



Gold Standard[®]
for the Global Goals

TEMPLATE

MONITORING REPORT

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VERSION **v. 1.1**

RELATED SUPPORT - **TEMPLATE GUIDE Monitoring Report v. 1.1**

This document contains the following Sections

Key Project Information

SECTION A - Description of project

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SECTION C - Description of monitoring system applied by the project

SECTION D - Data and parameters

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KEY PROJECT INFORMATION

Key Project Information

GS ID (s) of Project (s)	4221
Title of the project (s) covered by monitoring report	Vichada Climate Reforestation Project
Version number of the PDD/VPA-DD (s) applicable to this monitoring report	6
Version number of the monitoring report	4
Completion date of the monitoring report	28/06/2025
Date of project design certification	29/08/2016
Date of Last Annual Report	October 2023
Monitoring period number	4 th monitoring period
Duration of this monitoring period	01/10/2022-31/08/2024
Project Representative	Julian Ekelhof FORLIANCE GmbH
Host Country	Colombia
Activity Requirements applied	Land Use and Forestry Activities/Risks & Capacities
Methodology (ies) applied and version number	Methodology for Afforestation/Reforestation (A/R) GHG emission reduction & sequestration V 2.0
Product Requirements applied	<input checked="" type="checkbox"/> GHG Emissions Reduction & Sequestration

Table 1 – Sustainable Development Contributions Achieved

Sustainable Development Goals Targeted	SDG Impact	Amount Achieved	Units/ Products
13 Climate Action (mandatory)	Emissions Reductions	269,960	VERs
8 Decent Work and Economic Growth	Increased employment opportunities	381	jobs
	Enhanced opportunities for income generation	379	employees earning above local minimum wage
15 Life on Land	Increased area under tree canopy cover	21,413.99	Ha of Trees Planted
	Enhanced biodiversity	110	number of protected threatened species in the project area & conservation status of species
	Enhanced biodiversity	11,994.17	Ha of protected Land Area

Table 2 - Product Vintages

Start Dates	End Dates	Amount Achieved	
		Emission reduction (tCO ₂)	VERs (post-buffer deduction)
01/10/2022-	31/12/2022	35,095	28,076
01/01/2023	31/12/2023	140,765	112,612
01/01/2024	31/08/2024	94,100	75,280

SECTION A. DESCRIPTION OF PROJECT

A.1. General description of project

The Vichada Climate Reforestation Project stands as a transformative initiative aimed at restoring degraded grasslands, enhancing biodiversity, and supporting local communities through sustainable afforestation efforts. Led by Inverbosques and Aldea Forestal, the project's environmental and social initiatives not only contribute to carbon sequestration but also enrich the lives of residents through job creation, community support, and sustainable practices.

The forestry project is implemented in the Eastern Colombian Department of Vichada, within and around the Bitá River Basin. The applied measure to remove GHG from the atmosphere is the afforestation of degraded grasslands (baseline) with three main tree species: *Acacia* sp, *Pinus* sp. and *Eucalyptus* sp. In the last two years, the project participants have conducted research studies and pilot projects to assess the success rate of native species planting as a transitional step for biodiversity restoration; hence supporting the transition from degraded areas into a forested area. By using the above three species the project participants take the first step helping to provide the soil stability, structure, and microclimate improvements that enable native species to establish more effectively, especially on highly degraded lands.

The project boundary is defined as follows: the project region where all project areas are located and where future new areas may be added are the municipalities of Puerto Carreño, La Primavera, and Cumaribo (grouped project).

Independently managed by two project participants, Aldea Forestal and Inverbosques, the project has implemented and continues to establish forest plantations of *Eucalyptus urophylla*, *Eucalyptus tereticornis*, *Eucalyptus pellita*, *Acacia mangium*, and *Pinus caribaea* with the aim of restoring the degraded lands for a transitional natural forest regeneration. During the current monitoring period Aldea Forestal still managed 3,282.26 certified hectares, while Inverbosques has added new planted areas to the project design reaching out to 18,131.73 ha. The new areas added for validation sum up 2,892.12 ha

The project was validated and verified for the first time in 2016 under Gold Standard Version 0.9 requirements. Three years later in 2019, it was verified for the second time and transitioned to the GS4GG version. In 2023, the project was successfully

revalidated and underwent a Design Change; followed by its third monitoring event following under Gold Standard. In 2024, the project is in its 4th monitoring period (2022-2024).

Temporal: For this performance review 2022-2024, the project developer has submitted and got approval for a deviation request from the implicit rule that all project participants must participate in a verification event at the same time. The temporary absence of monitoring data for the period 2022-2024 from Aldea Forestal does not impact the integrity of project data. The project developer ensures that all monitoring data from all project lands, including those temporarily absentees, will be available in one of the upcoming performance reviews within the allotted 5-year period rule from Gold Standard.

A.2. Location of project

The project is in Vichada department, southeastern Colombia. It borders with Venezuela by the east, Meta department by the west, Casanare and Arauca departments by the north, and Guainía department by the south. The project region where all project areas are located and where future new areas may be added are the municipalities of Puerto Carreño, La Primavera, and Cumaribo (Figure 1).

The whole project area spreads from -70.0892904239815948° East, 4.6388864859050800° North to -67.7133614723530854° East, 6.1806146130301522° North (EPSG:4326).

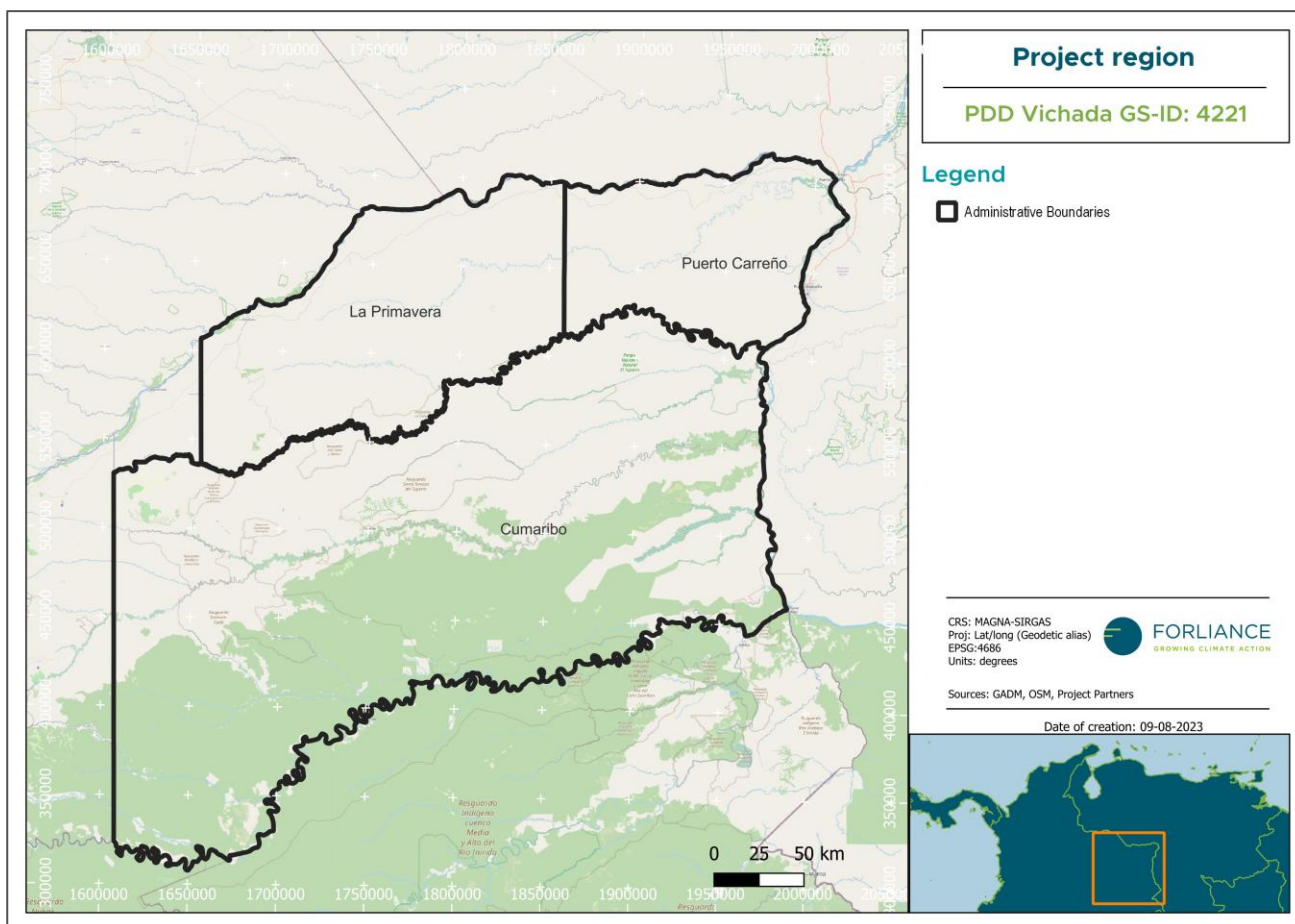


Figure 1. Project region

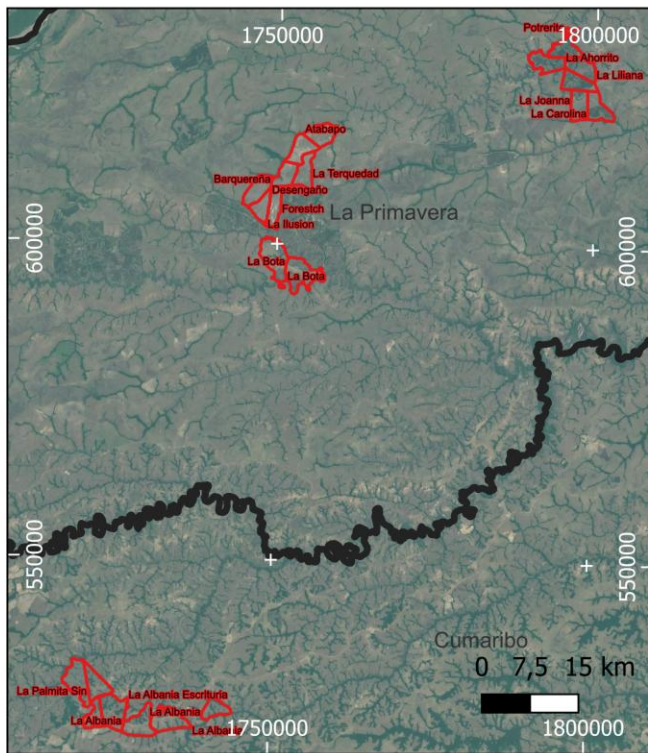
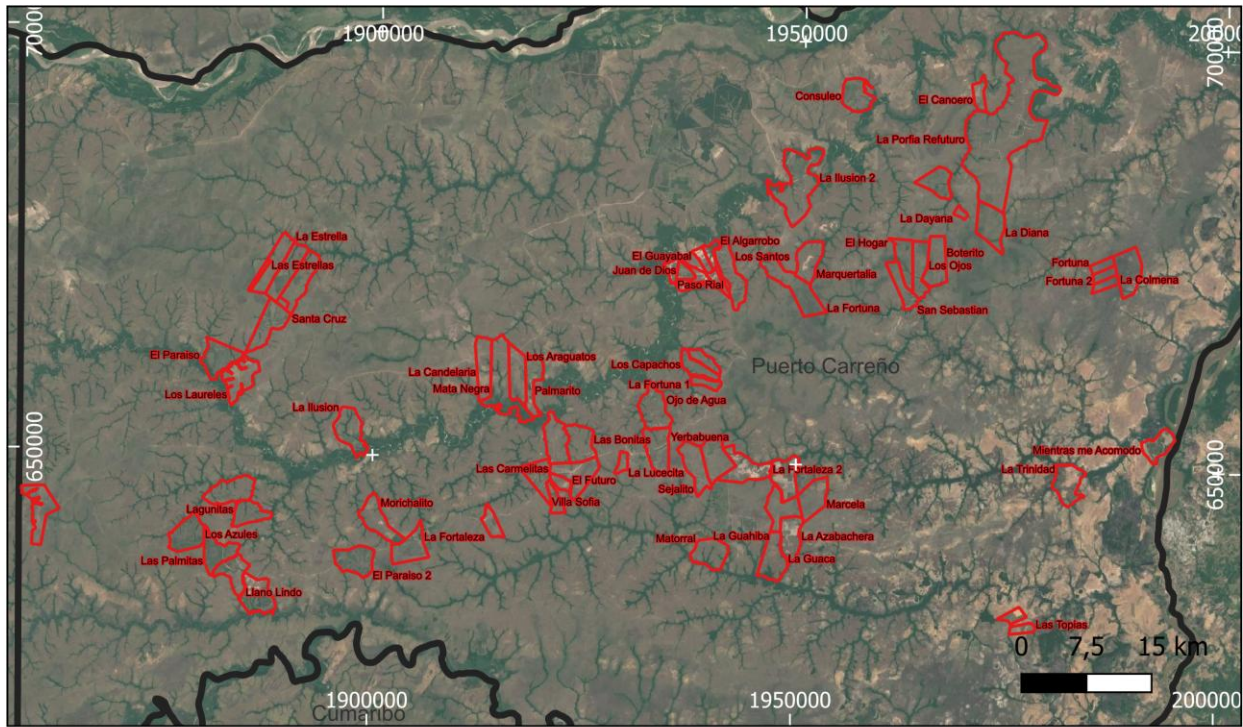
The project area is spread over 89 properties located in the project region (Table 3 and Figure 2). Out of them, Inverbosques is responsible for managing 83 properties in Puerto Carreño, La Primavera and Cumaribo, while Aldea Forestal manages 6 properties in La Primavera and Cumaribo.

