REDD+ EMBERÁ WOUNAAN MONITORING REPORT

Document prepared by B-Terra Corp and CO2CERO S.A.S.

Date of issue (*Version 14 20/01/2025*)

Monitoring Report Template (Version 1.0)[1]	
Name of project	*REDD+ Emberá Wounaan*
BCR Project ID	*BCR-PA-CO-14-002*
Registration date of the project activity	*20/10/2022*
Project holder	*Comarca Emberá Wounaan*
Contact	*Cacique Leonides Cunampia[2]*

[1] The instructions in this form are a guide. Do not represent an exhaustive list of the information the preparer shall provide under each section of the template.
[2] It is important to highlight that the contact phone of the current Chief Leonides Cunampia is a temporary contact information, considering that the position is subject to changes according to the governance structures of the Emberá Wounaan Region.

Monitoring Report Template (Version 1.0)[1]	
	Cellphone: +507 6900-7584 *Office Address in Comarca Emberá Wounaan: Plaza Bal Harbour, Local 23 Upper Floor, Panama City.*
Version number of the Project Document applicable to this monitoring report	*Version 14* *(20/01/2025)*
Applied methodology	*This project has been developed based on the BioCarbon Registry. 2023. BCR STANDARD. From differentiated responsibility to common responsibility. Version 3.2. September 23, 2023 and the methodology "Quantification of GHG emissions in REDD+ projects BCR0002 version 3.1".*
Project location (Country, Region, City)	*Darién Province in eastern Panama, Capital: Unión Chocó*
Project starting date	20/04/2018
Quantification period of GHG reductions/removals	(20/04/2018 to 19/04/2048)
Monitoring period number	*This is the first monitoring period of the project.*
Monitoring period	(20/04/2018 to 31/12/2022)
Amount of emission reductions or removals achieved by the project in this monitoring period	*The total amount of emission reductions achieved by this monitoring period is 11,380,131 tCO_2e.* *The estimated average annual amount of GHG emission reductions is 2,276,026 tCO_2e/year*

Monitoring Report Template (Version 1.0)[1]	
Contribution to Sustainable Development Goals	*2. Zero hunger* *4. Quality education.* *5. Gender equality.* *6. Clean water and sanitation.* *13. Climate action.* *15. Life on land.*
Special category, related to co-benefits	*N/A*

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1 General description of project

The REDD+ Emberá Wounaan project is an initiative that promotes governance, culture, sustainable economic development, and environmental conservation through the enhancement of social, economic, and ecological capital. Throughout the initiative, governance and resource management involve capacity building and the design of governance structures, transparency includes learning and leadership management, and planning and foresight encompass activities that aid in the recognition of culture and social dynamics while creating strategies that revive ancestral knowledge. Additionally, support is provided for sustainable agricultural and livestock models and productive chains. On the other hand, training covers theoretical elements about a REDD+ project, socio-environmental safeguards, Conservation and Sustainable Forest Management (SFM), and identification of reforestation and restoration areas available for plantation establishment.

REDD+ Emberá Wounaan Project is in the Darién Province (Panama), encompassing 41 communities with approximately 10,000 inhabitants to be benefited and 436,551 hectares distributed in two sectors. The Cémaco Region includes three townships: Cirilo Guaynora, Manuel Ortega, and Lajas Blancas, corresponding to 72% of the total area, while the Sambú Region includes two townships, Río Sabalo and Jingurudó, covering 28% of the total area. In Cémaco, the topography consists of undulating plains with elevations ranging from 50 to 500 meters above sea level (masl) up to the foothills of the Darién Mountain range, where mountainous areas reach elevations between 500 to 1,700 meters above sea level, with the highest point being Cerro Tacarcuna at 1,850 meters above sea level. In the case of Sambú, located southeast of Darién, approximately 35% of the area consists of undulating plains in the Sambú river valley, with the highest point reaching 830 masl. The temperature in valleys and plains ranges between 27°C to 30°C with an annual average precipitation of 3,000 mm, with December, January, and February being the driest months. In mountainous and foothill areas, precipitation can reach up to 8,000 mm annually, with no dry season, and temperatures ranging between 17°C and 25°C.

The objective of REDD+ Emberá Wounaan project is to reduce deforestation and degradation of natural forests owned by the Comarca through conservation and restoration strategies involving all groups within indigenous communities, including women, elders, and youth, ensuring gender equality, participation, forest governance, and the application of skills that enhance rural development. Education and training on topics related to individual development and community management are a focal point in this project, understanding that deep learning is the best tool for implementing successful activities, achieving the continuity and stability of the initiative. Over 30 years, REDD+ Emberá Wounaan will prevent the emission net of 56,947,881 tCO_2e with an annual average net of 1,837,028 tCO_2e, estimated from an emission factor of 637.18

tCO_2e/ha for Mature Mixed Broadleaf Forest cover and 380.16 tCO_2e/ha for Secondary Mixed Forest cover. These emission factors were generated from the methodological reconstruction of Panama's National Reference Level through the establishment of monitoring plots, which are consistent with the ecosystem's reality. This project is built upon multiple activities, including emission reduction from deforestation and forest degradation.

1.1 Sectoral scope and project type

Table 1. BCR standard scope.

The scope of the BCR Standard is limited to:	
The following greenhouse gases, included in the Kyoto Protocol: Carbon Dioxide (CO_2), Methane (CH_4) and Nitrous Oxide (N_2O).	
GHG projects using a methodology developed or approved by BioCarbon Standard, applicable to GHG removal activities and REDD+ activities (AFOLU Sector).	x
Quantifiable GHG emission reductions and/or removals generated by the implementation of GHG removal activities and/or REDD+ activities (AFOLU Sector).	
GHG projects using a methodology developed or approved by BioCarbon Standard, applicable to activities in the energy, transportation and waste sectors.	
Quantifiable GHG emission reductions generated by the implementation of activities in the energy, transportation and waste sectors.	

Source: BioCarbon Standard, 2023.

Their main activity is the Reduction of Emissions from Deforestation and Forest Degradation, consolidated under the Quantification of Greenhouse Gas Emission Reduction for REDD+ Projects methodology BCR 0002 version 3.1 by BioCarbon Standard.

1.1.1 Project type

The REDD+ Emberá Wounaan project falls under the category of projects in the AFOLU sector (Agriculture, Forestry, and Other Land Use), within sectoral scope 14 Forest. Its main activity is the Reduction of Emissions from Deforestation and Forest Degradation.

The project includes only the Emberá Wounaan community, which consists of two sectors, Cémaco and Sambú, and does not require the inclusion of new instances and/or parameters in its development.

Table 2. Type of Project.

Activities in the AFOLU sector, other than REDD+	
REDD+ Activities	x
Activities in the energy sector	
Activities in the transportation sector	
Activities related to Handling and disposing of waste	

Source: BioCarbon Standard, 2023.

1.1.2 Project scale

Not applicable for the current project according to the REDD+ category under which it is designed.

1.2 Project start date

The project's start date, April 20, 2018[3], reflects the moment when the Emberá Wounaan communities, voluntarily and autonomously, managed their internal administration to initiate concrete actions aimed at reducing GHG emissions through the conservation of natural forests. This initiative originated from the communities themselves, demonstrating their commitment to protecting forest resources and preserving their cultural identity.

Support for this date is found in Administrative Resolution No. 07 issued by the Emberá Wounaan General Congress, which includes a series of specific measures for forest conservation. Among these measures[4], REDD+ projects are highlighted as a tool for conservation, particularly through strategies related to carbon dioxide capture.

