a national tool created by means of Resolution 1447/2018 aimed at tracking GHG mitigation initiatives at the national level and avoiding double counting. Therefore, the following can be stated:

Emission Trading Programs and Other Binding Limits:

The emission removals of this project will not be used for compliance under any other trading program or mechanism. The properties included in the first instance are not located in the jurisdiction of other REDD+ or ARR programs, according to the Verra Registry[18] and the National Registry for the Reduction of Greenhouse Gas Emissions (RENARE)[19].

Other Forms of Environmental Credit:

The project has not sought or received any other GHG environmental credit.

Participation under Other GHG Programs:

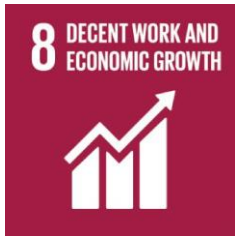
The project has not been registered nor is it seeking registration under any other GHG program.

2.1.10 Sustainable Development

Table 2 details the contribution of the project to each applicable SDG. The main project contribution to the SDGs is the provision of decent work and economic growth in the region (goal 8) through the implementation of commercial forestry activities. Additionally, the project promotes gender equality (goal 5). For this, FFC uses the Hay method of job evaluation[20], which allows for determining the salary structure based on different levels and bring the same benefits to all its employees. Finally, the project promotes the conservation of forests and local biodiversity, and the provision of ecosystem services, contributing to SDG 13, Climate action; and SDG 15, Life on land.

[17] The authority in charge is updating this platform, when it is available the respective records will be made renare-qa.siac.gov.co\GPY-web\#\ingresar
[18] https:\\registry.verra.org\
[19] renare-qa.siac.gov.co\GPY-web\#\ingresar
[20] Hay is a method used by corporations and organizations to map out job roles in the context of their organizational structure.

Table 2. Project contributions to sustainable development and monitoring

SDG	National-associated goal	Activities developed by the project	Metric	Project goal achieved in this verification period	Frequency	Responsible
5. Gender equality	5.5 Ensure women's full and effective participation and equal opportunities for leadership at all levels of decision-making in political, economic and public life.	FFC promotes men and women hiring in equal conditions and with the same opportunities. To ensure this, FFC uses the Hay job evaluation to determine the company's salary structure, while supporting the hiring of female labor in the company.	Number of women hired per monitoring period. Number of women in managerial positions.	Constraint-free job creation for women and men, ensuring gender equality within the project. For this verification period, 16 women out of 76 people were hired between 2016 and 2022.	Every monitoring period	Human Resources Leader
8. Decent work and economy growth 	8.5 By 2030, achieve full and productive employment and decent work for all women and men, including for young people and persons with disabilities, and equal pay for work of equal value.	The project aims to generate decent employment through formal hiring, guaranteeing salary ranges in accordance with the roles performed (Hay job evaluation) and complying with the social benefits required by Colombian regulations. Additionally, FFC provides onboarding training and	Number of people directly hired by FFC. Job offers advertised by FFC and number of vacancies for each position. Percentage of contractors for each monitoring	Considering that a project objective is to provide decent work options through formal recruitment processes, in 2022 16 general positions were created in addition to the 76 existing ones (direct employees). Similarly, by 2021 and 2022, contractors were periodically hired for the	Every monitoring period	Human Resources Leader and HSEQ Leader

SDG	National-associated goal	Activities developed by the project	Metric	Project goal achieved in this verification period	Frequency	Responsible
		other permanent training programs for employees to reinforce their knowledge and reduce accident rates.	period. Training sessions conducted per type of stakeholder.	performance of specific activities, which corresponds to 39 contractors in 2021 and 41 in 2022, respectively. Finally, between 2021 and 2022, as a mechanism for knowledge transfer and capacity building, around 44 training sessions and constructive participatory events were held with employees and other key stakeholders.		
13. Climate action 	13.2 Integrate climate change measures into national policies, strategies and planning.	FFC provides workshops to its staff on project activities, including conservation actions, as part of the mandatory onboarding training. This has the purpose to maintain 100% of the planted areas and to ensure compliance with the national standard.	Net estimated emission removals in the project area > the without-project scenario. For ARR projects: Number of hectares of forest cover increased in the project area measured against	All project activities are urgently required to fight climate change and its impacts while providing social benefits through the development of an economically profitable product. The project has contributed to GHG emissions reduction by	Annual	Planning Manager

SDG	National-associated goal	Activities developed by the project	Metric	Project goal achieved in this verification period	Frequency	Responsible
		Additionally, several workshops and meetings have been held with local communities, focusing on topics such as the importance of trees, the difference between planted and natural forests, planting, fertilization methods, and fire control. Finally, FFC managed to remove GHGs by the plantation growth.	the without-project scenario.	providing carbon sinks and capturing 140,372 tCO_2e in the current verification period (without Buffer).		
15. Life on land 	15.2 Promote the implementation of sustainable management of all types of forests, halt deforestation, restore degraded forests and increase afforestation and reforestation globally.	The main objective of the project is to restore lands degraded by livestock through afforestation activities. In addition, the project protects native ecosystems, including morichales and gallery or riparian forests.	Change in the number of hectares planted by the project with the aim to restore degraded lands and to improve ecological connectivity and wildlife habitat. Number of hectares of	In this period, the project established 2,886.94 ha of *E. pellita*. In addition, the project protects 5,225.74 ha of native ecosystems, including morichales and gallery or riparian forests. Both activities promote ecological connectivity and improve wildlife habitats.	Annual	Planning Manager

SDG	National-associated goal	Activities developed by the project	Metric	Project goal achieved in this verification period	Frequency	Responsible
			forests and natural areas that are protected and managed by the project for biodiversity conservation.			

2.2 Project Implementation Status

2.2.1 Implementation Schedule (G1.9)

The activities have been and will be implemented according to the schedule described in the PD during the validation process, as described below[21]:

Date	Milestone(s) in the project's development and implementation
2016-2028	Tree planting (new areas).
2016-2046	Maintenance of the plantation.
2016-2046	Job creation.
2016-2046	GHG accounting period (verification at least every five years).
2017	Initial engagement with communities (socio-economic baseline study).
2019	Local stakeholder consultation.
2021-2023	Second verification before the VCS and CCB standards.
2020-2046	Forest inventory (at least every five years).
2016-2046	Land preparation prior to each establishment and re-establishment.
2016-2046	Maintenance of planted areas in accordance with the Forest Management Plan and the FSC criteria.
2020-2046	Tree harvesting and re-planting (rotation period: seven years).

2.2.2 Methodology Deviations

The coordinate system was readjusted for this verification period, as well as the allometric equation to estimate the height of the species *E. pellita,* the estimates of the baseline emission and the default value for mean annual increment in volume (MAI) used in the *ex-ante* estimates.

Coordinate system

To align the information submitted to environmental authorities, the coordinate system was changed from Magna Sirgas / Colombia Bogotá Zone (EPSG: 3116) to Magna Sirgas / Colombia East East Zone (EPSG:3118). Considering that this resulted in changes in the areas (Table 3), an equivalent amount of VCUs (843) issued in the first verification event were discounted in this period[22].

[21] Detailed information of the operational activities carried out during this verification period (2021-2022) is available at: Support documents\Climate Support documents\Plantations documents\ Activity progressbymonth_2020 tot 2022.xlsx.
[22] The estimates of the discount made due to coordinate system change are available in the folder: Support documents\Climate Support documents\ER\Coordinate System Change

Table 3. Area by coordinate system

Project Zone							
Property		3116 Area			3118 Area		
ID	Name	Eligible area (ha)	Total area (ha)	Verified area (ha)	Eligible area (ha)	Total area (ha)	Verified area (ha)
540-1031	La Delicia	1,394	1,599	693	1,380	1,583	686
540-1219	Paraíso TAD	1,071	1,568	588	1,040	1,483	582
540-1374	Tierradentro	1,995	2,272	863	1,951	2,234	854
540-1691	Cuernavaca	632	974	361	624	963	357
540-2202	La Josa	907	1,088	620	896	1,076	613
540-2209	Llano Lindo	840	1,087	245	829	1,075	242
540-221	El Paraíso I	926	1,137	189	920	1,412	188
540-222	El Paraíso II	973	1,304	106	981	1,764	105
540-2550	Garza Morena	729	985	383	737	1,297	380
540-4453	El Toro 2-1	163	306	78	161	303	77
540-4454	El Toro 2-2	235	306	195	232	303	193
540-4476	El Toro 2-7	271	307	207	269	303	205
540-4477	El Toro 2-6	220	306	75	218	303	74
540-4478	El Toro 2-5	292	306	168	289	303	166
540-4479	El Toro 2-4	267	306	208	264	303	206
540-4664	Los Cuatro Amigos	491	781	-	486	777	-
540-4670	La Victoria	234	440	78	241	442	78
540-4671	La Orqueta	927	1,312	-	917	1,299	-
540-4740	La Fe	564	1,009	-	558	1,004	-
540-4770	Carraito	597	736	-	591	728	-
540-4785	El Comienzo	826	1,153	60	817	1,159	60
540-4786	El Barajuste	1,003	1,230	275	993	1,217	272
540-4823	Paraíso LP	483	619	13	496	1,155	12
540-4837	El Triunfo	800	1,134	-	791	1,135	-
540-4841	La Fortaleza	538	909	-	532	900	-
540-5757	El Toro 301	215	304	51	213	301	51
540-5763	La Cordobeza	312	455	26	328	1,259	26
540-6297	La Pista	1,016	1,016	-	1,021	1,032	-
540-6298	Las Malvinas	110	112	-	109	111	-
540-643	Hato Nuevo	1,386	2,379	560	1,390	2,915	555
540-6508	Tierradentro 2	242	291	119	237	295	117
540-6581	Tierradentro 5	142	214	110	151	211	109
540-975	El Toro 2	93	306	21	92	303	21

Project Zone							
Property		3116 Area			3118 Area		
ID	Name	Eligible area (ha)	Total area (ha)	Verified area (ha)	Eligible area (ha)	Total area (ha)	Verified area (ha)
540-976	El Toro 3	1,201	1,545	308	1,188	1,529	305
Total		**22,104**	**29,796**	**6,600**	**21,944**	**32,478**	**6,533**

Source: South Pole, 2023, based on information provided by FFC.

Height model

The allometric equation to estimate the tree height was changed to be congruent with the current state of the plantation. The process consisted of a verification of the accuracy of the height equation used in the first verification, the calibration and validation of more representative height allometric equations in function of the diameter to the breast height (DBH), and the assessment of the calibrated models and choice of the most accurate one[23].

Estimation of the baseline emissions

A census was developed in the Diamantina property to estimate the real emissions caused by the removal of shrub and tree biomass in the baseline scenario. This deviation will be considered from this verification period onwards, which means that the corresponding estimation will apply only after the 2020 vintage. This census consisted of the identification of species present in the area and the measurement of dasometric variables (heigh and DBH). Subsequently, this information was used to estimate the biomass and the CO_2 emissions following the methodology proposed in section 11 of the CDM Methodological Tool 14: *Estimation of carbon stocks and change in carbon stocks of trees and shrubs in A/R CDM project activities,* v4.1. The equations used are the following:

$$C_{SHRUB,t} = \frac{44}{12} \, x \, CF_S \, x \, (1 + R_s) \, x \sum_i A_{SHRUB,i} \, x \, b_{SHRUB,i}$$

Where:

$C_{SHRUB,t}$	Carbon stock in shrubs within the project boundary at a given point of time in year *t*; t CO_2-e
CF_s	Carbon fraction of shrub biomass; t C (t.d.m.)$^{-1}$. The 0.47 default value is used.
$A_{SHRUB,I}$	Area of shrub biomass estimation stratum *i*; ha.
$b_{SHURB,i}$	Shrub biomass per hectare in shrub biomass estimation stratum *i*; t d.m. ha^{-1}.

[23] The detailed methodology used to adjust the height equation is at: Support documents\ER\Height Model.

The shrub biomass per hectare ($b_{SHURB,i}$) was estimated according to the appendix 1 of the CDM Methodological Tool 14 and considered the census information[24], as follows:

$$V_{SHRUB,j} = DBH\ x\ H\ x\ f$$

$$B_{SHURB,t} = \sum_{j} V_{SHRUB,j}\ xD_j\ x\ BEF_j\ x(1 + R_j)$$

$$b_{SHRUB,i} = \frac{B_{SHRUB,t}}{A_{CENSUS}}$$

Where:

$B_{SHURB,\ t}$	Shrub biomass in the census at time *t*, t d.m.
A_{CENSUS}	Size of the census area, ha.
$V_{SHRUB,j}$	Stem volume of shrub of species *j* measured in the census; m^3.
D_j	Density (over bark) of tree species *j*; t d.m. m^{-3}.
BEF_j	Biomass expansion factor for conversion of tree stem biomass to aboveground tree biomass, for tree species *j*; dimensionless.
R_j	Root-to-shoot ratio for tree species *j*; dimensionless.
DBH	Diameter of the breast height of the individuals measured in the census, m.
H	Height of the individuals measured in the census, m.
f	Shape factor of the shrub, dimensionless. The value used is 0.7.

Additionally, dead wood and litter pools were considered and estimated based on the default values reported in the CDM Methodological Tool 12, V 3.1 and the following equations:

$$C_{LI} = C_{SHRUB,t}\ x\ DF_{LI}$$

$$C_{DW} = C_{SHRUB,t}\ x\ DF_{DW}$$

Where:

[24] The methology followed in the census and the volume estimation are in: Support documents\ER\Baseline.

C_{LI} Carbon stock in litter in stratum *i* at a given point of time in year *t*; t CO_2e.

C_{DW} Carbon stock in deadwood in stratum *i* at a given point of time in year *t*; t CO_2e.

DF_{LI} Conservative default factor expressing carbon stock in litter as a percentage of carbon stock in tree biomass; percent.

DF_{DW} Conservative default factor expressing carbon stock in deadwood as a percentage of carbon stock in tree biomass; percent.

The default values used for this estimation are presented in Table 4.

Table 4. Default values baseline

Description	Type	Key data	Source
Biomass expansion factor	Mean value for tropical broadleaf forest	1.5	IPCC (2003). Good Practice Guidance for LULUCF. Mean value for tropical broadleaf forest[25]. Table 3A.1.10.
Wood density	Weighted average value of the species recorded in the census	0.53	Literature for species recorded in the census. See AGB_BL tab in the ex-post Excel sheet.
Root/Shoot Ratio (R)	Shrubs	0.40	CDM A/R Tool_14. "Estimation of carbon stocks and change in carbon stocks of trees and shrubs in A/R CDM project activities", page 20[26].
Deadwood biomass	All	6%	CDM A/R Tool_12. "Estimation of carbon stocks and change in carbon stocks in dead wood and litter in A/R CDM project activities". Table 5, page 18.
Litter biomass	All	1%	CDM A/R Tool_12. "Estimation of carbon stocks and change in carbon stocks in dead wood and litter in A/R CDM project activities". Table 6, page 19.
Carbon fraction	All	0.47	IPCC (2006). Good Practice Guidance for LULUCF. Chapter 4. Forest Land. Table 4.3[27].

[25] https:\\www.ipcc-nggip.iges.or.jp\public\gpglulucf\gpglulucf_files\GPG_LULUCF_FULL.pdf
[26] https:\\cdm.unfccc.int\methodologies\DB\C9QS5G3CS8FW04MYYXDFOQDPXWM4OE
[27] https:\\www.ipcc-nggip.iges.or.jp\public\gpglulucf\gpglulucf.html

Description	Type	Key data	Source
Factor C to CO_2	All	44/12	CDM A/R Tool 14. "Estimation of carbon stocks and change in carbon stocks of trees and shrubs in A/R CDM project activities".

Source: South Pole, 2023.

Default value of the mean annual increment (MAI) in volume

The MAI default values were changed to use primary information of the project and, in this way, to obtain more accurate projections considering the current conditions of the project. The MAIs used for this verification were 7.4 and 6.4 m^3 ha^{-1} $year^{-1}$ for *E. Pellita* and *A. mangium*, respectively[28].

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

Taking into account the continuous interaction promoted by the project with the different stakeholders, a new analysis of the social context in the territory has been carried out for the current verification period (2021-2022) with the aim of creating a Stakeholder Engagement Plan[29] that guides FFC's social approach, improves communication dynamics, prevents conflicts, and facilitates joint work efforts with key actors.

In this way, based on the Stakeholder Engagement Plan outcome, the previously-identified key actors and the respective communication mechanisms have been updated, as follows:

Stakeholder	Entities that are part of it
Local government	• Departmental Governor's Office of Vichada • Municipal Mayor's Office of Puerto Carreño and its secretariats and departments (Government, Planning, Social Development, Indigenous Affairs, DDAGA) • Municipal Mayor's Office of La Primavera and its secretariats • Municipal Ombudsman. • Police Inspection of La Venturosa and Puerto Murillo (Aceitico) • General Maritime Directorate (Captain of Puerto Carreño) • Colombian National Police (Puerto Carreño and La Venturosa) • Colombian National Navy (Puerto Carreño)

[28] The calculations are in the MAIs sheet of the document for ex-ante estimations at: Support documents\ER\Exante.
[29] This information is located at: Support Documents\General Section\Plan De Geston Social y Relacionamiento V.3.

Stakeholder	Entities that are part of it
Neighboring communities	• Cattle ranchers • Subsistence agriculture farmers • Agribusiness sector • Other forestry companies
Properties in the project area and the project's influence area	• Farm owners • Residents or caretakers of the neighboring farms • Workers from neighboring farms
Neighboring settlements	• La Venturosa police inspection • Aceitico police inspection • Puerto Murillo police inspection • Community Action Boards (JAC) of the settlements • Veredas located in the project's area of influence and their JACs
Indigenous communities	• Morichalito Matsuldani indigenous community • La Mayera indigenous community • Local indigenous organizations
Environmental authorities	• Headquarters of the Regional Autonomous Corporation of Orinoquia (Corporinoquia) in Yopal, Casanare • Corporinoquia local offices in La Primavera and Puerto Carreño
Health institutions	• San Juan de Dios Hospital in Puerto Carreño • Health center in La Venturosa • Health center in Aceitico
Education sector	• SENA's campus in Puerto Carreño • La Conquista School (La Venturosa) • El Aceitico Boarding School

Stakeholder	Entities that are part of it
NGOs, foundations, universities	• University of Los Llanos (Unillanos) • Orinoquia Foundation • Omacha Foundation
Other organizations and foundations	• Vichada Women's Foundation • Cashew Producers Association • Religious organizations • Colombian Agricultural Society • Regional producer associations • GIZ
National government	• Ministry of Environment and Sustainable Development (MADS) • Ministry of the Interior (Prior Consultation Agency) • Ministry of Agriculture (UPRA, National Land Agency) • Land Restitution Agency • Ministry of Transport

Source: South Pole, 2023, based on information provided by FFC.

Based on these stakeholders identified, an analysis of relevance for the project was carried out, considering their interests, rights, concerns, influence capacity and potential impacts by and on the project. Therefore, the following key stakeholders will be the basis of FFC's social action (Figure 2).

- Employees
- Neighboring settlements (La Venturosa and Aceitico)
- Local government (Puerto Carreño Mayor's Office and Vichada Governor's Office)
- Indigenous community (Morichalito)
- Local environmental authority (Corporinoquia)
- NGOs, foundations, universities, research centers.

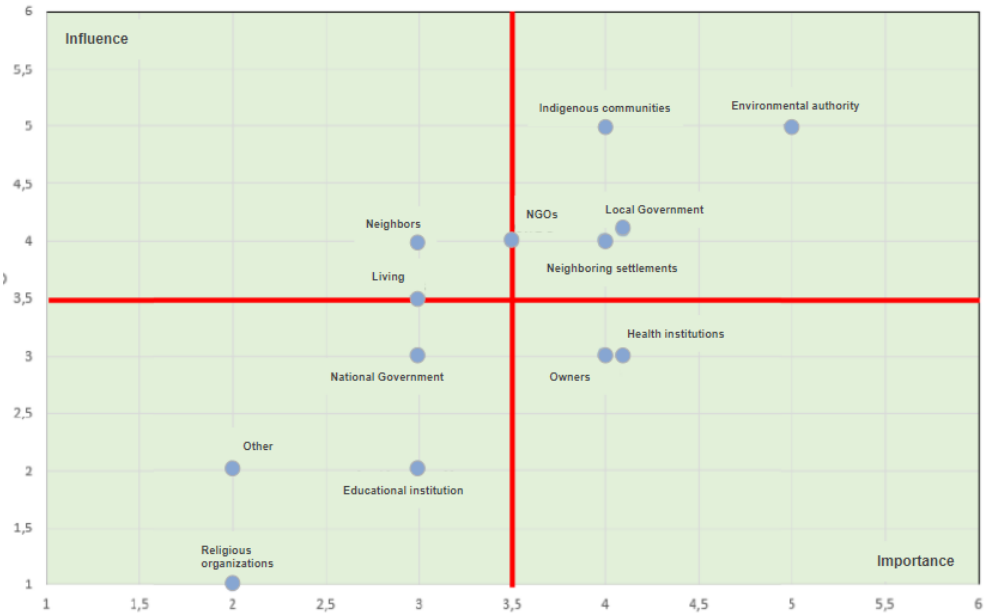


Figure 2. Matrix of the stakeholders' influence and relevance

Source: Social and relationship Management Plan, 2022[30].

A communications strategy was planned for the aforementioned stakeholders, including suitable channels and tools that facilitate the engagement objective pursued with each group of identified actors (Table 5).

Table 5. Mechanisms and tools for communication with the different stakeholders.

Method	Objectives	Tools	Stakeholder
Dissemination	To provide stakeholders with relevant and objective information to strengthen their commitment to the FFC project. To resolve conflicts and respond to general concerns.	Workshops Data sheets Web page Company news posts Meetings	Local communities

[30] The support information is available at: Support documents\Community Support documents\Mitigation of Negative Impacts

Method	Objectives	Tools	Stakeholder
Consultation	To obtain information from interested parties about FFC activities, impacts, alternatives or decisions.	Meetings Team meetings Surveys	Local communities Local governments Local environmental authority Local NGOs Employees
Involvement	To engage directly with stakeholders to ensure concerns and expectations are understood and, where appropriate, taken into account.	Workshops Group discussions Meetings Workers Committee Social diagnoses	Employees Local communities
Collaboration	To partner with stakeholders for decision-making, including collaboratively proposing alternatives and defining the best solutions.	Consensus building Meetings Decision making	Local government Environmental authority Local communities NGOs
Empowerment	To attend the relevant decisions made by interested parties regarding aspects of FFC operations, which shall be considered relevant.	Meetings Focus spaces Issues prioritization	Employees

Source: Social and relationship Management Plan, 2022.

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

In order to ensure the best global practices, increase the productivity of the plantations, and achieve the highest technology standards, FFC has made the following changes for plantation management and in the Forestry Plan[31,32], which were also validated in the FCS certification process.

- **Genetic material improvement**

  FFC has been leading a genetic improvement program to achieve higher plantation yields by using genetic material with higher growth rates and resistance to extreme events, pests, and diseases. In this sense, tests with seeds and clones from various sources (including FFC's genetic material) have been performed and the best material has been chosen. Given the success of said tests, FFC will gradually replace the acacia and eucalyptus planted-areas with the genetic material that has produced superior results, preserving its diversity (clones, seeds, and hybrids). Additionally, FFC redefined the criteria to ensure successful plantations as shown in Table 6.

Table 6. Criteria for a successful plantation

Objective	Previous implementation and Forestry Plan	Current implementation and Forestry Plan
Species ratio at planting	70%: *E. pellita* 30%: *A. mangium*	100%: *E. pellita* (clones, seeds, hybrids)
Final stocks	1,292 steams per ha (sph)	1,424 steams per ha (sph)
Planting density	3.2 m x 2.4 m	2.3 m x 2.9 m
Optimal stocks after planting	30 days >98% (1,333 sph) 12 months >95% (1,292 sph) Rotation age >92% stems at harvest time	30 days >98% (1,469 sph) 12 months >95% (1,424 sph) Rotation age >92% stems at harvest
Tree height average	5 m at 12 months	7 m at 12 months
Tree height uniformity	± 25 cm at 12 months	± 5 cm at 12 months

[31] The previous implementation and Forestry Plan was described in appendices 2 and 3 of the CCB+VCS project description document (PDD).

[32] The updated Forestry Plan and the document with the coresponding improvements are in the folder: Support documents\Plantations documents.

Objective	Previous implementation and Forestry Plan	Current implementation and Forestry Plan
Tree diameter at breast height (DBH)	5.6 cm at 12 months	7 cm at 12 months

Source: South Pole, 2023, based on information provided by FFC

- **Nursery**

  One of the main factors of tree growth problems is related to root development, especially in the first months after field establishment. Therefore, FFC decided to modify the period spent by seedlings in the nursery, reducing it from 40 to 25 days to prevent the roots from coming out too soon and from causing root curling.

- **Site preparation**

  Roots were observed to have horizontal growth and twisting due to soil limitations in some areas. Thus, FFC decided to change the land preparation process followed for primary tillage, first breaking and loosening the soil at an average depth of 50 cm using a chisel plow, and then a disk plow at 15 cm depth. This process is carried out from three to six months before planting. Subsequently, between one to three months prior to planting, secondary tillage must be performed to improve the seedbed with the disc harrow.

  Additionally, FFC extends the effective planted area to those with soil limitations (lateritic soils), taking advantage of the yields obtained with the new genetic material and the management techniques implemented. In lateritic soils, mechanical remotion of the previous land cover (grass) can be restricted so that fire is used in these cases.

- **Fertilization**

  The project area has clayey with low pH and high-aluminum concentration soils, which favors the retention of nutrients, especially of phosphorus, reducing their availability to plants. To mitigate these conditions, the fertilizer used for the first application was changed to Basifertil since it is covered by an organic layer of calcium that attracts aluminum from the soil, thus making the phosphorus available to be absorbed by the plants. Likewise, the calcium contribution decreases soil acidity, in turn increasing the nutrient absorption provided in fertilization.

  Soil will be fertilized at least twice per cycle (seven years). The first application will be performed at the planting time (no more than 3-5 days after planting) with 70 gr of Basifertil and micronutrients per tree. The second fertilization will take place between the 6th and 10th month, with approximately 50 gr of N-P-K and micronutrients per tree. Then, the foliar coloration of the plantation will be assessed to determine whether a third or fourth fertilizer application is necessary.

2.2.5 Grouped Projects

In this verification period, 2,886.94 ha were planted to reach 9,419.70 ha in total. These areas, denominated the second instance, are located into or near the first instance and meet the following criteria:

- Are within the initially delimited expansion area.

- Their activities are under the control of project participants.
- Technologies are used or measures are taken as specified in the project description.
- Are subject to the baseline scenario determined in the project description for the specified project activity and geographic area.
- Their characteristics regarding additionality are consistent with those of the initial instances for the specified project activity and geographic area.
- Ownership rights are clear from the beginning, either by acquisition of the properties or leasing contracts with the landowners.
- Have a start date equal to or later than the start date of the grouped project.
- The AFOLU non-permanence risk analysis was performed.
- Comply with national, regional, and local regulations.

Below are the details of the area to be verified in this period, between December 04, 2020 and November 08, 2022.

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

In this verification period, the project's total area was 41,193.8 ha, with 26,995.2 ha of them being eligible. The area increase is attributed to the acquisition of seven properties (with 8,715.68 ha) by FFC. Additionally, during this period 2,886.94 ha were planted, reaching 9,419.70 ha planted (Table 1).

The project does not present changes in the stakeholders map since the new areas are located near the ones previously validated (Figure 3). Thus, the total area of the project continues to be influenced by the communities of La Venturosa, Aceitico and Morichalito.

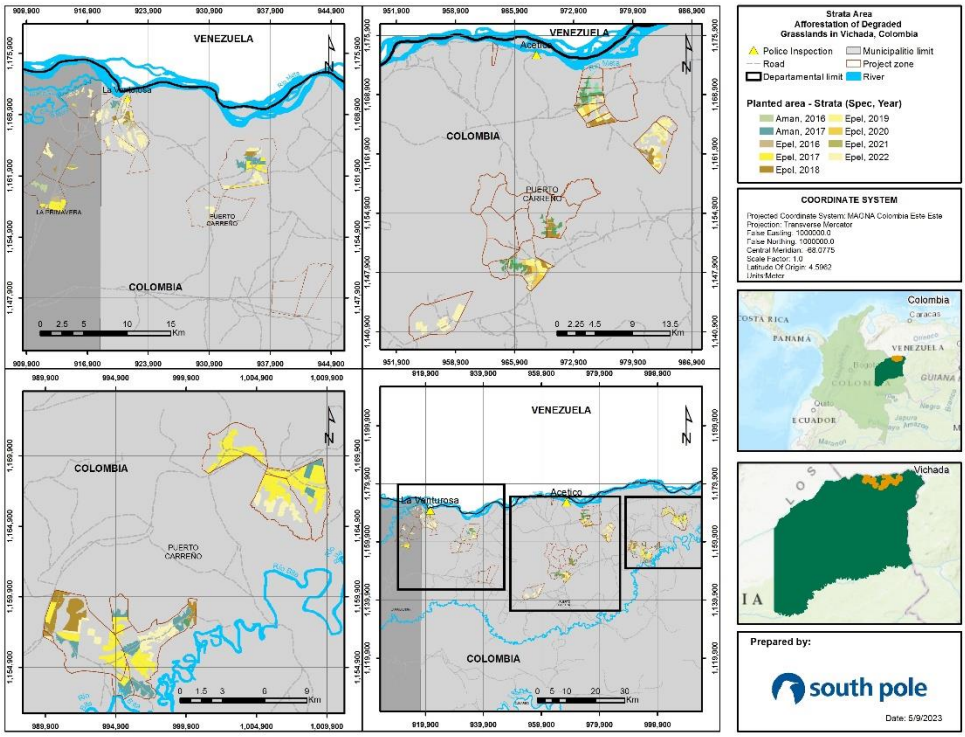


Figure 3. Localization of the project area

Source: South Pole, 2023, based on information provided by FFC

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

No project areas or communities have been removed during this period.

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

The new project instance meets the eligibility criteria because it is located inside the validated area. The detailed criteria compliance is presented in Table 7.

Table 7. Criteria compliance

Criterion	Compliance
Projects shall comply with all applicable rules and requirements set forth in the VCS+CCB Program.	The project considers the rules of the *Climate, Community & Biodiversity Standards, V 3.1*, and the *VCS Standard*, *V 4.4*.
The projects and the implementation of project activities shall not lead to the violation of any applicable law, regardless of whether the law is enforceable or not.	The project complies with Colombian regulations (Section 2.5). The project proponent constantly reviews the changes in the Colombian legislative system to stay up to date with the country's laws.
Projects shall apply eligible methodologies under the VCS+CCB Program. These methodologies shall be fully applied, including the full application of any tool or module to which a methodology refers.	The AR-ACM0003 methodology *Afforestation and reforestation of lands except for wetlands* guides the entire project development. Therefore, the project evaluates the criteria applicability for each component (climate, community, and biodiversity) . For further details, go to the corresponding section.
Projects involving tree felling shall demonstrate that the permanence of their carbon stock is preserved and shall implement management systems to ensure that the carbon against which Verified Carbon Units (VCUs) are emitted is not lost during a final cut without subsequent replanting or regeneration.	FFC ensures the project permanence through a robust management plan, this being evidenced by the fact that most failed or harvested areas have been reestablished. Likewise, systems have been implemented to evaluate the efficiency of the management plan in place and the yields of the plantations. Finally, the project conducts management and control activities to ensure the survival of planted individuals and the succession of reforested areas.
Activities that convert native ecosystems to generate GHG credits are not eligible under the VCS+CCB Program. An exception to this criterion is made when the compensation or conversion took place at least 10 years prior to the start date of the proposed project.	The project consists of the afforestation of areas degraded by extensive cattle ranching. Therefore, native ecosystems are not converted as demonstrated in the eligibility analysis[33].

[33] The eligibility analysis was updated with the new area, it is in the folder: Support documents\General Section\Criteria Compliance\Eligibility

Criterion	Compliance
Activities that drain native ecosystems or degrade hydrological functions to generate GHG credits are not eligible under the VCS+CCB Program. An exception to this criterion is made when such drainage or conversion took place before 1 January, 2008. The area of the project instances cannot be in wetlands. If this applies, the project must comply with both the requirements of the respective project category and the requirements of Wetlands Restoration and Conservation (WRC).	The project does not perform activities that degrade hydrological functions. On the contrary, the project maintains the banks of natural drainage and wetlands, as demonstrated in the eligibility analysis[34].
Projects must prepare a non-permanence risk report in accordance with the VCS Program document *AFOLU Non-Permanence Risk Tool*, both for validation and verification.	The project's non-permanence risk report was calculated again for this period, based on the template designated by the VCS standard[35].

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

The scalability of the project is limited to the areas that meet the criteria listed above and are within the expansion area (Puerto Carreño and La Primavera, in Vichada, Colombia) as presented in the PDD (Figure 3).

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

The new project instances are within the properties reported in the validation process. Therefore, this section is not applicable.