Table 3 - Managed properties during current monitoring period

Inverbosques			Aldea Forestal
Atabapo	La Diana	Los Ojos	La Ahorrito
Barquereña	La Esmeralda	Los Sabanales	La Carolina
Boterito	La Estrella	Los Santos	La Joanna
Catherine	La Fortaleza	Marcela	La Liliana
Consuleo	La Fortaleza 2	Marquertalia	Potrerito
Desengaño	La Fortuna	Mata Negra	Santa Helena
El Alcaravan Casuarito	La Fortuna 1	Matorral	
		Mientras me	
El Algarrobo	La Guaca	Acomodo	
El Arava	La Guahiba	Morichalito	

El Canoero	La Ilusion	Moriche Solo
El Caricari	La Ilusion 2	Ojo de Agua
El Condolirio	La Lucecita	Palmarito
El Futuro	La Palmita	Paso Rial
El Guayabal	La Palmita Sin	Roraima
	La Porfia	
El Hogar	Refuturo	San Jorge
El Morichal	La Terquedad	San Sebastian
El Paraiso	La Trinidad	Santa Cruz
El Paraiso 2	Lagunitas	Sejalito
El Porvenir	Las Bonitas	Sol y Sombra
Forestch	Las Campanitas	Villa Sofia
Fortuna	Las Carmelitas	Yerbabuena
Fortuna 2	Las Estrellas	
Juan de Dios	Las Neblinas	
La Albania	Las Palmitas	
La Albania Escrituria	Las Topias	
La Azabachera	Leon	
La Bota	Llano Lindo	
La Brasilia	Los Araguatos	
La Candelaria	Los Azules	
La Colmena	Los Capachos	
La Dayana	Los Laureles	

Total Inverbosques: 83			Total Aldea: 6
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Project area

PR 2024 Vichada GS-ID: 4221

Legend

- Project Properties
- Administrative Boundaries

Company	Property area (ha)
Inverbosques	99,150.81
Aldea Forestal	7,371.26
Total	106,522.07

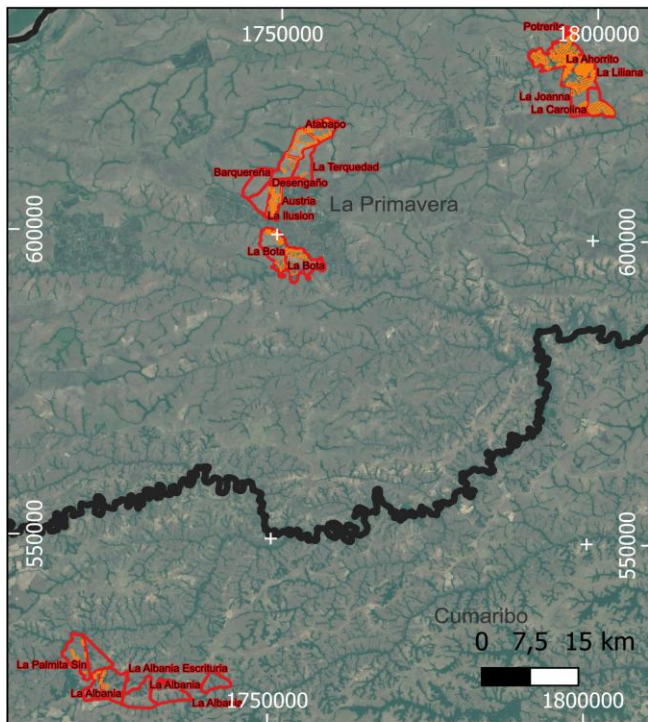
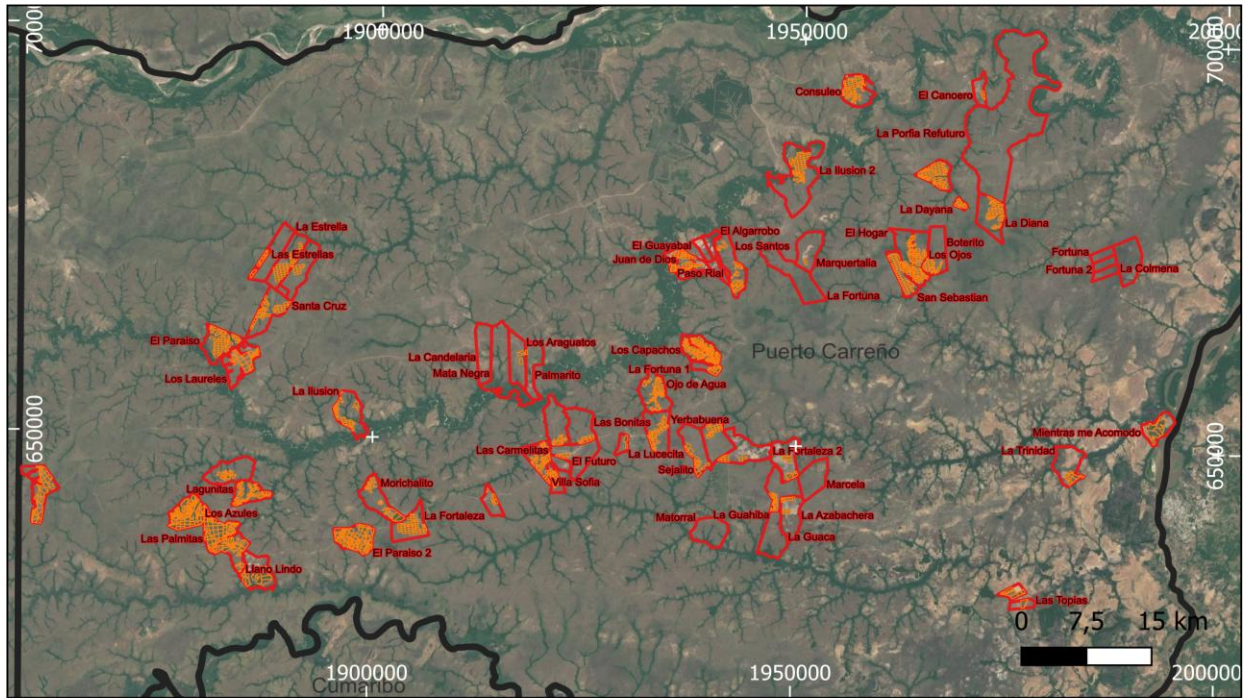
CRS: MAGNA-SIRGAS / Colombia East zone
 Proj: Transverse Mercator
 EPSG:3118
 Units: meters



Sources: GADM, OSM, Project Partners

Date of creation: 05-11-2024

Figure 2a. Project area



Planted project area

PR 2024 Vichada GS-ID: 4221

Legend

- Planted project area
- Project Properties
- Administrative Boundaries

Company	Property area (ha)
Inverbosques	18,131.73
Aldea Forestal	3,282.26
Total	21,413.99

CRS: MAGNA-SIRGAS / Colombia East zone
 Proj: Transverse Mercator
 EPSG:3118
 Units: meters

FORLIANCE
GROWING CLIMATE ACTION

Sources: GADM, OSM, Project Partners

Date of creation: 18-12-2024

Figure 2b. Project planted area

A.3. Reference of applied methodology

>> The Gold Standard Afforestation/Reforestation (A/R) GHG Emissions Reduction & Sequestration Methodology V 2.0 names six criteria for projects to apply the methodology. Their compliance is described below:

a. Projects can apply all silvicultural systems:

*i. **Conservation forests (no use of timber)***

ii. Forests with selective harvesting

iii. Rotation forestry

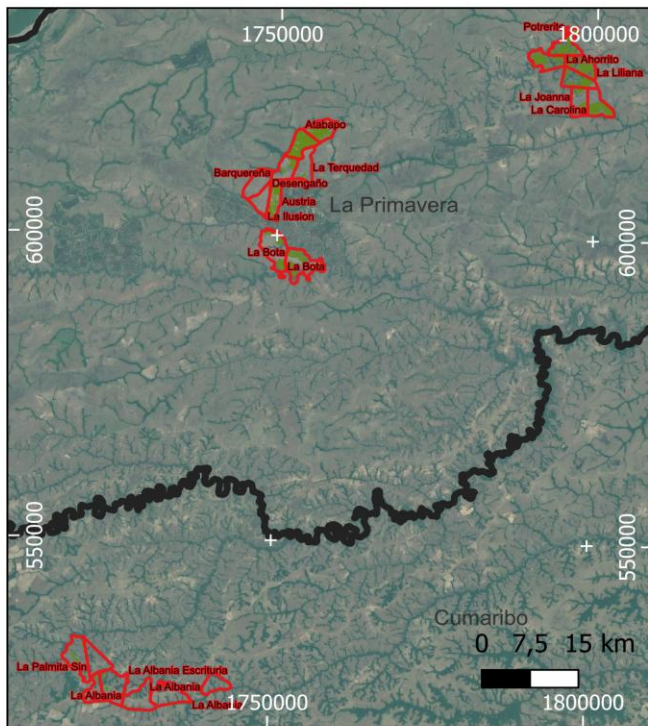
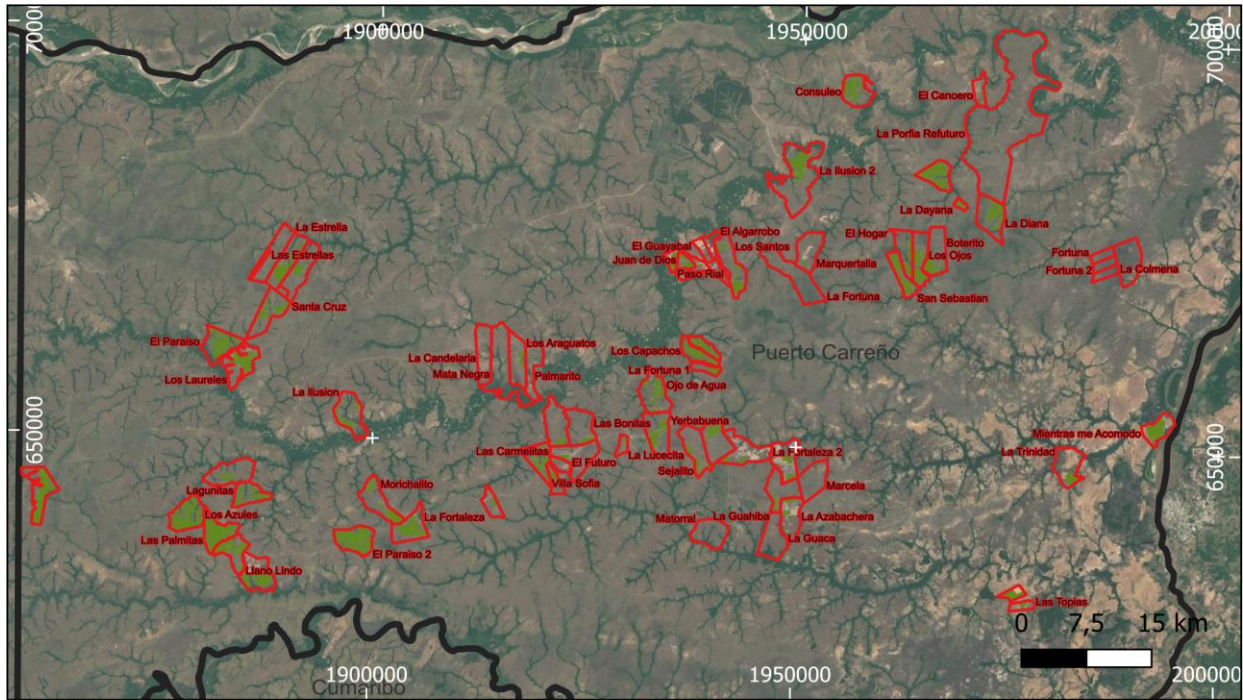
The project applies a conservation system (i).

b. All projects can include agriculture (agroforestry) or pasture (silvopasture) activities.

The project does not include agroforestry nor silvopastoral activities.

c. Project Areas shall not be on wetlands.

The project areas are not on wetlands. An eligibility analysis was developed from the project start date and also 10 years prior the start date. At every new added area within the project region, an eligibility analysis is performed. See Figure 3a and 3b.



Project Eligibility

PR 2024 Vichada GS-ID: 4221

Legend

- Project Properties
- Administrative Boundaries

Project Eligibility

- false
- true

Eligibility	Area (ha)
Eligible	21,413.99
Non-Eligible	9.94
Total	21,423.92

CRS: MAGNA-SIRGAS / Colombia East zone
 Proj: Transverse Mercator
 EPSG:3118
 Units: meters

FORLIANCE
GROWING CLIMATE ACTION

Sources: GADM, OSM, Project Partners

Date of creation: 18-12-2024

Figure 3a. Overall Eligibility Analysis Map

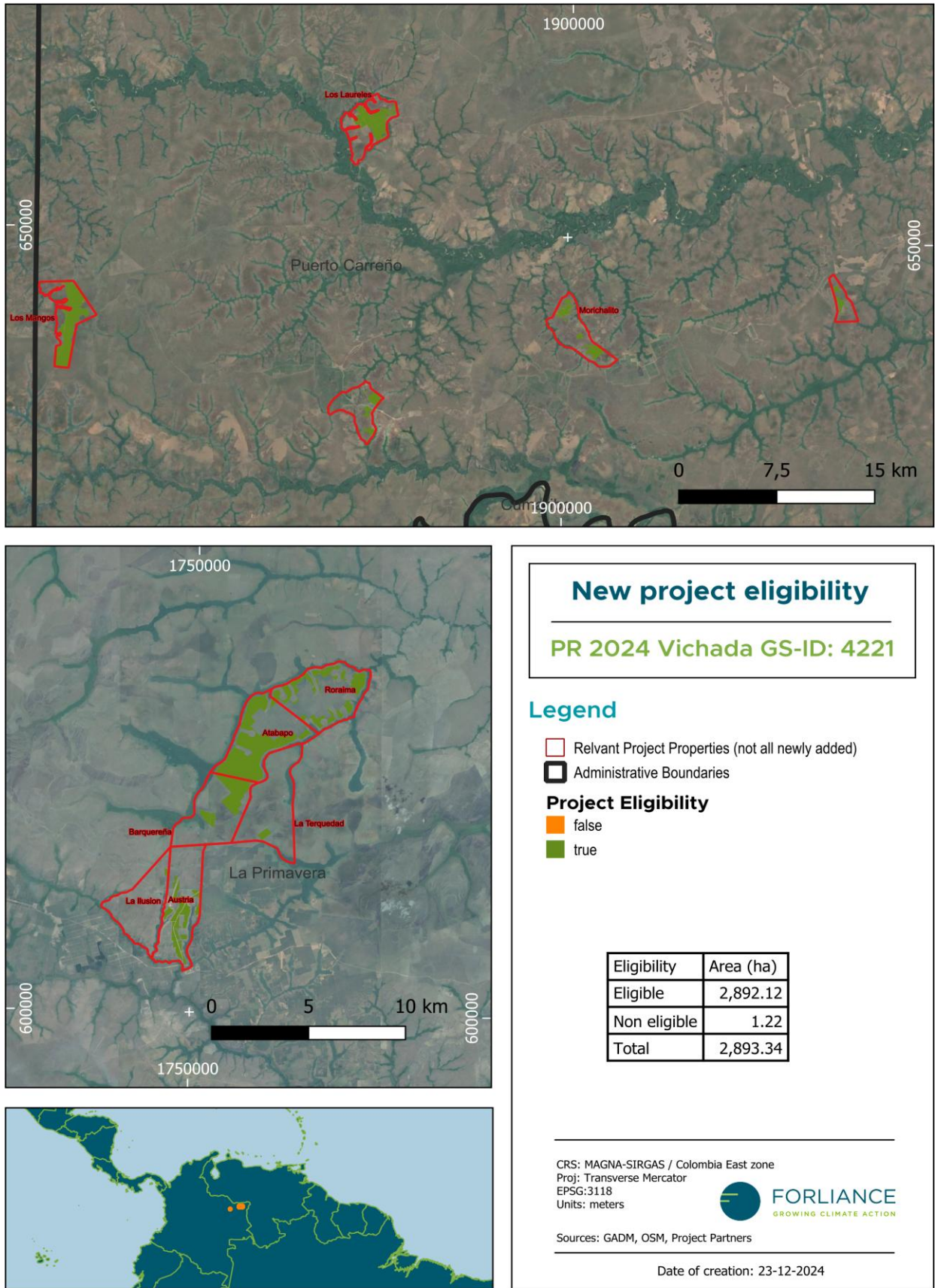


Figure 3b. New areas added - Eligibility Analysis Map

d. Project Areas with organic soils shall not be drained or irrigated (except for irrigation for planting).

The project area does not have organic soil but loamy mineral soils¹. No drainage or irrigation takes place in the project apart from during the nursery phase. See forest management plans.

e. Soil disturbance (through ploughing, digging of pits, stump removals, infrastructure, etc.) on organic soils shall be in less than 10% of the area that is submitted to certification (not 10% of the entire project area).

The project area does not have organic soil.

Further, soil disturbance is insignificant. Soil is prepared manually and with small machinery as part of land preparation activities and only during planting years.

f. The most likely scenario without the project (baseline scenario) shall be defined for the project area. This scenario shall not show any significant increase of the Baseline biomass ('tree' and 'non-tree').

The baseline scenario is degraded grassland areas, which does not represent an increment in baseline biomass. See PDD for more details.