In this context, Resolution No. 07 of April 20, 2018, also references the regulatory framework that established the Emberá Darién Territory. This territory was segregated from the Province of Darién, covering two geographic areas in the districts of Cémaco

[3] See in: 07_*Fecha de inicio\ResAdm_07_2018.pdf*.
[4] See in: 07_*Fecha de inicio\ResAdm_15_2018.pdf*.

and Sambú, with the purpose of promoting the integral development and cultural identity of the Emberá and Wounaan people. It is important to note that the Emberá Wounaan Territory is subject, in terms of administration, to the provisions of the National Constitution, current laws, and the regulations adopted by the General Congress of the Territory, which are executed by municipal governments and state agencies operating within its jurisdiction[5].

The Act of Resolution No. 07 also underscores the active participation of the Emberá Wounaan General Congress in national REDD+ discussions, including its contribution to the development of the National REDD+ Plan and the National Indigenous Peoples REDD+ Plan, in collaboration with the Ministry of Environment. These actions were formalized through a resolution signed by the President of the General Congress, Edilberto Dorigama, and the General Cacique, Edilfonso Aji, emphasizing the intention to conserve the Territory's forests under a conservation and protection scheme related to carbon dioxide capture.

It is worth noting that, although the National Government promoted initiatives such as the "One Million Hectares Program" (Law 69 of October 30, 2017)[6], the Emberá Wounaan Territory chose not to join the program, highlighting the voluntary nature of its efforts. By staying outside this program, the communities did not receive benefits associated with Law 69 of 2017, reaffirming that their actions were taken independently and without external conditions. However, Law 69 of October 30, 2017, served as a guide for the communities in structuring their conservation strategies.

1.3 Project quantification period

The quantification of emissions reduction for the project will be carried out from the start date of the initiative, which is April 20, 2018, until April 19, 2048, covering an accreditation period of 30 years.

1.4 Project location and project boundaries

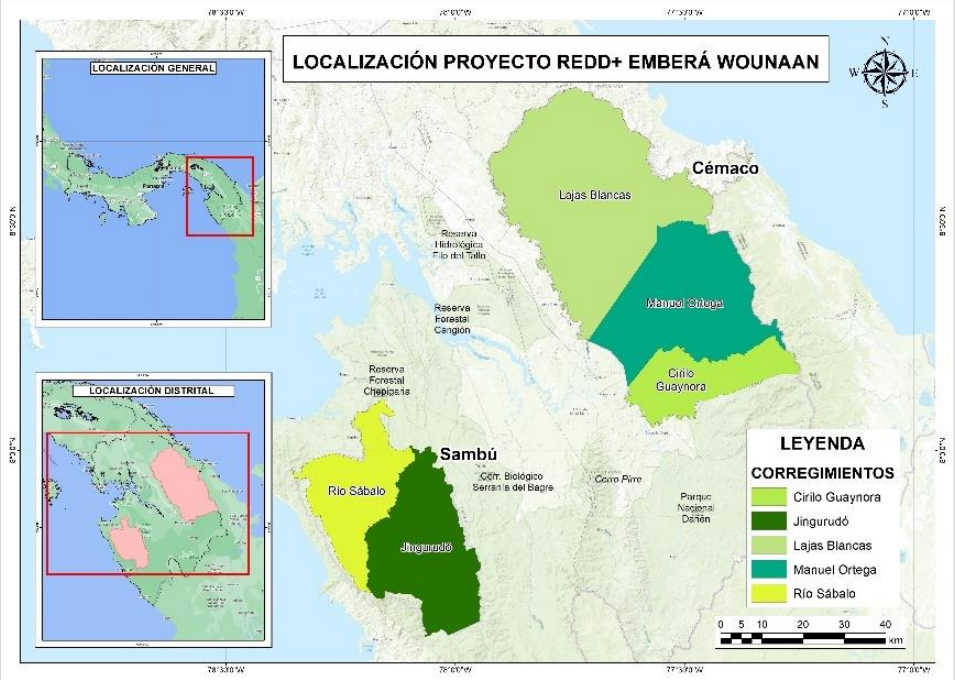
The total area of the REDD+ Emberá Wounaan project corresponds to the territories of the Emberá Wounaan indigenous communities, located in the Darién Province in eastern Panama in Central America, with its capital being Unión Chocó. According to the country's political-administrative organization, these territories correspond to the

[5] Law 22 of November 8, 1983, which established the Emberá Darién Territory.
[6] See in: *07_Fecha de inicio*

Comarca Emberá Wounaan, created by Law 22 of 1983, which defines a total extension of 436,551.48 hectares.

The Comarca Emberá Wounaan is composed of two territories: the Cémaco District and the Sambú District. The former is in the northeast of the province in the Darién mountain range, covering an area of 305,852 hectares and divided into the corregimientos of Lajas Blancas, Manuel Ortega, and Cirilo Guaynora. The Sambú District is located in the southwest of the Darién province and consists of the corregimientos of Jingurudó and Río Sábalo, encompassing the mountain ranges of Pirre, Jungurudo, El Bagre, and El Sapo, with an area of 130,699 hectares.

Figure 1. REDD+ Emberá Wounaan location.



Source: CO2CERO S.A.S., 2023.

The Cémaco and Sambú districts and the Darién Province are located within the Chocó Biogeographic region, also known as the Chocó-Darién ecoregional complex. Ecoregions are relatively large units of land composed of multiple communities and species, with boundaries closely resembling those of the predominant areas prior to more abrupt land use changes, and they are commonly used in conservation activities. This ecoregion extends from eastern Panama through the Colombian Chocó to the city of Guayaquil in Ecuador. It lies between the Pacific Ocean and the eastern Andes Mountain range andes (Olson , y otros, 2001), (WWF Colombia, Fundación Ecotróopico

y Cecoin, 2008) and is divided into several subregions. For the present project, the focus is on the Darién Province of Panama.

The REDD+ Emberá Wounaan Project is the first initiative to be developed in Panama. Therefore, there is no evidence that the project or the community is part of another registry and certification program for AFOLU sector projects, as shown in **Table 3**.

Table 3. REDD+ projects registered in certifying programs.

N°	Certification program	ID Proyect	Name	Location
1	BioCarbon Standard	N/A	Not registered	N/A
2	Verra	2578	Panama forests conservation project reduction of GHG emissions through deforestation and avoided degradation. - alliance of indigenous peoples and rural communities of Panama	Inactive Provincia Veragua
3		1881	Conservation of Panama forests - reduction of GHG emissions from deforestation. Grouped project	Provincias: Bocas del Toro, Chiriquí, Coclé, Colón, Panamá, Los Santos and Veraguas
4	Cercarbono	N/A	Not registered	N/A
5	COLCX	N/A	Only registered in Colombia	N/A
5	Gold Standard	N/A	Not registered	N/A

Source: Compiled by CO2CERO S.A.S., 2023.

1.5 Summary Description of the Implementation Status of the Project

1.5.1 Project activities

The Emberá Wounaan REDD+ project aims to strengthen socio-cultural, economic, and natural capital by involving activities for the conservation, restoration, and preservation of natural forests within the project boundary. Additionally, it focuses on improving productive activities towards more sustainable and efficient models, reducing the trend of deforestation and forest degradation, and enhancing territorial governance. Furthermore, the project seeks to improve soft skills and education within the community, achieving an integration of capacity building with the implementation of activities in the territory, enabling the communities to adopt fundamental concepts and criteria for self-management. The project's REDD+ activities are classified into four (4) strategic lines, nine (9) investment lines, translating into 21 activities. Each activity is linked to goals and indicators[7]. The REDD+ activities are presented below according to the designed lines.