6) Project Zone Map (G1.13)

The total planted area corresponds to 9,419.70 ha, where 6,532.76 ha were planted in the first verification period and 2,886.9 ha in this second one (Figure 3). This new area is part of the expansion area and presents the same physical and social parameters described in the PDD (sections 2.1.5 and 2.1.6) since it is surrounded by the properties presented in the first verification event. Thus, project boundaries are modified (as mentioned in item 1 of this section) but new communities are not added.

7) Changes to Management (G4.1)

[34] The eligibility analysis was updated to include the new area. It is located in the folder: Support documents\General Section\Criteria Compliance\Eligibility

[35] The NPR document can be found in the folder: Support documents\NPRT.

There have been no changes to the management structure, roles, and/or responsibilities as a result of new entities joining the project.

2.2.6 Risks to the Project (G1.10)

A risk analysis covering a period of 100 years was conducted based on the application of the VCS AFOLU Non-Permanence Risk Tool[36] (the summary of the risks is presented in Table 8). The project area was divided according to two different social conditions and, consequently, two risk analyzes were conducted:

An eligible area of 1,901 ha under the influence of the Morichalito indigenous community. This zone was defined as the area of the community settled around the Chaquichaque stream, the natural barrier for community mobilization (Figure 4).

An eligible area of 25,094 ha in the territory that is not under indigenous community influence. The results of the non-permanence risk assessment were 17% for the area 1 (under indigenous community influence) and 15% for the area 2 (not under indigenous community influence).

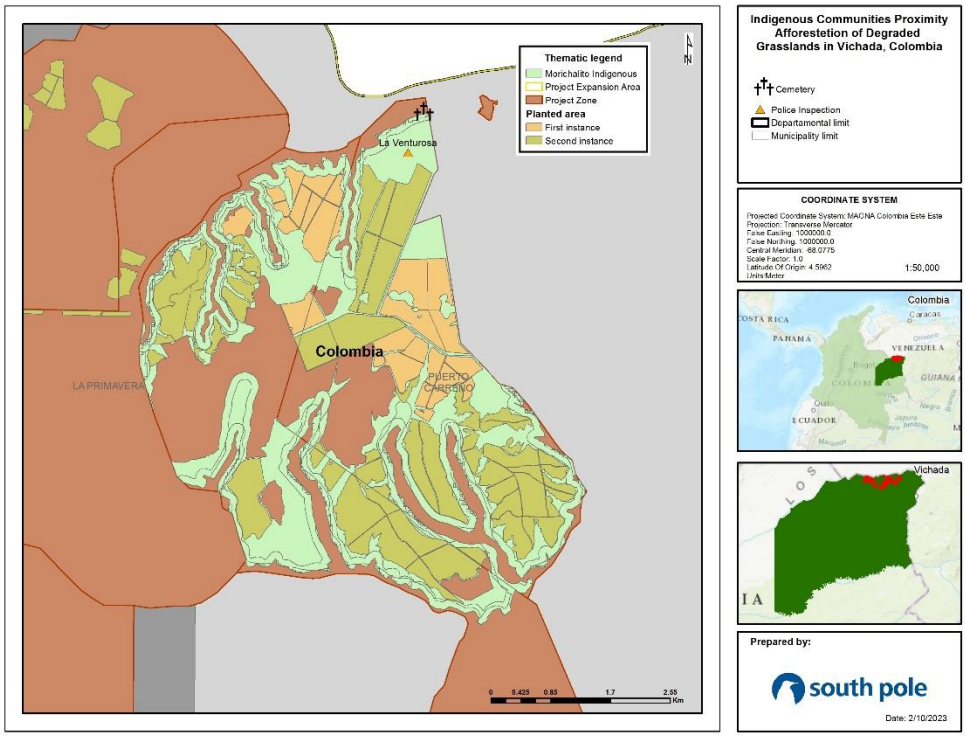


Figure 4. Indigenous community influence

Source: South Pole, 2023, based on information provided by FFC

Table 8. Project risks

[36] The NPR document can be found in the folder: Support documents\NPRT.

Identified risk	Potential impact of risk on climate, community and/or biodiversity benefits	Actions needed and designed to mitigate the risk
Ongoing enforcement to prevent encroachment by outside actors is required to protect more than 50% of stocks. Just for an eligible area of 1,901 ha.	In 2016, an indigenous community was settled1.3 km away from the Paraiso project property. As a consequence, in the project area under its influence (1,901 ha, defined as the area of the community settled around the Chaquichaque stream, the natural barrier for the community mobilization), community activities, such as hunting or fire for honey collection, could occur.	The project owner has a good relationship with the indigenous community and measures are taken to improve the community's livelihoods through the support to productive activities and job offers. Additionally, FFC has developed training on proper fire management.
The project longevity is 30 years without legal agreements or requirements to continue the management practice.	Non-continuity of project activities may halt the positive climate, community, and biodiversity impacts of the project.	Even though there is no legal agreement to continue with the management practice over the length of the project, the project representatives plan to continue with the management and conservation activities for at least 50 years.
Political risk: The average (of the available data for the last five years) Colombian Governance score is -0.19.	The interruption of project activities due to government decisions make this kind of incentives for reforestation less attractive and/or important.	Colombia has ratified the UNFCCC (1995) and the Kyoto Protocol (2005) and has submitted three National Communications to the UNFCCC (in 2001, 2010, and 2015). Colombia is a member of the World Bank's Forest Carbon Partnership Facility and became a UNREDD+ partner country in 2013.[37] Therefore, it does not seem likely that the Colombian government will back down from its commitment to climate change fight.
Risk of fires, pests and diseases.	In the event that plantations are affected by fires, pests or diseases, the establishment, growth and productivity of the trees would be affected.	The project has implemented protocols to avoid and control the loss caused by fires, pests and diseases.

Source: South Pole, 2023, based on information provided by FFC.

[37] REDD in Colombia: Available at: http:\\theredddesk.org\countries\colombia

2.2.7 Benefit Permanence (G1.11)

The project intends to maintain the climate, community, and biodiversity benefits beyond its lifetime by ensuring community empowerment: training in forest management, fire control and importance of conservation (Section 4.1.1).

2.3 Stakeholder Engagement

2.3.1 Stakeholder Access to Project Documents (G3.1)

Project information was shared through the mechanisms described in Section 2.3.1 of the Project Description Document (PDD). In order to ensure a greater scope, the Project Document and the Monitoring Report were published on the FFC website. Nevertheless, for stakeholders without internet access, printed copies of both documents were made available in places frequently visited by local communities, such as the Forest First office at Puerto Carreño (Vichada), the police inspection of La Venturosa and Aceitico, the local school and the communal houses.

Likewise, project results obtained during this verification period (2021-2022) will be shared with the identified stakeholders (Section 2.2.3) after the audit and verification process, as long as some specific information required is updated and made available. For this, the following communication channels will be used:

- Forest First Colombia (FFC) websites
- Information exchange by email
- Dissemination of printed material in communal locations
- Verra website

2.3.2 Dissemination of Summary Project Documents (G3.1)

As established from the Project Design (PD) phase and updated in the Social Management and Engagement Plan (Section 2.2.3), different communication channels were selected, according to the types of actors involved, the characteristics of the messages, the resources available and the type of information to be shared. In this sense, the dissemination of project documents has a differential approach, as follows:

- Employees: The information on activity implementation and monitoring was communicated to each working group through their supervisors, as well as in some participatory workshops held in some of the FFC camps.
- Communities: Communications with the residents of nearby territories are channeled through the representatives of the Community Action Boards (JACs), since these were identified as key communication bridges with the communities. The JACs have a mediating role in the context of communications, the search for conflict resolution (if any), and the exchange of information and documents. On the other hand, the police inspector of the populated settlements close to the project area (La Venturosa and Aceitico) is also considered a key stakeholder for project communication purposes so regular contact is maintained with him.
- In this sense, spaces for dialogue with representatives of the JACs were created, who were also provided with information related to the actions carried out by the project during the 2021-2022 verification period.

- Local governments and NGOs: Communications with public institutions and civil associations identified as project-relevant are established in a more formal way, considering the type of audience and the current limitations for visiting Puerto Carreno's municipal seat from the rural camps. Therefore, both project-related information and meeting invitations are shared/made through email, official letters and phone calls. In this sense, the meetings are mostly held virtually.

2.3.3 Informational Meetings with Stakeholders (G3.1)

Several informational meetings with different stakeholders were carried out with the purpose of addressing key topics involving climate change and the strategies implemented by the project to tackle it. For the present verification period (2021-2022), the following events took place[38]:

Topic	Date of the event (mm/dd/yyyy)	No. of attendees			Stakeholder type
		Men	Women	Total	
Dissemination of the progress of the forest carbon project	06/10/2021	5	1	6	Employees
Dissemination of the progress of the forest carbon project	09/06/2021	15	4	19	Employees
Dissemination of the forest carbon project	09/03/2021	2	4	6	Community
Climate change and carbon credits	09/30/2021	5	0	5	Employees
Climate change and carbon credits	08/31/2021	16	3	19	Employees
Climate change and carbon credits	06/10/2021	11	3	14	Employees
Climate change and carbon credits	06/18/2021	11	0	11	Employees
Climate change and carbon credits	06/15/2021	12	1	13	Employees
Climate change and carbon credits	06/10/2021	4	2	6	Employees
Participatory workshop to characterize and analyze landscape structures and functions	30/11/2022	16	16	32	Community

[38] This information is located at: Support Documents\General section\ Information Meetings with Stakeholders

Topic	Date of the event (mm/dd/yyyy)	No. of attendees			Stakeholder type
		Men	Women	Total	
Dissemination of FFC activities	23/11/2022	3	1	4	Policy makers (Municipal Ombusdsman of Puerto Carreño)
FFC project sustainability process	15/02/2022	2	4	6	Policy makers (Mayor's Office of Puerto Carreño)
Dissemination of FFC's social and environmental investment	25/08/2022	4	3	7	Policy makers (Mayor's Office of Puerto Carreño)
Approach meeting between FFC and Corporinoquia	19/12/2022	3	1	4	Policy makers (Regional Autonomous Corporation of the Orinoquia)
Participatory space for fire reduction	01/12/2022	25	47	72	Community (Morichalito)

Source: South Pole, 2023, based on information provided by FFC

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

The project has issued some guidelines to ensure continuous construction and discussion spaces with community leaders around the coordination and management of activities with direct and indirect impacts on the territories. In this sense, for the 2021-2022 verification period the impacts, risks and progress of project activities were reviewed with the stakeholders using targeted communication channels. Likewise, comments regarding project information were received through the PQC mechanism, facilitating the formulation of improvement strategies.

For the most adequate development of the different project activities, agreements for common efforts and work were signed with various private entities, as presented in Table 9 below.

Table 9. Private companies and services provided to FFC during the 2021-2022 verification period

Name of the company	Service provided to FFC
Consultoría y Medio Ambiente S.A.S.	Preparation of environmental and social impact studies.

Name of the company	Service provided to FFC
PSL Proanalisis	Water and soil sampling and laboratory analysis.
Omacha Foundation (agreement)	Support in biodiversity and participatory monitoring.
National University of Colombia and ECOLMOD (Agreement with the Ministry of Science-FFC-UNAL)	Scientific research project on fire management and biodiversity.
Enbosque	Services provided for plantations establishment and maintenance, forest protection and catering.
Serviforest	Services provided for plantations establishment and maintenance, forest protection and catering.
Servialcont	Services provided for plantations establishment and maintenance, forest protection and catering.
Casallup	Catering service.
Escalar Ingeniería	Development of the engineering concept of the processing plant located in Pinoquia.

Source: South Pole, 2023, based on information provided by FFC

On the other hand, FFC has a special investment line aimed at developing and supporting actions for maintaining social relations with stakeholders. For the 2021-2022 verification period, the budget was distributed as shown in Table 10.

Table 10. Support provided and donations made by FFC to communities and other interest groups in the 2021-2022 period

Social investment in the La Venturosa community	Social investment in the Morichalito Matsuldani community	Social investment in the Aceitico community	Social investment at the institutional level
COP $ 9,915,000	COP $ 1,385,000	COP $ 2.100.000	COP $ 2.200.000

Source: South Pole, 2023, based on information provided by FFC

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

In the dialogue and information exchange spaces that were part of the stakeholder consultation (Section 2.3.7), relevant information regarding the process to be followed for verifying the activities developed by the project under the VCS and CCB standards was provided to the different stakeholders.

Additionally, for some stakeholders such as the local and environmental authorities, the project progress in the 2021-2022 period was presented via emails, face-to-face meetings and phone calls since there is clear recognition of the appointed officials within said entities for FFC project engagement.

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

In the participatory events held (Section 2.3.7) with the different key stakeholders (such as authorities, employees and local communities), relevant information related to the verification process and the corresponding audit visit was provided. Likewise, the process followed for the first verification (detailed in Section 2.3.7 of the PD) was communicated.

Similarly, the FFC Development and Training Manager, through direct communications with the Community Action Boards (JACs) and the police inspection of the communities, has reported the future verification process (2021-2022 period) of the FFC project and its corresponding audit by a third party.

2.3.7 Stakeholder Consultation (G3.4)

Between 2021 and 2022 (the verification period), seven participatory events were held with the relevant stakeholders, having 157 attendees in total. These consultation spaces had the objective not only to provide relevant information on the development of the FFC project activities and their impacts, but also to deepen knowledge about related topics and to facilitate sessions to attend some concerns[39], having active participation as a key (Table 11 and Figure 5).

Table 11. Dialogue and participatory events around project development[40]

Stakeholder	Date of the event (mm/dd/yyyy)	No. of attendees			Topics addressed
		Total	Men	Women	
Policy makers (Mayor's Office of Puerto Carreño &	11/25/2022	3	0	3	Dissemination of the progress of the FFC project.

[39] The presentation prepared can be found at: Support Documents\General Section\Stakeholder Consultation\Presentación Socialization FFC

[40] For the stakeholder consultation supporting documents, go to: Support Documents\General Section\Stakeholder Consultation

Stakeholder	Date of the event (mm/dd/yyyy)	No. of attendees			Topics addressed
		Total	Men	Women	
Department of Agricultural Development and Environmental Management - DDAGA)					
NGO (OMACHA)	01/30/2023	4	1	3	Dissemination of the progress of the FFC project in 2021-2022 and follow-up of the agreements between OMACHA and FFC.
Employees (Toro II Camp)	02/01/2023	16	14	2	Dissemination of the progress of the FFC project and identification of its impacts.
Employees (San Cristóbal Camp)	02/02/2023	28	26	2	Dissemination of the progress of the FFC project and identification of its impacts.
Community (Aceitico police inspection)	02/11/2023	44	24	20	Dissemination of the activities carried out by FFC in 2021-2022.
Community (La Venturosa police inspection)	02/13/2023	27	12	15	Dissemination of the activities carried out by FFC in 2021-2022.
Community (Morichalito Matsuldani)	02/14/2023	35	19	16	Dissemination of the activities carried out by FFC in 2021-2022.

Source: South Pole, 2023, based on information provided by FFC

A.

B.

C.

D.

Figure 5. Local Stakeholder Consultation meetings. A. Aceitico community; B. La Venturosa community; C. Morichalito community; D. Employees of Toro II

Source: South Pole and Forest First Colombia, 2023

On the other hand, in addition to the participatory consultation events with the inhabitants of the populated centers of La Venturosa, Aceitico and Morichalito, 16 surveys were conducted in order to identify the perceptions of local stakeholders and interested parties on FFC's operations and activities in the territory, its impacts on the community, as well on the environment and local economy. Likewise, it was sought to identify the needs and expectations of the inhabitants regarding knowledge transfer and to make visible the communication channels made available by FFC to submit comments, complaints and suggestions[41].

The information was analyzed through a characterization and classification of the most relevant criteria, which allowed for assessing the level of knowledge of the communities regarding the project, as well as their perception of project impacts (Table 12).

[41] The supporting documents can be checked at: Support Documents\ General Section\ Stakeholder Consultation\ Surveys

Table 12. Summary of the questions asked to the communities of La Venturosa, Aceitico and Morichalito in the surveys

Questions	Underlying questions	No. of answers
1. What do you think is the objective of the Forest First Colombia (FCC) project that is developed in this territory?	Tree planting	6
	Timber production	2
	Environmental care (oxygen generation, biodiversity conservation, pollution reduction, flora protection)	9
	Community support, local economy boost, job creation	3
	Infrastructure (roads) repair	1
2. Are you aware of the activities carried out by the Forest First Colombia (FFC) project? Mention some of them.	Delivery of medicines, health promotion events	3
	Folkloric, recreational, and children's activities	4
	Environmental care talks, fire control	5
	Community and social work	1
	Reforestation, planting	7
	Job creation	2

Questions	Underlying questions	No. of answers
	Strengthening of relationships with neighbors	1
3. How do you think the activities carried out by the FFC project have benefited the community?	Training	3
	Donations and support to the health center	6
	Support for education and schools	1
	Environmental and animal protection	2
	Local job creation	9
	Community development and social integration	5
4. What impacts has the reforestation carried out by the FFC project had on the landscape and environment?	Presence and conservation of fauna	4
	Environmental protection	2
	Tree planting and cutting	3
	Oxygen production and lower temperatures	1
	Landscape improvement	2
	Unknown	2

Questions	Underlying questions	No. of answers
	Unanswered	3
5. Do you consider that the FFC project has generated impacts on the local economy? Mention them.	Yes	6
	Income generation	1
	Handicraft work	1
	Unknown	3
	Job creation	3
	Improvement of life quality	1
	Well-being (support for health and education)	3
	Flora and fauna conservation	1
	Unanswered	4
6. Have you attended any training session, workshop or talk conducted by the FCC project? Mention them.	Yes	11
	Fire prevention	1
	First aid	1

Questions	Underlying questions	No. of answers
	Risk management	1
	ECOMOLD	1
	SENA	1
	Agriculture	1
	Handicraft	1
	No	1
	CYMA	2
	Dissemination of the activities carried out by FFC in 2022	5
	Unanswered	3
7. What topics would you like to see covered in the training sessions conducted by FFC?	Heavy machine operation	1
	Handicrafts	1
	Agriculture (cassava, sweet potato, cashew, plantain, corn)	4
	Sacred sites	1

Questions	Underlying questions	No. of answers
	Plantation maintenance	1
	Fire prevention	1
	Health	3
	Employment and job training	2
	Actions carried out by FFC	1
	Environmental and biodiversity protection	1
	Unanswered	3
8. Do you know the communication and information channels provided by the FFC project? Have you used them?	Have not used them	5
	Through FFC's Social Coordinator	8
	Suggestions mailbox	2
	Telephone numbers	4
	Unknown	1
	Meetings and workshops	1
9. List the animals you have seen in your territory.		42

Source: South Pole, 2023

2.3.8 Continued Consultation and Adaptive Management (G3.4)

Following the process defined in Section 2.3.7 of the Project Document (PD) and implemented during the first project verification, permanent communication was established with the communities through the project's Social Coordinator, the Community Action Boards, and other key stakeholders such as the Police Inspector of the communities near the project area (La Venturosa and Aceitico) and local leaders. For this, the communication channels defined for each stakeholder type were used.

In the same vein, based on the participatory events held with different project stakeholders, the following activities were carried out to fulfill the agreed commitments.

Table 13. Participatory events

Stakeholder	Date of the event	Place	Type of assistance	Description
Traditional Authority Board	05/12/2021	Morichalito indigenous community	Support	According to the decisions made in the meeting held on 05/11/2021 with the Traditional Authority Board, the support is provided directly through the community's captain and the indigenous guard.
Traditional Authority Board	05/14/2021	Morichalito indigenous community	Donation for infrastructure improvement	According to the decisions made in the meeting held on 05/11/2021, moriche leaf stalks were transported for home repairs and adaptation. In total, 3,980 moriche stalks collected in various areas (such as the Marranas Islands and Chiquichaque) were carried in three trips. The commitment not to cause damage in the morichal areas and to carry out a due process of natural selection by the collectors was taken.
Community Action Board	05/16/2021	La Venturosa	Support	Commitment taken in the meeting held on 05/12/2021. The support was provided for the celebration of the Mother's Day.

Source: South Pole, 2023, based on information provided by FFC

2.3.9 Stakeholder Consultation Channels (G3.5)

As detailed in Section 2.3.1 of the Project Document (PD), communications in the FFC project are based on the identification of the most suitable channels. Accordingly, for consultation events held during the 2021-2022 verification the following channels were used (Table 14):

Table 14. Channels used to provide information and receive comments and concerns about the FFC project

Stakeholder	Channel/method
Employees	Regular meetings with supervisors to report the progress of the project
	Letter requests
	Oral requests
Communities	Participatory events with the presidents of the Community Action Boards (JACs)
	Letter requests
	Oral requests
Public institutions	Face-to-face and virtual meetings
	Information exchange through emails or letters

Source: South Pole, 2023, based on information provided by FFC

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

All dissemination, consultation and participation activities are publicly promoted. In this sense, all stakeholders are invited to participate regardless of their culture, gender or age.

Regarding local communities, the invitations to meetings and the exchange of project-related information are shared through their representatives, with the presidents of the Community Action Boards (JAC) being the contact points for the rural population and the governors and/or captains for the indigenous groups. With the employees, the communications protocol consists of providing information on activity implementation and the respective feedback through the supervisors of each working group. In the case of public institutions and civil associations, the identified members have been invited to comment and provide feedback on the project through email and formal letters.

The necessary measures taken to promote effective community engagement are detailed in Section 2.3.10 of the PD. They were implemented during briefings, the stakeholder consultation and the implementation of project activities in the 2021-2022 period.

2.3.11 Anti-Discrimination Assurance (G3.7)

Forest First Colombia is working to establish procedures that guarantee the promotion of an anti-discriminatory culture. In this sense, as one of the approaches of its Human Rights policy, gender equality is incorporated into all operations.

In consequence, by 2022, 25% of the project's internal workforce was comprised by women, with 42% of them holding team leadership or senior management positions in 2022. Likewise, the wage ratio between women and men is 1, which means that gender equality in terms of opportunities and economic remuneration is complied with[42].

2.3.12 Grievances (G3.8)

During the 2021-2022 project verification period, the agreed channels for complaint and claim handling were followed up by establishing direct communication between FFC and the Steering Committee of the La Venturosa and Aceitico communities (for more details, see Section 2.3.12 of the PDD). In this way, direct communications, either in person or by telephone, have been received from the representatives of La Venturosa, Aceitico and Morichalito.

Additionally, various requests and comments were delivered by the employees and other local stakeholders through the suggestion mailboxes (Figure 6, A) located in the different camps, the community police inspections and the FFC office in Puerto Carreño. Likewise, comments were received via email and telephone since posters with contact information were placed in FFC camps and offices, as well as in areas of common use in the local communities (Figure 6, B).

[42] The supporting documents can be checked at: Support documents\ General Section\ Anti-discrimination Assurance

A. **B.**

Figure 6. Channels for the reception of complaints and claims. A. Mailboxes; B. Information with contact details

Source: Forest First, 2023

The most relevant comments, complaints and claims received through the designated channels, as well as their development, are presented below. They are mostly related to requests for support made by the communities (Table 15).

Table 15. Requests received through the project's complaints, claims and comments mechanism

Stakeholder	Date	Place	Request	Channel used	Development
Employees	04/15/2021	FFC Camps	A change in the casino administration is proposed due to potential internal conflicts.	Suggestions mailbox	On 05/06/2021, the Committee sent an acknowledgment of receipt of the complaint, which was transferred to Operations to act as the contract's controller.
Employees	04/15/2021	FFC Camps	It is communicated that the food supply is insufficient for the field staff.	Suggestions mailbox	On 05/06/2021 the Committee sent an acknowledgment of receipt of the complaint, which was transferred to Operations to act as the contract's controller.

Stakeholder	Date	Place	Request	Channel used	Development
Community Action Board of La Venturosa	05/13/2021	La Venturosa Community	Support	Request letter	In response to the request made by the JAC to tear down the old museum house, the area was delimited with security tape. Due to company policies, harvest personnel were not allowed to remove the roof because it contained asbestos, which is prohibited nationwide.
Darwin Ramírez (Harvest Area)	05/13/2021	La Venturosa Community	Donation for infrastructure improvement	Request letter	Request for the donation of timber materials for the construction of his home located in the Chiquichaque area.
Alvin Rondon	05/18/2021	La Venturosa Community	Donation for infrastructure improvement	Request letter	Request made on 05/10/21 for the delivery of 50 wooden beams and 60 second-hand boards for the construction of his home.
La Conquista School	05/19/2021	La Venturosa Community	Support to education	Request letter	Request for fuel made by the school director on 05/14/21 with the purpose to operate a power plant and deliver educational material to students.
Nelson Niño (Member of the FFC's Harvest Area)	05/28/2021	La Venturosa Community	Donation	Oral	Delivery of burnt oil for wood immunization in his home. This donation was approved by Derek Howe by ensuring all handling precautions.
Morichalito Matsuldani Community	05/28/2021	Morichalito Indigenous Community	Donation	Oral	A donation of 20 pieces of canvas is made to adapt the homes of four families in the community. The donation was

Stakeholder	Date	Place	Request	Channel used	Development
					approved by Derek Howe.
José Angel Romero (Farmer and resident of Base de Paraíso – Muco 2)	05/31/2021	FFC's Paraiso Camp	Donation	Oral	Request for fertilizer for corn cultivation.
Juan Carlos Gaitán (Harvest Area)	06/01/2021	Morichalito Indigenous Community	Donation for infrastructure improvement	Request letter	The material for the adaptation of his home is delivered in the indigenous community of Morichalito Matsuldani.
Elibardo Florez (Harvest Area contractor)	06/02/2021	La Venturosa Community	Donation for infrastructure improvement	Oral	After the infrastructure adaptations made in the San Cristóbal Camp, timber material has been piled. For this reason, he requested the donation of boards found there to be used in his home repair works.
La Conquista School	07/13/2021	La Venturosa Community	Support	Support to education	In support of the educational sector, school kits are delivered to the students of the La Conquista School, in the La Venturosa community, for their return to school.
La Venturosa Health Center	07/16/2021	La Venturosa Community	Health support	Request letter	In compliance with the strategy proposed by the company's Sustainability Area, consisting in supporting the area of influence of La Venturosa, medicines are delivered to the local health center.
Salomón Vega	08/19/2021	La Venturosa Community	Support	Oral	Delivery of 10 wooden poles to carry out operations related to the poultry farming project, which will benefit Forest First

Stakeholder	Date	Place	Request	Channel used	Development
					Colombia.
The Kite's Day	08/28/2021	La Venturosa Community	Support for community activities	Commitment with the La Venturosa Community	Delivery of four prizes to reward the different child and adolescent kite categories in the community.
Salomón Vega	09/09/2021	La Venturosa Community	Support	Oral	Delivery of a sawdust bag to implement the poultry farming project.
Emperatriz Ramírez	09/10/2021	La Venturosa Community	Support	Request letter	Delivery of material for a poultry project that will benefit the population of La Venturosa.
José Ángel Romero (Farmer and resident of Base de Paraíso – Muco 2)	09/11/2021	FFC's Paraiso Camp	Support	Oral	Delivery of material.
National Police	09/28/2021	La Venturosa Community	Support	Oral	Delivery of a sawdust bag to carry out their activities.
Indigenous School of Morichalito	10/07/2021	Morichalito Indigenous Community	Support to education	Oral	School supplies are delivered.
National Police Station in La Venturosa	10/21/2021	La Venturosa Community	Environmental support for the Civic Police Group	Oral	75 native trees are delivered.
The Children's Day	10/31/2021	La Venturosa Community	Support	Minutes	Two prizes are donated for the winners of the Halloween contest. In addition, snacks and sweets are delivered to all the students.

Stakeholder	Date	Place	Request	Channel used	Development
Handcraft Workshop	11/02/2021	Morichalito Indigenous Community	Support for community cultural practices	Community project	Four pots, scissors, needles, ink and snacks are delivered to conduct five sessions with the artisan women within the framework of the project.
Load of moriche leaf stalks	11/11/2021	Morichalito Indigenous Community	Adaptation of barns for a productive project	Minutes	3,500 moriche leaf stalks were transported, benefiting 50 families of the community who are developing a productive poultry farming project.
Beautification of public spaces	11/16/2021	Police Inspection of La Venturosa	Community support for fairs and celebrations	Request letter	Pruning and cleaning of the coleo plants and the soccer pitch grass is carried out with a Kubota machine: Additionally, a lawn mower was lent for cleaning other spaces.
T-shirts for the Interveredal Sports Tournament	11/16/2022	FFC's office in Puerto Carreño	Donation to the sports team	Minutes	22 t-shirts with the company's logo are donated for the Interveredal Sports Tournament in Carreño.
Materials for the school beautification	11/17/2021	La Conquista School	Education incentives	Request letter	Delivery of material for the beautification of the school located in La Venturosa.
La Venturosa fairs and festivals	11/19/2021	La Venturosa Community	Support	Oral	Delivery of material for the community to improve public spaces for the Rope Fair.
Trophies for fairs and celebrations	12/02/2021	La Venturosa Community	Support	Minutes	Awards and trophies are delivered to the community for the celebration of the Rope Fair.
La Venturosa Health Center	12/24/2021	Police Inspection of La	Health support	Request letter	The 2nd batch medicines are delivered to the local health center as part of the company's

Stakeholder	Date	Place	Request	Channel used	Development
		Venturosa			community and social responsibilities.
Enbosque's worker (contractor)	01/04/2022	Paraiso Camp	Concern about payment dates	Mailbox	A Human Resources and HSE audit are pending to be scheduled.
Serviflorest contractor	06/06/2022	Puerto Carreño office	Wrong payment balance	Request letter	HR conducted an adequate review and follow-up of the reported situation.
Ombudsman of Puerto Carreño	01/11/2022	Puerto Carreño	Deterioration of lands in Aceitico due to the loading and unloading of manures and fertilizers	Voice-to-voice messages	The case was transferred to the area in charge for its respective processing and response.
Employee	12/05/2022	San Cristóbal Camp	Complaint about inequality in the food service provided to employees	E-mail	HR and HSE assessed the service conditions to improve them by adapting the food menus according to the requirements of the different areas.
Christmas presents	12/24/2022	Police Inspection of La Venturosa	Support	Minutes	Gifts were delivered to children in the community for Christmas celebration.
Christmas presents	12/24/2023	Morichalito Indigenous Community	Support	Oral	Gifts were delivered to children in the community for Christmas celebration.

Source: South Pole, 2023, based on information provided by FFC.

2.3.13 Worker Training (G3.9)

In the 2021-2022 verification period of the Forest First Colombia (FFC) project, different events for knowledge transfer and capacity building were held with employees around various issues related to sustainable development and the improvement of project processes (Table 16).

Table 16. Training sessions carried out for employees in the 2021-2022 verification period[43]

Date	No. of people	Objective	FFC Area/Team
06/23/2021	10	Waste sorting	Silvotecnia
07/01/2021	10	Waste sorting according to the new color code	Harvest, San Cristóbal
06/23/2021	11	Waste sorting according to the new color code	Enbosque, Muco B
03/16/2021	12	Waste sorting according to the new color code	Serviforest, Tierradentro
03/19/2021	12	Waste sorting according to the new color code	Enbosque, Muco A
03/17/2021	8	Waste sorting according to the new color code	Serviforest, Delicias
03/30/2021	3	Waste sorting according to the new color code	Security
05/20/2021	19	Biodiversity by Omacha	San Cristóbal employees
05/24/2021	16	Biodiversity of the Orinoquia and camera trapping techniques	Toro II employees
25/05/2021	22	Biodiversity of the Orinoquia and camera trapping techniques	Serviforest
05/20/2021	7	Biodiversity of the Orinoquia and camera trapping techniques	Nursery, Muco
05/20/2021	19	Biodiversity of the Orinoquia and camera trapping techniques	Harvest
05/21/2021	18	Biodiversity of the Orinoquia and camera trapping techniques	San Cristóbal
05/21/2021	10	Biodiversity of the Orinoquia and camera trapping techniques	Planning
10/20/2021	3	Waste management: cooking oils	Casino
01/14/2022	7	High Conservation Values and biodiversity	Nursery, San Cristóbal Camp
02/04/2022	6	High Conservation Values	Juriepe area employees
06/06/2022	9	Participatory monitoring	San Cristóbal Camp employees
06/09/2022	7	Participatory monitoring	Toro II Camp employees
07/16/2022	22	Participatory monitoring of the Ramsar site	Tierradentro Camp employees

[43]The supporting documents can be checked at: Support Documents\ General\ Worker Trainning

Date	No. of people	Objective	FFC Area/Team
08/24/2022	15	Fauna and environmental conditions	Harvest, Pinoquia area
03/30/2022	13	Biodiversity: Conservation strategies	Toro II employees
08/30/2022	12	Participatory monitoring	Marrana Island employees
08/30/2022	15	Participatory monitoring	Chaparrito employees
08/30/2022	15	Participatory monitoring	514, La Venturosa, JGM
11/07/2022	44	Workshop: Management of deadly fauna	Toro II employees
11/09/2022	60	Workshop: Management of deadly fauna	San Cristóbal (Embosque) employees
11/10/2022	22	Workshop: Management of deadly fauna	Las Delicias area employees
11/11/2022	22	Best practices for organic and inorganic waste management	Toro II employees
11/16/2022	1	Management of usable residues and participatory monitoring of fauna	Maldivas area employees
11/17/2022	4	Participatory monitoring	Las Delicias area employees
11/17/2022	15	Good use of usable waste and participatory management	Tierradentro area employees
11/26/2022	10	Management of usable residues and participatory monitoring	Juriepe area employees
11/26/2022	14	Participatory monitoring and biodiversity protection	San Cristóbal employees

Source: South Pole, 2023, based on information provided by FFC

Likewise, as a way to continuously strengthen employees' skills and abilities for the development of project activities, a satisfaction and perception survey on some of the training programs offered was carried out[44].