A.4. Crediting period of project

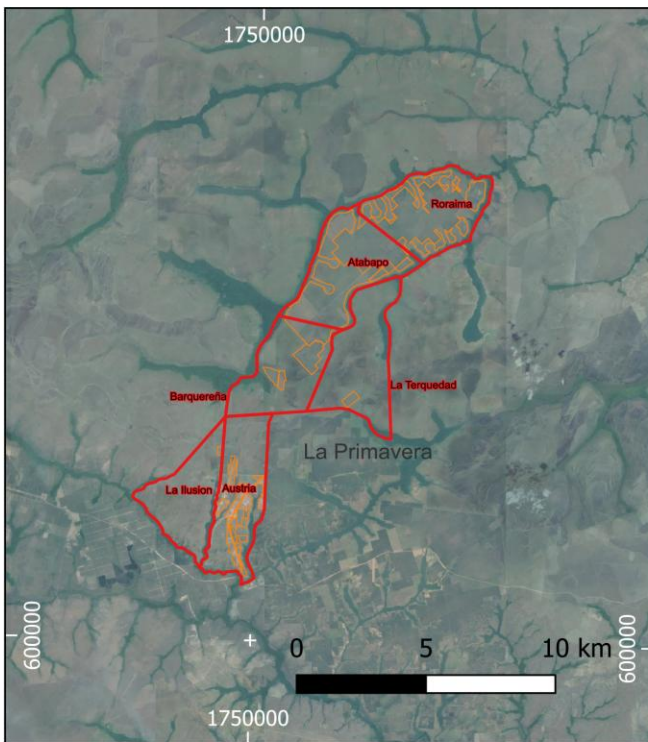
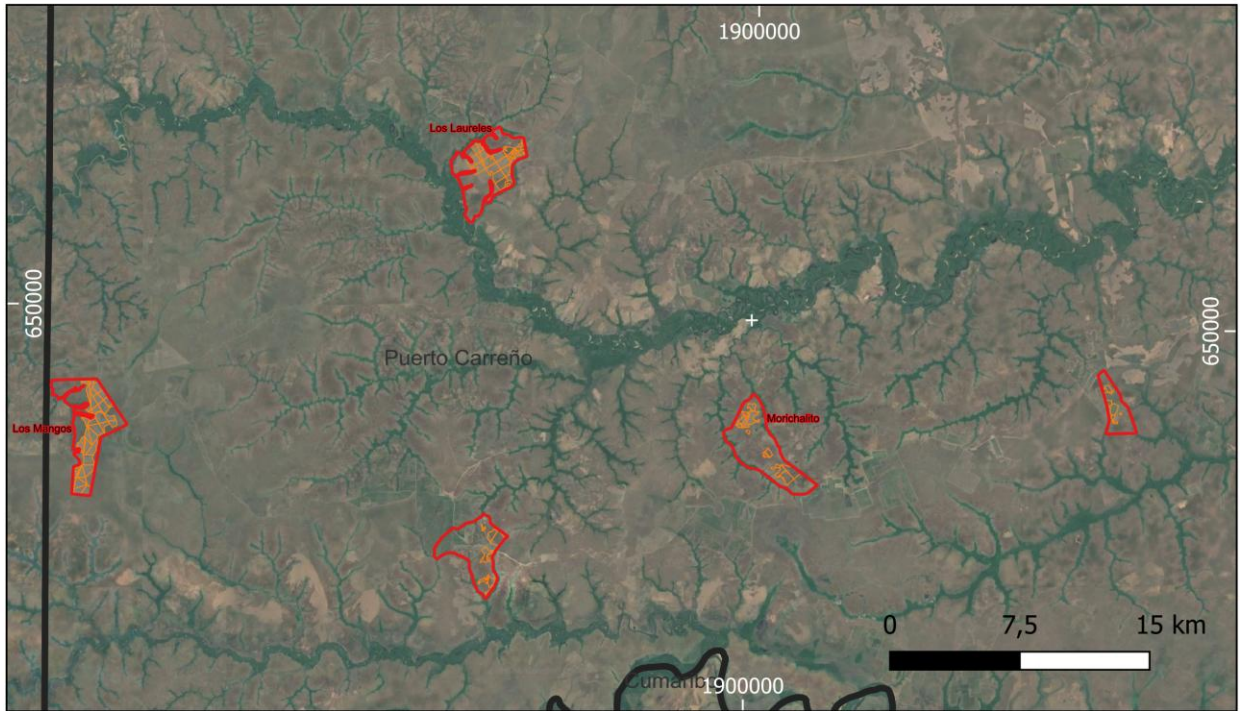
The crediting period is 30 years (02/02/2006-01/02/2036)

¹ See 09_Forest Management

SECTION B. IMPLEMENTATION OF PROJECT

B.1. Description of implemented project

During the monitoring period 2022-2024 no changes were made to the Design Certified PDD which has been revalidated in 2023. Additional planted areas were added by Inverbosques for validation, the area is equal to 2,892.12 ha. Total planted area for current monitoring period is 21,413.99 ha planted (Figure 4).



New planted project area
PR 2024 Vichada GS-ID: 4221

Legend

- Planted project area
- Relevan Project Properties (not all newly added)
- Administrative Boundaries

Company	New planted area (ha)
Inverbosques	2,892.12
Aldea Forestal	0
Total	2,892.12



CRS: MAGNA-SIRGAS / Colombia East zone
 Proj: Transverse Mercator
 EPSG:3118
 Units: meters



Sources: GADM, OSM, Project Partners

Date of creation: 23-12-2024

Figure 4. New areas added – planted project area

Information on Aldea Forestal remains equal to the third performance review as they are not pursuing a verification event. The information below remains as a general framework but no indicator has been monitored.

Aldea Forestal:

For this monitoring period, the project participant, Aldea Forestal, has not pursued a verification. Nonetheless, the company continuous to follow its Forest management plan every year according to FSC certification. Furthermore, for the HSEQ (Health, Security, environmental and quality) activities, the organization implemented individual procedures and supporting documentation is recorded in paper logbooks which are digitalized (scanned) and properly stored in the project documentation system. A summary of activities performed annually is as follows:

Table 4 Summary of yearly activities by Aldea Forestal (not under verification)

Topic	Periodicity	Description
Capacity building activities	Every month	At the beginning of each year, Aldea Forestal set up its training program topics for the employees for the complete year.
Monitoring and audit FSC	Once per year	Annual auditing of FSC certification. See FSC annual auditing report including Aldea Forestal
Internal and external firewall maintenance	Weekly- 6 months per year	Activity to prevent any risk of forest fires.
Forest fires brigades / network	Yearly	Several meetings are conducted every year within Aldea Forestal employees and local communities. Further, networks are created at municipality level and village as prevention measure.

Topic	Periodicity	Description
Integrated Pest Management Diseases and Weeds (MIPEM)	First week of the month	Yearly activities for pest management
Local stakeholder consultation	Throughout the year	Regular and frequent meetings and local consultations about social, environmental, and climate topics (e.g., water, soil, CO ₂ sequestration, biodiversity protection). Positive impacts highlighted are: <ul style="list-style-type: none"> - Opportunity and quality of job employment - Training and capacity building opportunities - Relationship with local population and neighbors
Research activities	Throughout the year	Aldea Forestal supports research activities in its forested areas
HSEQ (Health, Security, environmental and quality) activities	Monitored once per month	From January to December

Inverbosques:

The implemented activities during the monitoring period (2022-2024) for Inverbosques are described below.

Inverbosques comprises seven management divisions: nursery, forest information management, silviculture, patrimony protection and security, projects control, human resources, and financial planning.

The divisions of nursery, silviculture, and patrimony employ the most people; around 80% of all the employees work in these divisions. For instance, the Nursery division is divided into the General and Research and Development divisions.

The Nursery Division is the heart of the operations of the entire project; here, Eucalyptus mother plants are managed to obtain viable and suitable cuttings that are extremely monitored in the greenhouse stage, considering parameters such as relative humidity and temperature. Finally, after having developed enough roots to survive outside the greenhouse (their final place in nature), the seedlings are transferred to the adaptation zone, where their resilience and mechanical resistance are developed to be ready for delivery to the final field. Along the same lines, native species management starts with the seed scarification processes for sprouting and the adaptation phase before final planting.

The research and development division are a crucial component of the landscape restoration process that the Vichada Climate project wants to achieve. This division builds up native species knowledge in seed germination, cost-effective scarification processes, most suitable substrate, plantation and wood density.

The Silvicultural direction encompasses the Geographic Information System (GIS) and the silvicultural units. The GIS unit categorizes the new properties through land use cover analysis to determine the potential areas to be planted (degraded) and the conservation areas. On the other hand, the Silvicultural unit oversees the soil preparation, afforestation, monitoring, and maintaining Eucalyptus and native species plantations.

Inverbosques has continued to increase their efforts in making the Vichada climate project a successful project that benefits not only the environment but the community surrounding it. Table 5 below highlights the activities that were led by Inverbosques through this monitoring period.

Table 5 - Summary of yearly activities by Inverbosques

Topic	Periodicity	Description
Capacity building activities for communities and company employees	Throughout the year	<p>Inverbosques implements continuous socialization about the project activities to local communities. Amount the efforts are:</p> <ul style="list-style-type: none"> - Inhouse training: They plan and train their employees and other stakeholders on forest fires, first aid, use of machinery, waste management, among others - Issuance of Newspaper twice per year called "Ruta de Madera" where the topics are: recognition to neighbors networking and participation, environment, events and training opportunities, conservation and sustainability. 10,000 copies have been distributed to rural communities, Community Boards, Local authorities, Community leaders, Indigenous people, Government entities, educational institutions, Inverbosques collaborators, and contractors. - Workshops and training sessions on topics such as waste management, silvicultural practices, and forest fire prevention and mitigation

Topic	Periodicity	Description
Monitoring and audit FSC	Once per year	Annual auditing of FSC certification. See FSC annual auditing report
Internal and external firewall maintenance	Weekly- 6 months per year	Activity to prevent any risk of forest fires.
Forest fires brigades / network	Yearly	Several meetings are conducted every year within Inverbosques employees and local communities. Further, networks are created at municipality level and village as prevention measure.
Integrated Pest Management Diseases and Weeds (MIPEM)	first week of the month	Yearly activities for pest management
Local stakeholder consultation	Throughout the year	Regular and frequent meetings and local consultations about social, environmental, and climate topics (e.g., water, soil, CO ₂ sequestration, biodiversity protection).
Research activities	Throughout the year	Inverbosques currently assessing assisted natural regeneration with native species
Apiculture	Throughout the year	Inverbosques has apiculture activities both within the project and also provide capacity building to community members
Free Prior and Informed Consent and Indigenous People Support	Once per year	Seven Indigenous Reserves (30 communities from four ethnic groups) have been consulted and informed. Indigenous reserves: <ul style="list-style-type: none"> • Guacamayas Maiporé • Kanalitojo • Piaroa de Cachicamo

Topic	Periodicity	Description
		<ul style="list-style-type: none"> • Caño Mesetas Dagua • Caño Bachaco • Caño La Hormiga • Caño Guáripa <p>These communities were supported in strengthening three components (identified in participatory manner):</p> <ul style="list-style-type: none"> • Organization: giving Technical Assistance in the Formulation of Life Plans and Revision of Internal Rules and Regulations. • Cultural & spiritual: Improving Malocas (ancestral long house used by indigenous people for meetings and ceremonies). • Socio-economic: Technical diagnosis of Conucos (Small plot of land for family farming) and food safety. Training in traditional use and management of fires (slash & burn systems) that surrounded communities do, additional training in solid waste and water. Support for Conucos productive projects.
eDNA sampling	Once per year	To track the biological transformation of the landscape and guide their restoration efforts. eDNA data collected at scale (50 samples) allows for comprehensive monitoring of soil biodiversity, providing crucial data on the health and functionality of the ecosystem as it recovers. The project

Topic	Periodicity	Description
		aims not only to capture carbon and generate carbon credits but also to restore biodiversity and create a model for large-scale ecological restoration in degraded tropical savannas. Method: eDNA metabarcoding to analyze 50 soil samples, identifying fungi and other soil organisms present in each sample and generating a comprehensive inventory of soil biodiversity across the different ecosystem types.
Community involvement	Throughout the year	Among the various activities Inverbosques does with the communities we find: <ul style="list-style-type: none"> - Support for school gardens - Support in local school activities and engagement in holiday celebrations

Transversal activities:

Information on Aldea Forestal is provided as general information as it was not verified in the current performance review event. The information remains the same as from the last verified certification event. For Inverbosques, it corresponds to the monitoring period 2022-2024.

Table 6 - Transversal activities developed by both organizations

Type of activity	Aldea Forestal	Inverbosques
Activities during Monitoring period 2019-2022-2024		
Stakeholder Socialization	The organization has a schedule program for communication,	The organization performs yearly internal (employees)

Type of activity	Aldea Forestal	Inverbosques
Activities during Monitoring period 2019-2022-2024		
	<p>participation, consultation, grievance, and dispute resolution. It is socialized annually with the community, which has the opportunity to communicate with the organization through different means.</p> <p>The organization has not received any complaints or claims in its 15 years of activities.</p> <p>During the years 2020, 2021 and 2022, no complaints or claims have been received. Support documentation >05_Social (local communities)</p>	<p>and external stakeholder meetings to socialize the project and advance main topics related to silvicultural activities, FSC Certification, and Capacity Building for the identification of social and environmental impacts. The organization executes yearly surveys, which provides feedback for the next socialization activities and elaboration of mitigation activities.</p> <p>Support documentation >05_Social (local communities)</p>
FSC Certification	<p>The group FSC certification (License number FSC-C150409) has successfully maintained the FSC responsible forest management certification under the code GFA-FM/COC-004132, issued from the 11th of November 2019 until the 10th of November 2024. The project participants successfully recertified in 2024, extending their current certification cycle up to 25th of November 2029. Supporting documentation can be found in the Forest Management Folder > FSC Certificates & Reports.</p>	
Records of implementation of activities	<p>Both organizations have documentation procedures to register the execution and results of yearly activities. At least once per month all activities related to the forest management plan and schedule are recorded (in paper). Supporting documentation in folder Plan Management Plan</p>	
Research	Permanent Plot Monitoring with the University of Tolima (UT)	Internal research on native species planting

Type of activity	Aldea Forestal	Inverbosques
Activities during Monitoring period 2019-2022-2024		
	UT Forest Inventory Research on Potential Products	
Monitoring of Biodiversity	In 2019, the company formulated its HCV plan and designed a brigade dedicated to monitoring and record the results of conservation activities and biodiversity records.	Elaboration of a participatory biodiversity monitoring plan involving citizen science and installation of camera traps. Strategic alliance with OMACHA foundations to Wildlife monitoring in the Bita River buffer zone. eDNA sampling to identify fungi and other soil organisms present in 50 samples across five ecosystem types; and generate a comprehensive inventory of soil biodiversity across the different ecosystem types. Support info> 02_Biodiversity_SDG 15

B.1.1 Forward Action Requests

There is one remaining FAR open from the Design Change review report; and three FAR from the last Performance Review event.