Table 4. Strategic line of governance and sense of belonging.

Strategic line of governance and sense of belonging.	
1. Governance and sense of belonging: REDD+ Emberá Wounaan aims to establish a governance framework that ensures equity and transparency during the execution of conservation activities, highlighting the importance of natural resources for the communities and their inhabitants. At the same time, it's crucial for individuals to enhance their sense of belonging regarding their territory and resources, preserving the defense and recognition of natural, cultural, and social values. This strategic line focuses on governance and transparency, preventing phenomena of corruption and destruction of collective well-being.	
Investment lines	**REDD+ Activities**
1.1 Goverment and administration.	1.1.1. Guidance in defining governance structures and well-being.
	1.1.2. Training in Project management, finance and resource administration.
1.2 Transparency and participation.	1.2.1. Establishment of consultation and decision-making spaces for authorities and

[7] See in: *02_Cobeneficios\3_Actividades REDD+\ ActividadesREDD+_Emberá Wounaan_V4*

Strategic line of governance and sense of belonging.	
	members of the Emberá Wounaan community.
	1.2.1. Training in good leadership practices.

Source: B-Terra Corp and CO2CERO S.A.S., 2022.

Table 5. Strategic line of culture and society.

Strategic line of culture and society	
2. Culture and society: This strategic line promotes social and territorial development through current and prospective plans, which will guide the use and management of natural and non-natural resources to support the community's social, economic, and cultural well-being. These activities aim to involve development and planning tools within the community, enhancing welfare, participation, and management of sustainable goods and services.	
Investment lines	**REDD+ Activities**
2.1 Planning and foresight	2.1.1. Development of community planning and development tools.
	2.1.2. Design of strategies for the conservation of indigenous ancestral knowledge.
	2.1.3. Assessment of provision and availability status of basic services, sanitation, health and education.
2.2 Boundaries and territory	2.2.1. Identification of territorial boundaries.
	2.2.2. Strategies for protecting territorial boundaries.

Source: B-Terra Corp and CO2CERO S.A.S., 2022.

Table 6. Strategic line of sustainable economic development.

Strategic line of sustainable economic development.	
3. Sustainable economic development: This strategy aims to provide the necessary elements and tools to enhance economic activities by adjusting existing production chains, which involve ancestral knowledge and respect the cultural value of the Emberá Wounaan people. These activities include technical support, training, and verification of effectiveness in economic development, health, and food security within the community's daily activities. Ultimately, it consolidates inclusive spaces hand in hand with women and youth.	
Investment lines	**REDD+ Activities**
3.1 Indigenous productive improvement.	3.1.1. Technical support in sustainable family production models.
	3.1.2. Design of economic alternatives and sustainable production chains.
3.2 Strengthening of productive capacities.	3.2.1. Trining in Good production practices.
	3.2.2. Improvement of tools and work materials.
	3.2.3. Institutionalization of Good practices for economic development and well-being.

Source: B-Terra Corp and CO2CERO S.A.S., 2022.

Table 7. Strategic line of environmental conservation.

Strategic line of environmental conservation	
4. Environmental conservation: This line is directly involved with the REDD+ project, with recognition, protection, and management of natural resources being fundamental. The forest is the most important source, including carbon reservoirs and resources used by communities and their customs. Forest conservation includes Sustainable Forest Management (SFM), forest restoration, and reforestation, promoting the REDD+ activities scenario defined at the international level while strengthening the economic and cultural values of communities.	
Investment lines	**REDD+ Activities**
4.1 Resources management	4.1.1. Training in REDD+ and socio-environmental safeguards.
	4.1.2 Monitoring of vegetation and biodiversity.
	4.1.3. Training in sustainable forest management (SFM).

4.2 Enhancement of carbon reservoirs.	4.2.1. Establishment of the Emberá Wounaan forest nursery.
	4.2.2. Forest restoration.
	4.2.3 Reforestation.
4.3 Forest-based economic alternatives.	4.3.1. Non-timber forest product production.

Source: B-Terra Corp and CO2CERO S.A.S., 2022.

Over time, the Emberá Wounaan REDD+ project has developed activities for which their objectives, benefits, and expected outcomes are analyzed, as well as the indicators defined for each activity and their evaluation results. Additionally, in section *13 Implementation of the project* of this document, you will find the information corresponding to the developed activities along with their respective evidence.

Finally, since the beginning of the project, and under the leadership of the legal representatives as community members, the implementation of various REDD+ activities has been progressing, which does not require a high economic investment, and which is in accordance with the technical knowledge of the social manager, technical developer, and disposition as autonomous availability of the population, seeking an awareness of the care of forests, environment and what is derived from it, mechanism and methods that in the measure of time achieve the reduction of GHG.

1.5.2 Total GHG emission reductions achieved in this monitoring period

The present monitoring report quantifies the reduced greenhouse gas emissions within the project boundaries of the Comarca Emberá Wounaan, from the project start date of April 20, 2018, until December 31, 2022, equivalent to 4 years, 8 months, and 11 days.

The reduction of emissions generated by the project was quantified annually during the years of project implementation up to the present date. It should be noted that the risk buffer value of 20% of emission reductions was applied.

1.5.2.1. Deforestation

Based on the monitored data year by year and the quantification of forest changes in the project area, showing the loss of forest cover, which is consistent with the reduction in deforestation compared to the baseline[8]. The monitoring of the project area during the verification period is summarized in the following **Table 8**.

[8] See in: *03_Carbono\MonitoreoAreas_REDDEmberaWounaan_V7.xlsx*

Table 8. Monitoring of forest areas within the project boundaries.

Year	Mature mixed broadleaf forest (ha)	Secondary mixed broadleaf forest (ha)	Total (ha)
2018	395,363.63	30,806.70	426,170.32
2019	395,079.19	29,722.50	424,801.69
2020	394,833.49	29,330.73	424,164.22
2021	394,542.21	29,124.01	423,666.22
2022	394,302.77	28,841.57	423,144.34

Source: CO2CERO S.A.S., 2023.

For the estimation of Ex-Post emissions reduction due to deforestation, the annual decrease for the given project activities was determined, with yearly periods covering the years of the initiative, evaluated for both the project area and the Leakage Area. The reduction in emissions in the Leakage Area occurred when the deforested area exceeded the scenario without the project[9].

In this way, the Ex-post emissions reduction of the project due to deforestation was obtained, considering the annual gross emissions generated by the project's implementation. During the evaluated monitoring period (5 years), a total of 7,862,828 tCO_2e reduced emissions were evidenced within the project area (**Table 9**).

Table 9. Reduction of net emissions due to deforestation in the project area.

Year	Ealb (tCO_2e)	Eim,m (tCO_2e)	EAf (tCO_2e)	Total RE (tCO_2e)	Buffer 20%	Net RE (tCO_2e)
2018	1,730,916	242,337	122,044	1,461,385	292,277	1,169,108

[9] See in: *03_Carbono\Carbono_Deforestacion_REDDEmberaWounaan_V10.xlsx*

Year	Ealb (tCO_2e)	Eim,m (tCO_2e)	EAf (tCO_2e)	Total RE (tCO_2e)	Buffer 20%	Net RE (tCO_2e)
2019	2,477,585	346,874	174,691	2,091,787	418,357	1,673,430
2020	2,477,585	346,874	174,691	2,091,787	418,357	1,673,430
2021	2,477,585	346,874	174,691	2,091,787	418,357	1,673,430
2022	2,477,585	346,874	174,691	2,091,787	418,357	1,673,430
TOTAL	**11,641,256**	**1,629,833**	**820,808**	**9,828,533**	**1,965,705**	**7,862,828**

Source: CO2CERO S.A.S., 2023.