On the other hand, during this verification period FFC opened some internship vacancies for students of associate's degrees through an alliance with the national training agency of Colombia, SENA, promoting the involvement of people with relevant competencies. Currently, there are four permanent positions for SENA interns. From 01/01/2021 to 11/30/2021, 10 people were hired in four positions, in addition to the SENA internships open for the following programs:

[44] The supporting documents can be checked at: Supporting Documents\ General section\ Worker Training

- Administrative Management Associate's Degree
- Nursery Management Associate's Degree
- Natural Resource Management Associate's Degree
- Ecological Agricultural Production Associate's Degree
- Maintenance and Installation of Photovoltaic Solar Systems Associate's Degree

2.3.14 Community Employment Opportunities (G3.10)

As of December 2022, the FFC project had 76 direct employees, of which 16 were women and 60 were men. The harvesting position is the one with the largest number of personnel (22 people), followed by administrative team (16), nursing (13), and operation (10), among others.

The workforce provided by the project in 2021 at the country level is representative and diverse (Table 17), with 55% local representation in the department of Vichada.

Table 17. Origin of FFC employees

Department	Hiring %
Antioquia	1
Boyacá	2
Casanare	1
Córdoba	1
Cundinamarca	17
Huila	1
Magdalena	1
Meta	6
Tolima	1

Department	Hiring %
Valle del Cauca	2
Vichada	55
Venezuela	2
Others	7
TOTAL	**100**

Source: South Pole, 2023, based on information provided by FFC of 2021

In the same line, it is worth mentioning that the project provides job opportunities to the young population of Vichada, as presented in Table 18.

Table 18. Distribution of employees by age

Age group	%
<25	12
25-35	38
36-45	28
16-55	15
>55	7
TOTAL	**100**

Source: South Pole, 2023, based on information provided by FFC of 2021

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

As mentioned in the PD and the first verification document, the applicable regulatory framework is based on Colombia's Substantive Labor Code (which was adopted by Decree 2663 of 1950), the best practices followed by the company, the International Labor Conferences, and the Political Constitution of Colombia. Based on the Substantive Labor Code, the following general principles are applicable to project activities:

- Definition of work and temporary work (articles 5 and 6).
- Freedom to work (article 7).
- Equality of workers (article 10).
- Right to work, unionization and strike (articles 11 and 12).
- Modalities, execution, effect and termination of contracts (Chapters IV, V and VI).

The above has been modified by Decree 1072 of 2015 and by the following laws:

- Law 188 of December 30, 1959
- Law 141 of December 16, 1961
- Law No 171 of December 14, 1961
- Law 73 of December 13, 1966
- Law 21 of June 14, 1967
- Law 22 of June 14, 1967
- Law 48 of December 16, 1968
- Law 3a of October 13, 1969
- Law 5a of October 13, 1969
- Law 27 of December 20, 1974
- Law 1788 of 2016
- Law 1098 of 2006
- Law 4a of 1976
- Law 6o of 1981
- Law 1846 of 2017
- Law 1822 of 2017
- Law 1610 of 2013
- Law 1563 of 2012
- Law 1562 of 2012
- Law 1496 of 2011
- Law 1468 of 2011
- Law 1429 of 2010
- Law 1280 of 2009
- Law 755 of 2002

- Law 995 of 2005
- Law 962 of 2005
- Law 789 of 2002.
- Law 278 of April 30, 1996
- Law 119 of February 9, 1994
- Law 1210 of 2008
- Law 54 of December 18, 1987
- Law 75 of 1986
- Law 11 of February 24 of 1984
- Law 51 of December 22, 1983
- Law 584 of 2000
- Law 550 of 1999
- Law 311 of August 12, 1996
- Law 23 of March 21, 1991
- Law 50 of 1990
- Law 71 of December 19, 1988
- Law 24 of 1986
- Law 39 of February 5, 1985
- Law 20 of January 22, 1982
-

Additional laws, decrees and resolutions that apply to project workers include, but are not limited to:

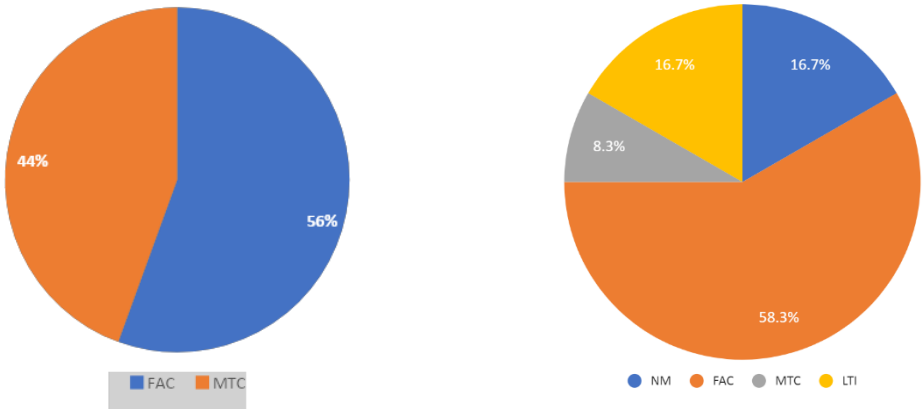
- Decree 21 of 1982: Prevention of the Social Security System elusion.
- Law 100 of 1993: Creation of the Integral Security System, with the objective of guaranteeing the fulfillment of the rights of all people.
- Law 119 of 1994: Restriction and regulation of the National Learning Service.
- Decree 1266 of 1994: Creation of the Professional Risks System as part of the Integral Security System to protect workers from physical, chemical, biological, psychosocial, sanitary and safety risks they may be exposed at work.
- Law 278 of 1996: Creation of the permanent commission for the coordination of wage and labor policies in accordance with the Ministry of Labor.
- Law 789 of 2002: Creation of the Social Protection Fund to promote the fulfillment of the rights to health, pension and work.
- Law 931 of 2004: Protection of workers from age discrimination.
- Law 1280 of 2009: Declaration of five working days of paid bereavement leave.
- Law 1468 of 2011: Declaration of 14 weeks of paid maternity leave.
- Law 1429 of 2010: Creation of incentives for business formalization (Title II), job creation, and labor formalization in the rural and urban sectors (Title III).

- Law 1438 of 2011: Transformation and regulation of the General System of Social Security in Health.
- Law 1496 of 2011: Guarantee of equal pay for men and women and implementation of mechanisms to eradicate gender-based discrimination.
- Law 1562 of 2012: Definition of work-related accidents (Article 3) and occupational diseases (Article 4), establishment of the rules for their prevention (Article 11) and basic income in case of temporary injuries (Article 5).
- Law 1610 of 2013: Regulation for labor inspections and labor formalization agreements.
- Law 1636 of 2013: Creation and regulation of the Unemployment Protection Mechanism.

In order to ensure worker's rights protection, as regulated by the laws listed above, Forest First Colombia (FFC) promotes the payment of decent wages, according to the role performed by each employee (currently, the company has 11 different positions). Furthermore, FFC fulfills payment of social security obligations and performs admission and periodic medical examinations, according to worker's regulations and, in the same way, it makes sure that contractors meet these mandatory requirements as part of its work policy. Finally, it has annual training plans to maintain and progressively improve the skills and knowledge of the people involved in the different project stages and areas (Section 0), also providing personal protective equipment to all personnel exposed to operational risks and managing work operations and break areas to guarantee the highest safety conditions.

2.3.16 Occupational Safety Assessment (G3.12)

Although no serious occupational health and safety incidents occurred during this monitoring period (2021-2022), actions were taken to strengthen the occupational safety management system designed for the project. In this regard, several safety meetings and training sessions with operating personnel (including contractors) were held to review the lessons learned. During said verification period, some events occurred resulting in minor injuries as shown below:



A. B.

Figure 7. Total injury events. A. 2021, B. 2022 FAC: First Aid Case; MTC: Medical Treatment Case; NM: Near Miss; LTI: Lost Time Injury

Source: South Pole, 2023, based on information provided by FFC

As of December 2022, 22 work accidents had occurred, with nearly 80% of the events being reported by direct employees and 20% by contractors. Among the most common accident agents are:

- Animals or biological agents (for example, contact with bees)
- Cutting hazards (resulting from handling small tools)
- Sharp surfaces and environmental agents (related to heat waves)
- Means of transport (motorbikes)

Each event was discussed with the Occupational Health and Safety Committee (COPASST), the managers of the teams and the workers to suggest and implement some controls and improvements such as:

- Replacement of some tools for safer ones.
- Adjustment of security procedures.
- Preparation of a checklist prior to the start of operations.
- Creation of a new system to simplify reports made by employees.

During the COVID-19 pandemic, the continuity of operations under safety regulations was a priority so that employees could work in adequate environments. Likewise, a COVID Committee, made up of field and office staff, was created with the objective of evaluating the procedures, problems and new regulations; and to monitor and update the actions implemented. For this, they have bimonthly meetings, which is a time lapse that allows for assessing the changing circumstances and responding in real time to the situations faced by the employees, for example, quarantine procedures were introduced before and after team rotations in remote plantations in order to eliminate or reduce the risk of COVID-19 outbreaks.

There were five cases of COVID-19 contracted on site (one FFC employee and four contractors). In these cases, COVID-19 protocols were immediately executed, and the spread of the virus was successfully halted. The workers who received medical attention in the hospital were discharged the same day and the others remained in the designated quarantine zones for the mandatory days.

To ensure the health and safety of all workers, specific instructions on safety protocols were provided, including shift adjustments to maximize social distancing and quarantining of the crews traveling to the fields. Wherever possible, changes were made to allow home-based collaborative work through the use of online tools. In the same vein, in June 2021, the Colombian Government launched a COVID-19 vaccination campaign, which was supported by FFC by training all its employees on the importance of getting vaccinated. These efforts led to fully vaccination of 100% of the employees and 96% of the field contractors.

On the other hand, a strategy for continuous improvement, consisting of reviewing, maintaining and updating internal prevention measures, is in place. As part of it, rapid COVID-19 test kits have been purchased for field personnel and suppliers, and visitors from other areas of the country are required to get a laboratory test within 48 hours before traveling to the area of operations.

2.4 Management Capacity

2.4.1 Required Technical Skills (G4.2)

The contractor companies in charge of the technical processes related to field planting are presented in Table 19 below. They are periodically updated on FFC's operating procedures through forestry supervisors and training sessions.

Table 19. Contractor companies providing services to FFC

Company name	Service provided to FFC
Consultoría y Medio Ambiente S.A.S.	Preparation of environmental and social impact studies.
PSL Proanalisis	Water and soil sampling and laboratory analysis.
Omacha Foundation (agreement)	Support in biodiversity and participatory monitoring.
National University of Colombia and ECOLMOD (Agreement with the Ministry of Science-FFC-UNAL)	Scientific research project on fire management and biodiversity.
Enbosque	Services provided for plantations establishment and maintenance, forest protection and catering.
Serviforest	Services provided for plantations establishment and maintenance, forest protection and catering.
Servialcont	Services provided for plantations establishment and maintenance, forest protection and catering.
Casallup	Catering service.
Escalar Ingeniería	Development of the engineering concept of the processing plant located in Pinoquia.

Source: South Pole, 2023, based on information provided by FFC

In relation to carbon quantification, South Pole supported the first and second verification of the climate, community and biodiversity benefits generated by the project, through advice on the preparation of the Monitoring Report (including the climate, community and biodiversity sections, as well as the risk analysis) and documented the defined PQC mechanism.

Concerning occupational health and safety, new employees participate in an onboarding program to become familiar with field equipment and operations and aware of occupational risks. For existing employees, the following activities were carried out:

Safety meetings:

- Road safety (two hours).
- Safety duties and responsibilities (one hour).
- Proper use of respiratory protection during herbicide application (30 minutes).

In addition, first aid training has been provided by the Red Cross and road safety sessions have been conducted by a highly experienced trainer.

2.4.2 Management Team Experience (G4.2)

The FFC Management Team has extensive experience in the establishment, management and implementation of forestry projects in Colombia, where it has been present for 10 years, as well as in other countries. The team is comprised of highly qualified members with world-class global experience in various fields including forestry, sustainability, timber, business development, project management, governance, capital raising, and stakeholder mapping and management.

This experienced team ensures that the project is built on a solid foundation and managed to the highest standards. As evidence, the project has already obtained the carbon certification for the Colombian compliance market and the FSC Forest Management certification[45]. Most importantly, FFC is supported by Finnfund, which finances responsible sustainable projects that meet high management standards.

The organizational structure of the company is made up of the General Management as the highest decision-making body, which is subdivided into the executive directorates in charge of each area of the company. It should also be noted that the Technical Management area is responsible for silvicultural activities, project planning, nursery management and all human resources-related aspects. On the other hand, the Forestry Department carries out the harvesting, handling, and final disposal of timber products, secondary products, and waste (Figure 8).

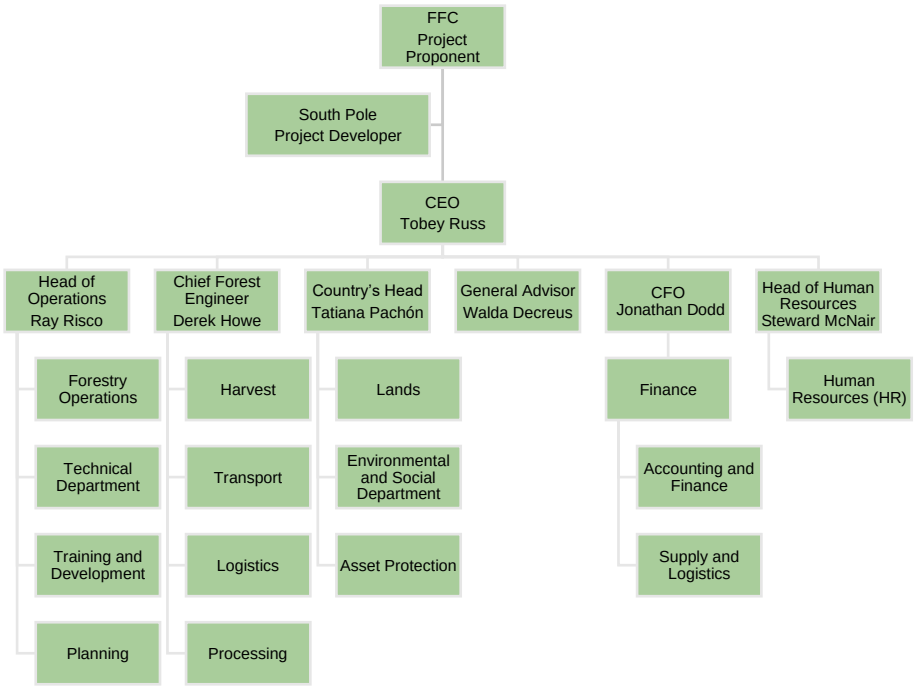


Figure 8. Organization chart and personnel involved

[45] The FSC certificate can be found at: Support documents\Climate Support documents\Plantations documents\FSC Certificate

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

As for the carbon crediting under VCS+CCB, the entire process will be overseen by FFC with the advice of South Pole. The latter is a global sustainability service provider with the mission of collaborating with clients in the public and private sectors to deliver solutions that help create more sustainable societies and economies. South Pole has more than 15 years of experience in the development of greenhouse gas (GHG) emission reduction and removal projects for their certification under different carbon standards, including their structuring, implementation, monitoring, and maintenance.

To date, South Pole has developed more than 700 projects in 40 countries. The company promotes the generation of environmental and social benefits, contributing to the Paris Agreement commitments and the UN Sustainable Development Goals (SDGs). The South Pole team is composed of highly-qualified members with global experience in the environmental, social, commercial, communication, financial and legal fields, whose objective is to guide the project partners towards innovative solutions to both mitigate risks and achieve their sustainability goals. More information on South Pole is available at https://www.southpole.com.

Furthermore, FFC partnered with highly-experienced forest operators in the country to support the operations in the field. These are:

- **Silvotecnia S.A.S.**[46]**:** Silvotecnia is a forestry company with more than 16 years of experience in the forestry sector. Characterized by its high-quality services, its mission is to provide forest operation, consulting, environmental and forest heritage management services that adhere to the highest standards and corporate social responsibility principles and generate value for its stakeholders.

  Silvotecnia provides integral services related to forestry plantations, environmental services and environmental, forestry and wood industry consulting. It is committed to robust performance in the sustainable development scenario, therefore considering social equity, environmental respect, and economic feasibility. It provides high-quality services to the forestry sector that generate employment and operate under the principles of sustainability and corporate social responsibility.

- **Enbosque:** Enbosque[47] has experience since 2009 and offers several services such as soil analysis, pest management and control, and forestry operations (including nursery management, soil preparation, planting, pruning, and weeding). Its staff has more than 20 years of experience in forestry operations within the country.

  Besides its technical and operational capacity, Enbosque has management capacity and experience in the Orinoquia region. All its processes are developed in compliance with the national legal framework related to environmental, labor, social, and legal aspects.

- **Serviforest Laverde S.A.S. and Servialcont S.A.S.:** Serviforestales Laverde S.A.S[48] and Servialcont S.A.S are local companies specialized in providing forestry support services in the Eastern Plains region. In the project, it is in charge of the establishment and maintenance of plantations, forest protection and catering.

[46] http:\\www.silvotecnia.com
[47] https:\\enbosque.com\
[48] http:\\www.serviforest.co\empresa\

- **Finnfund:** Finnfund[49] is a development investor focusing on responsible and profitable businesses in developing countries. It provides risk capital, long-term investment loans, mezzanine financing and expertise on how to invest in the developing markets. It supports sectors that are critical to sustainable development, including sustainable forestry, which produces development impacts.

  In 2017, Finnfund invested in FFC. This investment became an important milestone as it represented an external validation of the company's sustainable forestry practices and it supports its commitment to positively impact the region's community and environment.

- **Sappi:** Sappi[50] is a global diversified wood fiber company focused on providing dissolving wood pulp, packaging and specialty papers, as well as biomaterials and biochemicals; and it is one of the leading global providers of sustainable wood fiber products and solutions. FFC partnership with Sappi began in 2016, when the latter became a strategic investor, entering into an offtake agreement for up to 2.5 million tons per year. There is also a technical cooperation agreement in place that will allow FFC to benefit from Sappi's expertise in genetic improvement, silviculture, pest control and disease management.
- **Escalar Ingeniería S.A.S.:** Escalar Ingeniería S.A.S.[51] is a company legally incorporated in January 2002, whose main purpose is to provide consulting services in process engineering and technical supervision associated with the processing plant located in Pinoquia.

In parallel, FFC has agreements with other institutions to comply with the environmental regulations in force and the commitments acquired in terms of social biodiversity. This is the case of:

- **Consultoría y Medio Ambiente S.A.:** Consultoría y Medio Ambiente S.A.[52] is a company with more than 20 years of experience in the provision of consulting and engineering services in the areas of industrial safety, occupational health, environment and social management. In the project, it oversees the social and environmental impact studies required by Corporinoquia.
- **Omacha Foundation:** The Omacha Foundation[53] creates strategies to guarantee the conservation and sustainable use of aquatic and terrestrial ecosystems and species. Omacha has projects in Colombia, South America and other countries around the world, where they engage local communities and liaise with productive sectors and governments. In the project, this foundation supports biodiversity and participatory monitoring.
- **ECOLMOD, National University of Colombia:** The research group in Landscape Ecology and Ecosystem Modeling (ECOLMOD)[54] of the National University of Colombia is focused on training, development and innovation in the field of spatial analysis, in a multi- and interdisciplinary space in which information is managed according to national and international standards. This group also supports biodiversity monitoring, as well as the fire control educational program and other training activities.

[49] https:\\www.finnfund.fi\en\finnfund\
[50] https:\\www.sappi.com\group-profile
[51] https:\\www.escalaringenieria.com\web\
[52] https:\\www.cyma.com.co\quienes-somos\
[53] https:\\omacha.org\
[54] http:\\ecolmod.unal.edu.co\

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

FFC has the support of a large and globally recognized fund focused on profitable and responsible business: the Finnfund. In the same line, details of its cashflow are provided as evidence of the financial support received.[55]

The results of FFC's financial indicators of liquidity, solvency and profitability expected for the year 2023 are described below and allow us to evaluate the company's financial health:

- **Liquidity indicator:** Indicates what proportion of short-term debts can be covered by assets that can be liquidated quickly by the company. The higher it is, the more positive it is for the company, since it reflects the liquidity to meet its short-term debts. In this case, the average liquidity indicator is 3.9 times, which means that for every peso the company owes (current liabilities) it has 3.9 pesos to pay (current assets).
- **Solvency indicator:** The solvency indicator reflects FFC's capacity to meet its payment obligations (debts). On average, the solvency indicator is 3.2 times, which is a great advantage for FFC since it reflects a high capacity to pay its debts.
- **EBITDA:** The average profitability measured through EBITDA reflects that the company generates losses of -$7,096 (US$ thousands). This is because the Company initiated its first commercial sales of wood fiber to a local biomass plant and recorded initial revenues from these sales in 2022 and revenues from forest management services are generated from forestry services such as preparation, planting, fertilization, manure application and maintenance of eucalyptus and acacia plantations provided on third party land, which have not yet led to a positive result.

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

FFC has an anti-corruption policy in force, which proves FFC commitment to doing business ethically and in compliance with all anti-corruption, anti-money laundering and anti-terrorism applicable laws. The scope of such policy[56] applies to all “employees, directors and third parties acting on behalf of FFC and its affiliates”. The policy complies with articles 488 and 323 of the Colombian Criminal Code and will be amended should Colombian law change.

Additionally, there is a code of conduct that is shared with all employees, in which FFC’s position against corruption and bribery is detailed. These issues are openly discussed with employees who are considered the most vulnerable to this type of situations and a training program will be in place to ensure that all staff members are fully aware of this policy and code, understand their rationale and implement them consistently.

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

No sensitive information has been generated nor excluded from the public version of the project.

[55] Support material is available at: Support documents\NPRT\Internal Risk\Financial_Viability

[56] Support material is at: Support documents\Community Support documents\Net Positive Community\Employees

2.5 Legal Status and Property Rights

2.5.1 Recognition of Property Rights (G5.1)

In 2021, Forest First Colombia put in place its policy and procedure for the acquisition of land rights, based on legal, technical, social and environmental aspects. The objective of this process is to ensure full compliance with local regulations and respect for community and nature rights, while following a technical due diligence to identify the productive potential of the property by assessing legal aspects regarding titling, guaranteeing the proper use of the land and ensuring that the alienation of the property is carried out in a proper way.

This policy addresses the due diligence of the social component of the project, making sure that land ownership has not been granted or is in the process of being granted to local communities, nor that the property has occupants other than those allowed by the holders. It is worth mentioning that FFC does not pursue the acquisition of land use rights on properties with settled ethnic and peasant communities. Likewise, when possible, the policy seeks to identify and map ecosystem services and sets out the environmental due diligence for the mapping of all buffer areas and the high interest areas, such as the Bita River Ramsar site.

All the project properties have real property rights on behalf of Forest First Colombia S.A.S. through trusts issued by different banking entities. This means that, although Forest First is not the owner of the land, it can dispose of it due to the usufruct right he is entitled to. In other words, through usufruct, the corresponding landowners allow Forest First to use and enjoy their properties, taking economical advantage of them (as planned through the carbon project)[57]. Thus, the property rights of the project are in line with the legal requirements of the Republic of Colombia and no activities are carried out on lands with land tenure issues or under private ownership.

Table 20 provides a list with information of each property. All of them have their respective tradition and freedom certificates, which were reviewed to avoid and clarify potential controversies over land ownership.

Table 20. Real estate licenses of the properties that are part of the project area[58]

Property	ID	No. of Real Estate License
La Delicia	540-1031	00 01 0003 0239 000
Paraíso TAD	540-1219	00 01 0003 0286 000
La Diamantina*	540-1373	00 01 0003 0246 000
Tierradentro	540-1374	00 01 0003 0289 000
Cuernavaca	540-1691	00 01 0003 0205 000
La Josa	540-2202	00 01 0003 0598 000
Llano Lindo	540-2209	00 01 0003 0597 000
El Paraíso I	540-221	00 01 0004 0004 000

[57] Supporting material is at: Support documents\General Section\Criteria Compliance\Law compliance\0200-003-01E Land Acquisition Policy.

[58] The supporting land tenure documents are available at: Support documents\General Section\Criteria Compliance\Law compliance\Legal_Status_and_Property_rights.

Property	ID	No. of Real Estate License
El Paraíso II	540-222	00 01 0004 0003 000
Las Margaritas*	540-2453	00 01 0003 0230 000
Garza Morena	540-2550	00 01 0003 0296 000
San Cristóbal*	540-2921	00 01 0003 0115 000
Los Palmares*	540-2949	00 01 0003 0241 000
Los Yaguaros*	540-3433	00 01 0003 0229 000
El Toro 2-1	540-4453	00 01 0003 0094 000
El Toro 2-2	540-4454	00 01 0003 0095 000
El Toro 2-7	540-4476	00 01 0003 0100 000
El Toro 2-6	540-4477	00 01 0003 0099 000
El Toro 2-5	540-4478	00 01 0003 0098 000
El Toro 2-4	540-4479	00 01 0003 0097 000
Paraíso PC*	540-4494	00 01 0004 0021 000
Los Cuatro Amigos	540-4664	00 01 0003 0238 000
La Victoria	540-4670	00 01 0003 0240 000
La Orqueta	540-4671	00 01 0003 0217 000
La Fe	540-4740	00 01 0003 0075 000
Carraito	540-4770	00 01 0003 0216 000
El Comienzo	540-4785	00 01 0003 0077 000
El Barajuste	540-4786	00 01 0003 0078 000
Paraíso LP	540-4823	00 01 0003 0243 000
El Triunfo	540-4837	00 01 0003 0076 000
La Fortaleza	540-4841	00 01 0003 0215 000
Llano Lindo Port*	540-5679	00 01 0004 0087 000
El Toro 301	540-5757	00 01 0003 0106 000
La Cordobeza	540-5763	00 01 0003 0244 000
La Pista	540-6297	00 01 0004 0025 000
Las Malvinas	540-6298	00 01 0003 0014 000
Hato Nuevo	540-643	00 01 0004 0009 000
Tierradentro 2	540-6508	00 01 0003 0291 000
Tierradentro 5	540-6581	00 01 0003 0284 000
El Toro 2	540-975	00 01 0003 0096 000
El Toro 3	540-976	00 01 0003 0105 000

Source: South Pole, 2023, based on information provided by FFC.

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

FFC undertakes a technical and legal due diligence before purchasing new plots with the objectives to:

- Ensure that the title was properly acquired, and is legal and valid.
- Ensure that the plot is suitable for forestry activities and determine its eligibility areas.
- Ensure that the plot is free from encroachment and/or illegal occupiers, and that there are no additional claims on it.
- Identify environmentally sensitive areas for future conservation.
- Identify cultural heritage sites to allow free access to them.
- Avoid the eviction and forced displacement of people.

Furthermore, the project is on private land and FFC does not purchase any property before clarifying its legal status (Section 2.5.1). In consequence, no collective territories allocated to black or indigenous communities are part of the project area. However, the cemetery of a nearby settlement in La Venturosa is located within the boundary of a property owned by FFC, in a piece of land that had been abandoned but FFC delimited and it is currently being preserved, also allowing free access to the community.

2.5.3 Property Right Protection (G5.3)

FFC prioritizes free-of-conflict properties located in areas degraded by livestock. Furthermore, the project activities do not lead or force property rights holders to involuntarily remove or relocate their homes or activities since FFC has real ownership rights (Section 2.5.1).

2.5.4 Identification of Illegal Activity (G5.4)

No illegal activities that may affect the project have been identified. Currently, around 200 people live in the six camps located in the project area, each of them having a heritage or asset guardian in charge of patrolling the project properties to identify, as early as possible, fire events, the presence of cows (which can damage saplings) or any other natural or illegal activity that could affect the project. This helps to avoid and minimize any potential negative impacts on the project.

2.5.5 Ongoing Disputes (G5.5)

There are currently no land disputes in the project area. The RSR documents report all the land right changes since the first allocation, indicating that land tenure has been clear for at least the last 14 years[59]. In future cases of disputes over land tenure, the project will take the necessary measures to solve them or clarify overlapping claims.

2.5.6 National and Local Laws (G5.6)

The afforestation activities conducted by FFC adhere to Colombian forestry and environmental regulations. The most important legal frameworks for forest management resources are the National Code of Renewable Natural Resources and Environmental Protection (Decree 2811 of 10/18/1974) and the Forest Exploitation Regime (Decree 1791 of 04/10/1996)[60]. Table 21 shows an updated list of the current and most relevant forestry regulations that are applicable during the project crediting period.

Table 21. Law compliance

Law	Description	Project Compliance
Law 2811 of 1974	It determines the forest reserve areas (protective and productive) and prohibits the adjudication of wastelands in them, except for reasons of public and social	The new area included in this verification period is not within protective and productive forest reserve areas, the Natural Reserves of

[59] The supporting land tenure documents are available at: Support documents\General Section\Criteria Compliance\Law compliance\Legal_Status_and_Property_rights.

[60] The registrations before the ICA and the environmental permits requested to the respective environmental authorities are available at: Support documents\General Section\Criteria Compliance\Law Compliance.

Law	Description	Project Compliance
	interest. It also classifies the forest uses as persistent, unique, or domestic.	the Civil Society, or the National Natural Parks System. Additionally, with the increase in the plantation cover, the project expects to increase forest connectivity in the region, benefiting the local fauna and flora. Finally, in the project area, water banks and natural forest covers are protected. Similarly, wetlands are protected and are not used for the establishment of commercial timber plantations[61].
Decree 2915 of 1994	Whereby the Special Administrative Unit of the National Natural Parks System is organized.	
Law 299 of 1996	The conservation, protection, propagation, investigation, knowledge, and sustainable use of Colombian flora resources are declared strategic for the country and a priority for the environmental policy.	
Decree 196 of 1999	This decree regulates articles 109 and 110 of Law 99 of 1993 on Natural Reserves of the Civil Society. It states that the objective of the creation of natural reserves will be to guarantee the conservation, preservation, regeneration, or restoration of the natural ecosystems contained in them, and to enable the generation of environmental goods and services (Article 2).	
Decree 1791 of 1996	By which the forest use regime is established.	The second instance and the entire project area comply with all the requirements for commercial plantations set by the relevant regulations, as detailed below: 1) Registration: Forest plantations have been registered before the Ministry of Agriculture and Rural Development (MADR). 2) Free use and mobilization: Forest use began in 2018. However, the wood is stacked inside the plantation, so the respective permits for its mobilization have not yet been issued. 3) Environmental permits: Currently, the approval process for the management measures and the environmental permits required for the development of the A/R FFC project (according to Resolution 500.41-
Law 1377 of 2010	By which the commercial reforestation activity is regulated, setting out that all forest cultivations or agroforestry systems with commercial purposes shall be registered before the Ministry of Agriculture and Rural Development when they have an area of 10 or more hectares, or before the Municipal Units for Agricultural Technical Assistance (UMATAs) or whoever has the authority when it comes to smaller crops. When commercial forest plantations require the use of renewable natural resources, the corresponding authorizations or permits must be processed and obtained from the competent environmental authorities.	

[61] The Management Plan is at: Support documents\Climate Support documents\Plantations documents.

Law	Description	Project Compliance
Decree 2803 of 2010	By which the registration of forest crops and agroforestry systems with commercial purposes and of protective-producing plantations, as well as the mobilization of forest products of primary transformation are regulated, according to Law 1377 of 2010.	15.1752 of December 2015 issued by Corporinoquia) are underway. 4) The new areas met the criteria defined in Resolution 500.41-15.1752 of December 2015 to delimitate the eligible area.
Resolution 200.41-11-1130, modified by Resolution 500.41-15-1753 of 2015 by Corporinoquia	By which the regional environmental criteria for the development of forestry projects in the jurisdiction of Corporinoquia are defined and other provisions are issued.	
Law 1333 of 2009	By which the environmental sanctioning procedure is established and other provisions are issued.	To date, Forest First has complied with all Colombian regulations. Therefore, it has not been subject to sanctioning measures[62].
Draft law of the National Development Plan 2022-2026[63]	By which the National Development Plan 2022-2026 is intended to be issued.	Reforestation activities contribute to compliance with the Sustainability Pact, whose goals are focused on reducing GHG emissions, curbing deforestation, doubling the hectares with sustainable production and conservation systems, and implementing actions for climate change adaptation.
Resolution 1447 of 2018, modified by Resolution 0831 of 2020	By which the monitoring, reporting and verification system for mitigation actions at the national level is regulated, as provided in Article 175 of Law 1753 of 2015, and other provisions are issued.	The project has the national emission reduction certification issued by Verra[64]. Additionally, it is registered in the National Registry for the Reduction of Greenhouse Gas Emissions (RENARE)[65]. However, it is important to note that this platform is still in its stabilization phase and the official communication setting the relevant deadlines (referred to in Article 4 of

[62] No sanctioning measures were registered in the Single Registry of Environmental Offenders (RUIA, by its acronym in Spanish): http:\\vital.minambiente.gov.co\SILPA_UT_PRE\RUIA\ConsultarSancion.aspx?Ubic=ext

[63] National Development Plan (*Plan Nacional de Desarrollo*): https:\\www.dnp.gov.co\plan-nacional-desarrollo\pnd-2022-2026\Paginas\default.aspx

[64] The project is registered with the ID 2512 and the name “Afforestation of degraded grasslands in Vichada, Colombia”. See: https:\\registry.verra.org\app\projectDetail\VCS\2512

[65] The project will be registered in the RENARE platform when it is enabled.