Table 7 - Addressing open FARs

FAR ID	Description	Action taken	Supporting documentation
FAR01	FAR – The PD shall have to clarify the issuance history of all 3	The PD has generated a history table with the issued credits since the validation and previous	Excel "VICH22_PR2024_

FAR ID	Description	Action taken	Supporting documentation
	participants and a clear division of credit to demonstrate that there is no risk of double-counting.	performance review events of the project. The Excel table is available to the VVB ensuring transparency and no double-counting in the project history.	Inverbosques_130 225-GS”
From last Performance review event			
FAR 01	<p>FAR- The PD must upload the supporting documentation "Vichada eligibility analysis report" and related shapefiles used for constructing the image on Page 46 of the Verification Report.</p> <p>VVB in charge of validation and verification shall verify and assess the eligibility documents as mentioned above during the course of next performance certification.</p>	<p>For the areas added in the Performance Review 2024, we have uploaded the eligibility analysis report which explains the multilayered analysis consisting of a forest cover change analysis and a wetland extent analysis. The results show that project activities are not taking place on historic wetland area following the methodology of the approved eligibility analysis of the first performance review. This analysis included a historic forest non-forest analysis according to the plant year as well as a wetland area check based on a credible, international source: The JRC Global Surface water product with information from 1984 onwards.</p>	<p>Supporting documentation in FAR 01 folder</p> <ul style="list-style-type: none"> • Eligibility Report PR2024 • Vichada PDD Eligibility analysis 1996-2006 • Kmz file showing eligible area
FAR 02	FAR – The PD must upload the land	The PD has uploaded the requested information in folder	<ul style="list-style-type: none"> • Folder with the land titles of

FAR ID	Description	Action taken	Supporting documentation
	<p>titles/tenure or sample contracts on the SharePoint as supporting document in support of the claim that the PD secured titles.</p> <p>VVB in charge of validation and verification shall verify and assess the land title and tenure documents as mentioned above during course of next performance certification.</p>	<p>FAR 2 regarding the land title / contracts of all project areas, including the new areas added.</p>	<p>the new areas added</p> <ul style="list-style-type: none"> • Folder with the contracts of every project property • Example of a contract for a property in Folder "VICH24_New areas added" • Additional information on Land selection process
FAR 03	<p>The VVB in charge of validation and verification shall assess if the project has incorporated a proportion of the native species during course of next performance certification.</p>	<p>The project participant has already started to do an assessment for enrichment of forest plantation with native species for landscape management, biodiversity development, water regulation, soil enrichment, and carbon sequestration. They are assessing if a natural succession from forest plantation to native species forest is feasible or act through an assisted natural</p>	<ul style="list-style-type: none"> • Photos from planted native species • Videos from natural regeneration in already plated areas

FAR ID	Description	Action taken	Supporting documentation
		<p>succession depending on the area characteristics. There are 6 native species selected (supporting documentation) for forest enrichment activities. It is expected the forest enrichment with native species follows a slow succession towards a natural forest by end of the crediting period. The project participants will continue assess and implement these activities and reported in further monitoring reports. Lastly, in the auditing site visit with the VVB, it was possible to visit the forest nursery area where native species are being propagated, as well as the areas where they are planted as part of enrichment activities.</p>	

B.2. Post-Design Certification changes

>>

B.2.1. Temporary deviations from the approved Monitoring & Reporting Plan, methodology or standardized baseline

>>N/A

B.2.2. Corrections

>>N/A

B.2.3. Changes to start date of crediting period

>>N/A

B.2.4. Permanent changes from the Design Certified monitoring plan, applied methodology or applied standardized baseline

Inverbosques added new certified areas to the project planted area. The new area for validation sum up 2,892.12 ha.

B.2.5. Changes to project design of approved project

>> No current change from the latest approved PDD.

SECTION C. DESCRIPTION OF MONITORING SYSTEM APPLIED BY THE PROJECT

>> The project participant, Aldea Forestal, has not been included for this monitoring period. Hence data for this participant remains the same as the last performance review. To provide a comprehensive approach of the project, the PD has decided to no delete the information related to Aldea Forestal but to keep what has already been verified.

SDG 13

The sampling plan methodology follows the “Sourcebook for Land Use, Land-Use Change and Forestry Projects” by Pearson et al., 2005. It was implemented autonomously by each project participant² as summarized below.

Table 8 - Summary of forest monitoring methodology per company

Step	Phase	Project participant	
1	Stratification	A stratum – or Modelling Unit- is defined as a coherent area of one planted species of the same planting year belonging to one company. Planted areas were stratified for both companies to cover trees growth variability based on company, establishment year and species. For instance, AF-Am-2009 means an Aldea Forestal stand of Acacia mangium and established in 2009.	
Step	Phase	Aldea Forestal	Inverbosques
2	Forest inventory design	Randomly stratified sampling	Randomly_stratified sampling
3	Sampling size	Confidence level of 95%, statistical error equal or less than 10%, variability level, and effective area per stands are	Confidence level of 95%, statistical error equal or less than 10%, variability level, and effective area per stands are considered to determine

² Support_info>01_Climate_SDG13>2. Aldea Forestal>AF_Monitoring
Support_info>01_Climate_SDG13>1. Inverbosques>Inv_Monitoring

		<p>considered to determine sampling size.</p> <p>A total of 224 permanent plots are measured every monitoring.</p>	<p>sampling size. Up to this PR, there are 935 permanent plots. As the project continues to scale up additional plots will be added to comply with the Gold Standard inventory guidelines.</p>
4	Plot's location	<p>Plots are permanent, the reason why they were randomly located once. When needed, additional plots are located randomly at each forest inventory.</p>	<p>Plots are permanent, the reason why they were systematically located once. When needed, additional plots are located at each forest inventory.</p>
5	Plots shape and area	<p>Circular plots of 500 m² with a radius of 12.62 m</p>	<p>Circular plots of 400 m² with a radius of 11.28 m.</p>
6	Tree measurements	<p>All trees with a height equal or greater than 1.3 m are measured clockwise starting to the north, with the closest tree to the plot center. Qualitative and quantitative variables are measured. DBH is measured in cm for all trees with height equal or above 1.3 m, while heights are measured only for a subset of 16 trees per plot.</p>	<p>All trees with a height equal or greater than 1.3 m are measured clockwise starting to the north, with the closest tree to the plot center. Qualitative and quantitative variables are measured. DBH is measured in cm for all trees with height equal or above 1.3 m, while heights are measured only for a subset of trees equivalent to 20% or 25% of plot density. Regression models are used to estimate missing heights of non-measured trees.</p>

Other elements for forest monitoring plan

Field Measurements for both participants

The following equipment is needed to carry out the forest inventory:

- Compass (this may not be necessary if using GPS)
- Geographic Positioning System (GPS)

- Maps of plots to be measured
- Fiberglass meter tape (100 m and 30 m)
- Tree measuring tape
- PVC tube or pole with 2.5 m painted in 10 cm long bands for height determination
- Metal poles
- Clinometer for tree height and land slope
- Chalk or spray to mark trees after measuring
- Camera
- Data collection forms
- Permanent markers and/or pens

SDG 8

Monitoring Indicator 1: Total number of jobs due to project activities

Monitoring Indicator 2: Total number of employees earning above local minimum wage

Approach

- *Inverbosques*

The project aims to create numerous job opportunities for local and regional residents, helping to alleviate poverty and improve livelihoods.

For this monitoring period, the monitoring unit is a head count based on contracts and salary payments per year, as the minimum wage varies annually. For the present monitoring period, 2022, 2023 and 2024 minimum wage values were used. These values are enacted yearly by the Colombian Government through a National Decree of the Ministry of Labor (please refer to support documentation).

SDG 15

Monitoring Indicator: Enhanced biodiversity – Number of protected threatened species in the project area & conservation status of species.

Monitoring indicator: Total area of trees planted.

Monitoring indicator: Total protected land area.

Approach

- *Inverbosques*

Biodiversity monitoring in the High Conservation Value Areas (HCV)

As part of the Forest Stewardship Council (FSC) certification (see FSC reports in support documentation) and their strong commitment to biodiversity conservation, the project not only focuses on carbon sequestration through plantations but also ensures the protection of natural areas within its area of influence, identifying High Conservation Value areas, which provide various ecosystem services to local communities. These processes conserve and protect natural areas, enabling provisioning, regulation, cultural, and support services that benefit different local communities.

Following existing guidelines on the mapping of these provisional services, it was used a customized approach of field measurements, existing observations, external datasets, satellite imagery, and satellite-based products to map biodiversity values and proxies in the project area and the close vicinity. The approach serves the mapping of value of conservation area linked to Biodiversity values.

Participatory wildlife monitoring

To make biodiversity monitoring more effective, efficient, and participatory, Inverbosques combines two monitoring approaches: community-based monitoring and monitoring with camera traps. The first approach actively involves Inverbosques' workers and community members using citizen science with the iNaturalist platform. The project conducted training sessions with their employees, forest trainers, and local communities about the importance of participatory wildlife monitoring (with emphasis on medium and large mammals) and the use of the digital application iNaturalist³.

iNaturalist is an online social network and platform that works by leveraging the power of community and technology to document and understand biodiversity. Users can record their observations of living organisms, get help with identifications, and collaborate with others. Using a cellphone, users take photos or record sounds of living organisms they encounter in nature, and then these observations are uploaded via the iNaturalist website or mobile app.

³ [iNaturalist](#)

The project also uses more traditional methods to record wildlife in the conservation areas. For this, five camera traps were installed temporarily in the identified 11 high conservation areas (HCV) areas of different properties. Bushnell Core Glow cameras were used for the characterization; they were programmed to take a series of five (5) photographs and a fifteen (15) second video per event detection and were active 24 hours a day.

The species observed by participatory monitoring and those registered in the camera traps are uploaded to the iNaturalist platform.

Each photograph and video provided the following capture information: date, time, moon phase and temperature. To avoid overestimation, a group of photographs of the same species every 24 h in the same camera was considered as an individual²⁹.

Total area of trees planted and Total protected land area

Most plantation development in the tropics occurs as mosaic landscapes that include a mixture of forested, degraded, and open areas, including other ecosystem types such as wetlands. To monitor the areas, the project's GIS teams conduct an image analysis of the field plots (properties) and undertake a vegetation stratification phase and assessment to identify patches of riparian forest areas that vary in size, shape, and quality: buffer zones, wetlands, degraded areas (potential to be planted), and planted areas.

Protecting riparian forest areas aims to maximize ecological corridors and optimize benefits for biodiversity conservation, local community livelihoods, and plantation development. Therefore, the GIS team assesses the quantity and viability of these forest patches to ensure ecological benefits. A central premise of this stratification step is that even small forest patches can provide important wildlife habitat, connectivity, and carbon storage.

eDNA sampling:

DNA-based biodiversity monitoring technology provides big data, delivering quality results in a cost-effective, objective and repeatable manner. The Vichada Climate Reforestation Project is seeking to monitor biodiversity at scale and is looking for options for cost-effective, scalable methods and would like to understand how eDNA can help with the MRV for biodiversity for future income streams focused on nature recovery. For this reason, the project tested the products and services of NatureMetrics that uses soil samples to identify many distinct taxa without increasing field sampling effort

relative to conventional techniques (find more detailed information in support documentation).

The monitoring of soil biodiversity using eDNA methods will contribute to an understanding of the effect of the proposed silvicultural regime (from degraded land to Eucalyptus plantation to semi- natural forest via Assisted Natural Restoration) on soil biodiversity.

Specific monitoring objectives for this pilot project:

- 1) Establishing a soil biodiversity baseline on degraded land destined for afforestation
- 2) Characterize soil biodiversity in land areas representing different further forest succession stages (intermediate and mature) for benchmarking and to understand the changes in soil biodiversity that can be expected during the succession phases of eucalyptus forest in the area
- 3) Devising a monitoring approach that is consistent and repeatable to allow multi-year analysis of restoration progress between the different planting types, and with respect to reference high quality habitats in the vicinity of the project area.
- 4) Understand biodiversity for future land management decision-making and access to environmental markets.

Three assays can be undertaken on each sample, each one covering particular soil biodiversity taxa:

- Soil invertebrates
- Soil fungi
- Soil bacteria

Soil samples for soil biodiversity characterization will be taken from 3 main strata:

1. Degraded land destined for afforestation (the baseline)
2. Eucalyptus plantation
3. Acacia plantation
4. Areas with Petroferric gravel
5. Planted area
6. Forest (high conservation values)

- *Aldea Forestal*

For this monitoring period the project participant Aldea Forestal has not been included. Therefore, no SDGs contributions and description of activities have been added.

SECTION D. DATA AND PARAMETERS

D.1. Data and parameters fixed ex ante or at renewal of crediting period

Data/parameter	Emission removals in tCO ₂ e - Baseline
Unit	Tonnes of CO ₂ e/hectare
Description	The Baseline Scenario is defined as the land use scenario that would exist in the absence of the project.
Source of data	Ruegg, 2017; Etter et al, 2011; San Jose et al, 1988
Value(s) applied	Baseline = AGB Baseline + BGB Baseline Baseline: 8.64 tCO ₂ /ha
Choice of data or Measurement methods and procedures	Biomass stock of baseline scenario was identified from literature. It is defined for the project design certification and revised every project renewal design certification.
Purpose of data	Calculation of GHG baseline scenario
Additional comment	As part of the Renewal Design Certification the baseline GHG was updated based on literature available for Colombia

Data/parameter	AGB Baseline in tCO ₂ e
Unit	Tonnes of CO ₂ e/hectare
Description	The AGB Baseline Scenario is defined as the AGB of the land use scenario that would exist in the absence of the project.
Source of data	Ruegg, 2017; Etter et al, 2011; San Jose et al, 1988
Value(s) applied	AGB Baseline: 5.98 tCO ₂ /ha
Choice of data or Measurement methods and procedures	Biomass stock of baseline scenario was identified from literature. It is defined for the project design certification and revised every project renewal design certification.
Purpose of data	Calculation of GHG baseline scenario
Additional comment	As part of the Renewal Design Certification the baseline GHG was updated based on literature available for Colombia

Data/parameter	BGB Baseline in tCO ₂ e
Unit	Tonnes of CO ₂ e/hectare
Description	The Baseline Scenario is defined as the BGB land use scenario that would exist in the absence of the project.
Source of data	Ruegg, 2017; Etter et al, 2011; San Jose et al, 1988
Value(s) applied	BGB Baseline: 2.66 tCO ₂ /ha
Choice of data or Measurement methods and procedures	Biomass stock of baseline scenario was identified from literature. It is defined for the project design certification and revised every project renewal design certification.
Purpose of data	Calculation of GHG baseline scenario
Additional comment	As part of the Renewal Design Certification the baseline GHG was updated based on literature available for Colombia

Data/parameter	Emission removals in tCO ₂ e – Leakage
Unit	Tonnes of CO ₂ e/ha
Description	Leakage is emissions that occur due to a shift of activities from the inside of a project area to the outside of a project area.
Source of data	Leakage assessment was conducted for the project design certification in 2016. A FORLIANCE 's representative and a third party interview ex-landowners and neighbors to inquire on displacement of previous economic activities implemented over the project area.
Value(s) applied	– Leakage: 0 tCO ₂ /ha
Choice of data or Measurement methods and procedures	Gold Standard Afforestation/Reforestation (A/R) GHG Emissions Reduction & Sequestration Methodology, Version 2 ⁴
Purpose of data	Calculation of leakage
Additional comment	-

⁴ GS_Docs>Other_Docs>See section E in 403.01_V1.0_LUF_AR-Methodology_Integrated-TEMPLATE

Data/parameter	Emission removals in tCO ₂ e – Soil Carbon
Unit	Tonnes of CO ₂ e/ha
Description	The soil organic carbon is not sampled during inventory activities
Source of data	Soil Carbon is estimated based on the GS Tool for A/R Projects.
Value(s) applied	Default data used was selected from the tool. It includes: Climatic region: Tropical, wet Soil type: High Activity Clay Soils Soil Carbon (tCO ₂ e/ha/yr) = 2.09
Choice of data or Measurement methods and procedures	A/R Soil Carbon Tool of the Gold Standard
Purpose of data	Calculation of soil organic carbon project scenario
Additional comment	For more information, please refer to the carbon model. See Support Information>01_Climate_SDG13

Data/parameter	Emission removals in tCO ₂ e – Biomass Expansion Factor (BEF)														
Unit	Dimensionless														
Description	BEF is calculated from the ratio of aboveground biomass and bole biomass (defined by a merchantable measure or a minimum DBH) ⁵ .														
Source of data	IPCC LUCLUF, Good Practice Guidance for Land Use, Land-Use Change and Forestry, Annex 3A.1 Biomass Default Tables for Section 3.2 Forest Land														
Value(s) applied	<table border="1"> <thead> <tr> <th>Specie</th> <th>BEF</th> </tr> </thead> <tbody> <tr> <td>Acacia mangium</td> <td>1.5</td> </tr> <tr> <td>Eucalyptus pellita</td> <td>1.5</td> </tr> <tr> <td>Eucalyptus tereticornis</td> <td>1.5</td> </tr> <tr> <td>Eucalyptus urophylla</td> <td>1.5</td> </tr> <tr> <td>Pinus caribaea</td> <td>1.5</td> </tr> <tr> <td>Pinus oocarpa</td> <td>1.5</td> </tr> </tbody> </table>	Specie	BEF	Acacia mangium	1.5	Eucalyptus pellita	1.5	Eucalyptus tereticornis	1.5	Eucalyptus urophylla	1.5	Pinus caribaea	1.5	Pinus oocarpa	1.5
Specie	BEF														
Acacia mangium	1.5														
Eucalyptus pellita	1.5														
Eucalyptus tereticornis	1.5														
Eucalyptus urophylla	1.5														
Pinus caribaea	1.5														
Pinus oocarpa	1.5														
Choice of data or Measurement methods and procedures	BEF values were selected based on IPCC data.														
Purpose of data	Calculation of project scenario														
Additional comment	Further details on Support Information>01_Climate_SDG13														
Data/parameter	Emission removals in tCO ₂ e - Wood density														
Unit	ton/m ³														
Description	Wood density is the ratio of oven-dry weight of wood over its green volume														
Source of data	MINAM et al., 2021. https://biocarbono.org/wp-content/uploads/2022/12/Publicacion-GEI-31.10.22.pdf														

⁵ Source: Sanquetta, C. R., Corte, A. P., & da Silva, F. (2011). Biomass expansion factor and root-to-shoot ratio for Pinus in Brazil. Carbon balance and management, 6(1), 6.