Donde:

- *Ealb:* CO_2e emissions from deforestation for the baseline scenario.
- *Eim,m:* CO_2e emissions from deforestation in the project scenario.
- *EAf:* CO_2e emissions from deforestation in the leakage area.
- *Total RE:* Total CO_2e emissions reduction from deforestation in the monitoring period.
- *Buffer:* Reserve for the risk of non-permanence during the monitoring period.
- *Net RE*: Net CO_2e emissions reduction from deforestation in the monitoring period.

1.5.2.2. Forest degradation

For the estimation of ex-post emission reductions from degradation, the monitoring of areas for each degradation class was first conducted within the categories of Core, Perforations, and Islets (patches). The results of the areas by fragmentation class for the monitoring period (2018 – 2022) are shown in **Table 10**.

Table 10. Fragmentation classes during the monitoring period.

Spatial Boundary	Class	Area (ha)	
		Year 1 (2018)	Year 2 (2022)
Project Area	Core	387,378.65	379,420.78
	Perforation	84,28	56.00

Spatial Boundary	Class	Area (ha)	
		Year 1 (2018)	Year 2 (2022)
	Patch	1,717.52	2,170.21
	Overall total	**389,180.45**	**381,646.99**
Leakage Area	Core	12,887.90	9,831.74
	Perforation	98.74	16.83
	Patch	3,019.26	3,529.26
	Overrall total	**16,005.90**	**13,377.83**

Source: CO2CERO S.A.S., 2023.

Similarly, taking into account the selected MSPA (*Morphological Spatial Pattern Analysis*) classes and the land cover for the years within the monitoring period, a transition analysis is conducted according to the type of degradation (**Table 11**).

Table 11. Transition of fragmentation classes during the monitoring period.

		MMBF (ha)	SMBF (ha)
Spatial Boundary	**Class year 2018** / **Class year 2022**	Patch	Patch
Project Area	Core	245.75	617.77
	Perforation	0.00	0.00
	Total general	**245.75**	**617.77**
Leakage Area	Core	234.31	567.97
	Perforation	0.00	0.00

	Total general	**234.31**	**567.97**

*MMBF: Mature Mixed Broadlef Forest
*SMBF: Secondary Mixed Broadlef Forest

Source: CO2CERO S.A.S., 2023.

Additionally, the annual reduction due to the project's activities was determined (**Figure 2**) in accordance with the determination of the transition area for each type of degradation, with annual periods covering the years of the initiative. This evaluation was conducted for both the project area and the leakage area[10].

In this way, the ex-post emission reductions from degradation were obtained, considering the net annual emissions generated by the project due to its implementation. During the evaluated monitoring period (5 years), a total of 1,241,277 tCO_2e were reduced within the project area (see **Table 12**).

Table 12. Net emission reductions from degradation in the project area.

Year	*tCO_2e*					
	EAlbdeg	Eim,mdeg	EAfdeg	RE Totales deg	Búffer	RE Netas deg
	Annual	Annual	Annual	Annual	Annual	Annual
2018	299,234	70,834	10,499	217,901	43,580	174,321
2019	428,316	142,882	66,052	219,381	43,876	175,505
2020	428,316	62,003	0	366,313	73,263	293,050
2021	428,316	28,572	0	399,743	79,949	319,794
2022	428,316	80,057	0	348,259	69,552	278,607

[10] See in: *03_Carbono\Carbono_Degradacion_REDDEmberaWounaan_V9.xlsx*

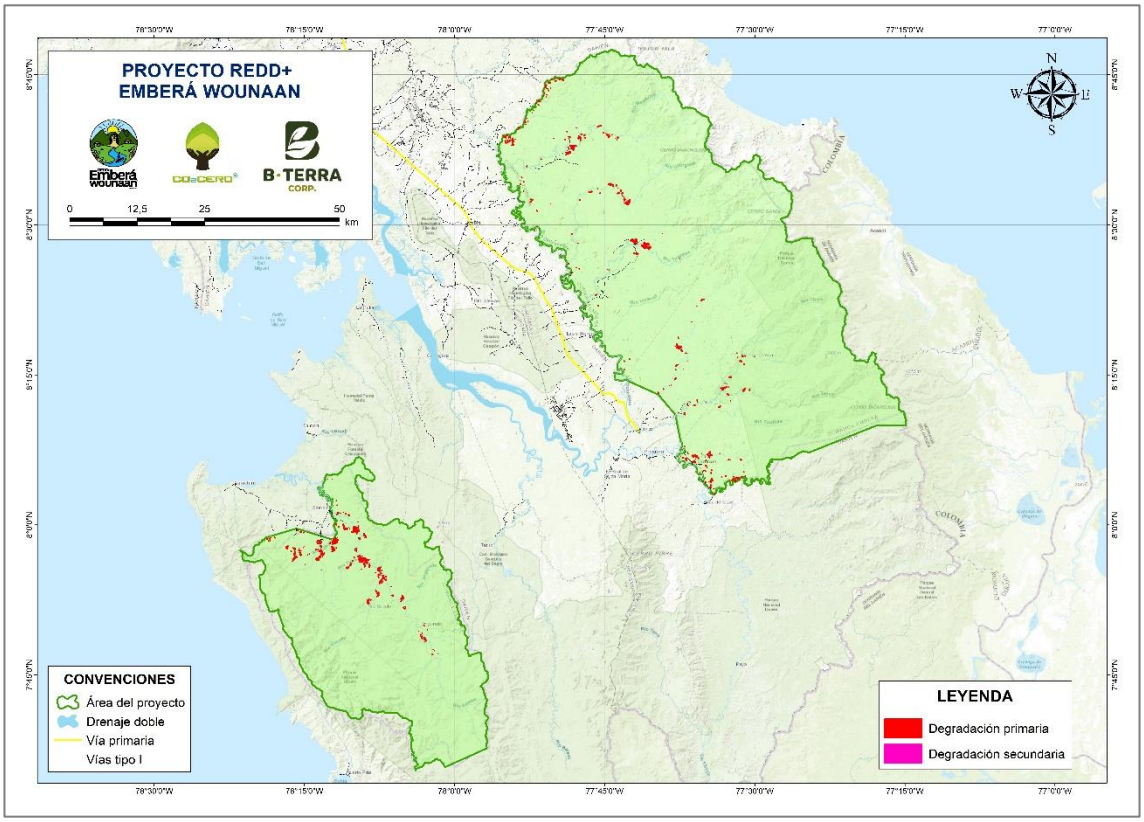
Year	*tCO₂e*					
	EAlbdeg	Eim,mdeg	EAfdeg	RE Totales deg	Búffer	RE Netas deg
	Annual	Annual	Annual	Annual	Annual	Annual
TOTAL	**2,012,496**	**384,348**	**76,550**	**1,551,598**	**310,320**	**1,241,277**

Source: CO2CERO S.A.S., 2023.

Where:

- *EAlbdeg:* CO_2e emissions from degradation for the baseline scenario.
- *Eim,mdeg:* CO_2e emissions from degradation in the project scenario.
- *EAfdeg:* CO_2e emissions from degradation in the leakage area.
- *RE Totales deg:* Total CO_2e emission reductions from degradation during the monitoring period.
- *Buffer:* Reserve for risk of non-permanence during the monitored period.
- *RE Netas deg*: Net CO_2e emission reductions from degradation during the monitoring period.