Law	Description	Project Compliance
		Resolution 831 of 2020) has not yet been issued. The project monitors, reports and verifies its GHG mitigation actions, in accordance with the principles of the national MRV System and the accounting rules established in this resolution, which are endorsed by an accredited VVB.
Agreement 013 of 2003 (EOT of Puerto Carreño) Agreement 013 of 2000, adjusted by Agreement 09 of 2015 (EOT of La Primavera)	This agreement approves the planning instrument of the municipalities of Puerto Carreño and La Primavera to guide the process of occupancy and transformation of the territory, anticipating its integral development and guaranteeing the improvement of the quality of life of the population, both in urban and rural areas.	From the planning phase of the plantations, the project adheres to the guidelines of the Territorial Ordering Scheme (EOT) of Puerto Carreño and La Primavera, which considers the areas for natural resource conservation and protection (such as water rounds, forests and the areas of high conservation value) in all the project area, including the new instances[66].
Decree 1235 of 2018 Resolution 300.36.31.0891 of 2021	This decree assigned the responsibility of developing a Ramsar Environmental Management Plan to the public entity with the local environmental authority role. Resolution 300.36.31-0891 approves and adopts the management plan for the Bita River basin issued by the MADS. This plan defines two categories of environmental zoning, according to their main environmental characteristics and uses: • Conservation and environmental protection: It includes legally protected and restoration areas, and protection areas. • Multiple uses: This category covers sustainable production, including areas for crops and livestock and the sustainable use of natural resources.	The FFC project engages in the said process as a signatory and partner of the project "Conservation and management of the Ramsar-site Bita River through the participatory preparation of the management plan and the implementation of sustainable productive proposals in terrestrial and aquatic ecosystems". The project is located in forestry areas, according to the territorial ordering plans of the municipalities of Puerto Carreño and La Primavera.
Labor Code	By which the Labor Law and working conditions are regulated.	FFC promotes the respect for labor rights, so that wages are fair and consistent with the

[66] The supporting land tenure documents are available at: Support documents\General Section\Criteria Compliance\Law compliance \Legal_Status_and_Property_rights\2. Land_Use_certification.

Law	Description	Project Compliance
		roles performed and the work experience of the employees. The company also pays all social benefits (security and social obligations) and continuously develops training plans to improve workers' skills and reduce occupational risks. Likewise, the company provides the Personal Protection Elements (PPE) required for each type of work[67].

Source: South Pole, 2023, based on information provided by FFC.

3 CLIMATE

3.1 Monitoring GHG Emission Reductions and Removals

3.1.1 Data and Parameters Available at Validation

Data / Parameter	Carbon Fraction of dry matter (CF)
Data unit	T C t d.m $^{-1}$
Description	Biomass carbon proportion. CF is used to convert biomass to carbon.
Source of data	IPCC (2006). Good Practice Guidance for LULUCF. Chapter 4. Forest Land. Table 4.3. [68]
Value applied	0.47
Justification of choice of data or description of measurement methods and procedures applied	This is the default value from IPCC. It applies for all species and is used in the baseline scenario.
Purpose of the data	Calculation of project emissions
Comments	

Data / Parameter	Carbon Fraction of dry matter (CF)
Data unit	T C t d.m $^{-1}$
Description	Biomass carbon proportion. CF is used to convert biomass to carbon.
Source of data	Local estimations[69]
Value applied	*E. pellita:* 0.509

[67] Supporting _information is available at: Support documents\General Section\Criteria Compliance\Law compliance\Laboral

[68] https:\\www.ipcc-nggip.iges.or.jp\public\gpglulucf\gpglulucf.html

[69] The support information is in Support documents\Climate Support documents.

	A. mangium: 0.513
Justification of choice of data or description of measurement methods and procedures applied	Destructive samples were taken directly from the field.
Purpose of the data	Calculation of project emissions.
Comments	

Data / Parameter	Biomass Conversion and Expansion Factor (BCEF)
Data unit	Dimensionless
Description	Ratio of above-ground stem volume to oven-dry biomass.
Source of data	IPCC (2006). Good Practice Guidance for LULUCF. Table 4.5.[70]
Value applied	From 0.7 to 4.0.
Justification of choice of data or description of measurement methods and procedures applied	The aboveground tree biomass is calculated using the BCEF and wood density in connection to increment in volume data. The BCEF value for the tropical climatic zone and the broadleaf forest type was used.
Purpose of the data	Calculation of project emissions.
Comments	

Data / Parameter	Volume equation
Data unit	m^3
Description	Equation to estimate the volume of trees of *E. pellita* based on their diameter at breast height (DBH) and height (H).
Source of data	Nieto, V., Giraldo, D., Sarmiento, M., Borralho, N. (2016). Effects of provenance and genetic variation on the growth and stem formation of Eucalyptus pellita in Colombia. Journal of Tropical Forest Science, Vol. 28 (3), Pp. 227 - 234.[71]
Value applied	$V=0.000051265*DBH^{1.8753}*H^{0.9888}$
Justification of choice of data or description of measurement methods and procedures applied	The biomass equation presented in the literature was used for the estimation of GHG removals. The applied equation was developed in Colombia, in areas with similar conditions to those present in the study area.

[70] https:\\www.ipcc-nggip.iges.or.jp\public\gpglulucf\gpglulucf.html
[71] https:\\www.researchgate.net\publication\305573242_Effects_of_provenance_and_genetic_variation_on_the_growth_and_stem_formation_of_eucalyptus_pellita_in_Colombia

Purpose of Data	Calculation of project emissions
Comments	–

Data / Parameter	Volume equation
Data unit	m^3
Description	Equation to estimate the volume of trees of *A. mangium* based on their diameter at breast height (DBH).
Source of data	Torres, D. A., & Del Valle, J. I., (2007). Growth and yield modelling of Acacia mangium in Colombia. New Forest. Vol. 34, Pp. 293 – 305[72].
Value applied	$V=0.000086*DBH^{2.747}$
Justification of choice of data or description of measurement methods and procedures applied	The biomass equation presented in the literature was used for the estimation of GHG removals. The applied equation was developed in Colombia, in areas with similar conditions to those present in the study area.
Purpose of Data	Calculation of project emissions
Comments	–

Data / Parameter	Root-to-shoot ratio (R)
Data unit	Dimensionless
Description	Ratio of the roots weight to the tree top weight. Used for belowground tree biomass estimation according to the standing aboveground biomass.
Source of data	CDM_AR_tool_14. "Estimation of carbon stocks and change in carbon stocks of trees and shrubs in A/R CDM project activities". Pages 18 and 20[73].
Value applied	Trees $R = e^{\frac{-1.085+0.9256ln(B)}{B}}$, where B is aboveground biomass. Shrubs 0.40
Justification of choice of data or description of measurement methods and procedures applied	Belowground biomass is usually estimated using this factor, as belowground sampling is destructive and expensive.
Purpose of the data	• Calculation of baseline emissions. • Calculation of project emissions.
Comments	

[72] https:\\www.researchgate.net\publication\226918233_Growth_and_yield_modelling_of_Acacia_mangium_in_Colombia

[73] https:\\cdm.unfccc.int\methodologies\DB\C9QS5G3CS8FW04MYYXDFOQDPXWM4OE

Data / Parameter	Dead wood (DF_{DW})
Data unit	%
Description	Conservative default factor expressing carbon stock in dead wood as a percentage of carbon stock in tree biomass.
Source of data	CDM_AR_tool_12. "Estimation of carbon stocks and change in carbon stocks in dead wood and litter in A/R CDM project activities," Version 03.0[74].
Value applied	6%
Justification of choice of data or description of measurement methods and procedures applied	Dead wood biomass is usually estimated using this factor, as dead wood sampling is destructive and expensive.
Purpose of data	Estimation of GHG emission reductions and removals.
Comments	

Data / Parameter	Litter (DF_{LI})
Data unit	%
Description	Conservative default factor expressing carbon stock in litter as a percentage of carbon stock in tree biomass.
Source of data	CDM_AR_tool_12. "Estimation of carbon stocks and change in carbon stocks in dead wood and litter in A/R CDM project activities," Version 03.0[75].
Value applied	1%
Justification of choice of data or description of measurement methods and procedures applied	Litter biomass is usually estimated using this factor, as litter sampling is destructive and expensive.
Purpose of data	Estimation of GHG emission reductions and removals.
Comments	

Data / Parameter	C to CO_2 factor

[74] https:\\cdm.unfccc.int\methodologies\DB\C9QS5G3CS8FW04MYYXDFOQDPXWM4OE
[75] https:\\cdm.unfccc.int\methodologies\DB\C9QS5G3CS8FW04MYYXDFOQDPXWM4OE

Data unit	$tCO_2\ tC^{-1}$ ($CO_{2equivalent}$)
Description	Factor applied to convert the tree carbon sequestered to tree CO_2e sequestered.
Source of data	CDM_AR_tool_12. "Estimation of carbon stocks and change in carbon stocks in dead wood and litter in A/R CDM project activities," Equation 12. Page 14[76].
Value applied	44/12 (3.667)
Justification of choice of data or description of measurement methods and procedures applied	CDM default value.
Purpose of the data	• Calculation of baseline emissions. • Calculation of project emissions.
Comments	

3.1.2 Data and Parameters Monitored

Data / Parameter	A
Data unit	Ha
Description	Project area (eligible planted area)
Source of data	Project boundaries are monitored using Geographical Information Systems (GIS) and collecting data from diverse sources (including GPS coordinates and remote sensing data).
Description of measurement methods and procedures to be applied	The area was demarcated through the use of remote sensing data and verified in the field with a GPS receiver. Then, the areas with individuals reaching the height required to be inventoried were filtered.
Frequency of monitoring/recording	At the beginning of site preparation and at every verification event.
Value monitored	6,913.44 ha
Monitoring equipment	GPS devices and remote sensing data
QA/QC procedures to be applied	The demarcated area is verified using a GPS device.
Purpose of data	Calculation of project emissions

[76] https:\\cdm.unfccc.int\methodologies\DB\C9QS5G3CS8FW04MYYXDFOQDPXWM4OE

Calculation method	Measurement
Comments	–

Data / Parameter	A_i
Data unit	Ha
Description	Area of stratum *i*
Source of data	Stratum and stand boundaries are monitored using Geographical Information Systems (GIS) and collecting data from diverse sources (including GPS coordinates and remote sensing data).
Description of measurement methods and procedures to be applied	Strata in the project area were demarcated using a GPS device. Then, the strata with individuals reaching the required height to be inventoried were selected.
Frequency of monitoring/recording	At every verification event.
Value monitored	**Stratum** / **Area (ha)** 2016Aman 162.58 2016Epel 109.27 2017Aman 855.69 2017Epel 2,307.56 2018Aman 672.50 2018Epel 1,325.85 2019Aman 188.83 2019Epel 910.48 2020Epel 380.68 **Total** **6,913.44**
Monitoring equipment	GPS equipment and remote sensing data
QA/QC procedures to be applied	The demarcated area is verified using a GPS device.
Purpose of data	Calculation of project emissions
Calculation method	Measurement
Comments	–

Data / Parameter	$A_{p.i}$
Data unit	m^2
Description	Area of sample plot in stratum *i*
Source of data	Field measurement
Description of measurement methods and procedures to be applied	SOPs defined under the national forest inventory were applied. See the description in Section 3.1.3.
Frequency of monitoring/recording	At every verification event.
Value monitored	500 m^2 and 700 m^2
Monitoring equipment	Digital hypsometer
QA/QC procedures to be applied	To verify that plots were installed and measured properly, 5% of randomly selected plots were remeasured. The remeasurement data was compared with the original measurement data and the resulting error was recorded.
Purpose of data	Calculation of project emissions
Calculation method	The sample plot location was registered with a GPS and marked on the project map.
Comments	–

Data / Parameter	n_i
Data unit	Dimensionless
Description	Number of plots established in each stratum
Source of data	Sampling error estimations

<table>
<tr><td>Description of measurement methods and procedures to be applied</td><td>The number of plots required for measuring the variation within the project boundary and the strata were estimated using the CDM tool: “Calculation of the number of sample plots for measurements within A/R CDM project activities”, v02.1.0).</td></tr>
<tr><td>Frequency of monitoring/recording</td><td>At every verification event.</td></tr>
<tr><td>Value monitored</td><td><table>
<tr><th>Stratum</th><th>No. of plots</th></tr>
<tr><td>2016Amam</td><td>9</td></tr>
<tr><td>2016Epel</td><td>3</td></tr>
<tr><td>2017Amam</td><td>41</td></tr>
<tr><td>2017Epel</td><td>39</td></tr>
<tr><td>2018Amam</td><td>48</td></tr>
<tr><td>2018Epel</td><td>41</td></tr>
<tr><td>2019Amam</td><td>3</td></tr>
<tr><td>2019Epel</td><td>10</td></tr>
<tr><td>2020Epel</td><td>5</td></tr>
<tr><td>Total</td><td>199</td></tr>
</table></td></tr>
<tr><td>Monitoring equipment</td><td>Not applied</td></tr>
<tr><td>QA/QC procedures to be applied</td><td>Sampling error assessment (Section 3.1.3)</td></tr>
<tr><td>Purpose of data</td><td>Estimation of the number of plots needed per stratum to ensure a sampling error less than 10%.</td></tr>
<tr><td>Calculation method</td><td>Equation 1 of the “A/R Methodological Tool for Calculation of the number of sample plots for measurements within A/R CDM project activities”.</td></tr>
<tr><td>Comments</td><td>–</td></tr>
</table>

Data / Parameter	Plot location
Data unit	Latitude/Longitude
Description	Localization of each sampling plot
Source of data	Data field sampling

Description of measurement methods and procedures to be applied	Measured with a GPS device
Frequency of monitoring/recording	Ate very verification event
Value monitored	Latitude and longitude of every plot
Monitoring equipment	GPS
QA/QC procedures to be applied	To verify that plots were installed and measured properly, 5% of randomly selected plots were remeasured. The remeasurement data was compared with the original measurement data and the resulting error was recorded.
Purpose of data	Calculation of project emissions
Calculation method	The sample plot location was registered with a GPS and marked on the project map (Figure 10).
Comments	-

Data / Parameter	DBH
Data unit	cm
Description	Diameter at Breast Height of the trees
Source of data	Field measurements in sample plots
Description of measurement methods and procedures to be applied	Typically measured 1.3 m above-ground. All trees in the plots with a DBH ≥1.5 cm were measured.
Frequency of monitoring/recording	At every verification event.
Value monitored	The forest inventory database[77]

[77] The supporting information is available at: Support documents\Climate Support documents\ER\Expost.

Monitoring equipment	Digital caliper
QA/QC procedures to be applied	To verify that plots were installed and measured properly, 5% of randomly selected plots were remeasured. The remeasurement data was compared with the original measurement data and the resulting error was recorded.
Purpose of data	Calculation of project emissions
Calculation method	Measurement
Comments	–

Data / Parameter	H
Data unit	m
Description	Total height of trees
Source of data	Field measurements in sample plots
Description of measurement methods and procedures to be applied	Measurement of all the trees' height in the permanent sample plots that result in the project activity.
Frequency of monitoring/recording	At every verification event.
Value monitored	The forest inventory database[78]
Monitoring equipment	Digital hypsometer
QA/QC procedures to be applied	To verify that plots were installed and measured properly, 5% of randomly selected plots were remeasured. The remeasurement data was compared with the original measurement data and the resulting error was recorded.

[78] The supporting information is available at: Support documents\Climate Support documents\ER\Expost.

Purpose of data	Calculation of project emissions
Calculation method	Measurement
Comments	–

3.1.3 Monitoring Plan

3.1.3.1 Verification of changes in carbon stocks in the selected pools

The monitoring plan details the methodology and standard operating procedure (SOP) implemented for the ARR project activity[79]. The monitoring plan fulfills the requirement that the project activity shall have credible and accurate monitoring procedures in place to enable the evaluation of project performance and the verification of the net anthropogenic GHG emission removals.

Only the tree aboveground biomass was measured. Therefore, only the individual growth of trees was monitored. On the other hand, the carbon content of belowground biomass and dead wood attributable to the project activities were not monitored. These were estimated by using default values and suggested methods included in the tool "Estimation of carbon stocks and change in carbon stocks in dead wood and litter in A/R CDM project activities". Similarly, the root-to-shoot ratio (R) was used for the estimation of belowground biomass based on the aboveground measurements.

3.1.3.1.1 Stratification

The stratification of the project area was defined according to the "A/R Large-scale Consolidated Methodology: Afforestation and reforestation of lands except for wetlands Version 02.0," section 5.2.11.b, which sets out that regarding actual net GHG removals by sinks, the stratification for ex-post estimations shall be based on the actual implementation of the project planting and management plans. In consequence, the stratification was based on the planting dates and the species planted (Table 22 and Figure 10). Neither natural nor anthropogenic impacts (e.g., local fires) nor other factors (e.g., soil type) significantly altered the pattern of biomass distribution in the project area.

Table 22. Strata for plot sampling

Stratum	Planting year	Planted species	Area (ha)	No. of plots	Plot size
2016Aman	2016	*Acacia mangium*	162.58	9	500 m^2
2016Epel	2016	*Eucalyptus pellita*	109.27	3	500 m^2
2017Aman	2017	*Acacia mangium*	855.69	41	500 m^2

[79] The detailed description of the process carried out according to the SOP is in the folder: Support documents\Climate Support documents\Inventory documents.

Stratum	Planting year	Planted species	Area (ha)	No. of plots	Plot size
2017Epel	2017	*Eucalyptus pellita*	2,307.56	39	500 m^2
2018Aman	2018	*Acacia mangium*	672.50	48	500 m^2
2018Epel	2018	*Eucalyptus pellita*	1,325.85	41	500 m^2
2019Aman	2019	*Acacia mangium*	188.83	3	700 m^2
2019Epel	2019	*Eucalyptus pellita*	910.48	10	700 m^2
2020Epel	2020	*Eucalyptus pellita*	380.68	5	700 m^2

Source: South Pole, 2023, based on information provided by FFC.

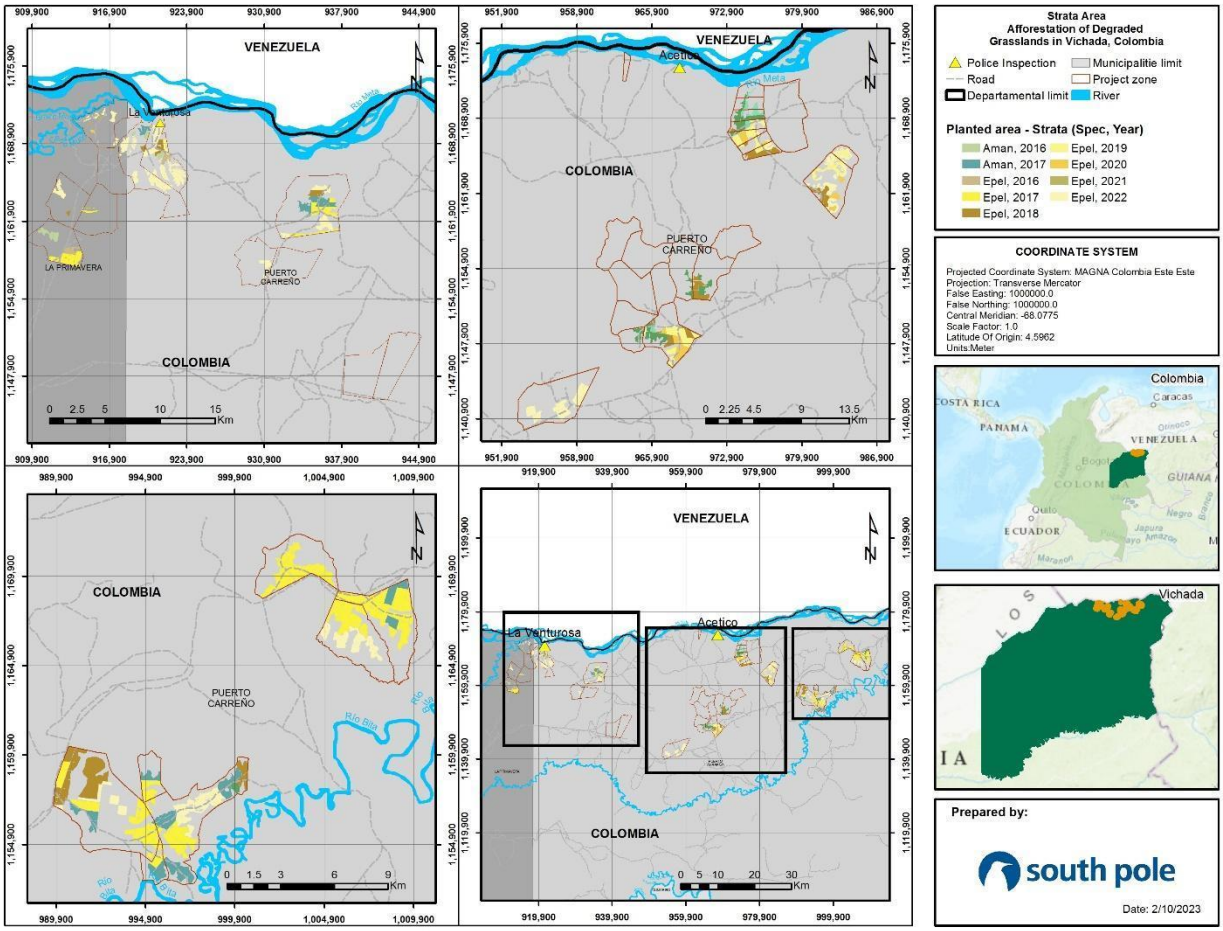


Figure 9. Strata distribution

Source: South Pole, 2023, based on information provided by FFC

3.1.3.1.2 Plot type and size

Permanent plots were established for carbon stock sampling in all areas. The sample plots were used to measure parameters such as tree height (H) and Diameter at Breast Height (DBH). Circular permanent plots of 500 m^2 and 700 m^2 were used for collecting data on the trees with DBH ≥1.5 cm. All permanent plots were properly numbered, georeferenced, and located within a cover/layer map representing the project scope (Figure 10).

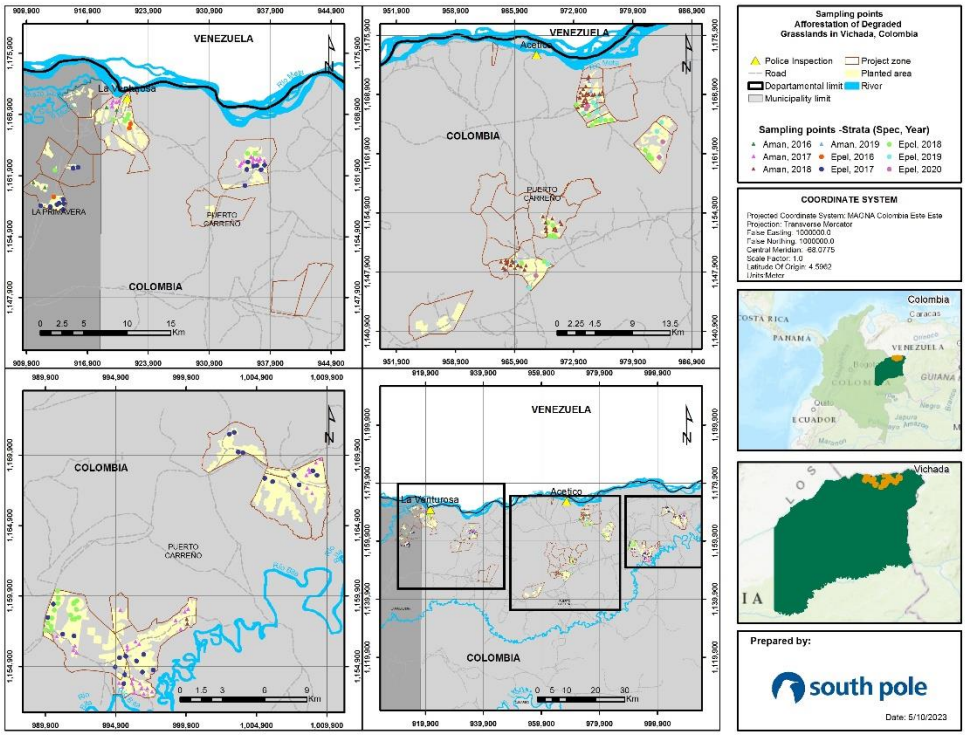


Figure 10. Planted area and plots

Source: South Pole, 2023, based on information provided by FFC

3.1.3.2 Standard operating procedure (SOP)

The plots were randomly located within each stratum to avoid their subjective choice based on the convenience of their position (plot centers and plot reference points). To do so, the "Create Random Points" tool of the ArcGIS software was used. Before the field phase, the centers of the plots were identified on a map. For each plot, the geographic position (GPS coordinate), administrative location, and stratum code were recorded and filed.

The following steps were followed in the plot establishment (for more information, see Section 3.3.3.2 Standard Operating Procedure of the PD):

- Access to plots: The plots were located with the help of a georeferenced map and a GPS device. The access details were recorded.
- Establishment of permanent plots: The central tree was marked with yellow paint. Similarly, all trees within the plots were marked with their number (in plaques) and the point of DBH measurement (with paint).

- Field data collection: Tree DBH and height were measured according to the PD SOP recommendations and the Forest First protocol for the use of forest measurement equipment[80].
- Data recording: The collected field data was saved in the internal memory of the digital caliper and backed up on the online servers of South Pole and Forest First.
- Monitoring intervals and frequency: The ARR project activities were monitored in a period of 4.2 years, that is, less than five years as set out by CCB rules.

3.1.3.3 Procedures for internal auditing and quality assurance (QA)/quality check (QC)

FFC was responsible for centralizing the documentation required for project planning and implementation. QA and QC procedures were implemented to ensure that net anthropogenic GHG removals by sinks were measured and monitored in a precise, credible, verifiable, and transparent way.

3.1.3.3.1 Field data collection

The staff involved in the measurement of carbon pools are fully trained in field data collection and analysis. SOPs were developed and followed for each step of field measurement so that results are comparable over time. To verify that plots were properly installed and measured, at least 5% of the randomly selected plots were remeasured (10 plots). The following parameters were evaluated:

1. Plot location All the remeasured plots were easily found in the field through a GPS device. Additionally, there was no significant difference between the two latitude and longitude measurements.
2. DBH and height: The remeasurement data was compared with the original measurement data. The average resulting discrepancy was lower than 10% (Table 23), so corrections were not necessary. The level of recorded errors was calculated and reported using the following equation:

$$Discrepancy(\%) = \frac{Estimate1 - Estimate2}{Estimate2} * 100$$

Table 23. DBH and height average error[81]

Plot ID	Average DBH plot discrepancy (%)	Average H plot discrepancy (%)
A117-90	-1.77	-1.41
A155-83	-4.47	-0.97
A169-25	-3.52	0.60
A332-77	2.58	-2.28

[80] Supporting information is in the folder: Support documents\Climate Support documents\Inventory documents.
[81] The Quality Check calculations are in the folder: Support documents\Climate Support documents\Quality control.

Plot ID	Average DBH plot discrepancy (%)	Average H plot discrepancy (%)
A418-187	4.97	-1.91
B333-2	3.37	-4.34
B418-207	-3.73	7.98
B425-97	-3.42	2.35
B429-9	-4.04	1.76
A117-90	-1.77	-1.41

Source: South Pole, 2023.

3. The root means square error (RMSE), the Nash-Sutcliffe efficiency (NSE) coefficient and the number of times that the observations variability is greater than the mean error (nt) were estimated to assess the validity of the measurements. The results show very good to good validity in DBH and height measurements (Table 24)[82].

Table 24. Statistics used to define the accuracy of the measurements

Statistics	DBH		H	
	Value	Criteria	Value	Criteria
RMSE	0.99	VG	0.99	VG
NSE	4.14	G	3.98	VG
nt	7.83	VG	10.28	VG

Source: South Pole, 2023.

The criteria were selected according to the thresholds referenced by Ritter and Muñoz-Carpena (2013)[83].

[82] The Quality Check calculations are in the folder: Support documents\Climate Support documents\Quality control.
[83] Ritter, A and Muñoz-Carpena, R. 2013. Performance evaluation of hydrological models: Statistical significance for reducing subjectivity in goodness-of-fit assessments. Journal of Hydrology 480: 33-45.

3.1.3.3.2 Sampling error assessment

The project uses the methods from the 2003 IPCC's Good Practice Guidance for LULUCF, as well as the modalities and procedures for A/R project activities to estimate net GHG emissions and removals by sinks. In the context of this methodology, the major sources of uncertainties associated with changes in carbon stock in the living biomass pool include natural factors (such as fire and pest outbreaks), forest stand variables (such as variation in the yield tables, and errors during the measuring process. Sampling error estimates were made for all strata included in the inventory that was part of the monitoring using the following equation:

$$E(\%) = \frac{t_{val}\ x\ \sqrt{\sum_{i=1}^{M} w_i^2\ x\ \frac{s_i^2}{n_i}}}{b_{TREE}} * 100$$

Where:

E (%)	Sampling error in the carbon stock in trees in the tree biomass estimation (tCO_2e).
tval	Two-sided student's *t*-value for a confidence level of 90% and degrees of freedom equal to *n – M,* where *n* is the total number of sample plots within the tree biomass estimation strata and *M* is the total number of tree biomass estimation strata.
Wi	Ratio of the area of stratum *i* to the sum of the areas within the tree biomass estimation strata
Si^2	Variance of tree biomass per hectare across all sample plots in stratum *i.*
ni	Number of sample plots in stratum *i*.
b_{TREE}	Mean tree biomass per hectare in the tree biomass estimation strata; t d.m. ha^{-1}.

The sampling error of the living biomass pool is 3.3% and not uncertainty discounts must be applied, according the A/R Tool 14 "Estimation of carbon stocks and change in carbon stocks of trees and shrubs in A/R CDM project activities, V 4.2". When the sampling error is less than 10%, no uncertainty discount factor is applied.

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

Printed copies of the Monitoring Report summary were delivered to the different stakeholders identified. For communities, the information was presented and distributed in consultation meetings and left in other key information exchange places, such as the police inspections. For local authorities, the information concerning the progress of FFC activities was shared by email and presented in face-to-face meetings. Additionally, Monitoring plans and all documents and information about the results of the monitoring and verification of this project were published on VERRA's platforms for public comments.

3.2 Quantification of GHG Emission Reductions and Removals

3.2.1 Baseline Emissions

According to the "AR-ACM0003 A/R Large scale Consolidated Methodology: Afforestation and reforestation of lands except wetlands, 2.0", the carbon content and changes in the baseline are estimated as follows:

$$\Delta C_{BSL,t} = \Delta C_{TREE,BSL,t} + \Delta C_{SHRUB,BSL,t} + \Delta C_{DW,BSL,t} + \Delta C_{LI,BSL,t}$$

Where:

$\Delta C_{BSL,t}$	Baseline net GHG removals by sinks in year *t*; t CO_2-e.
$\Delta C_{TREE_BSL,t}$	Change in carbon stock in the baseline tree biomass within the project boundary in year *t*, as estimated in the tool "Estimation of carbon stocks and change in carbon stocks of trees and shrubs in A/R CDM project activities"; t CO_2-e.
$\Delta C_{SHURB_BSL,t}$	Change in carbon stock in the baseline dead wood biomass within the project boundary, in year *t*, as estimated in the tool "Estimation of carbon stocks and change in carbon stocks in dead wood and litter in A/R CDM project activities"; t CO_2-e.
$\Delta C_{DW_BSL,t}$	Change in carbon stock in the baseline dead wood biomass within the project boundary, in year *t*, as estimated in the tool "Estimation of carbon stocks and change in carbon stocks in dead wood and litter in A/R CDM project activities"; t CO_2-e.
$\Delta C_{LI_BSL,t}$	Change in carbon stock in the baseline litter biomass within the project boundary, in year *t*, as estimated in the tool "Estimation of carbon stocks and change in carbon stocks in dead wood and litter in A/R CDM project activities"; t CO_2-e.