Value(s) applied	Species	Wood density (ton/m³)
	Acacia mangium	0.55
	Eucalyptus pellita	0.71
	Eucalyptus tereticornis	0.79
	Eucalyptus urophylla	0.71
	Pinus caribaea	0.42
	Pinus oocarpa	0.48
Choice of data or Measurement methods and procedures	<p>Values were selected at species or genus level from literature about species carbon sequestration performance in the project region.</p> <p>Tree biomass is estimated by multiplying volume per wood density per species.</p>	
Purpose of data	Calculation of project scenario	
Additional comment	<p>Wood density values were taken from research developed in forest plantations of the project region</p> <p>Further details in Support Information>01_Climate_SDG13</p>	

Data/parameter	Root-to-Shoot Ratio (R-t-s)	
Unit	Dimensionless	
Description	Ratio of the weight of the roots to the weight of the top of the tree. Used for below-ground tree biomass estimation.	
Source of data	IPCC LUCLUF ,Good Practice Guidance for Land Use, Land-Use Change and Forestry, Annex 3A.1 Biomass Default Tables for Section 3.2 Forest Land	
Value(s) applied	Species	R-t-S
	Acacia mangium	0.42
	Eucalyptus pellita	0.42
	Eucalyptus tereticornis	0.42
	Eucalyptus urophylla	0.42
	Pinus caribaea	0.42
	Pinus oocarpa	0.42
Choice of data or Measurement methods and procedures	Values were chosen per species	
Purpose of data	Calculation of project scenario	

Additional comment	Root to shoot ratio values were updated to obtain more precise results. Values were selected per species and based on research developed in the project region.
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Data/parameter	Carbon fraction tC/t d.m.
Unit	Percentage
Description	Percentage of the biomass of the tree that is carbon.
Source of data	Gold Standard Afforestation / Reforestation (A/R) GHG Emissions Reduction & Sequestration Methodology
Value(s) applied	0.5
Choice of data or Measurement methods and procedures	Default value
Purpose of data	Calculation of project scenario
Additional comment	-

Data/parameter	C to CO ₂ factor
Unit	tCO ₂ /tC
Description	Factor applied to convert carbon sequestered to CO ₂ e sequestered
Source of data	Gold Standard afforestation / reforestation (A/R) GHG emissions reduction and sequestration methodology
Value(s) applied	3.6667 (44/12)
Choice of data or Measurement methods and procedures	IPCC default value.
Purpose of data	Calculation of project scenario
Additional comment	

D.2 Data and parameters monitored

SDG 13

Data / Parameter	Productive area
Unit	Hectares (ha)
Description	The productive area is considered as the eligible area where tree planting (or related actions) activities take place and that meets the applicability conditions of the applied Gold Standard Methodology.
Source of data	- Inverbosques and Aldea Forestal information on productive area boundaries. Aldea Forestal data is already verified value. The change from the last performance review is due to the added new area for validation of Inverbosques.
Value(s) applied	106,522.07 ha

Measurement methods and procedures	Remote sensing tools to trace project productive area and planted areas.
Monitoring frequency	At each performance certification event
QA/QC procedures	Remote sensing tools are used to trace the project's productive area.
Purpose of data	Report on SDG 13
Additional comment	This parameter is monitored because it represents the eligible validated area where afforestation can take place. Note that not all productive areas are planted.

Data / Parameter	Height
Unit	Meter
Description	The height will be used to calculate tCO ₂ sequestration in the planted areas.
Source of data	Field measurements: Forest Inventory. Where there were no heights data, heights values were calculated from allometric equations. For detailed information see supporting document "Height and volume estimation-technical documentation">01_Climate_SDG13>Ex-post
Value(s) applied	Average 9.53 m
Measurement methods and procedures	<p>A sampling approach is designed and conducted by experts to measure tree's allometric variables. Sample plots are measurement units where variables, such as height are registered.</p> <p>The amount of sample plots, their shape and location are determined per project participant depending on the characteristics and variability in planted areas.</p>
Monitoring frequency	At each performance certification event
QA/QC procedures	External foresters are hired to conduct forest inventories to monitor forest plantations growth.
Purpose of data	Report in SDG 13
Additional comment	See Section B.6.1. in the PDD for further details on monitoring approaches.

Data / Parameter	DBH
Unit	cm
Description	The DBH is used to calculate tCO ₂ sequestration in planted areas
Source of data	Field measurements: Forest Inventory
Value(s) applied	Average 10.51 cm
Measurement methods and procedures	A sampling approach is designed and conducted by experts to measure tree's allometric variables. Sample

	<p>plots are measurement units were variables, such as Diameter at Breast Height (DBH) are measured.</p> <p>The amount of sample plots, their shape and location are determined per project participant depending on the characteristics and variability in planted areas.</p>
Monitoring frequency	At each performance certification event
QA/QC procedures	External foresters are hired to conduct forest inventories to monitor forest plantations' growth.
Purpose of data	Report on SDG 13
Additional comment	See Section B.6.1. in the PDD for further details on monitoring approaches.

Data / Parameter	Tree volume mean annual increment (MAI)																
Unit	m ³ /ha/yr																
Description	Mean Annual Volume Increment of project species on site																
Source of data	<p>MAI values are estimated based on DBH and H data and allometric volume equations. Allometric tree variables and equations are provided and measured by the project participants based on forest inventories.</p> <p>Aldea Forestal allometric equations were readjusted on the 2022 Forest Inventory, while Inverbosques allometric equations were fitted in 2019.</p>																
Value(s) applied	Average 5.31																
Measurement methods and procedures	<p>Each project participant has allometric volume equations adjusted to the project planted areas. Age and volume per tree are used to estimate MAI, which is extrapolated, later, to plot and hectare level.</p> <table border="1"> <thead> <tr> <th>Specie</th> <th>Volume (Allometric equations) or height variable to calculate MAI</th> </tr> </thead> <tbody> <tr> <td>A. mangium</td> <td>$V=0.0000754*(d^{1.9261244})*(h^{0.7960017})$</td> </tr> <tr> <td>E. pellita</td> <td>$V=0.0000806+*(d^{1.8571284})*(h^{0.8724138})$</td> </tr> <tr> <td>P. caribaea</td> <td>$V=0.00128447 + 0.00002800*(d^2)*h+0.00008704*(d^2)$</td> </tr> <tr> <td>A. mangium</td> <td>Height</td> </tr> <tr> <td>E. pellita</td> <td>Height</td> </tr> <tr> <td>P. caribaea</td> <td>Height</td> </tr> <tr> <td>A. mangium</td> <td>$V=0.00013 * (d^{1.57823127})*(h^{0.89686306})$</td> </tr> </tbody> </table>	Specie	Volume (Allometric equations) or height variable to calculate MAI	A. mangium	$V=0.0000754*(d^{1.9261244})*(h^{0.7960017})$	E. pellita	$V=0.0000806+*(d^{1.8571284})*(h^{0.8724138})$	P. caribaea	$V=0.00128447 + 0.00002800*(d^2)*h+0.00008704*(d^2)$	A. mangium	Height	E. pellita	Height	P. caribaea	Height	A. mangium	$V=0.00013 * (d^{1.57823127})*(h^{0.89686306})$
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E. pellita	Height																
P. caribaea	Height																
A. mangium	$V=0.00013 * (d^{1.57823127})*(h^{0.89686306})$																

	E. spp	$V=0.00011*(d^{1.83469})*(h^{0.71817})$
	P. caribaea	Same as Aldea Forestal
	Acacia mangium	$\ln(H)=1.04+0.488*\ln(d)$
	Eucalyptus pellita	$\ln(H)=0.95+0.565*\ln(d)$
	Eucalyptus tereticornis	$\ln(H)=1.202+0.488*\ln(d)$
	Eucalyptus urophylla	$\ln(H)=0.868+0.489*\ln(d)$
	Pinus caribaea	$\ln(H)=0.489+0.681*\ln(d)$
	Pinus tecunumanii	$\ln(H)=1.107+0.457*\ln(d)$
Monitoring frequency	At each performance certification	
QA/QC procedures	External foresters are hired to conduct forest inventories to monitor forest plantations' growth.	
Purpose of data	Report on SDG 13	
Additional comment	See Section B.6.1. in the PDD for further details on monitoring approaches. For more details on forest monitoring methodology see Support Info>Climate_SDG13	

Data / Parameter	Aboveground tree biomass (AGB)
Unit	Tonnes of CO ₂ -equivalents/hectare (tCO ₂ e/ha)
Description	Aboveground tree biomass is calculated using the stem volume, the Biomass Expansion Factor (BEF), carbon fraction and C to CO ₂ factor.
Source of data	<p>Forest inventories measurements of DBH and height.</p> <p>Allometric equation of height fitted to project plantations based on height measurements at each forest inventory.</p> <p>Allometric equations of volume per species adjusted to project areas and from literature.</p> <p>Wood density values per species and Biomass Expansion Factors (BEF) were obtained from a study about project plantations in the project region. See MINAM et al., 2021. https://biocarbono.org/wp-content/uploads/2022/12/Publicacion-GEI-31.10.22.pdf</p>
Value(s) applied	63.84 tCO ₂ e/ha

Measurement methods and procedures	AGB is measured to estimate the project contribution to SDG 13. It results from multiplying BEF, wood density, volume per tree, carbon fraction, and a default value to convert C to CO ₂ e. The volume per tree is calculated based on allometric equations that depend on DBH and heights measurements. Values per tree are then extrapolated to plot and finally to hectares.
Monitoring frequency	At performance certification
QA/QC procedures	AGB values are compared to values available in literature and ex-ante estimates.
Purpose of data	Report on SDG 13
Additional comment	-

Data / Parameter	Belowground tree biomass (BGB)
Unit	Tonnes of CO ₂ -equivalents/hectare
Description	Below ground biomass is estimated based on the root to shoot ratio of trees with respect to aboveground biomass
Source of data	Aboveground biomass estimates Root to shoot ratios obtained from a study about forest plantations in the project region. See MINAM et al., 2021. https://biocarbono.org/wp-content/uploads/2022/12/Publicacion-GEI-31.10.22.pdf
Value(s) applied	26.81 tCO ₂ e/ha
Measurement methods and procedures	To estimate BGB, root biomass is assumed to correspond to a proportion of AGB. Such proportion is given by the root-to-shoot ratio, which is species-specific.
Monitoring frequency	At each performance certification
QA/QC procedures	- BGB values are compared to values obtained in literature from the project region and ex-ante estimates.
Purpose of data	Report on SDG 13
Additional comment	-

Data / Parameter	Other emissions
Unit	Tonnes of CO ₂ -equivalents/hectare(tCO ₂ /ha)

Description	Other emissions are those that result from the use of Nitrogenous fertilizers during project activities.
Source of data	Project participants provide information on fertilizers applied as part of the forest management plan.
Value(s) applied	0.65 tCO ₂ e/ha
Measurement methods and procedures	Nitrogen content in Kg/ha is calculated based on each fertilizer content given in percentage. Then, such percentage is multiplied by the total kilograms of fertilizers applied per hectare to find Kg of N per hectare. The default value of 0.005 tCO ₂ per kg of N was applied to the Carbon Model.
Monitoring frequency	At each performance certification
QA/QC procedures	FSC standard certification principles and criteria.
Purpose of data	Report on SDG 13
Additional comment	Other emissions from certain land preparation techniques, from the use energy during project activities, and from nitrogen-fixing trees were not included since they are not related to project activities.

SDG 8

Data / Parameter	Total number of jobs								
Unit	Number								
Description	Refers to total jobs generated because of the project.								
Source of data	Project activity								
Value(s) applied	<table border="1"> <thead> <tr> <th></th> <th>Inverbosques</th> <th>Aldea</th> </tr> </thead> <tbody> <tr> <td>2022</td> <td>19 full-time contracts & 3 temporary contracts</td> <td>-</td> </tr> </tbody> </table>				Inverbosques	Aldea	2022	19 full-time contracts & 3 temporary contracts	-
	Inverbosques	Aldea							
2022	19 full-time contracts & 3 temporary contracts	-							

	2023 ⁶	68 full-time & 177 temporary	-
	2024	34 full-time & 80 temporary	-
	Total during period	Monitoring period 2022-2024: 121 full-time 260 temporary	Monitoring period 2022: 15 jobs
Measurement methods and procedures	Head count. Use numbers as at the end of the reporting period, unless there has been a material change during the reporting period		
Monitoring frequency	Annual		
QA/QC procedures	Contracts signed		
Purpose of data	Monitor Target 8.5		
Additional comment	-		

Data / Parameter	Total number of employees earning above local minimum wage								
Unit	Number of employees								
Description	Refers to the total number of employees earning above the local minimum wage as per national laws								
Source of data	Project activity								
Value(s) applied	<table border="1"> <thead> <tr> <th></th> <th>Inverbosques</th> <th>Aldea</th> </tr> </thead> <tbody> <tr> <td>2022</td> <td>19 full-time contracts & 3 temporary contracts</td> <td>7</td> </tr> </tbody> </table>				Inverbosques	Aldea	2022	19 full-time contracts & 3 temporary contracts	7
	Inverbosques	Aldea							
2022	19 full-time contracts & 3 temporary contracts	7							

⁶ 20240815 – Base de datos empleados

	2023 ⁷	68 full-time & 177 temporary	
	2024	34 full -time & 78 temporary	
	Total during period	Monitoring period 2022-2024: 121 full-time 258 temporary	Monitoring period 2022: 15 jobs
Measurement methods and procedures	Head count Use the number as at the reporting period.		
Monitoring frequency	Annual		
QA/QC procedures	-		
Purpose of data	Monitor Target 8.5		
Additional comment	-		

SDG 15

Data / Parameter	Total area of Trees Planted
Unit	Hectares (ha)
Description	Refers to area of land on which trees were planted during the reporting period.
Source of data	Project activity
Value(s) applied	21,413.99 ha (Aldea Forestal + Inverbosques) 18,131.74 ha (current monitoring area for Inverbosques)
Measurement methods and procedures	Measurement
Monitoring frequency	Annual
QA/QC procedures	GIS data
Purpose of data	Monitor Target 15.2
Additional comment	-

⁷ [Based on 2023 values](#)

Data / Parameter	Number of protected threatened species in the project location according to the IUCN Red List
Unit	Number of species observed/presented in the project area
Description	<p>Refers to number of threatened species present on land and conservation status of the species in reporting period.</p> <p>Threatened species are any species (including animals, plants, fungi, etc.) which are likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range. The term threatened is an umbrella term for a group of categories that capture various levels of threat to the species, ranging from vulnerable species to endangered species to critically endangered species.</p> <p>Project can refer to the following sources for further guidance and for clarification on the classification definitions cited herein:</p> <p>International Union for the Conservation of Nature Convention on International Trade in Endangered Species of Wild Fauna and Flora</p>
Source of data	Project Activity (Species monitoring)
Value(s) applied	110 species registered and monitored in the project area between birds, mammals, and reptiles.
Measurement methods and procedures	Registry of the species observations from participatory monitoring involving employees and forest trainers Registry from the camera traps installed in the project area High Conservation Values
Monitoring frequency	Annual
QA/QC procedures	-
Purpose of data	Monitor Target 15.5
Additional comment	-

Data / Parameter	Total protected Land Area
Unit	ha of functional ecosystem

	ha of enhanced or regenerated ecosystem
Description	Refers to the total project area of land identified and marked as a protected area to enhance biological diversity. For example, the Gold Standard project is required to mark 10% of the project area as a protected area (LUF Activity Requirements).
Source of data	Project activity
Value(s) applied	11,994.17 ha
Measurement methods and procedures	Measurement
Monitoring frequency	Annual
QA/QC procedures	-
Purpose of data	Monitor Target 15.5
Additional comment	-

D.3. Comparison of monitored parameters with last monitoring period

Data/Parameter	Value obtained in this monitoring period*		Value obtained last monitoring period*	
Project Design	Conservation project		Conservation project	
Total Project area	106,522.07		73,835.87	
Planted Area (ha)	21,413.99		19,208.4	
Baseline estimation (tCO2)	8.64		8.64	
BEF	1.5		1.5	
Wood Density	Am	0.55	Am	0.55
	Ep	0.71	Ep	0.71
	Et	0.80	Et	0.80
	Eu	0.71	Eu	0.71
	Pc	0.42	Pc	0.42
	Po	0.49	Po	0.49
Root to shoot ratio	0.42		0.42	
MU	56		52	

The table below shows the Mus for the complete climate project, including Aldea Forestal (verified areas) and Inverbosques (both verified and under validation).