Figure 2. Degradation map for the monitoring period within the project area.



Source: CO2CERO S.A.S., 2023.

1.5.2.3. Forest fires

The quantificaction of CO_2 and non-CO_2 emissions generated by forest disturbances from fires is estimated based on the guidelines presented in the “2006 IPCC guidelines for national greenhouse gas inventories. Volume 4. Agriculture, forestry and other land uses. Non- CO_2 greenhouse gas emissions from biomass burning” and considering the results from cover monitoring, aerial biomass data, and litter from the forest inventory, and the guidelines from Chapter 2, "Generic methodologies applicable to multiple land-use categories"[11]. According to the applicability conditions for the section on emissions generated by fires in forest lands, croplands, and grasslands, emissions of CO_2, CH_4, and N_2O from controlled and natural fires are declared.

[11] Volume 4 AFOLU, Chapter 2 Generic Methodologies Applicable to Multiple Land-Use Categories. From the book "2006 IPCC Guidelines for National Greenhouse Gas Inventories."

Considering the availability of information and the variables included in Equation 2.27 of the mentioned chapter, the following formula is applied:

$$Lfuego = A * Mb * Cf * Gef * 10-3$$

Where:

Lfuego: Amount of GHG emissions caused by the fire (t of each GHG).
A: Burned area (ha).
Mb: Mass of fuel available for combustion (t/ha). This includes biomass, litter, and dead wood.
Cf: Combustion factor, dimensionless (Default value according to IPCC cover type).
Gef: Emission factor (g/kg) of dry matter burned.

According to the variables described above, the data generated specifically by the project (**Figure 3**) corresponds to the variable's "A" thanks to geoprocessing and to the variable "Mb," where the values of available mass are obtained through forest monitoring. The values are obtained for the aboveground biomass and litter reservoirs, excluding dead wood and belowground biomass as these are derived from the variables and are thus assumed to be zero. The results in terms of areas and tCO_2e are presented in the **Table 13** and **Table 14**, respectly. It is important to note that the Global Warming Potentials for methane and nitrous oxide were obtained from the IPCC's Sixth Assessment Report[12].

Table 13. Monitoring of forest fire areas within the project area and leakage areas.

Spatial Boundary	Year	Area (ha)	
		MMBF	SMBF
Project Area	2018	5.32	8.29
	2019	17.40	38.08
	2020	3.57	2.60
	2021	5.63	1.60

[12] *https://report.ipcc.ch/ar6/wg1/IPCC_AR6_WGI_FullReport.pdf*

Spatial Boundary	Year	Area (ha)	
		MMBF	SMBF
	2022	6.91	1.21
	Total	**38.83**	**51.78**
Leakage Area	2018	2.60	11.74
	2019	9.26	34.72
	2020	0.24	1.65
	2021	4.12	4.23
	2022	1.01	0.59
	Total	**17.23**	**52.94**

Source: CO2CERO S.A.S., 2023.

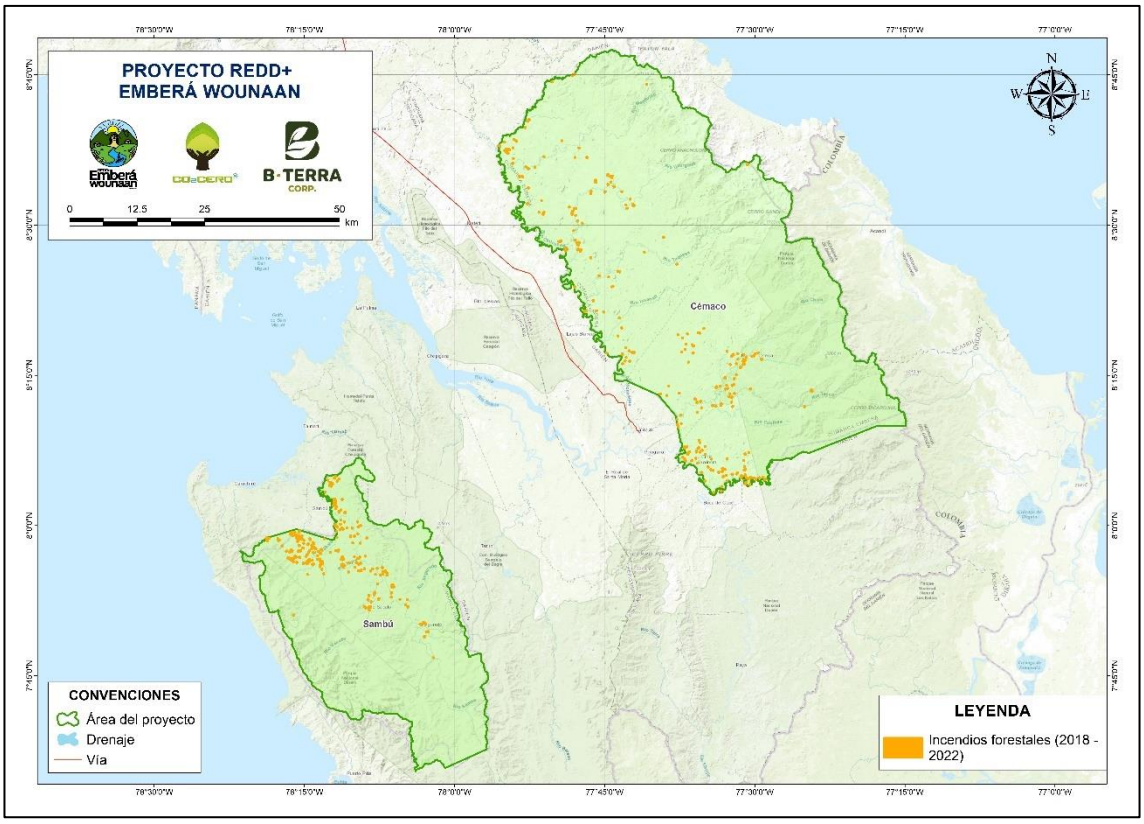
Table 14. Net emission reductions from forest fires within the project area.

Year	tCO_2e	
	LFire Project Area	LFire Leakage Area
2018	3,318	2,320
2019	4,749	3,321
2020	4,749	3,321
2021	4,749	3,321
2022	4,749	3,321

Year	tCO_2e	
	LFire Project Area	LFire Leakage Area
Total	**22,313.79**	**15,604.15**

Source: CO2CERO S.A.S., 2023.

Figure 3. Map of forest fires for the monitoring period within the project area.



Source: CO2CERO S.A.S., 2023.

1.5.3 Total GHG emission reductions

Considering the selected activities in the project (deforestation and degradation), as explained earlier, the project yields a total of 11,380,131 tCO_2e for the initial verification period (5 years) within the project area. This includes reductions due to non-permanence

risk (buffer) and forest fires. It's worth noting that the net reductions from the project amount to 9,104,105 tCO_2e (see **Table 15**)[13].

Table 15. Net reductions in the project area.

	tCO_2e										
Year	***Ealb***	***Eim,m***		***EAf***		***RE Totales***		***Búffer***		***RE Netas***	
	Annual	**Annual**	**Acum**	**Annual**	**Acum**	**Annual**	**Acum**	**Annual**	**Acum**	**Annual**	**Acum**
2018	2,030,150	316,488	316,488	34,374	34,374	1,679,286	1,679,286	335,857	335,857	1,343,429	1,343,429
2019	2,905,901	494,505	810,994	100,227	134,601	2,311,168	3,990,455	462,233	798,091	1,848,935	3,192,364
2020	2,905,901	413,626	1,224,619	34,175	168,776	2,458,100	6,448,555	491,620	1,289,710	1,966,480	5,158,844
2021	2,905,901	380,195	1,604,815	34,175	202,951	2,491,530	8,940,085	498,306	1,788,016	1,993,224	7,152,068
2022	2,905,901	431,680	2,036,494	34,175	237,126	2,440,046	11,380,131	488,009	2,276,025	1,952,037	9,104,105
TOTAL	**13,653,752**	**2,036,494**		**237,126**		**11,380,131**		**2,276,025**		**9,104,105**	

Source: CO2CERO S.A.S., 2023.