3.2.1.1 Carbon stock in trees and shrubs in the baseline

The baseline carbon stock in shrubs was calculated according to "A/RTool 14. Estimation of carbon stocks and change in carbon stocks of trees and shrubs in A/R CDM project activities, V 4.2"[84], Section 11, equation 26.

$$C_{SHRUB,t} = \frac{44}{12} \times CF_s \times (1 + R_s) + \sum_i A_{SHRUB,i} \times b_{SHRUB,i}$$

Where:

$C_{SHRUB,t}$	Carbon stock in shrubs within the project boundary at a given point of time in year *t*; t CO_2-e.

[84] The supporting information is available at: Support documents\Climate Support documents\ER.

CF_s Carbon fraction of shrub biomass; t C (t.d.m.)$^{-1}$. A default value of 0.47 is used unless transparent and verifiable information can be provided to justify a different value.

R_s Root-to-shoot ratio for shrubs; dimensionless. The default value of 0.40 is used unless transparent and verifiable information can be provided to justify a different value.

$A_{SHRUB,i}$ Area of shrub biomass estimation stratum *i*; ha.

$b_{SHRUB,i}$ Shrub biomass per hectare in shrub biomass estimation stratum *i*; t d.m. ha^{-1}.

Carbon stock in litter and dead wood was estimated according to the A/R Tool 12 "Estimation of carbon stocks and change in carbon stocks in dead wood and litter in A/R CDM project activities, V 03.0". The parameters and key data for the carbon stock estimations in shrubs are presented in Section 2.2.2. The aboveground biomass value for shrubs was the result of the census developed in the Diamantina property, whose data was extrapolated to the areas planted from 2020 given the similarity of their land cover.

3.2.1.2 Changes in carbon stocks in trees and shrubs in the baseline

As defined in the PD, the change in the baseline carbon stocks in trees ($\Delta C_{BSL,t}$) is zero, which means that the emissions caused by the baseline change are equal to the carbon stock in shrubs within the project boundary at the stabilization time ($C_{SHURB,t}$). According to the tool "Estimation of carbon stocks and change in carbon stocks of trees and shrubs in A/R CDM project activities, V 04.2," changes in the baseline carbon stocks in trees can be accounted as zero if one or more of the conditions listed in Section 5.12 are present.

Specifically, in the project area burning cycles before the project start date did not enable the successful establishment of vegetation other than grasslands. Therefore, the indicator f applies: Land is subjected to periodic cycles (e.g. slash-and-burn, or clearing-regrowing cycles) so that the biomass oscillates between a minimum and a maximum value in the baseline.

3.2.2 Project Emissions

The quantification of project emissions and/or removals was calculated following section 5.5 of the AR-ACM003 methodology "A/R Large-scale Consolidated Methodology Afforestation and reforestation of lands except wetlands".

$$\Delta C_{ACTUAL,t} = \Delta C_{P,t} - GHG_{E,t}$$

Where:

$\Delta C_{ACTUAL,t}$ Actual net GHG removals by sinks, in year *t*; tCO_2e.

$\Delta C_{P,t}$ Change in the project carbon stocks, occurring in the selected carbon pools, in year *t*; tCO_2e.

$GHG_{E,t}$ Increase in non-CO_2 GHG emissions within the project boundary as a result of the implementation of the A/R CDM project activity, in year *t*, as estimated in the

tool "Estimation of non-CO_2 GHG emissions resulting from burning of biomass attributable to an A/R CDM project activity"; tCO_2e.

3.2.2.1 Change in carbon stocks

Changes in the project carbon stocks were calculated based on Section 5.5 of the "A/R Large-scale Consolidated Methodology for afforestation and reforestation of lands except wetlands"[85] as follows:

$$\Delta C_{P,t} = \Delta C_{TREE_PROJ,t} + \Delta C_{SHRUB_PROJ,t} + \Delta C_{DW_PROJ,t} + \Delta C_{LI_PROJ,t} + \Delta SOC_{AL,t}$$

Where:

$\Delta C_{TREE_PROJ,t}$	Change in carbon stock in tree biomass in project in year *t*, as estimated in the tool "Estimation of carbon stocks and change in carbon stocks of trees and shrubs in A/R CDM project activities"; tCO_2e.
$\Delta C_{SHRUB_PROJ,t}$	Change in carbon stock in shrub biomass in project in year *t*, as estimated in the tool "Estimation of carbon stocks and change in carbon stocks of trees and shrubs in A/R CDM project activities"; tCO_2e.
$\Delta C_{DW_PROJ,t}$	Change in carbon stock in dead wood in project in year *t*, as estimated in the tool "Estimation of carbon stocks and change in carbon stocks in dead wood and litter in A/R CDM project activities"; tCO_2e.
$\Delta C_{LI_PROJ,t}$	Change in carbon stock in litter in project in year *t*, as estimated in the tool "Estimation of carbon stocks and change in carbon stocks in dead wood and litter in A/R CDM project activities"; tCO_2e.
$\Delta SOC_{AL,t}$	Change in carbon stock in SOC in project in year *t*, in areas of land meeting the applicability conditions of the tool "Tool for estimation of change in soil organic carbon stocks due to the implementation of A/R CDM project activities", as estimated in the same tool; tCO_2e.

According to the methodology, the carbon stock in t_1 consists of the net emissions, reductions and removals obtained in the first verification, that is, covering the period between September 15, 2016 and December 03, 2020. The methodology for the estimation of carbon stocks in t_2 is described below:

3.2.2.2 Carbon stock in trees at a point of time

To estimate the carbon stock in tree biomass at a given point in time, the A method (estimation by measurement of sample plots) of the A/R Tool 14 "Estimation of carbon stocks and change in carbon stocks of trees and shrubs in A/R CDM project activities, V 04.2" was used. According to Section 8.1, the sampling design used was "stratified random sampling".

[85] The supporting information is available at: Support documents\Climate Support documents\ER.

The models and parameters used to estimate the tree biomass and carbon per plant species in the strata of both project instances are presented in sections 3.1.1 and 3.1.2.

- Tree biomass ($b_{TREE,l,p,i}$)

Biomass of a tree in a sample plot was estimated by using the equation 4 of the Appendix 1 of the AR-TOOL14:

$$b_{TREE,l,p,i} = f_j\left(X_{1,l}, X_{2,l}, X_{3,l}, \dots\right) x\ (1 + R_J)$$

Where $b_{tree,l,p,i}$ is the biomass of tree *l* in sample plot *p* of stratum *i* (t d.m.), $f_j(x_{1,l}, x_{2,l}, x_{3,l}, \dots)$ is the aboveground biomass of the tree returned (t d.m.) and Rj is the root-to-shoot ratio (dimensionless).

The aboveground biomass is estimated through the volume equations by species reported in existing literature and the biomass conversion and expansion factor for expansion of merchantable growing stock volume to aboveground biomass ($BCEF_s$)[86]. The used allometric equations are adjusted to Colombian commercial plantations located in sites with climatic conditions similar to those of the project area. Table 25 shows the volume equations by species and their respective source.

Table 25. Volumetric equations

Species	Volumetric equations	Source
Eucalyptus pellita	$V = 0.000051265\ DBH^{1.8753}\ x\ H^{0.9888}$	Nieto, V., Giraldo, D., Sarmiento, M., Borralho, N. (2016). Effects of provenance and genetic variation on the growth and stem formation of *Eucalyptus pellita* in Colombia. Journal of Tropical Forest Science, Vol. 28 (3), Pp. 227 - 234.
Acacia mangium	$V = 0.000086 DBH^{2.747}$	Torres, D. A., & Del Valle, J. I., (2007). Growth and yield modelling of *Acacia mangium* in Colombia. New Forest. Vol. 34, Pp. 293 – 305.

DBH: Diameter at breast height in cm, measured in each of the trees in the plots. H: total height in m, estimated using the adjusted allometric model (Section 2.2.2). V: volume in m^3.

- Mean tree biomass per hectare ($b_{TREE,p,i}$)

Mean tree biomass per hectare in a sample plot was estimated according to the equation 1 of the Appendix 1 of the A/R Tool 14:

$$b_{TREE,p,i} = \frac{\sum_i b_{tree,l,p,i}}{A_{plot}}$$

[86] The BCEF value for the tropical climatic zone and the broadleaf forest type was used. IPCC (2006). Good Practice Guidance for LULUCF. Table 4.5. Available at: https:\\www.ipcc-nggip.iges.or.jp\public\2006gl\pdf\4_Volume4\V4_04_Ch4_Forest_Land.pdf

Where $b_{tree,p,i}$ is the tree biomass per hectare in sample plot *p* of stratum *i* (t d.m. ha^{-1}) and A_{plot} is the size of the sample plot (ha).

- Biomass by stratum (B_{TREE})

The biomass per hectare was projected and subsequently estimated based on the total area of each stratum, according to equation 13 of Section 8.1 of the A/R Tool 14:

$$B_{TREE} = A_i \; x \; b_{TREE,p,i}$$

Where B_{TREE} is the change in tree biomass in the biomass estimation strata (t d.m), $b_{TREE,p,i}$ is the tree biomass per hectare in sample plot in stratum *i* (t d.m. ha^{-1}) and A_i is the area of stratum *i* (ha).

- Carbon stock (C_{TREE})

The carbon stock in trees in the tree biomass estimation strata was calculated according to equation 12 of the A/R Tool 14:

$$C_{TREE_{PROJ},t} = \frac{44}{12} \; x \; CF_{TREE} \; x \; B_{TREE}$$

Where $C_{TREE_PROJ,t}$ (tCO_2e) is the carbon stock in trees in the tree biomass estimation strata, B_{TREE} (t) is the mean tree biomass per hectare in the tree biomass estimation strata and CF_{TREE} is the carbon fraction.

3.2.2.3 Carbon stock in dead wood and litter

The estimation of carbon capture by litter and dead wood followed the A/R Tool 12 “Estimation of carbon stocks and change in carbon stocks in dead wood and litter in A/R CDM project activities, V 03.1”. Conservative default factors were used to estimate the carbon stock in dead wood and litter as a percentage of carbon stock in tree biomass.

$$C_{DW,i,t} \; = \; C_{TREE,i,t} \; x \; DF_{DW}$$

$$C_{LI,i,t} \; = \; C_{TREE,i,t} \; x \; DF_{LI}$$

Where:

$C_{DW,i,t}$	Carbon stock in dead wood in stratum *i* at a given point of time in year *t*; t CO_2e.
$C_{LI,i,t}$	Carbon stock in litter in stratum *i* at a given point of time in year *t;* t CO_2e.
$C_{TREE,i,t}$	Carbon stock in tree biomass in stratum *i* at a point of time in year *t*, as calculated in the tool “Estimation of carbon stocks and change in carbon stocks of trees and shrubs in A/R CDM project activities”; t CO_2e.
DF_{DW}	Conservative default factor expressing carbon stock in dead wood as a percentage of carbon stock in tree biomass; percent.

DF_{LI} Conservative default factor expressing carbon stock in litter as a percentage of carbon stock in tree biomass; percent.

3.2.2.4 Increase in non-CO_2 GHG emissions ($GHG_{E,t}$)

The estimation of $GHG_{E,t}$ will be carried out using the following equation:

$$GHG_{E,t} = GHG_{SPF,t} + GHG_{FMF,t} + GHG_{FF,t}$$

Where:

$GHG_{E,t}$ Emissions of non-CO_2 GHGs resulting from burning biomass and forest fires within the project boundaries in year *t*; t CO_2-e.

$GHG_{SPF,t}$ Emissions of non-CO_2 GHGs resulting from the use of fire for site preparation in year *t*; t CO_2-e. For the project, this value is zero because logging and burning are common practices in the baseline, so fire has been used at least once during 10 years before the start of the A/R CDM project activities.

$GHG_{FMF,t}$ Emissions of non-CO_2 GHGs resulting from the use of fire to clear the land of harvest residue prior to replanting or other forest management activities, in year *t*; t CO_2-e. For the project, it is equal to zero.

$GHG_{FF,t}$ Emissions of non-CO_2 GHGs resulting from fire in year *t*; t CO_2-e.

According to the forestry plan of the project, the emission of non-CO_2 greenhouse gases ($GHG_{E,t}$) could result from the use of fire for site preparation ($GHG_{SPF,t}$) and fire events that lead to loss of aboveground tree biomass ($GHG_{FF,t}$). During this period, the emission of non-CO_2 GHGs is estimated as zero according to the A/R Tool 08 "Estimation of non-CO_2 GHGs emissions resulting from burning of biomass attributable to an A/R CDM project activity" taking into account that:

- Emission of non-CO_2 GHGs resulting from the use of fire for site preparation in year *t* is zero since this is a common practice in the area, meeting the requirement detailed in Section 7 of the A/R Tool 08. Furthermore, the discount for the removal of bush biomass is applied in the baseline emission estimation.
- The project has not been affected by fire events during this verification period (2021-2022), so the accumulated project area affected by such fires in the present period is ≤5%, according to paragraph 3 of the A/R Tool 08[87].
- The only fire-related activities carried out in the project area are associated to firebreaks maintenance and only herbaceous individuals (pastures) that cannot be removed with mechanical methods are subjected to them. In this sense, the emissions resulting from the use of fire to clear the land of harvest residue prior to replanting or other forest management activities ($GHG_{FMF,t}$) are not considered.

[87] The updated record of impacts by fire and other agents is available at: Support documents\Climate Support documents\Fire_and_Other_Affectations

3.2.2.5 Uncertainty (u_c)

In order to determine the margin of error of the estimates of the carbon accumulated in the project, the uncertainty was estimated according to equation 15 of section 8.1 of the A/R Tool 14:

$$u_c = \frac{t_{VAL}\ x\ \sqrt{\sum_{i=1}^{M} w_i^2\ x\ \frac{S_i^2}{n_i}}}{b_{TREE,p,i}}$$

Where:

u_c	Uncertainty in CTREE. For this variable, corresponding to the 2021-2022 period, there was an uncertainty of 3.3 %.
t_{VAL}	Two-sided Student's *t*-value for a confidence level of 90 percent and degrees of freedom equal to *n* - *M*, where *n* is the total number of sample plots within the tree biomass estimation strata and *M* is the total number of tree biomass estimation strata.
w_i	Ratio of the area of stratum *i* and the sum of areas of tree biomass estimation strata (i.e., A/A_i); dimensionless.
S_i^2	Variance of tree biomass per hectare across all sample plots in stratum *i*; (t d.m. ha^{-1}).
$b_{TREE,p,i}$	Tree biomass per hectare in sample plot in stratum *i* (t d.m. ha^{-1}).

3.2.2.6 AFOLU Non-Permanence Risk Discount and Pooled Buffer Account

Based on the total carbon removed by the plantations in the first instance, the number of credits to be deposited in the AFOLU Pooled Buffer Account is determined, noting that they will not be traded as carbon credits since they will cover potential carbon loss in the case that the permanence of the plantations or the project is not ensured. To estimate the non-permanence risk and the buffer credits to be discounted, the "AFOLU Non-Permanence Risk Tool" was used. The analysis resulted in a buffer value of 17% for Morichalito influence area and 15% for the rest of the area.

3.2.3 Leakage

According to the A/R Methodological tool "Estimation of the increase in GHG emissions attributable to displacement of pre-project agricultural activities in A/R CDM project activity", project leakage is not significant (zero) since cattle grazing is a traditional activity in the area and the main land cover corresponds to shrubs and grasslands, as demonstrated in the validation and the first verification event. Thus, the cattle units were transferred to the remaining areas of the property, maintaining the acceptable load capacity and avoiding negative environmental impacts.

3.2.4 Net GHG Emission Reductions and Removals

The net anthropogenic GHG removals by sinks will be calculated based on the information previously presented and equation 5 of the AR-ACM0003 methodology:

$$\Delta C_{AR-CDM,t} = \Delta C_{ACTUAL,t} - \Delta C_{BSL,t} - LK_t$$

Where:

$\Delta C_{AR\text{-}CDM,t}$	Net anthropogenic GHG removals by sinks in year *t*; t CO_2-e.
$\Delta C_{ACTUAL,t}$	Actual net GHG removals by sinks in year *t*; t CO_2-e.
$\Delta C_{BSL,t}$	Baseline net GHG removals by sinks in year *t*; t CO_2-e.
LK_t	GHG emissions due to leakage in year *t*; t CO_2-e.

Subsequently, Long-Term Average (LTA) was reassessed considering sections 3.2.20 and 3.2.21 of the VCS Standard, V.4.1 and the AFOLU Guidance: Example for Calculating the Long-Term Average Carbon Stock for ARR Projects with Harvesting to Calculate the LTA. In Figure 11, the results of project baseline absorptions, leakage emissions and net GHG emission absorptions are presented. They were estimated according to the above-mentioned methodology.

The LTA obtained was 1,537,588 tCO_2e. According to the VCS standard, this value shall be updated in future verification events based on monitored data and the inclusion of new areas in the grouped project, which means that the long-term average GHG benefit may change over time.

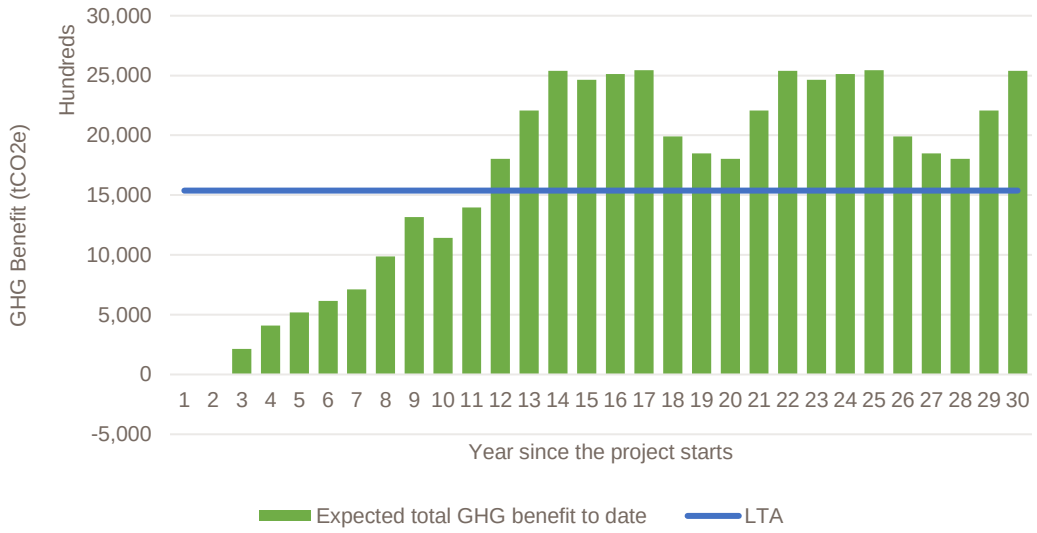


Figure 11. Expected total GHG benefit to date (t CO_2-e) and LTA.

Table 26 shows the net GHG emission reductions and removals of the project according to the methodology presented above.

Table 26. Estimates of GHG net emission reductions and removals

Year	Baseline emissions or removals (tCO_2e)	Project emissions or removals (tCO_2e)	Leakage emissions (tCO_2e)	Net GHG emission reductions or removals (tCO_2e)
2019	-	-	-	-
2020	18	18,840	-	18,822
2021	-	80,124	-	80,124
2022	-	66,366	-	66,366
Total	**381**	**165,330**	**-**	**165,312**

Source: South Pole, 2023, based on information provided by FFC.

In total, 139,529 VCUs will be issued in this verification period, after the buffer discount of 24,940 tCO_2e and the deduction of 843 tCO_2e for the area change in the first verification event occasioned by the conversion of the coordinate system from Magna Sirgas / Colombia Bogotá Zone (3116) to Magna Sirgas / Colombia East East Zone (3118).

3.3 Optional Criterion: Climate Change Adaptation Benefits

The project does not seek Gold Level validation for climate change adaptation benefits.

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

The project does not seek Gold Level validation for climate change adaptation benefits.

4 COMMUNITY

4.1 Net Positive Community Impacts

4.1.1 Community Impacts (CM2.1)

Community Group	Local community
Impact	Increased job opportunities
Type of Benefit/Cost/Risk	This is one of the most relevant social impacts since it results in direct benefits to local stakeholders.

Change in Well-being	The project has generated new job opportunities for the local community and intends to continue to do so. As of December 2022, the FFC project had 76 employees, of which 16 were women. Specifically, in the current verification period (2021-2022) 16 people were hired, maintaining 25% of the female staff (Section 4.1.3. Job creation and support to development and sustainable growth of the territory). The foregoing is a relevant impact since job options in the department of Vichada have been scarce in recent years, with general unemployment of 21.2% and youth unemployment of 13.9% (2019), according to figures reported by the Ministry of Labor in the DNP's TerriData portal, 2023[88]. This is the result of the high rates of informality and job insecurity among the young population given the few opportunities for diversification of economic activities in the region (DNP, 2023[89]). Therefore, the employment options created through the FFC project not only directly benefit the hired population, but also derive in social benefits for the territory by enabling local economic revitalization, improved access to goods and services that contribute to a better quality of life for families, and the economic empowerment of individuals.

Community Group	Local community and FFC employees
Impact	Increased perception/recognition of the value of forest resources
Type of Benefit/Cost/Risk	Through the project activities, employees and their families as well as the communities located in the surroundings of the project areas are expected to progressively increase the value given to the goods and services provided by forests, and therefore to further recognize the need to protect them and their natural resources.

[88] Departamento Nacional de Planeación -DNP, 2023. Territata. Fichas y Tableros, Vichada: en https://terridata.dnp.gov.co/index-app.html#/perfiles/99000

[89] Departamento Nacional de Planeación -DNP, 2023. Territata. Fichas y Tableros, Vichada: en https://terridata.dnp.gov.co/index-app.html#/perfiles/99000

Change in Well-being	This impact has been gradually generated through participatory events where project progress and social and environmental services improved during each verification period have been presented (see sections 2.3.3, 2.3.7 and 2.3.12). This has been reinforced with talks and workshops led by the Omacha Foundation and the National University (ECOLMED) and aimed at raising awareness about the importance of biodiversity, climate change adaptation and waste management. Likewise, surveys in the communities of La Venturosa, Aceitico and Morichalito evidenced the positive change in the community's perception towards the project and the sustainable management of forest resources (see sections 2.3.7 and 4.1.3).

Community Group	Local communities (La Venturosa and Aceitico) and FFC employees
Impact	Technical capacity building and knowledge transfer
Type of Benefit/Cost/Risk	This is a benefit currently delivered by the project and expected to continue throughout project length. It has a direct impact on employees and other stakeholders, who have accessed technical training.
Change in Well-being	During this second verification period, around 44 general training sessions on various topics were conducted for employees and 14 for other stakeholders (Sections 2.3.3, 0 and 2.3.16). Technical capacity building and knowledge transfer contributes to the improvement of professional and labor growth options for the employees and, in turn, of overall project processes. On the other hand, the knowledge acquired by employees through the different project strategies is mostly transferred to their families, which means that this is not just an individual benefit, but it scales up at the territorial level.

Community Group	Employees
Impact	Improved working conditions
Type of Benefit/Cost/Risk	This is a direct benefit for FFC employees, both professionally and for their quality of life.
Change in Well-being	In order to promote continuous improvement in FCC processes and the well-being of its employees, strategies for permanent internal communications have been designed through committees such as the COPASST. The latter was created in

	2021 (Section 2.3.16) and since then it has focused on the implementation of different actions, such as awareness raising campaigns to ensure accident reporting (if applicable), improve labor practices, and protect wildlife. This has allowed employees to have clear spaces for dialogue as well as conflict, problem and impact management. In turn, this has resulted in improved processes with a positive impact on the health and welfare of employees and their families.

4.1.2 Negative Community Impact Mitigation (CM2.2)

As previously mentioned, the FFC project is located on private properties whose tenure has been duly formalized and boundaries have been delimited for proper management and control. In this sense, no direct negative impacts are generated on local communities or other interested parties.

However, and despite the improved perception of the project (as presented in sections 4.1.1, 2.3.7 and 4.1.3), some barriers have been identified in the relationship with inhabitants of the Morichalito Matsuldani indigenous community (which is part of the corregimiento of La Venturosa, in the municipality of Puerto Carreño), specifically around the management of territorial natural resources. In general, some of their cultural practices such as fire use for small animal hunting and honey collection have an impact on forest plantations, especially in this Orinoquia savannah system, where rapid combustion and intense fire spread are more likely to occur, being difficult to control them. In this sense, and as mentioned in Section 4.2.1, a protocol for continuous community engagement has been created with the aim to facilitate the interaction between FFC and relevant stakeholders in a friendly and participatory manner.

It is worth mentioning that this indigenous settlement has not yet been included in the national census or registered with the Department of Indigenous, Rom and Minority Affairs of the Ministry of the Interior. It is mainly made up of the Amorúa and Sikuani ethnic groups, but it is subject to dynamics of continuous displacement of indigenous populations coming from Venezuela[90].

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

The actions carried out by FFC during this verification period (2021-2022) have resulted in different positive impacts for the communities that inhabit the territories surrounding the project areas, especially on the well-being of FFC employees and their families, as well as on the local economic system.

Among the positive impacts associated with the improvement in the well-being of local communities are job creation and support to economic development, support for the local health center, creation of training programs, improvement of local relations, improvement in health and safety conditions for employees, and improvement in the perception about the project.

[90] CCNPB (Norman Pérez Bello Claretian Corporation), 2020. Preocupación por los pueblos de lo Orinoquía en el marco de la emergencia sanitaria por el COVID-19. Press release.

4.1.3.1 Job Creation and Support to Economic Development

As established from the project's design phase, one of the main social impacts expected from the project is the promotion of adequate employment options in the territory, considering gender equality. In this regard, since the beginning of the project more people have been hired, with 16 new staff members during the 2021-2022 verification period (Table 27). Furthermore, FFC project has kept the percentage of female labor above 20% (Table 27).

Table 27. FFC Staff

Year	Sex		Total
	M	F	
2018	35	13	48
2019	43	17	60
2020	40	20	60
2021	36	11	47
2022	60	16	76

Source: South Pole, 2023, based on information provided by FFC

In the same line, FFC has the objective to support the development and sustainable growth of the territory where the project is located. In this sense, the strategy for hiring members of the local communities and the actions to prevent the migration of young people to other regions in search of opportunities that they have not historically found in said territory are aligned. To illustrate these efforts, in the 2021-2022 verification period the percentage of personnel from the local communities was higher in comparison to personnel from other countries or Colombian regions (Figure 12).

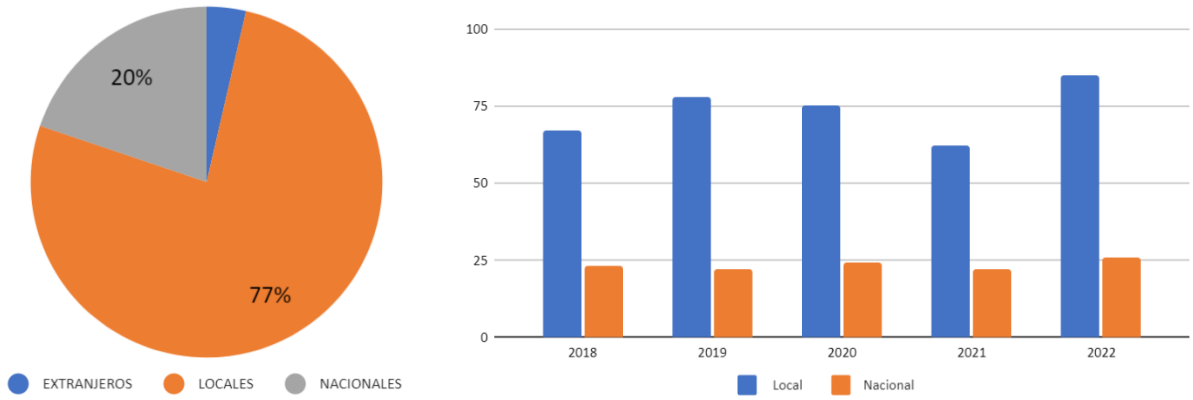


Figure 12. Place of origin of the FFC staff

Source: South Pole, 2023, based on information provided by FFC

As a consequence of the high number of local personnel hired, an increase in the population of the communities of La Venturosa and Morichalito between 2021 and 2022 has been observed (Figure 13).

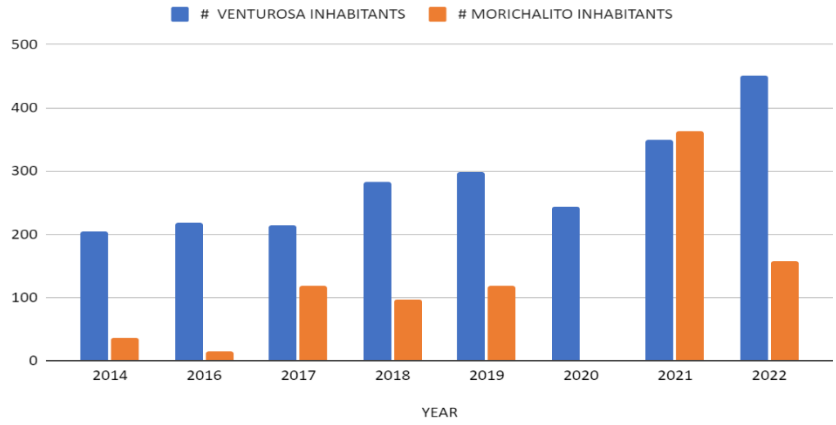


Figure 13. Territory permanence (number of inhabitants of the local communities)

Source: South Pole, 2023, based on information provided by FFC

4.1.3.2 Support to the Local Health Center

Throughout the project, constant investments have been made by FFC to support the health center used by the communities surrounding the project area. Said economic contribution has been variable, but with an increasing tendency (Figure 14).

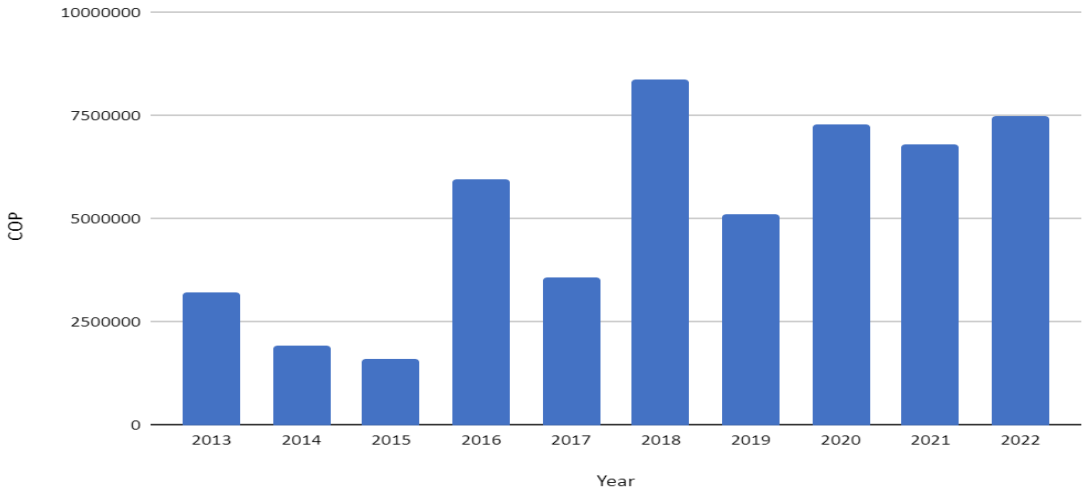


Figure 14. Community health care investments

Source: South Pole, 2023, based on information provided by FFC

Health investments depend on identified needs, based on verbal reports of the employees of the health centers and the situations that arise in the territory (Figure 15).

Figure 15. Health investment in the communities of La Venturosa and Aceitico

Source: Forest First Colombia, 2023

Additionally, support was provided for different health promotion events led by the municipal Mayor's Office and the National Navy, which were attended by the three communities of the project's area of influence and the relevant indigenous groups. In this sense, assistance to the most vulnerable population who lacks the resources and means to access the health system was prioritized (Figure 16).

Figure 16. Support to the health promotion event with the National Army

Source: Forest First Colombia, 2023

4.1.3.3 Community and other Stakeholders Training and Engagement

Training and knowledge transfer events were conducted for the communities and other stakeholders who live in the surroundings of the project area or have shown interest in exchanging information on some issues related to FFC, as detailed in sections 2.3.3 and 0 of this document.

Likewise, the communities have been informed about the activities carried out and the expected project impacts. For this, spaces such as study dissemination and community participatory meetings have been used as communication channels (Figure 17).

Figure 17. ***Information dissemination meetings with the communities***

Source: Forest First Colombia, 2023

In this context, the activities carried out during the 2021-2022 monitoring period were communicated in meetings with municipal entities such as the Mayor's Office, which had representatives of the Secretariat of Social Development, the Secretariat of Government, the Secretariat of Planning, staff for liaison with victims of the armed conflict, the JACs, the Risk Management Department, and the Municipal Ombudsman (information presented in sections 2.3.3 and 2.3.7), see Figure 18.

Figure 18. Information dissemination meetings with local government and authorities

Source: Forest First Colombia, 2023

Finally, in order to maintain good relationships with the different stakeholders, permanent communication strategies were formulated. Therefore, it is proposed to strengthen communication channels, align activities in response to common needs, and prospectively support the growth and development of the region.