Table 9 – Mus overview

MU1_ID	MU1	MU2	ID_code	Eligible_area_ha
1	AF-2009	1.1	AF-Am-2009	270.07
2	AF-2010	1.2	AF-Pc-2009	238.07
3	AF-2011	2.1	AF-Pc-2010	532.75
4	AF-2012	3.1	AF-Pc-2011	351.88
5	AF-2013	4.1	AF-Pc-2012	443.81
6	AF-2014	5.1	AF-Pc-2013	564.26
7	AF-2015	6.1	AF-Ep-2014	129.28
8	IB-2009	6.2	AF-Pc-2014	504.54
9	IB-2010	7.1	AF-Pc-2015	232.33
10	IB-2011	7.2	AF-Ep-2015	15.27
11	IB-2012	8.1	IB-Am-2009	88.05
12	IB-2013	8.2	IB-Ep-2009	30.34
13	IB-2014	8.3	IB-Pc-2009	0.62
14	IB-2015	9.1	IB-Am-2010	691.58
15	IB-2016	9.2	IB-Ep-2010	428.06
16	IB-2017	9.3	IB-Et-2010	143.91
17	IB-2018	10.1	IB-Am-2011	1471.13
18	IB-2019	10.2	IB-Ep-2011	763.06
19	IB-2020	10.3	IB-Et-2011	42.78
20	IB-2021	10.4	IB-Eu-2011	3.86
21	IB-2022	11.1	IB-Am-2012	882.10
22	IB-2023	11.2	IB-Ep-2012	104.20
23	IB-2024	11.3	IB-Et-2012	10.15
		12.1	IB-Am-2013	741.13
		12.2	IB-Ep-2013	181.47
		12.3	IB-Et-2013	10.04
		12.4	IB-Eu-2013	3.84
		13.1	IB-Am-2014	971.19
		13.2	IB-Ep-2014	301.43
		14.1	IB-Am-2015	570.50
		14.2	IB-Ep-2015	313.05
		14.3	IB-Eu-2015	18.99
		15.1	IB-Am-2016	800.36
		15.2	IB-Ep-2016	695.25
		16.1	IB-Am-2017	250.44
		16.2	IB-Ep-2017	749.37
		17.1	IB-Am-2018	124.56
		17.2	IB-Ep-2018	662.94
		17.3	IB-Eu-2018	3.66
		18.1	IB-Am-2019rep	100.62
		18.2	IB-Ep-2019rep	19.15

MU1_ID	MU1	MU2	ID_code	Eligible_area_ha
		18.3	IB-Pc-2019rep	4.70
		18.4	IB-Am-2019	98.69
		18.5	IB-Ep-2019	665.72
		18.6	IB-PE-2019	845.42
		18.7	IB-Pc-2019	5.85
		18.8	IB-Pt-2019	0.26
		19.1	IB-Ep-2020	605.92
		19.2	IB-Pc-2020	1071.12
		19.3	IB-Ep-2020rep	7.18
		20.1	IB-Ep-2021	869.27
		20.2	IB-Pc-2021	1039.67
		21.1	IB-Ep-2022	821.78
		21.2	IB-Pc-2022	139.47
		22.1	IB-Ep-2023	638.15
		23.1	IB-Ep-2024	140.70

D.4. Implementation of sampling plan

Sampling design and data collection

The forest inventory is made up 224 plots for Aldea Forestal, and 935 plots for Inverbosques. Information can be found at Supporting documentation>01_Climate_SDG13 & >04_GIS

For the current forest inventory and monitoring period, the initial dataset consisted of 935 forest inventory plots. During the data cleaning process—removing outliers, incomplete records, and plots with measurement inconsistencies—resulted in a refined dataset of 911 plots. This refinement is a standard and essential step in ensuring data quality and analytical integrity, particularly in carbon estimation, where accuracy and consistency are critical.

Therefore, the sampled 911 plots remain fully representative of the defined Monitoring Units, as stratification by species, planting year, and company was preserved. And it provides a robust and statistically valid basis for estimating forest carbon stocks. Statistically, the reduction represents less than 3% of the total planned plots, which is well within acceptable limits for sample attrition in field-based forest inventories. The final sample size provides sufficient statistical power to meet the required precision thresholds under the Gold Standard, and the calculated confidence intervals confirm

that the $\pm 20\%$ relative precision requirement was either met or any excess was appropriately penalized according to the methodology.

Thus, the reduced dataset for the current monitoring period of 911 plots remains fully appropriate and statistically representative for robust carbon stock estimation.

In addition, the collected data in the Vichada Climate Project for both entities included measurements of key tree data needed to estimate the carbon stored in the tree biomass. Measured tree parameters included tree diameter, tree height, and tree species. The measured tree data were then used to calculate further tree measures, such as basal area and tree volume. Tree diameter is normally measured at breast height (dbh), which should always be 1.3m above ground level.

Analysis of collected data and precision level

The measured tree dbh (diameter at breast height) and height data were used to the tree volumes of all trees in the measurement plots. As height was only measured for a few trees in each plot, the height of the remaining trees was estimated using the plot-specific dbh-to-height allometric equations. The individual tree volumes were then calculated based on species-specific allometric equations that estimate tree volume based on dbh and height. The trees volumes were then aggregated at the plot-level and further expanded to the hectare-level (m^3/ha). The hectare-level volumes were further expanded and transformed to achieve the metric tons of CO_2 equivalents ($\text{t CO}_2\text{e}/\text{ha}$) using species-specific wood densities, biomass expansion factors, root-to-shoot ratio, carbon concentration, and C-to- CO_2 ratio.

Based on the measurements of each measurement plot, the sample averages, precision levels, and – if applicable – penalties could be calculated. To calculate the sampling precision, first the sampling error was calculated. The sampling error was determined for each Management Unit (MU) based on the MUs' average $\text{tCO}_2\text{e}/\text{ha}$ stored in trees, the standard deviation of the carbon stored in trees, the measurement plot size, the number of plots, and the MU area. Based on the sampling error the sampling precision was calculated (which is the sampling error expressed as a percentage of the sample average) and possible penalties. Of the sampled MUs, all except one met the precision requirements (i.e., sampling error $< 20\%$ of the sample average at a 90% confidence level). Accordingly, in later Verified Emission Reduction calculations, a penalty must be applied to three MUs.

In detail, the equations used are:

Total_biomass_in_tCO2e_ha:

Total carbon stored in tree biomass per hectare (in tCO2e)

Total_biomass_in_tCO2e_ha_Variance:

Variance in total carbon stored in tree biomass per hectare (in tCO2e)

Population:

Total number of sample plot that could be placed within MU1. Calculated as follows:

$$Population = MU1 \text{ Area} / \text{sample plot size}$$

FPC:

Finite population correction. This correction is applied in order to account for the fact that the carbon stock uncertainty only applies to the unmeasured share of the population. Calculated as follows:

$$FPC = \text{SQRT}[(Population - \text{number of measured plots}) / (Population - 1)]$$

Total_biomass_in_tCO2e_ha_SD:

Standard deviation of total carbon stored in tree biomass. The standard deviation is the square root of the variance

Total_biomass_in_tCO2e_ha_StdErr:

Standard Error of total carbon in tree biomass. The Standard Error is calculated as follows:

$$Standard \text{ Error} = \text{Standard Deviation} / \text{SQRT}(\text{number of plots})$$

Total_biomass_in_tCO2e_ha_MOE:

Margin of Error of total carbon stored in tree biomass. The margin of error is calculated as follows:

$$MOE = . \text{Standard Error} * z\text{-value}$$

Note, that the appropriate z-value is dependent on the confidence interval considered. Here, in accordance to GS requirements, the 90% confidence interval was considered. Accordingly, the z-value was equal to 1.645.

Uncertainty:

Sampling uncertainty (in percent of average carbon stock). Calculated as follows:

$$Uncertainty = MOE / Total_biomass_in_tCO2e_ha$$

Penalty in %:

Uncertainty penalty (in percent) in accordance with GS requirements. if

Uncertainty is above 20%, a uncertainty penalty is applied. Calculated as follows:

$$Penalty \text{ in } \% = \text{MAX} (\text{Uncertainty} - 0.2, 0)$$

Penalty in tCO2e/ha:

Uncertainty penalty in tCO2e/ha. Calculated as follows:

$$Penalty\ in\ tCO2e/ha = Penalty\ in\ \% * Total_biomass_in_tCO2e_ha$$

Total_biomass_in_tCO2e_ha_penalty_corrected:

Total carbon stored in tree biomass after correcting for the uncertainty penalty.

Calculated as follows:

$$Total_biomass_in_tCO2e_ha_penalty_corrected = Total_biomass_in_tCO2e_ha - Penalty\ in\ tCO2e/ha$$

For the current forest inventory and monitoring, two MUs have an uncertainty above 20%, being this MU8 and MU23, with an uncertainty of 33% and 26% correspondingly. A proper penalty following Gold Standard rules (>20%) were applied to the total biomass per hectare in tCO2.

SECTION E. CALCULATION OF SDG IMPACTS

E.1. Calculation of baseline value or estimation of baseline situation of each SDG Impact

For this monitoring period, the project participant Aldea Forestal has not been considered in the project’s SDG contributions. Values provided remain as the last one verified to provide a comprehensive overview of the project. The values monitored for the period 2022-2024 correspond to Inverbosques only.

SDG 13

The baseline value of the SDG 13 was calculated according to Gold Standard Afforestation/Reforestation (A/R) GHG Emissions Reduction & Sequestration Methodology v2.0. For detailed calculations refer to the support information folder⁸ ex-ante and PDD documentation. For the new areas added, the baseline remains the same, as are based on literature review and historic analysis of the area. In addition, baseline emissions are considered and accounted in the carbon model. This can be seen in the

⁸ Support Information > 02_Carbon calculations: tab: value-factors

excel "VICH22_PR2024_Inverbosques_130225-GS" – tab "4.Values, Factors and Data", and in Tab "17. Carbon_seq_INV (2024), cell H4; where baseline emissions are considered in the ex post calculations. The research papers / literature is also provided to the VVB as evidence of the values.

Baseline = 8.64 tCO₂e/ha

SDG 8

The project aims to create numerous job opportunities for local residents, helping to alleviate poverty and improve livelihoods. These jobs range from tree planting and nursery management to project monitoring and environmental education. By providing stable employment, the project supports the economic development of the Vichada region.

Additionally, the project promotes equal opportunities for men and women in access to employment, working conditions, professional development, training and participation in decision-making processes. This approach helps to empower women and promote social inclusion, contributing to the overall development of the region.

By reinvesting the income from carbon finance into these measures, the longevity and sustainability of the project are ensured.

As Inverbosques is still increasing its operations, the total SDG impacts over the project lifetime are assumed to be the current observed values of 2022 (112 employees) plus a conservative 25% growth throughout the project lifetime.

That means Inverbosques (and thereby the whole project) is expected to hire 28 additional employees until the project ends in 2036, and all employees will earn above the local minimum wage.

Table 10 - Ex-ante estimations for SDG 8 (rounded)

Indicator	Aldea Forestal		Inverbosques		Total Project	
	Baseline	Ex-ante 2036	Baseline	Ex-ante 2036	Baseline	Ex-ante 2036
Total number of jobs	0	4	0	140	112	140
Total number of employees earning above local minimum wage	0	4	0	103	82	103

SDG 15

For this monitoring period, the project participant Aldea Forestal has not been included in the project’s SDGs contribution.

Total area of Trees Planted

Inverbosques will continue its landscape restoration activities through Eucalyptus and native species plantations; for this, it is expected to grow and expand its planted area at a rate of 25% throughout the project’s lifetime.

Number of protected threatened species in the project area & conservation status of species

As described under B.6.1. in the PDD, baseline values were assumed as the results of the species registered at the validation stage.

Baseline Inverbosques= 31

Inverbosques is projected to have a 25% increase in registered species based on the company’s annual growth, which will increase the extension of conserved areas.

Total protected Land Area

The ex-ante estimation for protected land area assumes that the project continues to add 10% of the total project areas under conservation, as required by the standard.

Table 11 - Ex-ante estimations for SDG15

Indicator	Aldea Forestal		Inverbosques		Total Project (Inverbosques)	
	Baseline	Ex-ante 2036	Baseline	Ex-ante 2036	Baseline	Ex-ante 2036
Total area of Trees Planted (ha)	3,282.26		11,182.54		11,182.54	13,978.18
Number of protected threatened species in the project area	21	26	31	39	31	38
Total protected Land Area					7,487	8,225.8

E.2. Calculation of project value or estimation of project situation of each SDG Impact

Values provided in every SDG below correspond to Inverbosques only. Aldea Forestal monitoring data is not included in the current performance review event.

SDG 13

The project contribution to SDG 13 was estimated based on the GS Methodology for Afforestation & Reforestation (A/R) GHG Emissions and Reductions Version 2.0. With a monitoring period from 01/10/2022 to 31/08/2024, the forestry plantation and conservation of forest activities contributed to the sequestration of 269,960 tCO₂e. More details are presented in the supporting documents⁹.

In the project, among the many efforts participants are making, one is focused on encouraging native species' natural regeneration under the forest canopy. This allows native species to naturally re-grow in these areas, gradually enhancing the ecosystem and recovering forest succession by promoting the development of native tree species. Additionally, there are active regeneration efforts, especially notable in Inverbosques, where a dedicated section of the nursery has been established to grow approximately 30 million seedlings of these native trees. This space allows for the cultivation and subsequent planting of these species, supporting the regeneration of the forest through active reforestation initiatives. By planting native species within the stands, they aim to strengthen the ecosystem and promote its long-term restoration and resilience.

⁹ Support Information>01_Climate_SDG13



Picture1: Nursery workers taking care of the seedling beds



Picture 2: Forestry team measuring native tree growth within the stands

SDG 8

As mentioned, the project participant Aldea Forestal is not considered for this monitoring period. Therefore, its project's SDG contributions are not monitored.

The project aims to create numerous job opportunities for local and regional residents, helping to alleviate poverty and improve livelihoods. Inverbosques' work policies include paying above the minimum wage in Colombia. The minimum salary is updated every year by governmental decrees enacted by the Ministry of Employment (see support documentation); proof of this is the decrees, and employment contracts, salary payments, and work policies available to the auditor.

Educational Initiatives

Education and training are a cornerstone of the Vichada Climate Reforestation project's social programs. The project runs workshops and training sessions to raise awareness about the importance of reforestation and environmental conservation, fires control and mitigation, waste management, first aid, etc. Among the many:

- Waste management

- Grievance mechanisms
- Silvicultural practices
- Forest fires prevention and mitigation
- First aid training
- Apiculture and Forestry training



Picture 3: Handout of the Inverbosques News Paper " Ruta de Madera" which provides communities valuable information about the environment, health and Safety among others



Picture 4: Capacity building to the Kanalitojo community about good agricultural practices "GAP"



Picture 5: Inverbosques Forest Rangers doing team building activities during first aid trainings.