Where:

- *Ealb:* CO_2e emissions from deforestation and degradation for the baseline scenario.
- *Eim,m:* CO_2e emissions from deforestation and degradation in the project area.
- *EAf:* CO_2e emissions from deforestation and degradation in the leakage area.
- *Total RE:* Total CO_2e emissions reductions from deforestation and degradation during the monitoring period.
- *Buffer:* Reserve for risk of non-permanence for the ex-post deforestation and degradation emissions reduction scenario.
- *Net RE:* Net CO_2e emissions reductions from deforestation and degradation during the monitoring period.

[13] See in: *03_Carbono/Carbono_Total_EmberaWounaan_V11.xlsx*

1.5.4 Overlap of activities

To avoid double counting for quantifying deforestation and degradation within the REDD+ Emberá Wounaan project area, the "Avoiding Double Counting" tool version 1.0 proposed by the BioCarbon Standard was utilized. A series of geoprocessing steps were undertaken to ensure the consistency and transparency of emission reductions during the current certification period. The different geoprocessing steps employed by the project are described below:

1. Layers of forest non-forest within the eligible project area and the leakage area[14] were intersected with degraded areas monitored annually during the monitoring period. This was done to prevent degraded areas from appearing in non-forest areas[15].
2. Subsequently, all monitored areas corresponding to each activity (deforestation and degradation) throughout the monitoring period were intersected. This was done in two instances:

    a. Each monitored deforested and degraded area was independently evaluated to ensure that no overlap occurred between two or more areas presenting the same type of degradation (primary or secondary) or that the same deforested areas were reported multiple times throughout the monitoring period. This ensures that a degraded or deforested area is not counted more than once over the monitoring period and that there is no double counting of CO_2 emissions.

    b. The total degraded areas from the entire monitoring period for each type of degradation were intersected to prevent transitions between inconsistent classes (e.g., transition from areas with secondary degradation in the early years of monitoring subsequently reported as areas with primary degradation). This ensures that degradation is consistent with the definition of each class defined by the country, thus, only transitions from primary degradation to secondary degradation in subsequent years are valid.

3. It was ensured that there were no overlaps year by year between the two activities included in the project, i.e., no areas were degraded and deforested

[14] See in: *04_SIG\1_GDB\B_NB_EmberaV7.gdb*
[15] See in: *4_SIG\1_GDB\Degradacion_V6.gdb*

simultaneously in the same year. This was done through annual intersections between deforested and degraded areas.

Finally, the entirety of reported and monitored deforested and degraded areas during the monitoring period were consolidated, and the areas corresponding to each activity were intersected. Considering the steps described above, the result is that there is no overlap between degradation and deforestation.

2 Title, reference and version of the baseline and monitoring methodology applied to the project

The REDD+ Emberá Wounaan Project was developed following the guidelines of the BCR Standard version 3.2, applying the BCR 0002 methodology version 3.1 of the BioCarbon Standard. Additionally, the tools suggested by the standard were used to address topics such as compliance with safeguards, alignment with the Sustainable Development Goals (SDGs), no net harm, baseline and additionality, monitoring reporting, risk and permanence, and avoiding double counting. In the **Table 16**, the names are related to the respective version used to build the current monitoring report.

Table 16. Tools of the BCR standard used for the current monitoring period.

Tool	Version
Tool to demonstrate compliance with the REDD+ Safeguards	Version 1.1
Sustainable Development Goals (SDGs)	Version 1.0
Avoiding double counting	Version 1.0
Monitoring, Reporting, and Verification (MRV) Tool	Version 1.0
Not net harm environmental and social safeguards	Version 1.0
Baseline and Additionality	Version 1.2
Permanence and risk management	Version 1.0

Source: CO2CERO S.A.S., 2023

3 Registry or participation under other GHG Programs/Registries

The REDD+ Emberá Wounaan Project has not been registered under another climate change mitigation program because this is its first monitoring period subject to validation and verification by a conformity assessment body, and it is the first initiative of this kind registered in Panama.

4 Contribution to Sustainable Development Goals (SGD)

In **Table 17**, a summary of the Sustainable Development Goals (SDGs) indicators applicable to the initiative is presented. These indicators are aligned with the National Strategic Plan with a State Vision "Panama 2030" developed by the National Development Consultation Council in conjunction with the United Nations Development Programme (UNDP). It is important to clarify that some of these indicators are applied with restrictions in their manifestation, given the scale at which they are proposed by the tool (International) and their relationship with the scale at which the project is implemented (Regional). To review the REDD+ activities[16].

Table 17. Indicators of Sustainable Development Goals (SDGs) related to the initiative.

SDG	Indicator	Variable	Strategic axis according to the National Strategic Plan
2. Zero hunger	2.a.2	Total official flows of resources (official development assistance plus other official flows) allocated to the agricultural sector	Good life for all
4. Quality education	4.1.1	Completion rate (primary education,	Good life for all

[16] See in: *02_Cobeneficios/3_Actividades REDD+*

SDG	Indicator	Variable	Strategic axis according to the National Strategic Plan
		first cycle of secondary education, and second cycle of secondary education)	
	4.3.1	Rate of participation of youth and adults in formal and non-formal education and training in the last 12 months, disaggregated by sex	Good life for all
5. Gender equality	5.1.1	Determine whether there are legal frameworks to promote, enforce, and monitor gender equality and non-discrimination	Good life for all
	5.5.2	Proportion of women in managerial positions	Good life for all
6. Clean wáter and sanitation	6.1.1	Proportion of the population using safely managed drinking water services	Environmental sustainability
13. Climate action	13.2.1	Number of countries that have communicated the establishment or implementation of an integrated policy, strategy, or plan that increases their capacity to adapt to adverse effects of	Environmental sustainability

SDG	Indicator	Variable	Strategic axis according to the National Strategic Plan
		climate change and promotes climate resilience and low greenhouse gas emissions development without compromising food production (e.g., national adaptation plan, nationally determined contribution, national communication, or biennial update report)	
15. Life on land	15.1.1	Forest area as a proportion of total land area	Environmental sustainability
	15.1.2	Proportion of important sites for terrestrial and freshwater biodiversity included in protected areas, disaggregated by ecosystem type	Environmental sustainability
	15.2.1	Progress towards sustainable forest management	Environmental sustainability
	15.3.1	Proportion of degraded land compared to total land area	Environmental sustainability
	15.4.1	Important biodiversity sites in mountains	Environmental sustainability

SDG	Indicator	Variable	Strategic axis according to the National Strategic Plan
		included in protected areas	
	15.4.2	Mountain green cover index	Environmental sustainability
	15.5.1	Red List Index	Environmental sustainability

Source: Compiled by CO2CERO S.A.S., 2022.

By implementing REDD+ activities, the Emberá Wounaan project has aimed to promote climate action and has assessed its contribution to the Sustainable Development Goals (SDGs) using the BioCarbon Standard's tool for determining contributions to the achievement of the SDGs version 1.0. This tool presents relevant criteria and indicators applicable to the project context[17]. In **Table 18**, the indicators for the SDGs applicable to the initiative and their results are presented. For a review of the REDD+ activities, refer to "*02_Cobeneficios\3_Actividades REDD+*" and section *13 Implementation of the project*.