4.1.3.4 Improvement in Health and Safety Conditions for Employees

Through different mechanisms, Forest First Colombia has constantly intended to promote the improvement in the health and safety conditions of its employees (Section 2.3.16). This has been materialized in workshops, talks, the delivery of protective equipment, the formation of groups aimed at ensuring continuous improvement and monitoring employee well-being (such as the COPASST, Joint Committee on Safety and Health at Work), among other activities.

In this monitoring period, recording and monitoring of occupational accidents as well as risk reduction campaigns increased (Figure 19).

Figure 19. Incidents reported by FFC employees

Event	2021	2022
Incidents and accidents at work reported by FFC	7	10
Incidents and accidents at work reported by contractors	2	2
Unsafe conditions	1	3
Reported SACs	1	3

Source: South Pole, 2023, based on information provided by FFC

For its part, the COPASST was formed for the period 2021-2023 through an act approved in November 2021[91]. From that moment on, periodic meetings have been held to review and assess the welfare conditions of FFC employees and propose improvement strategies.

4.1.3.5 Improved Perception of the Community (La Venturosa and Morichalito) about the FFC Project

In the participatory spaces that have been part of the consultation meetings held with the communities surrounding the project area, 16 perception surveys have been made (Section 2.3.7). Through these, it was possible to demonstrate an improvement in the awareness and recognition of the project and its impact by the communities. Specifically in relation with the recognition of FFC's purposes, environmental protection is evidently the most relevant one (Figure 20).

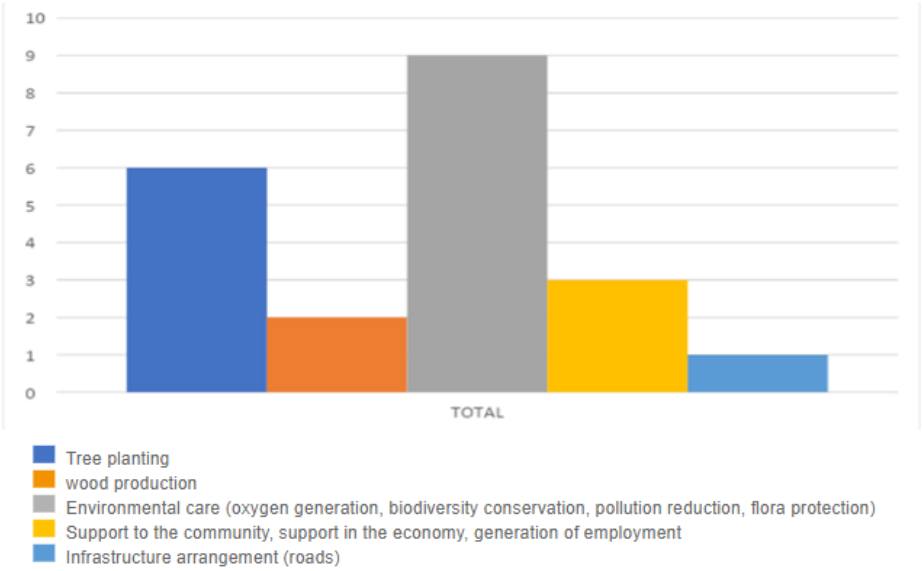


Figure 20. Perception of the communities of La Venturosa, Aceitico and Morichalito on FFC's purpose

Source: South Pole, 2023, based on information provided by FFC

The most recognized FFC activities to strengthen community engagement are reforestation, the conduction of environmental protection-focused talks and the support for local cultural activities (Figure 21).

[91] The supporting material can be found in the following folder: Support Documents\Community\Net Positive Community

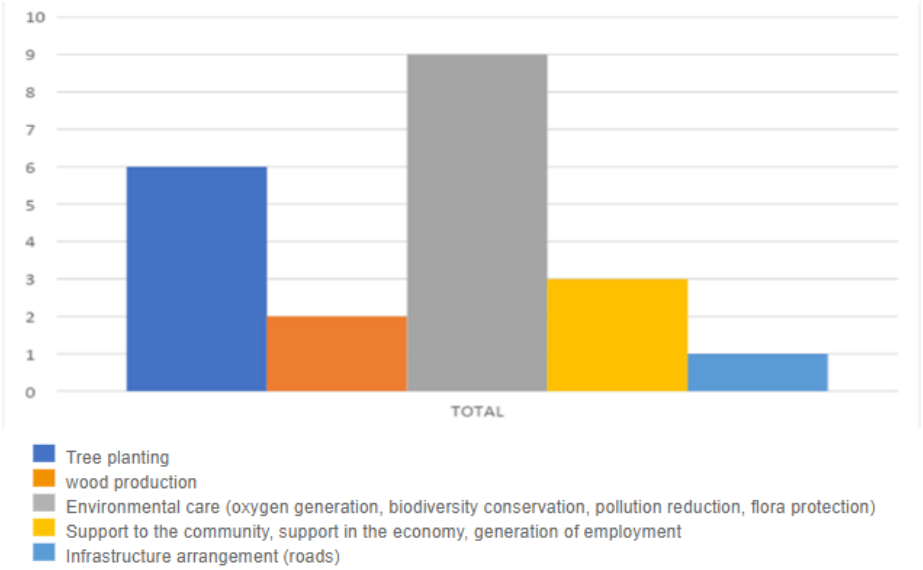


Figure 21. Activities recognized by the communities

Source: South Pole, 2023, based on information provided by FFC

For its part, among the positive impacts generated by the FFC project in the territory, local job creation, support for the health sector and community development stand out (Figure 22).

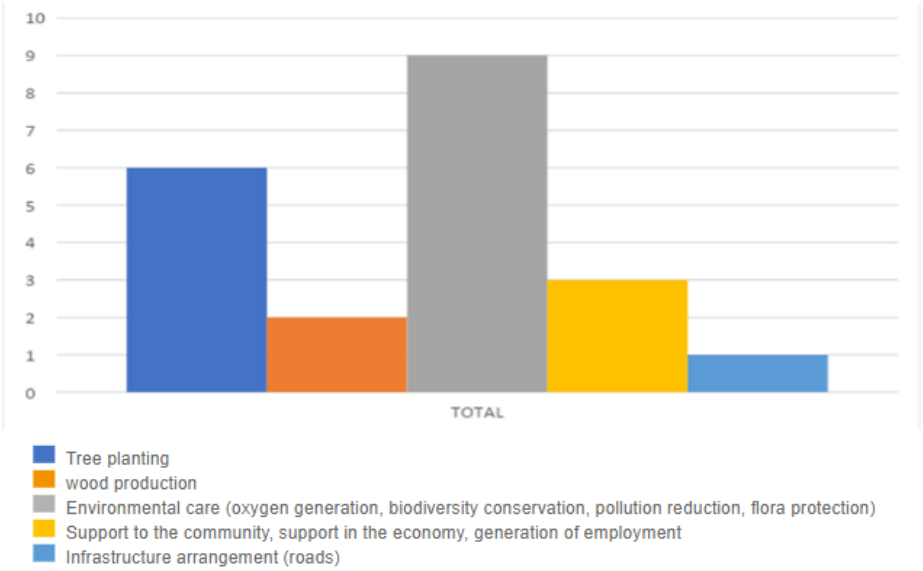


Figure 22. Impacts most recognized by local communities around FFC project areas

Source: South Pole, 2023, based on information provided by FFC

In conclusion, regarding the objectives of the FFC project recognized by the communities, most of them are related to environmental protection, biodiversity conservation, and pollution reduction. Likewise, the best-known project activities are reforestation and tree planting, although the communities consider having been benefited mainly through local job creation, training, donations and support for the health centers. This demonstrates an overall positive perception of the project, especially in terms of the impacts generated on the local economy and environmental protection.

Finally, with respect to the communication channels available for the FFC project, the results showed that the most used one is of a face-to-face nature: the FFC Social Coordinator. However, other channels of relevance are telephone calls and the suggestions mailbox.

4.1.4 Protection of High Conservation Values (CM2.4)

As determined in the previous project verification, the community cemetery is located in the surroundings of the project area. According to the HCV Network (https://www.hcvnetwork.org/hcv-approach), which is recommended as a guide by the applicable standard, this has been classified as a High Conservation Value (HCV) of a social nature, specifically as an HCV 6[92] (cultural values).

With respect to this social HCV, a management and recovery plan for the cemetery is under preparation since the place is currently abandoned (Figure 23) and little used by local communities. However, based on comments collected by FFC during field visits carried out in 2022, there is great interest, not only among La Venturosa inhabitants, in recovering this cemetery because its poor conditions have forced people to travel to Puerto Carreño to bury their loved ones, which entails higher expenses.

[92] HCV 6: Cultural Values: Sites, resources, habitats and landscapes of global or national cultural, archaeological or historical significance, and\or of critical cultural, ecological, economic or religious\sacred importance for the traditional cultures of local communities or indigenous peoples, identified through engagement with these local communities or indigenous peoples.

Figure 23. Current conditions of the local cemetery in the community of La Venturosa

Source: Forest First Colombia, 2023

4.2 Other Stakeholder Impacts

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

No negative impacts on communities neighboring the project area were identified during the 2021-2022 period. However, FFC has identified barriers for establishing a good working relationship with indigenous communities given their cultural dynamics and lack of commitment, which make it difficult to fulfill the responsibilities entailed by project activities. Additionally, some of their cultural practices, such as hunting and honey collection using fires, could affect the project areas close to the indigenous settlement (see Section 2.2.6 Project Risks).

In this sense, a Social and Engagement Management Plan (2022)[93] was designed with the objective of introducing a reference framework for the social component of the FFC project. In summary, it is expected to promote social and economic improvements for employees and the nearby communities by supporting integral development in terms of employment, education, health, and capacity building. This involves the design of strategies to foster the engagement of the communities around the project areas by permanently maintaining contact and exchanging information with them.

4.2.2 Net Impacts on Other Stakeholders (CM3.3)

No negative impacts on other stakeholders were identified during this verification period. On the contrary, the involvement of other actors in the project has been promoted, for instance, through the participatory monitoring carried out by the Omacha NGO, which has facilitated the engagement with the Puerto Carreño Mayor's Office.

On the other hand, the project has supported several strategic lines for territorial development, such as health, education, cultural development, and disaster risk management. This has been possible in collaboration with different stakeholders at the departmental and municipal levels, including the National

[93] The supporting material can be found in the following folder: Support documents\ Community\ Mitigation of negative Impacts\ Plan_Gestión_social_2022

Navy, the Red Cross, the local Fire Department, the local hospital, SENA, the rural schools, and the Disaster Risk Management Unit.

4.3 Community Impact Monitoring

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

According to the Monitoring Plan proposed in Section 4.4.1 of the Project Document (PD), the community goals defined for the project consist of increasing job opportunities, developing worker skills, and maintaining or improving working conditions and occupational safety. Taking this into account, the project progress in the 2021-2022 verification period is presented in Table 28, which can be complemented with the information included in the following sections of this document:

- Sections 2.3.3, 2.3.7, and 2.3.13, in relation to participatory spaces and training sessions carried out with employees and other local stakeholders.
- Sections 2.3.14, 2.3.16 and 4.1.3, where information about job opportunities and occupational health benefits is broken down.

Table 28. Project progress

Goal	Indicator	Activities developed	Monitoring frequency
Increased job opportunities	Throughout project development, the hiring of local workers will be prioritized, with a payroll expected to have around 77% of workers from local territories.	In this monitoring period (2021-2022), 16 people were hired. The total number of employees working in the project has increased from 60 in 2020 to 76 in 2022.	At each verification event
Improved labor skills in workers	Employees who are part of or have recently joined the project are expected to attend training sessions for the correct performance of their duties and as a way to promote their professional growth.	Throughout this monitoring period (2021-2022), 44 training sessions were conducted for the employees. They were mostly related to waste management, biodiversity monitoring and management, and health and occupational safety, while others focused on reporting the	At each verification event

Goal	Indicator	Activities developed	Monitoring frequency
	In this sense, 100% of the workers received technical training in relation to their work in FFC.	progress of project activities. Likewise, all new workers receive boarding training from the plantation manager.	
Labor conditions	100% of FFC workers are trained in risk management.	Strategies of encouragement for all the employees (including contractors) to report all events affecting safety and health were created. In 2022, FFC launched a new system to simplify said reports and the Committee on Safety and Health at Work (COPASST) was formed for the continuous improvement and monitoring of workers' rights and labor conditions.	At each verification event

Source: South Pole, 2023, based on information provided by FFC

The main steps proposed in the evaluation are:

1. Collection of relevant information according to the indicators described in the above table.
2. Design of an implementation plan for the activities described in FFC's Social Management Plan.
3. Design of specific verification methods for each indicator (interviews, surveys, etc.).
4. Design of relevant forms for information recording.
5. Systematization of the results and assessment of the social contribution of the project by sorting the benefits and the costs and risks (negative impacts). If necessary, a plan to mitigate the negative impacts identified during the indicator monitoring should be developed.
6. Development of a dissemination strategy for the surveillance plan, which will be validated with the community.
7. Provision of feedback and verification of the results with the above-mentioned stakeholder subgroups.

4.3.2 Monitoring Plan Dissemination (CM4.3)

Printed copies of the Monitoring Report summary were delivered to the different stakeholders identified. For communities, the information was presented and distributed in the consultation meetings and left in other key places for information exchange, such as the police inspections. For local authorities, the information concerning the progress of FFC activities was shared by email and presented in face-to-face meetings (see Section 2.3.7).

Likewise, the grievance mechanism, as described in Section 2.3.12 (Feedback and Grievance Redress procedure) of the PDD, has been set up together with the stakeholders and is already in use.

4.4 Optional Criterion: Exceptional Community Benefits

The project does not seek to be validated at the Gold Level for community or climate change adaptation benefits.

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

The project does not seek to be validated at the Gold Level for community or climate change adaptation benefits.

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

The project does not seek to be validated at the Gold Level for community or climate change adaptation benefits.

4.4.3 Net Impacts on Women (GL2.5)

The project does not seek to be validated at the Gold Level for community or climate change adaptation benefits.

4.4.4 Benefit Sharing Mechanisms (GL2.6)

The project does not seek to be validated at the Gold Level for community or climate change adaptation benefits.

4.4.5 Governance and Implementation Structures (GL2.8)

The project does not seek to be validated at the Gold Level for community or climate change adaptation benefits.

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

The project does not seek to be validated at the Gold Level for community or climate change adaptation benefits.

5 BIODIVERSITY

5.1 Net Positive Biodiversity Impacts

5.1.1 Biodiversity Changes (B2.1)

Change in Biodiversity	Connectivity
Monitored Change	Positive
Justification of Change	As mentioned by various studies[94,95], forest plantations provide shelter and create transit zones for different species, especially for mammals and birds, in non-forest areas, mostly grasslands or degraded lands as it is the case of the without-project scenario. This is especially feasible near natural forests like the patches inside the project zone. Between 2020 and 2022, 2,886.94 ha were planted in the project area, for a total of 9,419.70 ha. This area promotes connectivity between natural ecosystems of forest, savannas and morichales. Forest plantations work as fauna corridors between forest remnants, facilitating the displacement of individuals inside the landscape matrix, as recorded in the cases of the South American tapir (*Tapirus terrestris*), the white-lipped peccary (*Tayassu pecari*), and various feline species such as jaguars and cougars (Section 5.3.1.2 Fauna). Fauna records obtained through camera trapping show that the project's forest plantation is enabling the diversification of available habitats and creating new use spaces and ecological niches for the permanence of the species present in the without-the-project scenario, that is, in degraded lands (Section 5.3 .1.2 Fauna).

Change in Biodiversity	Fauna and flora

[94] Paviolo, A., Cruz, P., Iezzi, M. E., Pardo, J. M., Varela, D., De Angelo, C., ... & Di Bitetti, M. S. (2018). Barriers, corridors or suitable habitat? Effect of monoculture tree plantations on the habitat use and prey availability for jaguars and pumas in the Atlantic Forest. Forest Ecology and Management, 430, 576-586.

[95] Volpato, G. H., Prado, V. M., & dos Anjos, L. (2010). What can tree plantations do for forest birds in fragmented forest landscapes? A case study in southern Brazil. Forest Ecology and Management, 260(7), 1156-1163.

<table>
<tr><td>Monitored Change</td><td>Maintenance and/or increase</td></tr>
<tr><td>Justification of Change</td><td>
<u>Flora</u>:

In the flora monitoring carried out in the project area in 2022, 33 vegetation plots of 0.1 ha were implemented, for a total of 3.3 ha sampled. These plots were located in different land covers associated with natural and semi-natural ecosystems. There, the small size (Diameter less than 2.5 cm), middle size (Diameter greater than or equal to 2.5 cm and less than 10 centimeters) and large size (Diameter greater than or equal to 10 centimeters) categories were included. The results of each of the characterized plant covers are summarized in Section 5.3.1.1, and presented in the following table and Figure 24[96].

Composition and richness of flora species in the 2021-2022 monitoring period
<table>
<tr><th>Land cover</th><th>Floristic composition/ diversity (families, genera, spp)</th><th>Existing species with high IVI (Importance Value Index)</th></tr>
<tr><td>High dense floodplain forest</td><td>22 families, 29 genera and 30 species identified</td><td>Vochysia ferruginea
Myrcia splendens

Mahurea exstipulata
Trattinnickia rhoifolia
Iryanthera juruensis</td></tr>
<tr><td>Gallery and riparian forest</td><td>26 families, 37 genera and 39 species identified</td><td>Iryanthera juruensis
Caraipa llanorum
Hymenaea oblongifolia

Abuta grandifolia
Trattinnickia rhoifolia</td></tr>
</table>
</td></tr>
</table>

[96] The supporting material can be found in the following folder: Support documents\Biodiversity Support documents\Monitoreo biodiversidad

	Non-wooded dense dryland grassland	19 families, 28 genera and 29 species identified	*Mahurea exstipulata Curatella americana, Bowdichia virgilioides Caraipa llanorum* *Inga alba*
	Wooded dense dryland grassland	8 families, 10 genera and 10 species identified	*Curatella americana Bowdichia virgilioides Pinus caribaea*
	Flooded, non-wooded dense grassland	5 families, 5 genera and 5 species identified	*Curatella americana Citharexylum poeppigii*
	Flooded, wooded dense grassland	13 families, 18 genera and 19 species identified	*Mahurea exstipulata Caraipa llanorum Citharexylum poeppigii Euterpe precatoria Calophyllum brasiliense*
	Bushland	5 families, 5 genera and 5 species identified	*Mahurea exstipulata Mauritia flexuosa*
	Tall secondary vegetation	15 families, 16 genera and 16 species identified	*Xylopia aromatica Curatella americana* *Byrsonima crassifolia Simarouba amara Vitex orinocensis*

	Source: C&MA S.A., 2022[97] The results of the flora monitoring activities carried out in the different land covers, according to the Corine Land Cover methodology adopted for Colombia, show a high diversity of flora in the gallery or riparian forest and the high dense floodplain forest (Section 5.3.1.1.2). These results are based on the Margaleff, Shannon and Simpson indices, showing a good state of conservation of these ecosystems and no evidence of negative impacts derived from project activities[98]. <u>Fauna:</u> Regarding the wildlife diversity (Section 5.3.1.2 Fauna) reported in the monitoring carried out between 2017 and 2022 (i.e., baseline, community, and camera trap monitoring), 139 bird, 75 mammal, 31 reptile and 18 amphibian species are reported in the project area. In total, there are 263 species of vertebrates. The results of the fauna monitoring conclude that the high diversity of fauna species associated with the project area and the project zone are maintained and that project activities do not negatively affect the fauna of the area.

[97] Environmental and Social Impact Study (C&MA S.A., 2022) located at: Support documents\Biodiversity Support documents\Monitoreo biodiversidad/Informe monitoreo Línea base_flora_fauna

[98] The supporting material can be found in the following folder: Support documents\Biodiversity Support documents\Monitoreo biodiversidad

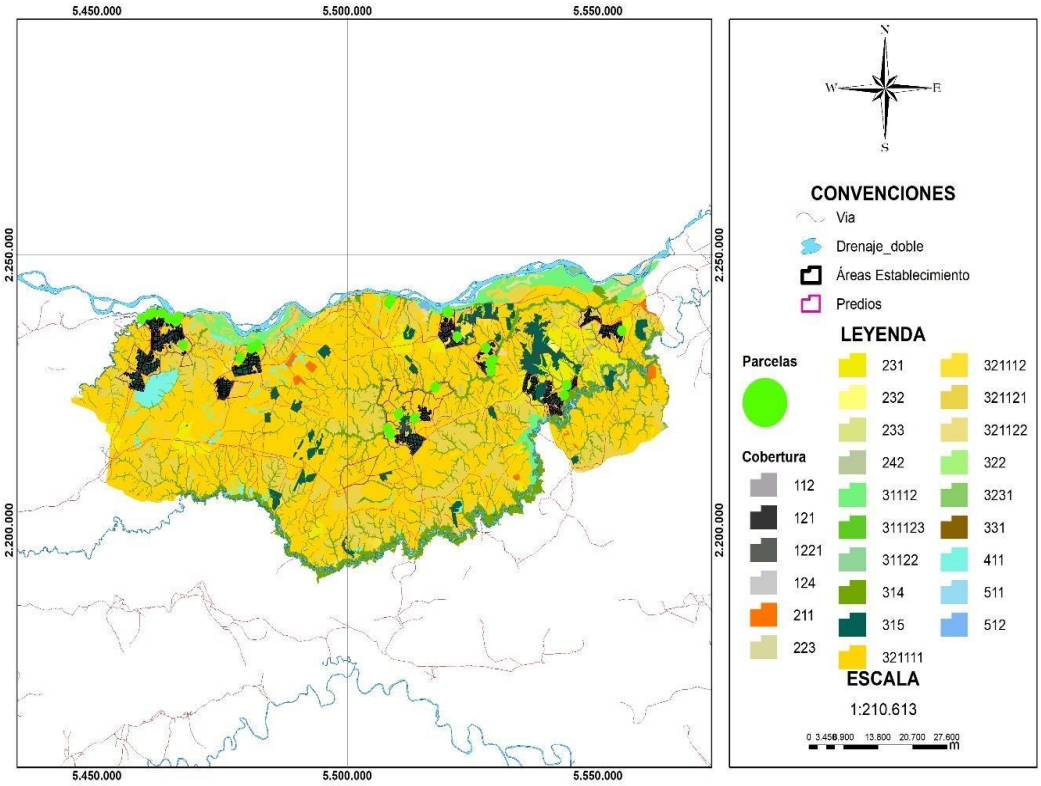


Figure 24. Location of the vegetation sampling plots in the project area

Source: C&MA S.A., 2022[99]

Table 29. Location of the vegetation sampling plots in the project area Source: C&MA S.A., 2022

Change in Biodiversity	Fauna and flora (endangered species)
Monitored Change	Positive
Justification of Change	<u>Endangered flora (Section 5.3.1.1.3):</u> For the identification of flora species whose used is banned, that are threatened or have some degree of endemism, a verification of the floristic composition of the entire inventory was carried out, based on the lists of the Appendices of the Convention on International Trade in Threatened Species of Wild Fauna and Flora (CITES, September 2012), the Resolution 1912 of September 15, 2017 of the Ministry of Environment and Sustainable Development (MADS), the IUCN Red Lists and the

[99] Environmental and Social Impact Study (C&MA S.A., 2022) located at: Support documents\Biodiversity Support documents\Monitoreo biodiversidad/Informe monitoreo Línea base_flora_fauna

	Red Books of Phanerogamous Plants of Colombia of the Alexander von Humboldt Biological Resources Research Institute. As a result, four endemic species were registered. Additionally, no flora species were identified as Endangered (EN), in accordance with Resolution 1912 of 2017 and CITES; and 44 species were classified as of Least Concern (LC) [100]. Endangered fauna (Section 5.3.1.2.2): For the identification of wildlife fauna species whose used is banned, that are threatened or have some degree of endemism, a verification of the entire inventory was carried out, based on the lists of the Appendices of the Convention on International Trade in Threatened Species of Wild Fauna and Flora (CITES, September 2012), the Resolution 1912 of September 15, 2017 of the Ministry of Environment and Sustainable Development (MADS), and the IUCN Red Lists. Accordingly, based on the IUCN Red List, one reptile and two mammal species were found in the Vulnerable (VU) category, two mammal and one reptile species are Endangered (EN), and one mammal species is Critically Endangered (CR). Regarding the CITES list, one bird, one reptile and five mammal species were found in Appendix I. For Appendix II, 19 species of birds, nine of reptiles and seven of mammals are reported. And similarly, Appendix III presents one species of mammal. In relation to endemism, two amphibian species are almost endemic, and one is endemic[101].

5.1.2 Mitigation Actions (B2.3)

Table 30 lists and describes the environmental management sheets developed by FFC to avoid negative impacts on biodiversity.

[100] The supporting material can be found in the following folder Support documents\Biodiversity Support documents\Monitoreo biodiversidad

[101] The supporting material can be found in the following folder: Support documents\Biodiversity Support documents\Monitoreo biodiversidad

Table 30. List of environmental management sheets[102]

Management Sheet	Objectives	Main Activities Implemented
MCA-01: Efficient use of water	• To define the necessary measures for the efficient use of water in the project. • To implement a drinking water treatment system for water consumption.	The Water Management Plan was updated in October 2022 to include new measures and indicators regarding the efficient use of water (surface, ground and rainwater) in the camps and during the implementation of project activities. Between April 29 and May 4, 2022, a quality monitoring and analysis of surface water was conducted in the project zone, covering 11 monitoring points in the municipalities of La Primavera and Puerto Carreño, in the department of Vichada[103]. The Tierradentro and San Cristóbal project camps have two-stage filtering systems. The former has a 4.5" Hydronix SDC Series polypropylene filter, while the latter has a high-purity coconut shell carbon filter with a polypropylene mesh that guarantees high retention and efficiency. Both are used to make the water consumed at the project site drinkable.
MCA-02: Wastewater management	• To establish the necessary measures for the adequate management of the wastewater generated in the project site. • To implement a wastewater treatment system for each of the camps that are part of the project.	FFC domestic and agricultural wastewater is discharged in accordance with current environmental regulations (Decree 3930 of 2010 and Resolution 0631 of 2015), with very low impact in terms of quality and volume. Wastewater is currently managed using a septic tank system as there is no municipal sewage service provided in the project area[104].
MCA-03: Non-hazardous solid waste management	To establish environmental management measures to prevent and mitigate the	Management, transport, and final disposal are carried out by a company with the mandatory environmental licenses: the

[103] Supporting information is available at: Support documents\Biodiversity Support documents\Monitoreo Agua
[104] Supporting information is available at: Support documents\Biodiversity Support documents\Monitoreo Agua

Management Sheet	Objectives	Main Activities Implemented
	impacts generated during the handling, storage and transportation of non-hazardous solid waste produced by the project.	public utilities company of Puerto Carreño, EMPCA S.A. E.S.P[105].
MCA- 04: Hazardous solid waste management	To establish environmental management measures to prevent and mitigate the impacts generated during the handling, storage and transportation of hazardous solid waste produced by the project.	• The Solid Waste Management Plan is implemented in the project area.[106] • Agrochemical packaging is delivered empty to the responsible supplier, the company D&M Solutions S.A.S. • Agrochemical packaging is washed tree times. • Temporary storage of hazardous waste was implemented. • Training on solid waste management was provided to 109 project employees[107]
MCA-05: Prevention and control of pollution by chemical products and fuels	To minimize the risks of pollution caused by the use of chemical products and fuels	• A training workshop on the handling of agrochemicals and fuels has been conducted for project members. In 2022, the Pesticide Management Plan was updated and five training sessions on pesticide management were held for 86 project workers[108]. These activities are focused on preventing soil and water contamination with pesticides and herbicides. • The Chemical Spill Response Plan was updated to address potential events of accidental chemical or fuel spill. • The project avoids the storage of large quantities of fuel. • Tanking, maintenance, and washing of machinery and equipment are carried out only in the areas designated for these

[105] Supporting information is available at: Support documents\Biodiversity Support documents\Manejo de residuos
[106] Supporting information is available at: Support documents\Biodiversity Support documents\Manejo de residuos\Manejo de residuos 2021\ 1400-013-01S Plan manejo integral de residuos solidos.pdf
[107] Supporting information is available at: Support documents\Biodiversity Support documents\Manejo de residuos
[108] Support material is available at. Support documents\Biodiversity Support documents\Plan de Manejo de Pesticidas

Management Sheet	Objectives	Main Activities Implemented
		activities. • The Chemical Spill Management Plan was updated and improved in 2022[109].
MCB-01: Wildlife management	To preserve the functional and structural attributes of the ecosystems in the project's area of influence.	• Wildlife monitoring was conducted between 2017 and 2022 through the camera trap method, also including community and baseline monitoring. Different types of monitoring were conducted in order to track the diversity, composition and structure of wildlife populations in the project area[110] • 243 project employees were trained on community monitoring and biodiversity[111]
MCB-02: Wild flora management	To preserve the functional and structural attributes of the ecosystems in the project's area of influence.	Flora monitoring has been carried out between 2017 and 2022. In this last year, the plant cover classification was updated and monitoring was carried in the project area in order to identify the changes in flora diversity, structure and composition with the

[109] Support material is available at. Support documents\Biodiversity Support documents\Plan de Manejo de Pesticidas\PLAN DE MANEJO DE PESTICIDAS

[110] Support material is available at: Support documents\Biodiversity Support documents\Monitoreo biodiversidad

[111] Support information is available at: Support documents\Biodiversity Support documents\Capacitaciones de biodiversidad

Management Sheet	Objectives	Main Activities Implemented
		purpose to demonstrate positive impacts and to prevent potential negative impacts of the project[112].
MCB-03: Integrated management of pests and diseases	To implement integrated pest and disease management as a strategy to minimize impacts on the region's fauna and flora.	In 2022, the Pesticide Management Plan was updated and five training sessions on pesticide management were held for 86 project workers[113].
MCB-04: Forest fire management	To conserve wildlife resources through fire prevention and control.	• Continuous workshops for project members on fire prevention and control as well as on uncontrolled burns are conducted. • Regular maintenance of firewalls is performed. • The Forest Fire Contingency Plan has been implemented.
ESRA (Environmental and Social Risk Assessment) for the glyphosate pesticide	To define the mitigation strategy for the glyphosate pesticide as well as the verification and monitoring methodology.	The project seeks to establish the optimal composition of glyphosate to avoid altering the biochemical characteristics of soil and water. For this, a new formula with a lower active principle in comparison with the formerly-used product (540 g/l) is being applied and the concentration for infield preparation has been reduced from 2,037 kg x 200 water liters to 1,620 kg x 200 water liters. Additionally, the project uses best application practices to ensure that the fertilizer is not leached or washed away: • Weather conditions are checked before every spray application. • Spray application is not carried out when there are high probabilities of rain or wind to avoid product drift.

[112] Support material is available at: Support documents\Biodiversity Support documents\Monitoreo biodiversidad
[113] Support material is available at: Support documents\Biodiversity Support documents\Plan de Manejo de Pesticidas

Management Sheet	Objectives	Main Activities Implemented
		• Fumigation using equipment such as a hand pump and a tractor with specific characteristic to avoid spillage or drift. • Each weeding team is responsible for washing glyphosate containers three times and to dispose them according to the Waste Management Plan. Also in 2022, the Pesticide Management Plan, the triple container washing methodology and the Chemical Spill Response Plan were updated in order to prevent, mitigate and adequately reverse any possible negative impact[114].

Source: South Pole, 2023

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

Project impacts are positive since project activities have facilitated the protection of native ecosystems and the establishment of 2,886.94 ha of forest plantations, for a total of 9,419.70 ha planted in degraded areas. These actions contribute to improving biodiversity conditions, habitats, connectivity processes, and the protection of fauna and flora species.

Specifically for this Monitoring Report, the flora and fauna monitoring activities carried out in the field were compilated and classified, and the Solid Waste Management, Chemical Spill Management, and Surface Water Management plans were updated.

In addition to the land cover classification update, information on the flora and fauna monitoring conducted from 2017 to 2022 was collected, organized and adjusted. The following tables present the impacts generated on fauna and flora in the project area.

Table 31. Flora: Indicators for Net Positive Biodiversity Impacts.