Picture 6: House visit by Inverbosques team members to address grievances

The educational and training program is focused on improving livelihoods and income diversification activities¹⁰, such as:

- Cultural exchange
- Forest fires prevention and mitigation
- Apiculture & Handicrafts
- Business plans and project formulation



Picture 7: Workshop with local communities to provide capacity building for personal development.



Picture 8: Forest Rangers finalizing the forest fire prevention and mitigation workshop

¹⁰ 20240818 Inverbosques Social Impact



Picture 9: Apiculture program lead by Inverbosques as an additional activity of the project.

Protection and safety

A comprehensive health and safety at work program is applied that emphasizes the correct use of equipment for everyday work, involving identification of hazards and assessing risks, selecting appropriate personal protective equipment (PPE) and ergonomic tools, providing thorough training on equipment use and maintenance, conducting regular inspections and maintenance, and ensuring compliance with relevant international and national regulations. Continuous monitoring and feedback mechanisms are essential to adapt and improve the program, ensuring a safe and healthy work environment for all employees (see support documentation for detailed records of all safety training, equipment inspections, and maintenance activities).

Through these comprehensive social programs, the project demonstrates a meaningful commitment to the development of the Vichada region, ensuring that their reforestation efforts have a lasting positive impact on both the environment and the local communities.

First aid training and fire prevention training



Table 12 - Ex-post monitoring for SDG 8

Values provided for Aldea Forestal are from the previous verified verification. To provide a comprehensive overview of the project, the values are only shown but not considered in the final value. Only Inverbosques are accounted for the current performance review event.

Indicator	Aldea Forestal			Inverbosques			Total Inverbosques
	2020	2021	2022	2022	2023	2024	
Total number of jobs	4	4	4	22	245	114	381
Total number of employees earning above local minimum wage	4	4	4	22	245	112	379

Among the employees hired in 2024 by the company are 2 interns from SENA (National Apprenticeship Service) doing their professional internships. These interns are in the training stage and, therefore, have a salary lower than the current legal minimum wage. However, according to the regulations, a SENA intern receives 50% of the current legal minimum wage (SMLV) during training. In 2024, the SMLV is \$1,300,000, so the intern will receive \$650,000 per month according to Colombian law (Law 789 of 2002, Chapter VI, Article 30¹¹).

In Colombia, the National Apprenticeship Service (SENA) is a public entity offering free technical and technological training to develop labor competencies to promote employment and productivity. Within the training provided by the SENA, there is a period of professional internships where students have the opportunity to learn subjects related to their studies. There are two stages: classroom internships, in which, within the initial training phase, the apprentice acquires technical knowledge through academic training, and productive internships, where the apprentice puts into practice the knowledge acquired in the classroom stage and faces labor challenges.

This demonstrates Inverbosques commitment to nurturing the next generation of forestry and conservation professionals by providing meaningful internship opportunities and robust support for student career development. The internship program is designed to offer hands-on experience, allowing interns to work on real conservation and land restoration projects that have real and measurable impacts. This immersive approach ensures that students gain practical skills and insights directly

¹¹ https://www.funcionpublica.gov.co/eva/gestornormativo/norma_pdf.php?i=6778

applicable to their future careers. Finally, the interns have the opportunity to transition into full-time roles within our company, ensuring their continued growth and success.

SDG 15

The Vichada Climate Reforestation Project is dedicated to global reforestation and ecosystem restoration. Their mission goes beyond planting trees; they are deeply committed to the social and economic development of the region, as well as conserving and enhancing local biodiversity in all its three dimensions, genetic, species and habitat and ecosystems.

Total area of tree planted and total protected land area

The project values for the indicator's total area of trees planted and protected land area are obtained through a phase of analysis and evaluation, which uses remote sensing and ground survey data to develop a map of the properties, including forest areas, wetlands, and particular planted areas. Most properties where the project is implemented are fragmented, where the riparian forest is present in patches of various sizes and proximity, intermingled in a mosaic with existing Eucalyptus and native species plantations or other land uses.

All the Eucalyptus and native species plots are properly georeferenced and monitored by the project's GIS team.

The GIS team uses remote sensing analysis to determine the importance and prioritization of each forest patch and whether it needs to be included in the conservation plan, given its size, shape, and connectivity to other patches, riparian zones, peat areas, or High Conservation Value (HCV) areas. The overriding objectives are ecological and social viability and optimization of the resulting Integrated Conservation and Land Use Plan for conservation, livelihoods, and plantation development outcomes.

Biodiversity monitoring in the High Conservation Value Areas (HCV)

Monitoring results with camera traps¹² and participatory wildlife monitoring¹³

As part of the wildlife participatory monitoring program, five camera traps were installed temporarily in the 11 HCV areas identified within the Management Units: Las Campanitas, La Esmeralda, La Ilusion I, La Ilusion II, Las Bonitas, Los Capachos, Los Sabanales, El Porvenir, El Paraiso, Ojo de Agua, Mientras me Acomodo. Some of the points are located in gallery forests of drainages that run to the Bitá River, others in riparian forests of the Bitá River. El Porvenir, which is located in an area parallel to the Quebrada Terecay and Mientras me Acomodo, located in a forest area surrounding the Orinoco River.

Participatory wildlife monitoring (emphasizing medium and large mammals) was carried out through citizen science exercises, using strategies like reporting sightings on the digital platform iNaturalist. The training was also provided to members of local communities and forestry company operators in identifying mammal species through photo-trapping and using the digital platform.

These sampling techniques showed the following results for this monitoring period:

- 36 Forest Rangers trained
- Five camera traps installed
- Eleven HCV areas evaluated
- 110 species:
 - 45 species registered by participatory monitoring.
 - 65 species registered by camera traps.
- 1,566 observations

Within the remarkable species found in the monitoring period are:

- Tapir (*Tapirus terrestris*)

¹² HCV Monitoring Report 2023

¹³ Support documentation 02_Biodiversity_SDG_15

- Giant anteater (*Myrmecophaga tridactyla*)
- White – lipped peccari (*Tayassu peccari*)
- Armadillo (*Dasypus novemcinctus*)
- Giant Armadillo (*Priodontes maximus*)
- Puma (*Puma concolor*)



Picture 10. Puma concolor. La Ilusion I (date: 01.03.2023)



Picture 11. Puma concolor. La Ilusion I (date: 02.03.2023)



Picture 12. Tapirus terrestris. La Ilusion I (date: 05.03.2023)



Picture 13. Leopardus pardalis. El Paraiso (date: 09.03.2023)



Picture 14. *Priodontes maximus*. Ojo de Agua (date: 19.04.2023)

Ecological restoration with native species¹⁴

To promote ecological restoration, enriching plantings with native species inside existing *Acacia* and *Eucalyptus* plantations is part of the restoration activities to improve environmental conditions, promote biodiversity development, water regulation, soil enrichment, and carbon sequestration.

Two designs have been developed, each including at least two species per stand to avoid monoculture. The first design focuses on planting blocks in underutilized low savannah areas, with native species arranged in staggered rows. The second design involves forest enrichment, which consists of introducing native species into existing acacia and eucalyptus plantations established between 2007 and 2016 (Figure 5). These plantings are done manually, allowing the newly introduced trees to grow organically alongside the existing plantations.

¹⁴ 20230707 enriquecimiento del Bosque – Especies Nativas Inverbosques

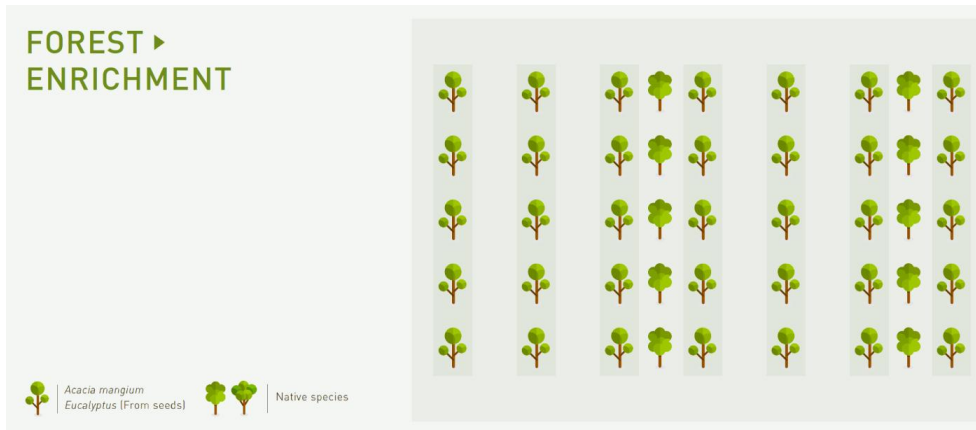


Figure 5. Forest enrichment design

The native species used for the ecological restoration are:

- Congrio (*Acosmium nitens*)
- Saladillo Blanco (*Vochisia lemanii*)
- Simaruba (*Simouruba amara*)
- Yopo (*Anandenanthera peregrina*)
- Guarupayo – Quince dias (*Tapirira guianensis*)
- Pavito- Chingale (*Jacaranda copaia*)



<p>3</p> 	<p>4</p> 
	
<p>Simaruba <i>Simarouba amara</i></p>	<p>Yopo <i>Anadenanthera peregrina</i></p>

<p>5</p> 	<p>6</p> 
	
<p>Guarupayo Quince días <i>Tapirira guianensis</i></p>	<p>Pavito - Chingale <i>Jacaranda copaia</i> (Aubl.) D.Don</p>



Picture 15. Native species enrichment planting (Los Sabanales)



Picture 16. Native species enrichment planting (La Ilusion II)

Strategic Alliances

The Vichada Climate Reforestation Project is also fostering forest and species conservation in the buffer zone of the Bitá River RAMSAR site. Collaborating with the Omacha Foundation¹⁵, the project supports the creation and strengthening of Biological Corridors for Tapir (*Tapirus terrestris*), Jaguar (*Panthera onca*), and Puma (*Puma concolor*). As part of their commitment under the “Agreement of Wills” (*Acuerdo de Voluntades*) for sustainability and conservation actions within the Bitá River Ramsar site watershed, the project has implemented a strategy for participatory biodiversity monitoring programs in alliance with the Omacha Foundation.

eDNA Soil Sampling¹⁶

Results for the pilot project and samples:

eDNA analysis revealed a rich soil biodiversity across the project area, detecting over 1,500 fungal species in the 50 soil samples analyzed. Results showed that Fungi diversity was higher in Acacia plantations (around 65 species detected), meanwhile the

¹⁵ Ruta de Madera March 2022

¹⁶ [Nature Metrics](#)

lowest species richness was present in petroferric gravel areas (around 48 species). Eucalyptus plantations harbored higher fungal diversity than both degraded and petroferric grassland, indicating successful biodiversity increases through reforestation efforts.

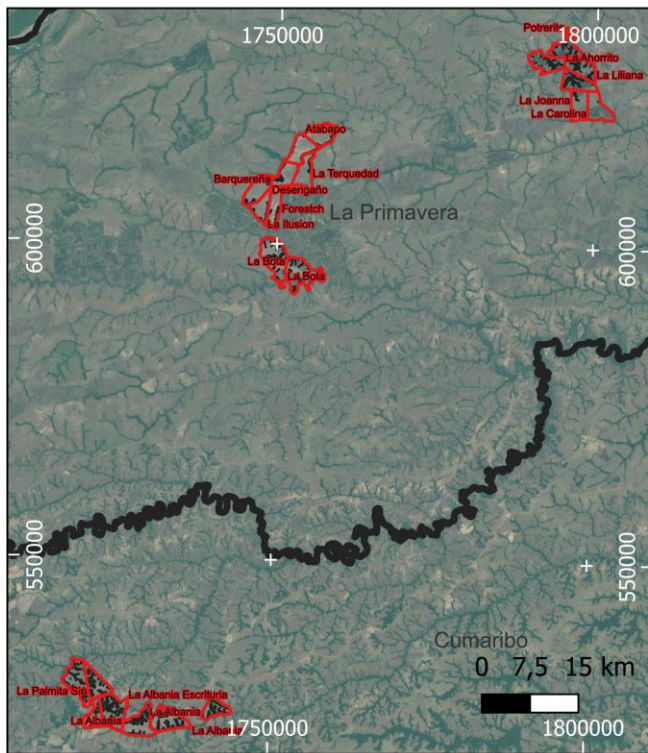
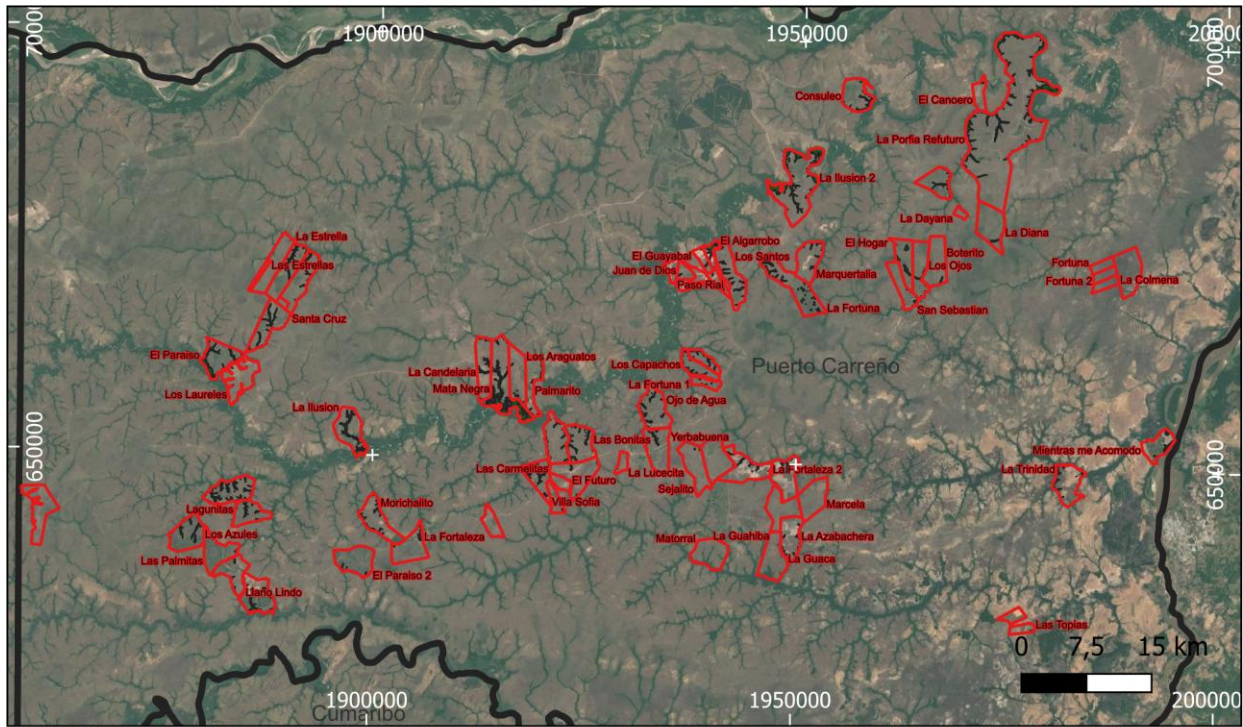
In the case of soil fauna, invertebrates, petroferric gravel and forest had the highest number of species detected, around 28 species. Meanwhile, acacia and eucalyptus plantations shared almost the same number of species, roughly 18.

The eDNA monitoring program has significantly influenced the afforestation/restoration project, providing scientific validation of their soil restoration approach. The data offers concrete evidence that their efforts are successfully increasing soil biodiversity and shifting the ecosystem towards a more forest-like state, supporting their innovative "restoration bridge" concept of using Eucalyptus as a transitional species. Insights from the fungal functional profiles are informing and optimizing restoration strategies, such as guiding decisions on when and where to introduce native tree species based on the development of mycorrhizal networks.