[17] See in: *02_Cobeneficios\4_SDG-Tool-2023_Emberá Wounaan_V3.xlsx.*

Table 18. Alignment of project activities with the SDGs.

Indicator	Variable	Compliance	Evidence
ODS 2 Zero hunger			
2.a.2	Total official resource flows (official development assistance plus other official flows) allocated to the agricultural sector.	To comply with the provisions of this indicator, the percentage allocated for the development of the agricultural sector is established in relation to the income to be obtained from the sale of carbon credits through the implementation of the project. This ensures the full and effective participation of all inhabitants of the communities belonging to the REDD+ Emberá Wounaan project[18]. Additionally, compliance with goal 2.a.2. is achieved through the REDD+ 1.1.2. activity, as it is envisaged to provide tools for the management of development alternatives at the community level, focusing on health, education, and housing, as well as strengthening skills in budget management, finance, and economic resource administration at the community level[19,20].	1) *11_Anexos y complementarios\01_Asistencia\Sesiones_Lideres_Encargados_17 11 2022.pdf* 2) *11_Anexos y complementarios\01_Asistencia\Asistencia_CongresoGeneral_22 11 2022.pdf* 3) *02_Cobeneficios\3_Actividades REDD+\SoporteActividades\1.1 Gobierno y administración\1.1.1Acta_CongresoGeneral_22 11 2022.pdf*
ODS 4 Quality education			

[18] See in: *11_Anexos y complementarios\10_Anexo_DistribuciónBeneficios_V3.docx*
[19] See in: *11_Anexos y complementarios\01_Asistencia\Sesiones_Lideres_Encargados_17 11 2022.pdf*
[20] See in: *02_Cobeneficios\3_Actividades REDD+\SoporteActividades\1.1 Gobierno y administración\1.1.1Acta_CongresoGeneral_22 11 2022.pdf.*

Indicator	Variable	Compliance	Evidence
4.3.1	Participation rate of youth and adults in academic and non-academic education and training in the last 12 months, disaggregated by gender.	Initially, training sessions are conducted focusing on sustainable forest management, good production practices, leadership skills, REDD+ and socio-environmental safeguards, and project management, finance, and resource administration. Information is collected on the number of trained individuals disaggregated by gender. The goal is to leverage the acquired knowledge in the future to implement non-formal educational programs. Below are some of the objectives outlined in the development of these activities: - Improve production levels within the indigenous territory. - Enhance the productive capacities and skills of community members. - Increase formal and non-formal education levels within the region. - Build capacities in women, youth, and adults for leadership in cultural, social, and economic domains. - Increase education levels in soft skills. Finally, the number of individuals trained in the conducted activities is presented:	1) *01_Acuerdos\01_Acuerdo comunidad\AprobacionRegional_Cemaco.pdf* 2) *01_Acuerdos\01_Acuerdo comunidad\AprobacionRegional_Sambu.pdf* 3) *02_Cobeneficios\3_Actividades REDD+\SoporteActividades\1.1 Gobierno y administración\1.1.1Acta_PlanQuinquenal_13 08 2022.pdf* 4) *11_Anexos y complementarios\01_Asistencia\Asistencia_Plan Quinquenal_13 08 2022.pdf* 5) *02_Cobeneficios\3_Actividades REDD+\SoporteActividades\1.1 Gobierno y administración\1.1.1 Resolucion003_ConsejoNokoraChiPorNaan.pdf* 6) *11_Anexos y complementarios\01_Asistencia\Sesiones_Lideres_Encargados_17 11 2022.pdf.* 7) *11_Anexos y complementarios\01_Asistencia\Asistencia_CongresoGeneral_22 11 2022.pdf.*

Indicator	Variable	Compliance	Evidence
		- Training in project management, finance, and resource administration: 1) 7 trainings on project management, benefit distribution, and resource management: 2 men 2) Definition of agreements for resource management and understanding of the REDD+ project: 8 men. - Leadership training in good practices: 1) Training on the implications of the REDD+ project in the region, community development, and governance: 2 men. 2) Resolution of conflicts and territorial differences: 2 men and 9 women. - Training in REDD+ and socio-environmental safeguards: 1) Socialization on REDD+ initiatives and carbon capture: 5 men. 2-4) Socialization on REDD+ and analysis of deforestation and degradation factors: 32 women and 70 men. 5) Definition of safeguards indicators: 2 men. 6) Basic concepts training on Climate Change: 8 women and 53 men 7-18; 20) Training on Climate Change, REDD+, and	8) *02_Cobeneficios\Soportes Actividades\1.1 Gobierno y administración\Acta_CongresoGeneral_22 11 2022.pdf.*

Indicator	Variable	Compliance	Evidence
		Carbon Market for residents and Nokora Council: 117 women, 286 men, and 4 illegible. 19) Socialization on the REDD+ project, its scope, and objectives at the regional level: 5 men.	
ODS 5 Gender equality			
5.1.1	To determine whether legal frameworks exist to promote, enforce, and monitor gender equality and non-discrimination based on sex	In Panama, regulations exist for the promotion, enforcement, and monitoring of this indicator, as evidenced by the verification of compliance in the implementation of the REDD+ Emberá Wounaan project. The current applicable regulations are described, mainly the Public Policy for Equality of Opportunities for Women (2012), Law No. 4 (1999), Executive Decree No. 53 (2002), Belém do Pará Convention (1994), CEDAW Convention (1979), Beijing Platform for Action (1995), and National Women's Mechanism (2017). On the other hand, through the implementation of the REDD+ 1.2.2. activity, efforts are made to build capacities in women, youth, and adults for leadership in cultural, social, and economic spheres.	1) *11_Anexos y complementarios\01_Asistencia\Sesiones_Lideres_Encargados_17 11 2022.pdf\Pg. 8* 2) *11_Anexos y complementarios\01_Asistencia\Asistencia_Cirilo Guainora_12 09 2021.pdf* 3) *02_Cobeneficios\3_Actividades REDD+\SoporteActividades\1.2 Transparencia y participación\1.2.2 Acta_Cirilo Guainora_12 09 2021.pdf*

Indicator	Variable	Compliance	Evidence
5.5.2	Proportion of women in leadership positions	Within activity 1.1.2 Training in project management, finance, and resource administration, and its corresponding indicator, it is possible to identify the number of women involved in training processes and whether they hold a direct or leadership role within them. Additionally, on-site information gathering is consolidating data from each respondent regarding their role within the Region (Activity 2.1.3 assessment of the state of provision and availability of basic services, sanitation, health, and education).	1) *11_Anexos y complementarios\01_Asistencia\Sesiones_Lideres_Encargados_17 11 2022.pdf.* 2) *11_Anexos y complementarios\01_Asistencia\Asistencia_CongresoGeneral_22 11 2022.pdf.* 3) *02_Cobeneficios\3_Actividades REDD+\SoporteActividades\1.1 Gobierno y administración\1.1.1Acta_CongresoGeneral_22 11 2022.pdf.*
ODS 6 Clean water and sanitation			
6.1.1	Proportion of the population using safely managed drinking water supply services.	Activity 2.1.3 assesses the state of provision and availability of basic services, sanitation, health, and education. Its objective is to identify focal points for individual and community development planning, as evidenced by the number of households evaluated annually regarding the provision of basic services and the initiatives aimed at improving the provision of essential public services in the communities. Water is one of the elements involved in the analysis.	1) *02_Cobeneficios\3_Actividades REDD+\SoporteActividades\2.1 Planeación y prospectiva\2.1.3 Mejoramiento agua potable.pdf.* 1 initiative developed.