Indicator	Outcome/Result	Description	Supporting Information
Quality of gallery forests	In total, 51,594 ha of riparian or gallery forest cover was identified, equivalent to	Gallery or riparian forests are a cover made up of arboreal vegetation located on the banks of permanent or temporary	Section 5.3.1[116]

[114] Support material is available at: Support documents\Biodiversity Support documents\Plan de Manejo de Pesticidas\PLAN DE MANEJO DE PESTICIDAS

[116] Support material is available at: Support documents\Biodiversity Support documents\Monitoreo biodiversidad

Indicator	Outcome/Result	Description	Supporting Information
	12.12% of the total identified area.	watercourses. This type of cover is limited by its breadth since it borders watercourses and natural drainage[115]. In the project's area of influence there are 51,594 ha of gallery forests, equivalent to 12.12% of the total identified. In order to characterize the gallery and riparian forest cover, five plots of 0.1 ha were established. As a result, it was found that the floristic composition of the vegetation (including all size categories and the herbaceous stratum) has a total abundance of 427 individuals, classified into 26 families, 37 genera, and 39 species. Regarding the botanical families for gallery or riparian forests, 26 of them were identified. Based on the number of species, the following stand out: Arecaceae with 4 species, Fabaceae with 4, Lauraceae with 3, Annonaceae with 2, Calophyllaceae with 2, Moraceae with 2, Myristicaceae with 2, and Vochysiaceae with 2. Similarly, based on the number of individuals, the following stand out: Vochysiaceae with 79 individuals, Calophyllaceae with 52, Arecaceae with 41, Fabaceae with 35, and Myristicaceae with 35. **Floristic diversity indices:**	

[115] IDEAM. (2010). Leyenda Nacional de Coberturas de la Tierra. Metodología CORINE Land Cover adaptada para Colombia Escala 1:100.000. Institute of Hydrology, Meteorology and Environmental Studies. Bogotá, D. C., 72p

Indicator	Outcome/Result	Description	Supporting Information
		Margalef's richness index (Dmg): The value of this index was 6.27, which indicates a high diversity of flora in the gallery and riparian forest. Shannon index (H'): This index estimates a value of 3.24, which suggests a high diversity of flora in the gallery and riparian forest. Simpson index (1-D): The D value (0.95) manifests the presence of high diversity in the gallery and riparian forest.	
Quality of morichales	An area of 23.43 ha of morichal cover was identified within the project's area of influence.	During the cover update process, moriche palms were identified. This cover is defined as a unit with the presence of morichales, which are communities characterized by the dominance of the moriche palm (*Mauritia flexuosa*), with heights up to 18 m, which are located on depressions and flooded areas mainly in the Colombian Orinoquia[117]. The area of influence is 23.43 ha, equivalent to 0.01% of the total identified.	Section 5.3.1[118]
Presence of threatened or endangered species in the project area	During this period, 44 species (DBH>10cm) in the LC category and 4 species of endemic flora were identified.	During the flora monitoring carried out in 2022, 44 species (DBH>10cm)were identified in the LC category, according to the IUCN. They are: *Abuta grandifolia*	Section 5.3.1[119]

[117] IDEAM. (2010). Leyenda Nacional de Coberturas de la Tierra. Metodología CORINE Land Cover adaptada para Colombia Escala 1:100.000. Institute of Hydrology, Meteorology and Environmental Studies. Bogotá, D. C., 72p

[118] Support material is available at: Support documents\Biodiversity Support documents\Monitoreo biodiversidad

[119] Support material is available at: Support documents\Biodiversity Support documents\Monitoreo biodiversidad

Indicator	Outcome/Result	Description	Supporting Information
		Acosmium nitens *Ampelozizyphus amazonicus* *Anadenanthera peregrina* *Andropogon bicornis* *Aniba guianensis* *Aniba panurensis* *Astrocaryum acaule* *Axonopus purpusii* *Bowdichia virgilioides* *Brosimum utile* *Bulbostylis communis var. Scabrida* *Byrsonima crassifolia* *Calophyllum brasiliense* *Campsiandra implexicaulis* *Caraipa llanorum* *Cecropia engleriana* *Citharexylum poeppigii* *Cochlospermum orinocense* *Connarus venezuelanus* *Curatella americana* *Davilla kunthii* *Delonix regia* *Euterpe oleracea* *Euterpe precatoria*	

Indicator	Outcome/Result	Description	Supporting Information
		Ficus americana *Geonoma cuneata* *Guatteria maypurensis* *Himatanthus articulatus* *Homalium guianense* *Hymenaea oblongifolia* *Hyptis brachiata* *Inga alba* *Iryanthera juruensis* *Mahurea exstipulata* *Maquira coriacea* *Matayba guianensis* *Mauritia flexuosa* *Mimosa pudica* *Monotagma laxum* *Myrcia splendens* *NN1* *Paspalum virgatum* *Persea sp.* *Phenakospermum guyannense* *Picramnia magnifolia* *Pinus caribaea* *Psidium guineense* *Pterocarpus amazonum*	

Indicator	Outcome/Result	Description	Supporting Information
		Sagittaria montevidensis *Schoenobiblus peruvianus* *Simarouba amara* *Siparuna sessiliflora* *Socratea exorrhiza* *Solanum nigrum* *Syagrus orinocensis* *Tetrathylacium macrophyllum* *Tococa guianensis* *Trachypogon vestitus* *Trattinnickia rhoifolia* *Triplaris americana* *Virola elongata* *Virola sebifera* *Vismia guianensis* *Vitex orinocensis* *Vochysia ferruginea* *Vochysia lehmannii* *Xylopia aromatica* *Zanthoxylum sp* **Endemic species:** *Euplassa saxicola* *Henriettea goudotiana* *Mikania paucifolia*	

Indicator	Outcome/Result	Description	Supporting Information
		Pepinia heliophila	

Source: South Pole, 2023, based on information provided by FFC.

Table 32. Fauna: Indicators for Net Positive Biodiversity Impacts.

Indicator	Outcome/Result	Description	Supporting Information
Predator species	In the monitoring events that took place between 2017 and 2022, seven species of predatory mammals were identified, of which six belong to the carnivora order: *Leopardus pardalis, Herpailurus yagouaroundi, Puma concolor, Cerdocyon thous, Pteronura brasiliensis,* and *Lontra longicaudis;* and one is an omnivorous, opportunistic predator species of the Didelphimorpha order: *Didelphis marsupialis.*	The fauna monitoring carried out includes the following activities: **Fauna monitoring in 2017**: In 2017 a fauna monitoring was carried out for the reptile, mammal and bird fauna classes. The monitoring took place in various locations of the project area such as San Cristóbal (SC), Base Mono (BM), Hato Nuevo (HN), Tierradentro (TA) and Cuernavaca (CV). <u>Birds</u>: In total, 139 species of birds were reported, which were included in 20 orders, the richest one being Passeriforme with 61 species and 42 families. Regarding the families, the richest was Tyrannidae, with 21 taxa. <u>Mammals</u>: For the mammals' group, a total of 75 species were identified, which were distributed in 27 families and 11 orders. The Phyllostomidae family was the one with the highest	Section 5.3.1[122]
Endangered terrestrial species	The monitoring events carried out between 2017 and 2022 showed five species in the VU category: *Myrmecophaga tridactyla, Tayassu pecari, Priodontes maximus, Tapirus terrestris,* and *Leptonycteris curasoae;* and one species in the EN category: *Pteronura brasiliensis*.		

[122] Support material is available at: Support documents\Biodiversity Support documents\Monitoreo biodiversidad

Indicator	Outcome/Result	Description	Supporting Information
		species richness (29), followed by the Emballonuridae family (5). Reptiles: 31 reptile species distributed in the Crocodilia, Testudines and Squamata orders were reported. The latter is the one with the highest richness, with 25 species. Amphibians: In the area of influence of the forest plantations, 18 species were recorded, all of which are of the Anura order. This order is characterized by short-bodied, tailless, and long hind legged individuals, which are fundamentally adapted to jumping. The registered species are distributed in three (3) families, being Leptodactylidae the one that presented the greatest richness with eight (8) species. **Camera trap monitoring in 2022:** Forest First conducted a camera trap monitoring between April 1, 2022 and May 8, 2022. To obtain the expected results, four cameras were installed during 40 days, for a total sampling effort of 160 days/camera. In this monitoring, eight different species were identified, of which *Myrmecophaga tridactyla, Tayassu pecari* and *Priodontes maximus* are highlighted since they are in	

Indicator	Outcome/Result	Description	Supporting Information
		the VU category on the IUCN's Red List[120]. **iNaturalist community monitoring**: Since January 2022, community wildlife monitoring was carried out through the iNaturalist platform. To date, 49 species have been identified, including *Priodontes maximus, Tapirus terrestris, Myrmecophaga tridactyla, Leopardus pardalis, Podocnemis unifilis, Eunectes murinus, Ramphastos vitellinus* and *Ara macao*, all cataloged as endangered (EN) species according to the IUCN[121]. **Camera trap monitoring in 2022-2023:** Between November 2022 and March 2023, 28 monitoring stations have been installed, obtaining a sampling effort of approximately 2,000 nights/cameras. These data are still being processed, but the results are expected to be available for the next monitoring report.	

Source: South Pole, 2023, based on information provided by FFC.

[120] The coordinates of the cameras' location and the list of species identified can be found at. Support documents\Biodiversity Support documents\Monitoreo biodiversidad\Base de datos monitoreo de fauna vDwC_Bita_2022_ForestFirts_Nov_22 (1).xlsx

[121] Support information available at: Support documents\Monitoreo biodiversidad\ Monitoreo comunitario_Observaciones_iNaturalist_FFC_Nov_22 (2).xlsx

5.1.4 High Conservation Values Protected (B2.4)

Given that project activities are carried out exclusively in degraded areas, that is, excluding native forests, the project does not negatively affect any high conservation values.

Project activities include the protection of natural ecosystems and the periodical monitoring of fauna and flora. The natural areas of dense and gallery forests were excluded from the planting zones and have been monitored to protect them from outsiders and anthropogenic events such as fires. In addition, the project maintains the wildlife corridors that are connected to the planted areas, allowing wildlife to move through them and promoting their access to suitable habitats by connecting forest fragments. In the same line, all planted areas have a 100 m buffer (of native forests, rivers, and other natural ecosystems) that serve as firebreaks and prevent the unwanted spread of seedlings of the planted exotic forest species. Considering the above, the high conservation values have not been affected.

High Conservation Value	Wetland complex of the Bita River basin – Wetland of International Importance according to the Ramsar Convention
Qualifying Attribute	The wetland complex of the Bita River basin, which covers an area of 824,535.77 ha, was declared a Ramsar site in 2018, becoming the largest site of this kind in Colombia. The Bita River flows over 510 km and crosses the municipalities of La Primavera and Puerto Carreño in the Vichada department. 95% of the river's natural cover is conserved, including gallery forest interspersed with mosaics of savannas, alluvial flooding savannas, and rocky outcrops (Decree 1235 of 2018). In consequence, it is home to several species of flora and fauna, including the jaguar (*Panthera onca)*, the giant otter (*Pteronura brasiliensis*), and the South American tapir (*Tapirus terrestris*), which are listed as Vulnerable (VU), Endangered (EN), or Near Threatened (NT) according to the IUCN's conservation status. The Bita River is also a provider of ecosystem services, especially of those related to food and water for human consumption, livestock, agriculture, and agribusiness (2.5% of the territory is covered by forest plantations and crops). In addition, it has a cultural value for the local communities, who have developed socioeconomic dynamics in the region in connection with the river[123] [124]. Forest First carried out monitoring activities within the Ramsar area using camera traps between April 1, 2022 and May 8, 2022 (Figure 25). To obtain the expected results, four cameras were installed during

[123] Trujillo, F. y C. A. Lasso (Eds.). (2017). IV. Biodiversidad del río Bita, Vichada, Colombia. Serie Editorial Fauna Silvestre Neotropical. Alexander von Humboldt Biological Resources Research Institute (IAvH). Bogotá, D. C., Colombia. 349 pp.

[124] Decree 1235 of 2018. https:\\www.minambiente.gov.co\documento-normativa\decreto-1235-de-2018\

High Conservation Value	Wetland complex of the Bita River basin – Wetland of International Importance according to the Ramsar Convention
	40 days, for a total sampling effort of 160 days/camera. In this monitoring, eight different species were identified, of which *Myrmecophaga tridactyla, Tayassu pecari* and *Priodontes maximus* are highlighted since they are in the VU category on the IUCN Red[125]. Two training workshops were carried out for the employees of the different FFC camps. One was related to High Conservation and Biodiversity Values, which covered the importance of protecting wetlands, rivers and the Ramsar site that is adjacent to the plantations. The other was led by the Omacha Foundation and focused on the importance of protecting the natural systems associated with the Bita River[126].
Focal Area	Bita River basin

Source: South Pole, 2023, based on information provided by FFC.

[125] List. The coordinates of the cameras' locations and the list of species identified can be found at: Support documents\Biodiversity Support documents\Monitoreo biodiversidad

[126] The supporting information can be found at: Support documents\ General Section\ Worker Training

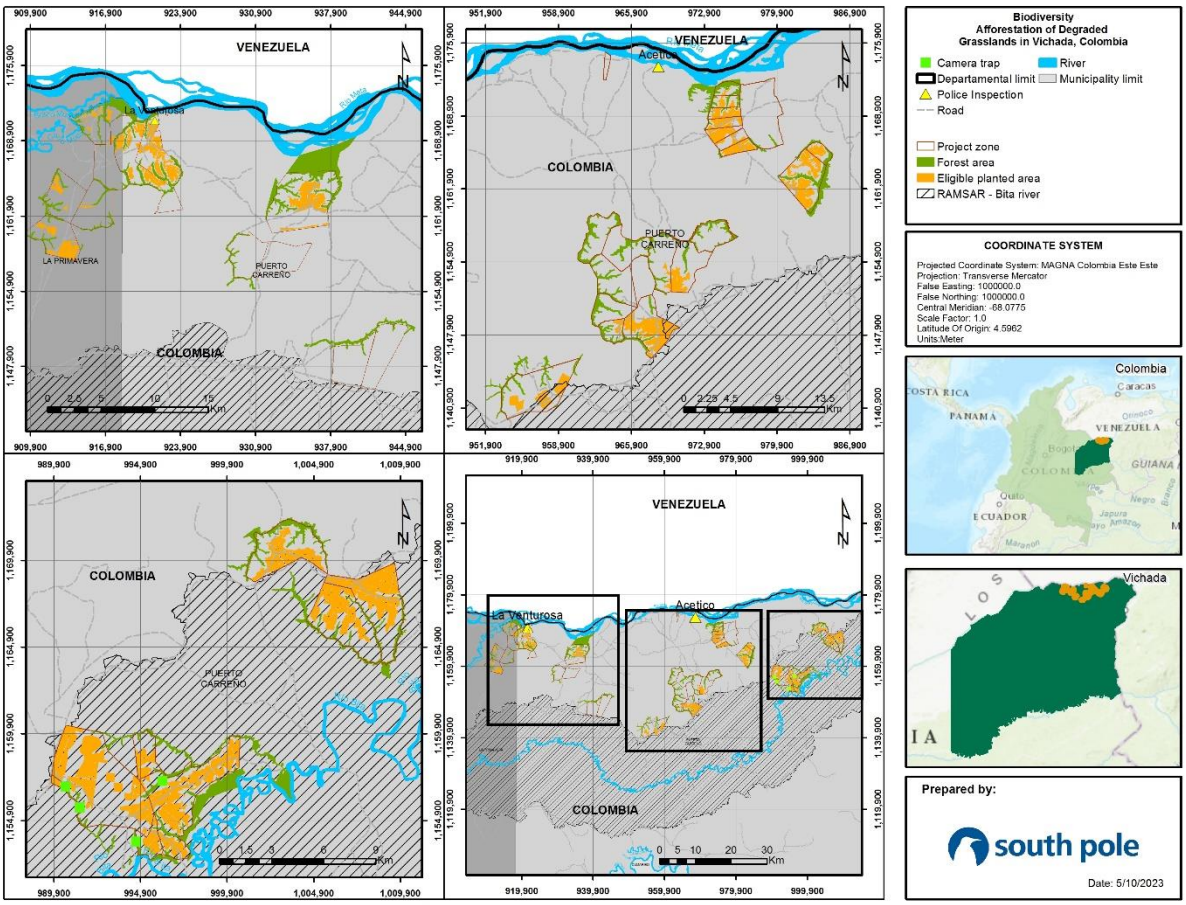


Figure 25. Camera traps location

Source: South Pole, 2023, based on information provided by FFC.

High Conservation Value	Jaguar Conservation Unit in Orinoquia
Qualifying Attribute	Jaguar conservation units have been identified in Colombia since 2002, and the entire project area is part of Unit 9: Orinoquia. The units identified correspond to the locations of the jaguar populations and the distribution of the species is determined by potential habitats and prey availability[127]. Orinoquia's jaguar population is the second in importance for Colombia, while the one located in the El Tuparro Natural National Park is the most representative in Vichada[128].

[127] Medellín, J., de la Torre, A., Zarza, H. (2016). El jaguar en el siglo XXI. La perspectiva continental. Colección Ediciones Cientificas Universitarias. Horizontes y Paradigmas en Ciencia y Técnologia). ISBN: 978-607-16-3535-8.
[128] Medellín, J., de la Torre, A., Zarza, H. (2016). El jaguar en el siglo XXI. La perspectiva continental. Colección Ediciones Cientificas Universitarias. Horizontes y Paradigmas en Ciencia y Técnologia). ISBN: 978-607-16-3535-8.

High Conservation Value	Jaguar Conservation Unit in Orinoquia
	The gallery forest and savannas allow for connectivity between jaguar populations from the Amazon and the Orinoquia[129]. In the monitoring activities carried out between 2017 and 2022, no jaguars have been registered, although the community recognizes the presence of this species in the region. Between November 2022 and March 2023, 28 camera trap monitoring stations have been installed with a sampling effort of approximately 2,000 nights/cameras. The resulting data are still being processed and will be delivered in the next verification. Additionally, camera monitoring will be constantly carried out in the project area.
Focal Area	Forest fragments present in the project zone.

Source: South Pole, 2023, based on information provided by FFC.

High Conservation Value	Native forests: *morichales* and riparian forests
Qualifying Attribute	The morichales are homogeneous or heterogeneous communities of palms of the genus *Mauritia* and other species that are strongly associated with water courses[130] [131]. Morichales and riparian forests provide ecological services by serving as biological corridors for fauna between savannas and forested areas. They provide shelter, food, and water (especially in dry periods) for fauna and can also act as carbon sinks and hydrological regulators [132] [133].

[129] Payán Garrido, E., Ruiz García, M., Franco, C. (2009). Distribución de jaguares y el conflicto por depredación como amenaza para su conservación, en la Orinoquia Colombiana. Instituto de Investigación de Recursos Biológicos Alexander von Humboldt, Bogotá, pp. 103 – 109.

[130] Trujillo, F; R. Antelo & Usma S. (editores). (2016). Biodiversidad de la cuenca baja y media del río Meta. Omacha Foundation, Palmarito Foundation, WWF. Bogotá, 336 pages.

[131] Pacheco, M., Peñuela, L., Solano, C. (2014). Manejo forestal sostenible en plantaciones en la Cuenca del río Bita, Vichada, Colombia. Proyecto "Fortalecimiento institucional y de política para incrementar la conservación de la biodiversidad en predios privados en Colombia". Grupo Colombiano Interinstitucional de Herramientas de Conservación Privada

[132] Trujillo, F., Mosquera-Guerra, F. (2016). Caracterización, uso y manejo de la mastofauna asociada a los morichales de los llanos orientales colombianos. Capítulo 7. Pp. 191-219. En: Lasso, C. A., G. Colonnello y M. Moraes R. (Editores), XIV. Morichales, cananguchales y otros palmares inundables de Suramérica. Parte II: Colombia, Venezuela, Brasil, Perú, Bolivia, Paraguay, Uruguay y Argentina. Serie Editorial Recursos Hidrobiológicos y Pesqueros Continentales de Colombia. Instituto de Investigación de Recursos Biológicos Alexander von Humboldt (IAvH). Bogotá, D. C., Colombia.

[133] Hernández-Valencia, I., González-Boscán, V., Zamora-Ledezma, E., Carrillo-Carrillo, V., Zamora-Figueroa, A. (2018). Environmental Impacts of the Oil Industry on the Mauritia Flexuosa Swamp Palm Groves (Morichales) in

High Conservation Value	Native forests: *morichales* and riparian forests
	Food availability in these ecosystems throughout the year is crucial for mammal and bird communities. Various studies have identified the presence of important endangered species such as *Lontra longicaudis, Pteronura brasiliensis, Priodontes maximus, Puma concolor, Panthera onca, Tapirus terrestris,* and *Myrmecophaga trydactyla* [134] [135]. During the cover update process carried out in 2022, morichales were identified. This land cover is defined as a unit made up of communities characterized by the dominance of the moriche palm (*Mauritia flexuosa*), located on depressions and flooded areas mainly in the Colombian Orinoquia, and with heights up to 18 m. **Morichales in the project area** *Source: C&MA S.A., 2022* For their part, gallery or riparian forests are a cover made up of arboreal vegetation located on the banks of permanent or temporary watercourses. This type of cover is limited by its breadth, since it borders watercourses and natural drainage[136].

Venezuela., In: Oil Contaminations: Impacts and offsets: Emilio Potter and Alyssa Vega (eds). Nova Science Publisher Inc. Pp.33-72.

[134] Trujillo, F; R. Antelo & Usma S. (editores). (2016). Biodiversidad de la cuenca baja y media del río Meta. Omacha Foundation, Palmarito Foundation, WWF. Bogotá, 336 pages.

[135] Hernández-Valencia, I., González-Boscán, V., Zamora-Ledezma, E., Carrillo-Carrillo, V., Zamora-Figueroa, A. (2018). Environmental Impacts of the Oil Industry on the Mauritia Flexuosa Swamp Palm Groves (Morichales) in Venezuela., In: Oil Contaminations: Impacts and offsets: Emilio Potter and Alyssa Vega (eds). Nova Science Publisher Inc. Pp.33-72.

[136] IDEAM. (2010). Leyenda Nacional de Coberturas de la Tierra. Metodología CORINE Land Cover adaptada para Colombia Escala 1:100.000. Institute of Hydrology, Meteorology and Environmental Studies. Bogotá, D. C., 72p

High Conservation Value	Native forests: *morichales* and riparian forests
	In 2022, this cover was monitored. According to the diversity indices of Shannon, Margalef and Simpson, it was found that it is in a good state of conservation and has a high diversity of flora species.
Focal Area	Native forest inside the project area.

Source: South Pole, 2023, based on information provided by FFC.

5.1.5 Invasive Species (B2.5)

The species used in this project (*E. pellita* y *A. mangium)* are worldwide known as exotic and invasive, but they are not considered as such in Colombia[137] [138]. However, along project development, conservation practices such as fire belts and periodic control burnings, in addition to seed removal from the surrounding riparian forest and morichal ecosystems to limit the colonization of these species have been implemented.

It should be noted that FFC has been leading a genetic improvement program with eucalyptus species with the purpose to achieve higher yields in plantations by using genetic material with superior growth rates and resistance to extreme climate events, pests and diseases. Given the success of the tests performed, FFC will start using exclusively the eucalyptus species and will gradually start replacing acacia plantations while preserving the diversity of its material (clones, seeds and hybrids).

To prevent the spread of *A. mangium* and *E.pellita* to areas outside the plantation, buffer areas (Figure 26) have been established between the plantations and natural covers such as gallery forests and dense forests. Additionally, seedlings of exotic forest species are continuously removed from areas outside the plantation boundaries.

[137] Quiceno – Mena, Dayana. (2017). Efecto de las plantaciones de Acacia mangium Willd. y Schizolobium parahyba (Vell) S.F. Blake sobre la trayectoria sucesional de la vegetación, en áreas de explotación minera a cielo abierto. Universidad Nacional de Colombia. Tesis de investigación presentada como requisito parcial para optar al título de Magister en Ciencias – Biología.

[138] Quevedo, Padilla, J. (2018). Vulnerabilidad de los ecosistemas llaneros frente a la invasión de la especie introducida Acacia mangium. Pontificia Universidad Javeriana, Facultad de estudios ambientales y rurales.

Figure 26. Buffer areas between the plantations and the riparian forest

Source: South Pole, 2023.

The invasive behavior of a species depends on the specific geographic area where it inhabits. Thus, a species considered invasive in a certain ecosystem or geographical region may not be so in a different context (e.g., *Psidium guajava, Spathodea campanulata, Miconia calvescens*).

Considering that Colombia ratified the Convention on Biological Diversity and its concepts (see Law 165 of 1994 and the Strategic Plan for Biological Diversity 2011-2020), the terms incorporated at the national level are the following, as defined by Cárdenas *et al.* (2010)[139], Cárdenas *et al.* (2015)[140] and Cárdenas *et al.* (2017)[141]:

Exotic (i.e., introduced) species: This is a species, subspecies, or lower or hybrid taxon found outside its natural (past or present) distribution, including any of its parts: gametes, seeds, eggs, or propagules.

Established (i.e., naturalized) species: An introduced/exotic species that successfully reproduces and has a viable population.

[139] Cárdenas, D., Castaño, N., Cárdenas-Toro, J., Baptiste, M. P., Gutiérrez, F. P., Gil, D. I., & Lasso, C. A. (2010). Análisis de riesgo y categorización de especies de plantas invasoras para Colombia. Bogotá: Alexander von Humboldt Biological Resources Research Institute.

[140] Cárdenas-Toro, J., Baptiste, M. P., Ramírez, W., Aguilar-Garavito, M., Gutiérrez, F. D. P., Castaño Arboleda, N., & Vargas, W. G. (2015). Herramienta para la gestión de áreas afectadas por invasiones biológicas en Colombia. Bogotá: Alexander von Humboldt Biological Resources Research Institute

[141] Cárdenas-López, D., Baptiste, M. P., & Castaño, N. (2017). Plantas exóticas con alto potencial de invasión en Colombia. Bogotá: Alexander von Humboldt Biological Resources Research Institute.

Invasive species: An introduced/exotic species that establishes and spreads over natural or semi-natural ecosystems or habitats. It is an agent of change and causes or has the potential to cause environmental, economic, or public health impacts.

The species introduced and cultivated in the project area (*Acacia mangium* and *Eucalyptus pellita*) are not considered of invasive behavior since the on-site floristic study and the plantation management observations have not shown that they prevent the growth of native species. Based on the study carried out, it is possible to conclude that these species do not reproduce or propagate in natural or semi-natural areas (e.g., riparian forests and grasslands) due to their low fertility. Additionally, they do not generate negative environmental impacts in the areas that are part of the plantation or in adjacent ones.

In order to deepen knowledge about the invasive nature of *Acacia mangium* and *Eucalyptus pellita*, the results of the search within Colombian official reports are summarized in Table 33.

Table 33. Colombian official reports about invasive species

INTRODUCED CULTIVATED SPECIES	State of knowledge on invasive species (2005)[142]	Risk analysis and proposal for the categorization of introduced species in Colombia (2010)[143]	National Plan for the Prevention, Control and Management of Introduced, Transplanted and Invasive Species (2011)[144]	Tools for the management of areas affected by biological invasions in Colombia (2015)[145]	Exotic plants with high invasion potential in Colombia (2017)[146]
Acacia mangium	Not reported as invasive	Not reported as invasive	Not reported as invasive	Not reported as invasive	Not reported as invasive

[142] Gutiérrez F. (2006). Estado de conocimiento de especies invasoras. Propuesta de lineamientos para el control de los impactos. Bogotá. Biological Resources Research Institute.
[143] Cárdenas, D., Castaño, N., Cárdenas-Toro, J., Baptiste, M. P., Gutiérrez, F. P., Gil, D. I., & Lasso, C. A. (2010). Análisis de riesgo y categorización de especies de plantas invasoras para Colombia. Bogotá: Alexander von Humboldt Biological Resources Research Institute.
[144] Franco A; Baptiste, María P; Díaz J; Montoya M (2011). Plan Nacional para la Prevención, el Control y Manejo de las Especies Introducidas, Trasplantadas e Invasoras: Diagnóstico y listado preliminar de especies introducidas, trasplantadas e invasoras en Colombia. Bogotá: Alexander von Humboldt Biological Resources Research Institute, The Nature Conservancy Colombia (TNC) & Ministry of Environment and Sustainable Development of Colombia.
[145] Cárdenas-Toro, J., Baptiste, M. P., Ramírez, W., Aguilar-Garavito, M., Gutiérrez, F. D. P., Castaño Arboleda, N., & Vargas, W. G. (2015). Herramienta para la gestión de áreas afectadas por invasiones biológicas en Colombia. Bogotá: Alexander von Humboldt Biological Resources Research Institute.
[146] Cárdenas-López, D., Baptiste, M. P., & Castaño, N. (2017). Plantas exóticas con alto potencial de invasión en Colombia. Bogotá: Alexander von Humboldt Biological Resources Research Institute.

INTRODUCED CULTIVATED SPECIES	State of knowledge on invasive species (2005)[142]	Risk analysis and proposal for the categorization of introduced species in Colombia (2010)[143]	National Plan for the Prevention, Control and Management of Introduced, Transplanted and Invasive Species (2011)[144]	Tools for the management of areas affected by biological invasions in Colombia (2015)[145]	Exotic plants with high invasion potential in Colombia (2017)[146]
Eucalyptus pellita	Not reported as invasive	Not reported as invasive	Not reported as invasive	Not reported as invasive	Not reported as invasive

Source: South Pole, 2023.

In this context, an **exotic or introduced species** can only be considered **invasive**[147] when it has been completely naturalized, is capable of generating a large number of fertile offspring at considerable distances from its mother plants (more than 100 m from the original population in less than 50 years for seed dispersal species) and is an agent of change with the potential to cause environmental, economic, or public health impacts. The degree of invasiveness depends on the probability of establishment and invasion, the potential impact and the control or eradication difficulty, so that a naturalized, exotic or introduced and cultivated species does not constitute an invasive species *per se*. None of these conditions have been triggered by the introduced species cultivated in the project area.

Therefore, the invasive nature of a species is measured based on its **fertility** (that is, if the species has fertile offspring) simultaneously with the **negative environmental, economic or public health impacts** that it may generate (for instance, competition with or displacement of native species, and ecological changes in natural ecosystem dynamics). As evidenced in the floristic study carried out in the project area (Section 5.3.1.1.2), neither *Acacia mangium* nor *Eucalyptus pellita* have this behavior within the project area.

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

Species	*Acacia mangium*
Justification of Use	*Acacia mangium* is a species used in areas affected by productive or mining activities due to its remarkable characteristics of adaptation to poor soil conditions. Furthermore, this is a fast-

[147] Richardson, D.M., P. Pyšek, M. Rejmánek, M.G. Barbour, F.D. Panetta & C.J. West. (2000). Naturalization and invasion of alien plants: concepts and definitions. Divers. Distrib. 6: 93–107.

	growing species with adaptability to acid soils, low precipitation, high temperatures and radiation[148].
Potential Adverse Effect	The use of *Acacia mangium* did not have any negative effect because the plantations were not established in natural areas and did not colonize these (Section 5.1.5).

Species	*Eucalyptus pellita*
Justification of Use	*Eucalyptus pellita* is a species widely planted in the Orinoquia region of Colombia due to its outstanding characteristics (such as stem straightness) and the physical properties of its wood. Additionally, the species has a low number of knots and is highly resistant, being suitable for the construction of fence posts, corral posts and live fences. It can also be used in silvopastoral systems[149].
Potential Adverse Effect	The *Eucalyptus pellita* plantations did not have negative effects and there was no water deficit in the plantations and the ecosystems of the project area's surroundings (Section 5.1.5).

5.1.7 GMO Exclusion (B2.7)

No GMOs were used in the project activities. All seeds used come from Colombian certified companies.[150]

5.1.8 Inputs Justification (B2.8)

The principle behind fertilization is to provide plantations with an early boost. Research has shown that this is best accomplished through the application of products containing nitrogen (N), phosphate (P) and potassium (K), plus other essential trace elements, in every tree. On the other hand, fertilizers achieve better results when applied in two moments and the first composition is higher in P, which enhances rapid root development and, therefore, helps the seedlings to optimize the uptake of the other essential nutrients and moisture from the site. In this way, two NPK micronutrient fertilizers are used in plantations, with different ratios in the first and subsequent fertilizations (see Section 2.2.4).

[148] Quevedo, Padilla, J. (2018). Vulnerabilidad de los ecosistemas llaneros frente a la invasión de la especie introducida Acacia mangium. Pontificia Universidad Javeriana, Facultad de estudios ambientales y rurales.
[149] Castro, D. and Sánchez, G. (2010). In vitro Clonal Propagation of Eucalyptus pellita F. Muell from Plus Trees. Temas Agrarios – Vol. 15: (1) Enero – Junio 2010 (34 – 43).
[150] Supporting information: ICA_records\Seeds.

Name	Basifertil (6-24-12) First Fertilization
Justification of Use	Soils in Vichada are weathered and have low fertility, acidic pH, and low moisture retention. Therefore, the establishment of the plantations required the application of granular fertilizers, especially to support the development of the plants in their early stages by giving them the necessary macro elements (N, P, K) for growth and to prevent damage by water deficit. In this case, Basifertil fertilizers is a combination of N (16%), P (24%), and K (12%). A higher concentration of K is necessary for the production stages.
Adverse Effect	When using fertilizers, it is important to determine their optimal composition and nutrient concentration as well as the type of materials used in its production, provided that certain components can alter soil and water biochemical characteristics, accelerate eutrophication in aquatic systems, and negatively affect soils. Therefore, the use of fertilizers in amounts different than those recommended could lead to mineral accumulation and concentration, causing soil compaction and degradation in the long term and, in turn, limiting root development and plant growth[151]. In addition, it is important to resort to good application methods, making sure that the fertilizer is not leached or washed away.