Table 13 - Ex-post monitoring for SDG 15

Values provided for Aldea Forestal are from the previous verified verification. To provide a comprehensive overview of the project, the values are only shown but not considered in the final value. Only Inverbosques are accounted for the current performance review event (Figure 6).

	Aldea Forestal	Inverbosques	Total (Inverbosques)
Indicator			
Total area of Trees Planted (ha)	3,282.26	18,131.74	18,131.74
Number of protected threatened species in the project area	20	110	110
Total protected Land Area	911.97	11,994.17	11,994.17



Project conservation
 PR 2024 Vichada GS-ID: 4221

Legend

- Project Properties
 - Administrative Boundaries
- Project conservation**
- Natural vegetation
 - River
 - Wetland

Land cover type	Conservation area (ha)
Natural vegetation	11,861.92
River	131.05
Wetland	1.21
Total	11,994.17

CRS: MAGNA-SIRGAS / Colombia East zone
 Proj: Transverse Mercator
 EPSG:3118
 Units: meters



Sources: GADM, OSM, Project Partners

Date of creation: 06-11-2024

Figure 6. Conservation areas

E.3. Calculation of leakage

>> NA

E.4. Calculation of net benefits or direct calculation for each SDG Impact

SDG	SDG Impact	Baseline estimate	Project estimate	Net benefit estimate
13	Climate Action -tCO ₂ removed	117,193	2,478,939	2,361,746
8	Number of Jobs	0	381	381
8	Total number of employees earning above local minimum wage	0	379	379
15	Total areas of tree planted	0	21,413.99	21,413.99
15	Number of protected threatened species in the project area & conservation status of species	31	110	79
15	Total protected land area	7,487	11,994.17	4,507.17

E.5. Comparison of actual SDG Impacts with estimates in approved PDD

SDG	Values estimated in ex ante calculation of approved PDD for this monitoring period	Actual values ¹⁷ achieved during this monitoring period
13	271,284	269,960
8	0	381
8	0	379
15	0	21,413.99
15	31	110
15	7,487	11,994.17

(a) ¹⁷ Whenever emission reductions are capped, both the original and capped values used for calculations must be transparently reported. Use brackets to denote original values.

E.5.1. Explanation of calculation of value estimated ex ante calculation of approved PDD for this monitoring period

Regarding SDG13 contribution, ex-ante calculations differ from ex-post in how volume is estimated. For ex-ante calculations, an average Mean Annual Increment (MAI) from the forest inventory 2019 was used. Then, MAI and wood density product was estimated to get tree biomass per MU. In contrast, for ex-post calculations, the total volume per plot was extrapolated to hectares, from which an average per MU was estimated to find the equivalent biomass per MU (see Section D.4).

SDG 8 and SDG 15 ex-ante calculation follows the same methodology as for ex-post calculation. The baseline was done in 2022 as part of the re-validation of the project and finalizing the transition to the Gold Standard for the Global Goals. They are based on collecting information and accounting for the total over the monitoring period.

E.6. Remarks on increase in achieved SDG Impacts from estimated value in approved PDD

>>

Not applicable for afforestation and reforestation (A/R) project activities

SECTION F. SAFEGUARDS REPORTING

PRINCIPLES	MITIGATION MEASURES ADDED TO THE MONITORING PLAN	Status Quo/ Value for Monitoring Period
2.2 Gender equality	Documentation of contracts and monitoring of salary payments. See SDG 8.	Payment is independent of gender ¹⁸ .

¹⁸See folder „03_Labour_SDG8“

3. Community Health, Safety and Working Conditions	Health and safety policies, and trainings on these topics.	Policies are in place and trainings conducted regularly ¹⁹ .
6.1.3 Labour rights	Documentation of contracts; see SDG 8	Sample contracts are provided ²⁰ .
6.1.5 Labour rights	Documentation of workers' safety workshops; see SDG 8	Safety workshops are conducted regularly ²¹ .
7.2 Energy supply	Ongoing capacity building for sustainable energy use and stakeholder consultations in the frame of FSC certification.	Topic is included into capacity building. Stakeholders perceive

¹⁹ See folder "06_SOP (health, safety at work, corporate, quality etc)"

²⁰ See VICH22_AF_Labor and VICH22_INV_Employee_numbers

²¹ See VICH22_AF_Health_and_safety_at_work and VICH22_INV_Health-Safety, and VICH22_AF_Trainings

8.1 Impact on Natural Water Patterns/Flows	(Potentially relevant) Monitoring of water consumption and existence of sustainable consumption policies	installation of solar panels as positive ²² . Water use is monitored and remained under the set thresholds. Sustainable consumption policies are in place ²³ .
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²² See VICH22_AF_Social_Impact_Evaluation, VICH22_AF_Env-Impact_Assessment_Results_22

²³ [See VICH22_AV_Env-Management-Policy, VICH22_AF_FSC_Env-Impact, VICH22_INV_Env-Policy, VICH22_INV_Environmental-management-indicators_Summaries and VICH22_AF_Env-Impact_Assessment_Results_22](#)

8.2 Erosion and/or Water Body Instability	Forest Management plans and certified compliance with them (FSC)	Areas continue following management plan and being FSC certified ²⁴ .
9.1 Landscape Modification and soil	Forest Management plans and certified compliance with them (FSC)	Areas continue following management plan and being FSC certified.
9.4 Release of pollutants	Forest Management plans and certified compliance with them (FSC) - Additional information under Principle 9.5 and 9.6	Areas continue following management plan and being FSC certified. Waste water management policies are in place ²⁵ .
9.5 Hazardous and Non-hazardous Waste	Forest Management plans and certified compliance with them (FSC) Monitoring of waste disposal and capacity building	Areas continue following management plan and being FSC certified. Waste generation is registered with the local authority. Waste disposal is monitored and the topic is included into trainings ²⁶ .
9.6 Pesticides and Fertilizers	Forest Management plans and certified compliance with them (FSC) Special capacity building related to and monitoring of agro-chemical use	Areas continue following management plan and being FSC certified. Fertilizers are only applied in early stages of tree growth. Mechanical pest management is prioritized and chemical pesticides only applied selectively. Agrochemical use is monitored and the topic is included into trainings ²⁷ .
9.11 Endangered Species	Forest Management plans and certified compliance with them (FSC) Additional biodiversity monitoring in the frame of SDG 15 and capacity building for Flora and Fauna Management	Areas continue following management plan and being FSC certified. This includes the protection of High Conservation Areas. The project additionally supports conservation movements of the Bitu River Basin. Management of Flora and Fauna is included into trainings ²⁸ . For monitored numbers, see section E.2.

²⁴ See folder 09_Forest Management

²⁵ See folder VICH22_INV_Waste_Water

²⁶ See folder 07_Environment, especially folders VICH22_AF_Waste_Disposal and VICH22_INV_Waste , and VICH22_INV_Env-Impacts_22.xlsx

²⁷ See folder 07_Environment, especially folder VICH22_INV_Agrochemicals, and VICH22_INV_Env-Impacts_22.xlsx

²⁸ See folder 07_Environment, especially VICH22_INV_Other_Env_Impacts, and folder 02_Biodiversity_SDG 15

SECTION G. STAKEHOLDER INPUTS AND LEGAL DISPUTES

G.1. List all Inputs and Grievances which have been received via the Continuous Input and Grievance Mechanism together with their respective responses/mitigations.

>> For this monitoring period the project participant Aldea Forestal has been not included²⁹. Inverbosques provided a list of grievances and requests received via multiple channels³⁰. Below is a list of comments received via telephone, e-mail, letters and the grievance box. Grievances have been anonymized.

To ensure and maintain an open and active communication environment, Inverbosques has implemented four suggestion/grievance boxes for the workers to express grievances, complaints, feedback, and suggestions. One of the boxes is located in the main camp, Las Bonitas, canteen (see pictures below), right next to where the staff receives their meal. The second and third boxes are in the men's and women's dorms of the Las Bonitas camp. The fourth one is in the small village of La Esmeralda, in the grocery store owned by one of the oldest families in the village. This location ensures the accessibility of the box to the whole community since this market store is also used as a gathering place for community members. The last box is in the auxiliary camp, Los Mangos.

Notably, the boxes are equipped with pens and a paper format with names, contact details, and space to write their complaints and suggestions.

²⁹ VICH22_AF_Grievance-mechanism_21.pdf

³⁰ VICH22_INV_Grievance_Mechanism

TEMPLATE- Monitoring Report



Grievance/suggestion box in La Esmeralda community Grievance/suggestion box in Women's dorm



Grievance box in Las Boninitas canteen Grievance/suggestion box in men's dorm.



Grievance box in Los Mangos Camp.

The table below shows a sample of the grievances and requests received during this monitoring period:

Table 14 - List of Stakeholder Inputs to Inverbosques³¹

Date	Stakeholder group	Grievance/ Request	Solved ?	Solution/ Answer
7 October 2022	Partners	The project Proyecto de Vida Silvestre - WCS requests a contribution of 2,500 native tree species for the conservation of the tapir in the Bitá River basin.	Yes	As part of its Social and Environmental Policy, INVERBOSQUES has decided to join the process of restoration and consolidation of the Bitá River basin corridor for the conservation of the tapir, bearing in mind the importance of this species in the area and applauding the actions undertaken by the project for its conservation.

³¹ For more information please reach support documentation 05_Social

				<p>This has motivated them to contribute through the donation of: 300 saladillo blanco, 1.300 moriche, 500 Simaruba, 400 yopo. Total 2.500</p> <p>This material should be used for the purpose for which it was requested, we trust that they will be put to good use, in order to contribute to the conservation of the tapir, the reduction of CO2, air purification, the formation of fertile soils, the formation of shelters for other species of fauna, reduction of soil temperature and other benefits that come with planting a tree.</p>
2 November 2022	Workers	An engineer requests a response regarding the meeting that was to be held between a legal advisor, the administrative director and the director of control and monitoring, responsible for OSH in InverBosques.	Yes	The meetings had been held to evaluate the case, but it is still under review.
1 & 2 November 2022	Community	Request for a donation of some Christmas gifts and snacks for the kids.	Yes	INV agreed to contribute by inviting the kids for a visit.
1 November 2022	Community	Request to donate lunch for a community meeting.	Yes	In accordance with the nature of the meeting, which is aimed at addressing collective issues that concern a community, of which INV is also part and in which the company has a space to share a proposal for social management and work for 2023 with the community base; INV has decided to integrate with the contribution of some ingredients for the lunch for the value of 70,000 pesos. The INV-team was put in charge of purchasing and transporting the ingredients to the meeting place
21 November 2022	Community	Request to donate Christmas gifts for kids.	Yes	Request was refused for internal reasons.

16 December 2022	Community	A community leader reported damage to a solar power plant due to maintenance work to the house on which they are installed. Additionally, information on the number of children on different farms was requested.	Yes	The company Camposol, responsible for the installation of solar systems donated by the government, visited the property and examined the system. They found damage to the controller, which was replaced. They stated that the component was showing manufacturing defects.
27 December 2022	Community	Anonymous complaint about an intern getting drunk and behaving inadequately during Christmas eve celebrations	Yes	The situation was addressed by the intern's direct supervisor and agreements were reached.
11 November 2022	Community	Request of a donation for an athlete to compete in a run.	Yes	Request was declined for not being in line with company policies.
2 November 2022	Community	Suggestion to create and promote a farmers market in La Esmeralda. Argument: In addition to motivating the culture of self-sufficiency and the exchange of agricultural products, it also increases self-employment, the feeling of well-being and the development of the community	Yes	A meeting was planned for April 2023 to discuss the idea.
25 October, 01 December 2022 , January 2023	Community	Suggestion that vehicles related to the company's activities should either take an alternative road or drive more carefully when driving through the village, as they represent a danger to playing kids and to elderly people.	Yes	There was a meeting with the contractor of the heavy vehicles and they were asked to socialise the rules of coexistence with the community.
June 2023	Community	Request for social support for our community of the Cazuarito inspection, damage to the turbo of the motor pump that provides the water pumping service to the community of the inspection, request for the maintenance of this element which has a repair value of one million eight hundred thousand pesos (\$1,800,000)".	Yes	In the past, the Inspector of Cazuarito made the same request, but during an approach by InverBosques, he mentioned that the Municipal Mayor's Office had taken care of this situation.

April 2024	Community	Request for donation of piping for the improvement of a sports arena.	Yes	The request is sent for evaluation by the sustainability committee, since the piping is available in the inventory.
July 2024	Community	Request for installation of ecological points in the bita/esmeralda pass	Yes	A favorable response is given to the request, indicating the installation of an ecological point and training will be provided to the ferry staff and the collection of waste will be done, as long as it is properly sorted according to resolution 2184/2019 (this should be done by the community).
Aug 2024	Community	Request for repair of the roads	In Progress	It is indicated that all requests related to roads are currently being evaluated, due to the contingency and the operation, there is no capacity to attend them.
Aug 2024	Community	Request for road repair, La Esmeralda - Bonitas section and patching in the town center.	In progress	The company is currently carrying out preparation and planting activities on the Alcaravan property, which has damaged the roads. Due to the rainy season, this has caused discomfort for some neighbours who travel this road. The community invited the company to carry out drainage and hole filling. The company provided a day's tractor for this activity.
Jan 2023	Supplier	Grievance - "About the payment for the workers with the service provider in charge of preparing and delivering the meals. "Servialimentos", they do not comply with the arrangements, and workers work more than 8 hours."	Yes	Since "Servialimentos" is an outsourced company, the complaint goes beyond Inverbosques's reach. However, Inverbosques contacted Servialimentos to emphasize that they must comply with all the formalities and legalities of Colombian laws and regulations. It was also suggested that the complaint reach his supervisor.
Jan 2023	Worker	Grievance – Related to the service provider Servialimentos. workers complaining about the working hours	Yes	Although the complaint is directly with the service provider, INVB suggested and helped with a new work schedule, which will be presented with the service provider's supervisor

Jan 2023	Worker	This is a complaint regarding a coordinator's behavior and attitude towards workers of lower rank. This behavior has caused some people to resign.	Yes	The complaint was escalated to the Human Resources Management Advisor, Catalina Quevedo, who will hold a meeting with the Area Director, Lilibian Jiménez, and the General Manager, Natalia Quevedo, to establish a warning about the resignations and other attitudinal situations among the area's team and make recommendations to improve coexistence throughout the area.
Jan 2023	Workers	This complaint is related the menu of the main canteen in the camp Las Bonitas.	Yes	In an improvement process with the food supplier, some recommendations have been made and the reported messages have been compiled to be transmitted in a meeting and via e-mail with the administrative director and the company manager.
Apr 2024	Community	Complaint of a community member who sold some supplies to the food service provider	Yes	Information has been verified with the purchasing area and payment vouchers have been sent to date.
Aug 2024	Community	Complaint regarding the status of the road to La Esmeralda village due to operations	Yes	Before starting the operation, the company approached the neighbors of this sector, and an agreement was reached to make the adjustments to the road once the operation is completed in this property. Pending response.

G.2. Report on any stakeholder mitigations that were agreed to be monitored.

>> No stakeholder mitigations were agreed to be monitored

G.3. Provide details of any legal contest that has arisen with the project during the monitoring period

>> There were no legal contests with the project during the monitoring period.

Revision History

Version	Date	Remarks
1.1	14 October 2020	<p>Hyperlinked section summary to enable quick access to key sections</p> <p>Improved clarity on Key Project Information</p> <p>Section for POA monitoring</p> <p>Forward action request section</p> <p>Improved Clarity on SDG contribution/SDG Impact term used throughout</p> <p>Clarity on safeguard reporting</p> <p>Clarity on design changes</p> <p>Leakage section added for VER/CER projects</p> <p>Addition of Comparison of monitored parameters with last monitoring period</p> <p>Provision of an accompanying Guide to help the user understand detailed rules and requirements</p>
1.0	10 July 2017	Initial adoption