Name	NPK Second Fertilization
Justification of Use	Soils in Vichada are weathered and have low fertility, acidic pH, and low moisture retention. Therefore, the establishment of the plantations required the application of granular fertilizers, especially to support the development of the plants in their early stages by giving them the necessary macro elements (N, P, K) for growth and to prevent damage by water deficit.
Adverse Effect	When using fertilizers, it is important to determine their optimal composition and nutrient concentration, as well as the type of materials used in its production, provided that certain components can alter soil and water biochemical characteristics, accelerate eutrophication in aquatic systems, and negatively affect soils. Therefore, the use of fertilizers in amounts different than those recommended could lead to mineral accumulation and concentration, causing soil compaction and degradation in the long term and, in turn,

[151] Massah, Jafar., Azadegan, Behzad. (2016). Effect of Chemical Fertilizers on Soil Compaction and Degradation. Agricultural Mechanization in Asia, Africa, and Latin America. Vol 47. No. 1.

Name	NPK Second Fertilization
	limiting root development and plant growth[152]. In addition, it is important to resort to good application methods, making sure that the fertilizer is not leached or washed away.

Name	Roundup 747 (Glyphosate)
Justification of Use	The use of herbicides is required for weed control in plantations, especially in their initial years, to remove species that could compete with the planted ones and limit their growth. If weed control is not carried out, the consequence might be the failure of the plantation, since weeds in the region grow faster than trees in their initial stages and are very aggressive. This herbicide is recognized for its systemic action, going directly to the root. Among its advantages are the fast leaf-to-root penetration of its active ingredient, its broad spectrum of weed control, and the fact that it does not damage the soils or crops and it requires low amounts of water.
Adverse Effect	The use of agrochemicals for weed control can generate soil and water contamination through infiltration. The use of this product should be reduced as much as possible and be limited only to the first stages of crop growth. Non-target plants adjacent to the plantations may be exposed to herbicide, since life history traits (e.g., flowering patterns and root development) could be affected[153]. Therefore, it is important to apply herbicides in dry, low wind seasons to prevent spreading into nearby cultivations and grasslands with cows. In addition, water courses or drainage areas should not be exposed to them.

5.2 Offsite Biodiversity Impacts

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

Considering the management measures adopted by the project, the possible impacts on biodiversity are related to the colonization of invasive species and the use of chemical fertilizers and herbicides, as previously reported (Sections 5.1.5. and 5.1.8).

[152] Massah, Jafar., Azadegan, Behzad. (2016). Effect of Chemical Fertilizers on Soil Compaction and Degradation. Agricultural Mechanization in Asia, Africa, and Latin America. Vol 47. No. 1.

[153] Dupont, Y.L., Strandberg, B., Damgaard, C. (2018). Effects of herbicide and nitrogen fertilizer on non-target plant reproduction and indirect effects on pollination in Tanacetum vulgare (Asteraceae). Agriculture, Ecosystems and Environment. 262: 76-82

Negative Offsite Impact	Mitigation Measure(s)
Potentially invasive species can colonize natural areas and displace native vegetation	Fire belt setting along with a periodic control burning will limit the expansion of invasive vegetation, which can be removed from natural forests manually. In 2022, firebreak activities were carried out for six days in order to prevent the spread of forest fires and the establishment of invasive vegetation. The activities carried out were controlled burns and firebreaks setting using an agricultural harrowing machine[154]. Firebreaks made using an agricultural harrowing machine Source: FFC, 2023. Controlled burning works with personnel and vehicles loaded with water Source: FFC, 2023.

[154] Support material is available at. Support documents\Biodiversity Support documents\Manejo de especies Exoticas_barreras cortafuegos\InvasiveSpices management

Negative Offsite Impact	Mitigation Measure(s)
	Removal of invasive species: In 2020, one day was dedicated to the eradication of exotic commercial species in the conservation area, while in 2022 two days were necessary for managing them. As evidenced, the presence of saplings of an introduced species does not *per se* represent an invasive behavior (Section 5.1.5) [155]. Removal of invasive species in the perimeters of the internal roads of the San Cristóbal camp Source: FFC, 2023.
The use of chemical fertilizers and herbicides can generate water and soil contamination	In 2022, the Pesticide Management Plan was updated and five training sessions on pesticide management were held for 86 project workers. These activities are focused on preventing soil and water contamination with pesticides and herbicides. In addition, the Chemical Spill Response Plan was updated to address potential events of accidental chemical or fuel spill[156].

[155] Support material is available at. Support documents\Biodiversity Support documents\Manejo de especies Exoticas_barreras cortafuegos\InvasiveSpices management

[156] Support material is available at: Support documents\Biodiversity Support documents\Plan de Manejo de Pesticidas

5.2.2 Net Offsite Biodiversity Benefits (B3.3)

The activities implemented by the project aim to create forest plantations on degraded lands. These activities have a positive impact on the conservation values established for the project through the generation of new areas for ecosystem connectivity that benefit wildlife by providing shelter and safe pathways for their displacement. In addition, the protection of key areas ensures habitats and food availability, which favors fauna protection and the long-term viability of their populations in the project area.

The above conditions have fostered the connectivity between the Meta and Bita rivers and the protection of the gallery forests and morichales in the area. Additionally, based on the protection of these native ecosystems, workshops on fauna management were conducted for the employees of the plantation, which has a positive impact on reducing hunting, and other harmful actions. Therefore, the potential impacts of project activities on biodiversity outside the project zone were positive. No negative impacts have been identified.

Compared to the without-project scenario, the benefits for biodiversity have been positive in terms of management measures.

Benefits Offsite	Management Measures
Connectivity between the Meta and Bita rivers	Between 2020 and 2022, 2,886.94 ha were planted in the project area, for a total of 9,419.70 ha. The planted areas and the dense and riparian forests protected by the project enable ecological connectivity between the Meta and Bita rivers and within the Ramsar site, having a direct effect on ecological connectivity at the regional level.
Employees awareness raising on biodiversity	Awareness raising campaigns were aimed at project employees on the topics of biodiversity misappropriation and proper waste disposal, which is expected to reduce wildlife hunting and possession, and pollution caused by garbage. At the regional level, this releases pressure on wildlife populations and encourages proper waste management[157] [158].

[157] Support material is available at: Support documents\Biodiversity Support documents\Capacitaciones de biodiversidad

[158] Support material is available at: Support documents\Biodiversity Support documents\Manejo de residuos\Manejo de residuos 2021\Capacitacion Residuos solidos empleados

5.3 Biodiversity Impact Monitoring

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

For this Monitoring Report, the flora and fauna monitoring activities carried out in the field have been compiled and organized. In this way, all the information from the 2017-2022 flora and fauna inventories was collected and subsequently used to update the biodiversity and environmental monitoring plans in order to set out improvements in procedures and data collection.

Below are the results of the plant cover update and the flora monitoring carried out in 2022, in addition to the results of the community monitoring using wildlife camera traps. These monitoring activities show that the biodiversity in the project area is high and has not been affected by project activities[159] .

5.3.1.1 Flora

For the characterization of wild flora in the project area, the land cover classification was updated and a flora monitoring in the identified land covers was carried out. This made it possible to adequately determine the richness and composition of plant species in the project area.

Plant land cover

For this monitoring report, the land cover classification was updated. For this, a satellite image was acquired and based on it, a geographic database was created using Geographic Information System (GIS) tools. Then, information from the field verification carried out in June 2022 (where the land cover of the area was recognized, identified and grouped, and control points were generated) was used. Finally, the land cover units were updated using the Corine Land Cover methodology adapted for Colombia[160]. In total, 25 land cover classes were identified, as shown in Figure 27.

[159] Support material is available at: Support documents\Biodiversity Support documents\Monitoreo biodiversidad
[160] IDEAM. (2010). Leyenda Nacional de Coberturas de la Tierra. Metodología CORINE Land Cover adaptada para Colombia Escala 1:100.000. Institute of Hydrology, Meteorology and Environmental Studies. Bogotá, D. C., 72p

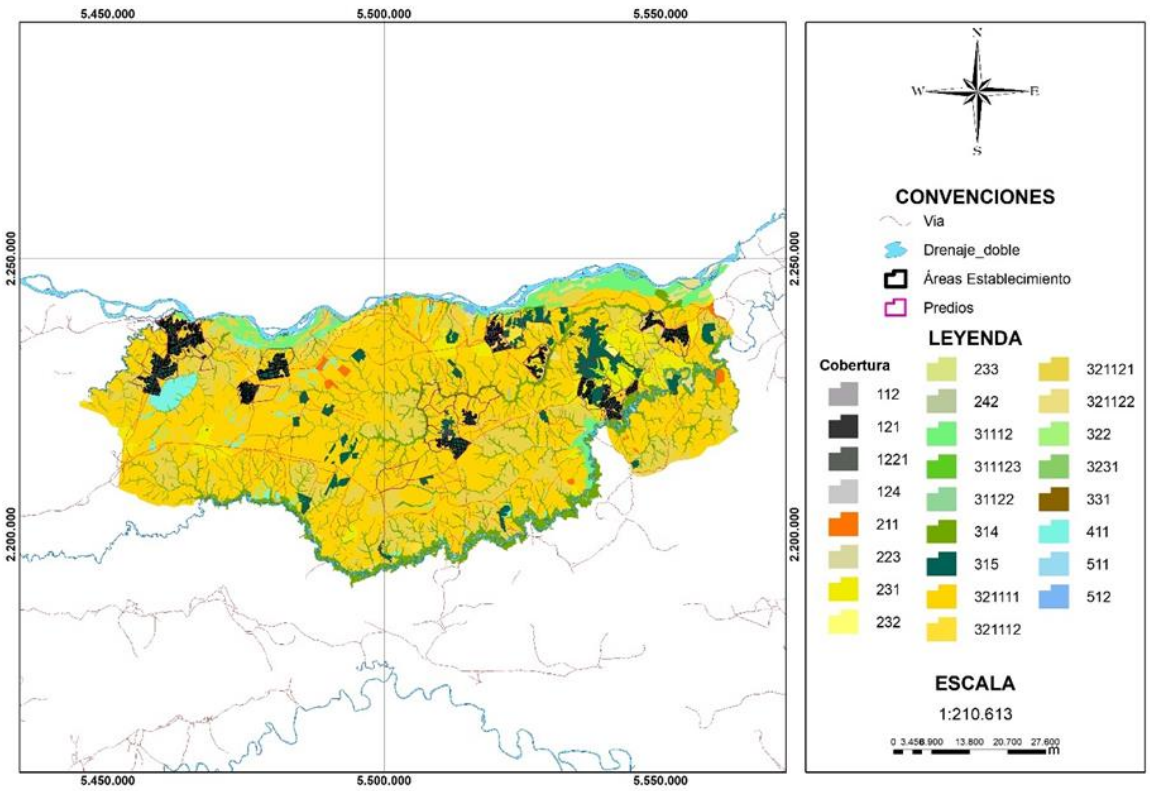


Figure 27. Land covers present in the project's area of influence

Source: C&MA S.A., 2022.

Floristic characterization

To characterize floristic diversity, a simple random sampling of 0.1 ha plots was carried out on the land covers identified in the project's area of influence. The plots were located in different units or natural and semi-natural ecosystems.

Table 34 lists the plots sampled in the ecosystems with the presence of plant cover typical of the area of influence. Individuals were marked with serial numbers using yellow paint. In the large trees plots (DBH≥10cm), an initial point was determined, and all the individuals were marked consecutively starting from number 1; in the middle and small trees plots (DBH<10cm), the individuals were marked with a sign on their stem or branch[161].

Table 34. Summary of the floristic characterization of the project

[161] For more information, see the Environmental and Social Impact Study (C&MA S.A., 2022) located at: Support Documents\ Biodiversity Support documents\Anexo X. Soportes monitoreo biodiversidad\ Informe monitoreo Línea base_flora_fauna

METRIC/ COVER	High dense floodplain forest	Gallery and riparian forest	Non-wooded dense dryland grassland	Wooded dense dryland grassland	Flooded, non-wooded dense grassland	Flooded, wooded dense grassland	Bushland	Tall secondary vegetation
Expanse of the land cover in the project area (ha)	14,532.19	51,594	220,348.34	4,841.13	66,851.91	48,492.61	528.29	898.56
Percentage of the land cover in the project area	3.41	12.12	51.77	1.14	15.71	1.15	0.12	0,21
Number of plots	4	5	8	3	2	5	4	2
Sampled area (ha)	0.4	0.5	0.8	0.3	0.2	0.5	0,4	0,2
Richness	30 spp	39 spp	29 spp	10 spp	5 spp	19 spp	5 spp	16 spp
Total abundance	244 ind	427 ind	992 ind	1,980 ind	72 ind	238 ind	148 ind	445 ind
Mixing ratio	0.123	0.091	0.028	0.005	0.069	0.08	0.034	0.036
Margalef	5.28	6.27	3.91	1.19	0.94	3.29	0.80	2.46
Menhnick	1.92	1.89	0.89	0.22	0.59	1.23	0.41	0.76

METRIC/ COVER	High dense floodplain forest	Gallery and riparian forest	Non-wooded dense dryland grassland	Wooded dense dryland grassland	Flooded, non-wooded dense grassland	Flooded, wooded dense grassland	Bushland	Tall secondary vegetation
Shannon_H	3.03	3.24	1,79	1.22	1.09	2.31	1.15	0.37
Simpson_1-D	0.94	0.95	0.68	0.62	0.61	0.85	0.56	1.00

Source: C&MA S.A., 2022

According to the results, the gallery and riparian forest cover presents the highest species richness, as well as the highest diversity indices according to Margalef (6.27), Menhnick (1.89), Shannon (3.24) and Simpson (0.95). These values are very close to the ones obtained in the high dense floodplain forest due to the floristic similarity between these two natural forest covers, where trees and shrubs are predominant. On the other hand, a different but expected behavior is observed in the grasslands, where (except for the non-wooded dense dryland grassland) the herbaceous-dominated covers present a lower species richness and a greater abundance of individuals (e.g., the wooded dense dryland grassland), which is usual considering the growth habits of helobiome-dominating herbs (i.e., clonal individuals, underground rhizomatous stems, macoyas).

The mixing ratio expresses the intensity of species mixture, so that high values show a higher proportion of individuals for each species. This behavior occurs in forest covers (where there is greater mixing) and to a lesser extent, in grass cover (where there is less mixing), being also reflected in the other diversity indices. For example, in the case of the Shannon index, it also indicates a greater equality of species in tree covers, which is expected in comparison with the grass cover, where there is greater dominance of species tolerant to soil conditions and waterlogging.

Considering that different methodologies for floristic studies recommend sampling a minimum area of 0.1 ha, this flora sampling set the goal of becoming a baseline for future plant diversity monitoring in the ecosystems of the project area. The species richness and composition, together with the biodiversity indicators, suggest an appropriate state of conservation of these natural areas and the maintenance of the ecological conditions of their ecosystems, regardless of the project activities.

Identification of banned, endemic, endangered and/or critically endangered plant species

For the identification of flora species whose used is banned, that are threatened or have some degree of endemism, a verification of the floristic composition of the entire inventory was carried out, based on the lists of the Appendices of the Convention on International Trade in Threatened Species of Wild Fauna and Flora (CITES, September 2012), the Resolution 1912 of September 15, 2017 of the Ministry of Environment and Sustainable Development (MADS), the IUCN Red Lists and the Red Books of Phanerogamous Plants of Colombia of the Alexander von Humboldt Biological Resources Research Institute. As a result, in

accordance with Resolution 1912 of 2017 and CITES, no flora species were identified as Endangered (EN), 44 species were classified as of Least Concern (LC) and one species was in the Nearly Threatened (NT) category.

Table 35 shows the species inhabiting the project area who are in the banned, endangered or critically endangered categories.

Table 35. Species in the banned, endangered or critically endangered categories

Taxonomic Nomenclature	Species	Common Name	IUCN Category
Abuta grandifolia (Mart.) Sandwith	*Abuta grandifolia*	Bagamo	LC
Acosmium nitens (Vogel) Yakovlev	*Acosmium nitens*	Congrio	NE
Ampelozizyphus amazonicus Ducke	*Ampelozizyphus amazonicus*	Sanango	LC
Anadenanthera peregrina (L.) Speg.	*Anadenanthera peregrina*	Cohoba	LC
Andropogon bicornis L.	*Andropogon bicornis*	West Indian foxtail	NE
Aniba guianensis Aubl.	*Aniba guianensis*	Laurel	LC
Aniba panurensis (Meisn.) Mez	*Aniba panurensis*	Yellow laurel	LC
Astrocaryum acaule Mart.	*Astrocaryum acaule*	Macanilla	NE
Axonopus purpusii (Mez) Chase	*Axonopus purpusii*	Guaratara	NE
Bowdichia virgilioides Kunth	*Bowdichia virgilioides*	Alcornoco	LC

Taxonomic Nomenclature	Species	Common Name	IUCN Category
Brosimum utile (Kunth) Pittier	*Brosimum utile*	Cow tree	LC
Bulbostylis communis var. scabrida M.G.López & D.A.Simpson	*Bulbostylis communis var. scabrida*	Porra e mono	NE
Byrsonima crassifolia (L.) Kunth	*Byrsonima crassifolia*	Golden-spoon	LC
Calophyllum brasiliense Cambess.	*Calophyllum brasiliense*	Maria	LC
Campsiandra implexicaulis Stergios	*Campsiandra implexicaulis*	Guamo chigo	NE
Caraipa llanorum Cuatrec.	*Caraipa llanorum*	Saladillo rojo	NE
Cecropia engleriana Snethl.	*Cecropia engleriana*	Yarumo	LC
Citharexylum poeppigii Walp.	*Citharexylum poeppigii*	Pendare	LC
Cochlospermum orinocense (Kunth) Steud.	*Cochlospermum orinocense*	Bototo	LC
Connarus venezuelanus Baill.	*Connarus venezuelanus*	Sangrito	NE
Curatella americana L.	*Curatella americana*	Rough-leaf tree	LC
Davilla kunthii A.St.-Hil.	*Davilla kunthii*	Chaparrillo	NE

Taxonomic Nomenclature	Species	Common Name	IUCN Category
Delonix regia (Hook.) Raf.	*Delonix regia*	Gulmohar	LC
Euterpe oleracea Mart.	*Euterpe oleracea*	Assai palm	NE
Euterpe precatoria Mart.	*Euterpe precatoria*	Mountain cabbage	LC
Ficus americana Aubl.	*Ficus americana*	Jamaican cherry fig	LC
Geonoma cuneata H.Wendl. ex Spruce	*Geonoma cuneata*	Palmicha	NE
Guatteria maypurensis Kunth	*Guatteria maypurensis*	Majaguillo	LC
Himatanthus articulatus (Vahl) Woodson	*Himatanthus articulatus*	Platanote	LC
Homalium guianense (Aubl.) Oken	*Homalium guianense*	Palo hierro or mandador	LC
Hymenaea oblongifolia Huber	*Hymenaea oblongifolia*	Algarrobo	LC
Hyptis brachiata Briq.	*Hyptis brachiata*	Mastranto	NE
Inga alba (Sw.) Willd.	*Inga alba*	Palo guamo	LC
Iryanthera juruensis Warb.	*Iryanthera juruensis*	Sangro	LC
Mahurea exstipulata Benth.	*Mahurea exstipulata*	Saladillo	LC

Taxonomic Nomenclature	Species	Common Name	IUCN Category
Maquira coriacea (H.Karst.) C.C.Berg	*Maquira coriacea*	Rubber	LC
Matayba guianensis Aubl.	*Matayba guianensis*	Pate paujil	NT
Mauritia flexuosa Lf	*Mauritia flexuosa*	Moriche or tree of life	NE
Mimosa pudica L.	*Mimosa pudica*	Touch me not	LC
Monotagma laxum (Poepp. & Endl.) K.Schum.	*Monotagma laxum*	Lengua de vaca	NE
Myrcia splendens	*Myrcia splendens*	Punchberry	LC
NN1	*NN1*	NN1	NE
Paspalum virgatum L.	*Paspalum virgatum*	Water couch	NE
Persea sp.	*Persea sp.*	Aguacatillo	NE
Phenakospermum guyannense (A.Rich.) Endl. ex Miq.	*Phenakospermum guyannense*	Platanillo	LC
Picramnia magnifolia JFMacbr.	*Picramnia magnifolia*	Sani	LC
Pinus caribaea Morelet	*Pinus caribaea*	Pitch pine	LC
Psidium guineense Sw.	*Psidium guineense*	Brazilian guava	LC

Taxonomic Nomenclature	Species	Common Name	IUCN Category
Pterocarpus amazonum (Benth.) Amshoff	*Pterocarpus amazonum*	Angu	NE
Sagittaria montevidensis Cham. & Schltdl.	*Sagittaria montevidensis*	Giant arrowhead	NE
Schoenobiblus peruvianus Standl.	*Schoenobiblus peruvianus*	Rayo caspi	LC
Simarouba amara Aubl.	*Simarouba amara*	Bitterwood	LC
Siparuna sessiliflora (Kunth) A.DC.	*Siparuna sessiliflora*	Romadizo	LC
Socratea exorrhiza (Mart.) H.Wendl.	*Socratea exorrhiza*	Araco palm	LC
Solanum nigrum L.	*Solanum nigrum*	Yerbamora	NE
Syagrus orinocensis (Spruce) Burret	*Syagrus orinocensis*	Churruvay palm	NE
Tetrathylacium macrophyllum Poepp. & Endl.	*Tetrathylacium macrophyllum*	White sajino	LC
Tococa guianensis Aubl.	*Tococa guianensis*	Tuno	NE
Trachypogon vestitus Andersson	*Trachypogon vestitus*	Saeta violacea	NE
Trattinnickia rhoifolia Willd.	*Trattinnickia rhoifolia*	Caraño	LC

Taxonomic Nomenclature	Species	Common Name	IUCN Category
Triplaris americana L.	*Triplaris americana*	Ant tree	LC
Virola elongata (Benth.) Warb.	*Virola elongata*	Sangretoro	LC
Virola sebifera Aubl.	*Virola sebifera*	Red ucuuba	LC
Vismia guianensis (Aubl.) Pers.	*Vismia guianensis*	Lacre	LC
Vitex orinocensis Kunth	*Vitex orinocensis*	Guarataro	LC
Vochysia ferruginea C.Mart.	*Vochysia ferruginea*	Salao	LC
Vochysia lehmannii Hieron.	*Vochysia lehmannii*	Saladillo blanco	LC
Xylopia aromatica Mart.	*Xylopia aromatica*	Monkey pepper	LC
Zanthoxylum sp	*Zanthoxylum sp*	Tachuelo	NE

Source: C&MA S.A., 2022

Regarding the species with probable endemic occurrence, four flora species were identified (Table 36).

Table 36. Flora endemic species

Scientific Name	Common Name
Euplassa saxicola	Yolombó
Henriettea goudotiana	Tuno

Scientific Name	Common Name
Mikania paucifolia	Non-registered
Pepinia heliophila	Non-registered

Source: C&MA S.A., 2022

5.3.1.2 Fauna

Fauna monitoring

Camera trapping

Forest First carried out monitoring activities using camera traps between April 1, 2022 and May 8, 2022. To obtain the expected results, four cameras were installed during 40 days, for a total sampling effort of 160 days/camera. In this monitoring, eight different species were identified, of which *Myrmecophaga tridactyla*, *Tayassu pecari* and *Priodontes maximus* are highlighted since they are in the VU category on the IUCN Red List (Table 37)[162].

Table 37. Fauna species identified in the camera trap monitoring in 2022

Class	Order	Family	Scientific Name
Mammalia	Rodentia	Cuniculidae	*Cuniculus paca*
Mammalia	Pilosa	Myrmecophagidae	*Myrmecophaga tridactyla*
Mammalia	Rodentia	Dasyproctidae	*Dasyprocta fuliginosa*
Mammalia	Artiodactyla	Tayassuidae	*Tayassu pecari*
Mammalia	Perissodactyla	Tapiridae	*Tapirus terrestris*

[162] The coordinates of the camera's locations and the list of species identified can be found at: Support documents\Biodiversity Support documents\Monitoreo biodiversidad

Class	Order	Family	Scientific Name
Mammalia	Cingulata	Chlamyphoridae	*Priodontes maximus*
Aves	Gruiformes	Rallidae	*Aramides cajaneus*
Aves	Galliformes	Cracidae	*Mitu tomentosum*

Source: South Pole, 2023, based on information provided by FFC[163]

Since January 2022, community wildlife monitoring was carried out through the iNaturalist platform. To date, 49 species have been identified, including *Priodontes maximus, Tapirus terrestris, Myrmecophaga tridactyla, Leopardus pardalis, Podocnemis unifilis, Eunectes murinus, Ramphastos vitellinus* and *Ara macao*, all of them cataloged as endangered (EN) species according to the IUCN (Table 38)[164].

Table 38. Faunal species identified in community monitoring through iNaturalist

Scientific Name	Common Name
Dasypus pastasae	Armadillo
Tamandua tetradactyla	Collared anteater
Ramphastos vitellinus culminatus	Channel-billed toucan
Hypnelus ruficollis	Russet-throated puffbird
Ascalapha odorata	Black witch
Ara macao	Scarlet macaw

[163] Support material is available at. Support documents\Biodiversity Support documents\Monitoreo biodiversidad

[164] Support material is available at. Support documents\Biodiversity Support documents\Monitoreo biodiversidad

Scientific Name	Common Name
Boa constrictor	Red-tailed boa
Chelonoidis carbonarius	Red-footed tortoise
Tapirus terrestris	South American tapir
Dasypus sabanicola	Long-nosed armadillo
Leopardus pardalis	Ocelot
Cerdocyon thous	Crab-eating fox
Podocnemis sp.	South American river turtle
Jabiru mycteria	Stork
Kinosternon scorpioides	Scorpion mud turtle
Chionomesa fimbriata	Glittering-throated emerald
Phimosus infuscatus	Bare-faced ibis
Sylvilagus floridanus	Eastern cottontail
Theraphosidae	Tarantulas
Hydrochoerus hydrochaeris	Capybara

Scientific Name	Common Name
Rhinella	Beaked toads
Odocoileus virginianus	White-tailed deer
Dryocopus lineatus	Lineated woodpecker
Crotalus durissus	Tropical rattlesnake
Epicrates maurus	Brown rainbow boa
Burhinus bistriatus	Double-striped thick-knee
Curculionidae	Snout beetles or true weevils
Hydropsalis maculicaudus	Spot-tailed nightjar
Rodentia	Rodents
Dasyprocta fuliginosa	Black agouti
Cuniculus paca	Lowland paca
Tayassu pecari	White-lipped peccary
Myrmecophaga tridactyla	Giant anteater
Aramides cajaneus	Grey-cowled wood rail

Scientific Name	Common Name
Priodontes maximus	Giant armadillo
Eurypyga helias	Sunbittern
Paroaria nigrogenis	Masked cardinal
Dasypus sp.	Long-nosed armadillos
Corallus ruschenbergerii	Common tree boa
Trachycephalus typhonius	Veined tree frog
Eunectes murinus	Green anaconda
Podocnemis unifilis	Yellow-spotted river turtle
Cairina moschata	Muscovy duck
Amphisbaena alba	Red worm lizard
Saturniidae	Saturniids, moths
Tropidacris collaris	Blue-winged grasshopper
Colobura dirce	Dirce beauty

Scientific Name	Common Name
Riodina lysippus	Neotropical metarlmark butterfly
Syrigma sibilatrix	Whistling heron

Source: South Pole, 2023, based on information provided by FFC[165]

Identification of endangered fauna species

Of the species identified in community and camera trap monitoring, seven species in some threat categories were found, according to the IUCN's Red List and Resolution 1912 of September 15, 2017 of the Ministry of Environment and Sustainable Development (MADS), see Table 39.

Table 39. Threatened fauna species

Scientific Name	Common Name	IUCN Category	Resolution 1912 of 2017
Myrmecophaga tridactyla	Giant anteater	VU	VU
Tayassu pecari	White-lipped peccary	VU	–
Tapirus terrestris	South American tapir	VU	CR
Priodontes maximus	Giant armadillo	VU	EN
Odocoileus virginianus	White-tailed deer	LC	CR
Podocnemis unifilis	Yellow-spotted river turtle	VU	EN

[165] Support material is available at. Support documents\Biodiversity Support documents\Monitoreo biodiversidad

Scientific Name	Common Name	IUCN Category	Resolution 1912 of 2017
Chelonoidis carbonarius	Red-footed tortoise	–	VU

Source: South Pole, 2023, based on information provided by FFC[166]

5.3.2 Biodiversity Monitoring Plan Dissemination (B4.3)

During this monitoring period (2021-2022) different actions were carried out to disseminate the project's biodiversity information, while continuous participatory spaces with the stakeholders were held in order to provide feedback on the monitoring plan. The participatory events that took place in 2021 and 2022 to discuss the biodiversity monitoring results are detailed in the table below:

Topic	Date of the event	No. of attendees	Stakeholder type
Dissemination of the progress of the forest carbon project	06/10/2021	6	Employees
Dissemination of the progress of the forest carbon project	09/06/2021	19	Employees
Dissemination of the forest carbon project	09/03/2021	6	Community
Dissemination of FFC activities	11/23/2022	4	Policy makers (Municipal Ombudsman of Puerto Carreño)
FFC project sustainability process	02/15/2022	6	Policy makers (Mayor's Office of Puerto Carreño)
Dissemination of FFC's social and environmental investment	08/25/2022	7	Policy makers (Mayor's Office of Puerto Carreño)
Dissemination of the FFC project results	11/25/2022	3	Policy Makers (Regional Autonomous Corporation of Orinoquia)
Dissemination of the FFC project results	02/01/2023	16	Employees
Dissemination of the FFC project results	02/02/2023	28	Employees
Dissemination of the FFC project results	02/11/2023	44	Community (Aceitico)

[166] Support material is available at. Support documents\Biodiversity Support documents\Monitoreo biodiversidad

Topic	Date of the event	No. of attendees	Stakeholder type
Dissemination of the FFC project results	02/13/2023	27	Community (La Venturosa)
Dissemination of the FFC project results	02/14/2023	35	Community (Morichalito)

Source: South Pole, 2023, based on information provided by FFC[167]

Also during 2022, a participatory monitoring strategy was developed with the aim of raising awareness among different stakeholders about the importance of protecting biodiversity, and to urge them to report relevant information of local biodiversity. This was achieved through announcements via email and WhatsApp as shown in the following table.

Table 40. Outreach activities related to the project's biodiversity component

Date	Original announcement (Spanish)	Announcement translation	Objective	Channel
09/15/2022	🐆🦎¡Si estás en campo, únete al monitoreo participativo!🐆🦎	🐆🦎If you are in the field, join the participatory monitoring!🐆🦎	Engage collaborators in the participatory monitoring program, encouraging biodiversity protection in their territories.	WhatsApp and e-mail
09/21/2022	🐆🦎Cuidemos las especies de nuestro entorno🐆🦎	🐆🦎Let's take care of the species around us🐆🦎	Encourage biodiversity protection through videos of species inhabiting in the area.	WhatsApp and e-mail
09/28/2022	🍓🌳Estamos en la semana FSC🌳🍓	🍓🌳We are in the FSC Week🌳🍓	Inform employees about the FSC certification and its importance for the company's development.	WhatsApp and e-mail
09/30/2022	¿Sabías qué en FFC protegemos aproximadamente 8.500 hectáreas de bosques naturales?	Did you know that at FFC we protect approximately 8,500 hectares of natural	Inform employees about the FSC certification and its importance for the company's development.	WhatsApp and e-mail

[167] Support material is available at. Support documents\Biodiversity Support documents\Capacitaciones de biodiversidad

Date	Original announcement (Spanish)	Announcement translation	Objective	Channel
	🌳🌳🌳	forests?🌳🌳🌳		
10/03/2022	Ganador septiembre - Monitoreo participativo 🏆📷	September Winner - Participatory Monitoring 🏆📷	Reward the collaborators who were part of the participatory monitoring, thus encouraging their continuous support.	WhatsApp and e-mail
10/05/2022	📷🦩¡Participa en el monitoreo participativo!📷🦩	📷🦩Join the participatory monitoring!📷🦩	Engage collaborators in the participatory monitoring program, encouraging biodiversity protection in their territories.	WhatsApp and e-mail
11/02/2022	📷 □Ganadores monitoreo participativo - Octubre📷 □	📷 □Participatory Monitoring Winners – October 📷 □	Reward the collaborators who were part of the participatory monitoring, thus encouraging their continuous support.	WhatsApp and e-mail
11/03/2022	📷🦁Monitoreo participativo- Reto Noviembre📷🦁	📷🦁Participatory Monitoring – November Challenge 📷🦁	Engage collaborators in the participatory monitoring program, encouraging biodiversity protection in their territories.	WhatsApp and e-mail
11/09/2022	🌳□¿En qué consiste la certificación FSC?🌳□	🌳□What is the FSC certification?🌳□	Inform employees about the FSC certification and its importance for the company's development.	WhatsApp and e-mail

Source: FFC, 2022.

5.4 Optional Criterion: Exceptional Biodiversity Benefits

The project does not seek to be validated at the Gold Level for biodiversity or climate change adaptation benefits.

5.4.1 Trigger Species Population Trends (GL3.3)

The project does not seek to be validated at the Gold Level for biodiversity or climate change adaptation benefits.

6 ADDITIONAL PROJECT IMPLEMENTATION INFORMATION

There is no additional information related to the implementation of the Project.

7 ADDITONAL PROJECT IMPACT INFORMATION

There is no additional project impact information.