Indicator	Variable	Compliance	Evidence
ODS 13 Climate action			
13.2.1	Number of countries that have reported the establishment or implementation of a policy, strategy, or integrated plan to enhance their capacity to adapt to the adverse effects of climate change, promoting climate resilience and low-emission development without compromising food production. This may include a national adaptation plan, nationally	The Panamanian National Climate Change Policy establishes the principle of recognizing the commitment to implementing actions for adaptation and mitigation of the adverse effects of climate change, considering areas of poverty, conservation and recovery of natural resources, and preservation of ecosystems. Within its objective 3, the policy aims to promote actions related to climate change mitigation that are compatible with the sustainable economic and social development established in the Kyoto Protocol. This involves promoting the implementation of development projects in the forestry sector, supported by the Clean Development Mechanism (CDM), including a REDD+ climate change mitigation project[21]. Additionally, Panama has the 2050 National Climate Change Strategy from the Ministry of Environment, where adjustments to the nation's environmental regulations are consolidated, and mechanisms for climate change mitigation, such as the National REDD+ Strategy, are outlined. Similarly, Panama has updated its Nationally Determined	1) *06_Documento de proyecto*\PART 1 - *ENG_REDD+ Emberá Wounaan_MonitoringReport_V14.docx\4.3 REDD+ in national context* 2) *09_Legislación\3_Documentos legales\01_Ambientales\Estrategia Nacional de Mitigación del Cambio Climático de Panamá.pdf.* 3) *09_Legislación\3_Documentos legales\01_Ambientales\CDN1_República de Panamá_2020.pdf*

[21] See in: *06_Documento de proyecto\PART 2 - ENG_PDD_EmberáWounaan_V14.docx\4.3 REDD+ in national context*

Indicator	Variable	Compliance	Evidence
	determined contribution, national communication, or biennial update report.	Contribution (NDC), involving ten (10) economic sectors, presenting operational climate scenarios resulting from designed policy instruments.	
ODS 15 Life on land			
15.1.1	Forest area as a proportion of total land area.	Cartographic analysis is conducted to establish the eligibility of the project area, defining forest and non-forest areas in relation to the total land area. For the year 2022, a total of 421,653.49 hectares of forest have been identified[22]. Additionally, REDD+ Activity 4.2.3 aims to increase carbon reservoirs, involve new production and conservation activities in the territory, and restore degraded areas and their ecosystem services.	1) *02_Cobeneficios\4_Soportes Actividades\3_Actividades REDD+\SoporteActividades\4.2 Mejoramiento de reservorios de carbono\4.2.3 Reforestación Sambú_2019.jpeg*
15.1.2	Proportion of important sites for terrestrial and freshwater	For the identification of important biodiversity sites, a cartographic analysis is conducted by ecosystem type, using the Holdridge climatic classification within the protected areas located in the Cémaco and	1) *06_Documento de proyecto\PART 1 - ENG_PDD_EmberáWounaan_V14.docx\ 2.5.1.5.1 Ecosystem types in protected areas*

[22] See in: *06_Documento de proyecto\PART 1 - ENG_PDD_EmberáWounaan_V14.docx\3.6.1 Eligible areas within GHG project boundaries (AFOLU sector projects)*

Indicator	Variable	Compliance	Evidence
	biodiversity included in protected areas, disaggregated by ecosystem type.	Sambú regions. It is identified that the very humid tropical forest presents a higher proportion of the area, accounting for 32.54% across all protected areas, followed by pre-montane rainforest (30.09%), very humid pre-montane forest (28.26%), tropical humid forest (8.21%), and low montane rainforest (0.90%).	
15.3.1	Proportion of degraded land compared to the total land area.	Compliance is achieved through the implementation of REDD+ Activity 4.2.2, which outlines forest restoration strategies aimed at reducing the impacts generated by forest degradation and increasing carbon reservoirs within the region. This is achieved through the engagement of the entire community in climate change mitigation activities. Additionally, an analysis is conducted on the annual historical degradation of the project area, highlighting the proportion of degraded land in the total area and the leakage area, under both baseline and project scenarios.	1) *06_Documento de proyecto\PART 1 - ENG_PDD_EmberáWounaan_V14.docx\ 3.6.3.2.3.2 Forest Degradation* 2) *02_Cobeneficios\4_Soportes Actividades\3_Actividades REDD+\SoporteActividades\4.2 Mejoramiento de reservorios de carbono\4.2.3 Reforestación Sambú_2019.jpeg*
15.4.1	Important sites for mountain biodiversity included in protected areas.	As part of the development of REDD+ Activity 4.1.2, information is expected to be generated on the current state of the natural resources owned by the region, along with an increase in knowledge associated with biodiversity and the richness of flora. Additionally, an assessment of the area is conducted. For the delimitation of the mountain landscape, a cartographic analysis was performed, identifying areas with slopes	1) *02_Cobeneficios\3_Actividades REDD+\SoporteActividades\4.1 Gestión de recursos\4.1.2 AnalisisdeFauna_Metití.pdf*

Indicator	Variable	Compliance	Evidence
		greater than 30% within the total protected areas. It was determined that 13.85% (19,413.41 ha) of this landscape belongs to important sites for biodiversity, mainly located in the Darién National Park[23].	
15.4.2	Mountain Green Cover Index	The area of stable forest within the project corresponds to 421,653.49 hectares, representing identified stable forest for the year 2022.	1) *03_Carbono\MonitoreoAreas_REDDEmberaWounaan_V7.xlsx*
15.5.1	Red List Index	To meet this indicator, Activity 4.1.2 is carried out, which monitors vegetation and associated biodiversity, including relevant faunal groups if applicable. Additionally, workshops are conducted to identify actors involved in deforestation and forest degradation, along with significant events in the community's history. This helps in understanding primarily the specimens of commercially traded flora originating from illicit trafficking and some of the wild fauna[24]. In the analysis conducted for biodiversity contributions, it is possible to identify each faunal group and species determined to be in some state of	1) *02_Cobeneficios\3_Actividades REDD+\SoporteActividades\4.1 Gestión de recursos\4.1.2 AnalisisdeFauna_Metití.pdf* 2) *12_Reporte de monitoreo\01_Inventario forestal\Bitácora_REDD+Emberá Wounaan.pdf*

[23] See in: *06_Documento de proyecto\PART 1 - ENG_PDD_EmberáWounaan_V14.docx\ 2.5.1.5.2 Mountains in protected areas*
[24] See in: *06_Documento de proyecto\PART 2 - ENG_PDD_EmberáWounaan_V14.docx\7 Causes and agents of deforestation and forest degradation*

Indicator	Variable	Compliance	Evidence
		threat according to the regulations of the Ministry of Environment, resolution DM-0657 of 2016.	

Source: CO2CERO S.A.S., 2023.

5 Compliance with Applicable Legislation

In order to comply with the legislation regarding the collective rights of indigenous peoples in Panama, particularly in the management and use of their lands, the REDD+ Emberá Wounaan project adheres to a series of Indigenous norms and jurisprudence. These are integrated into the design, implementation, and execution of REDD+ activities determined by the indigenous region, while respecting their rights, autonomy, customs, and cultures.

Furthermore, initiatives to reduce emissions from deforestation and forest degradation within Panamanian territory are related to a regulatory context involving Executive Decree No. 84 of 1999, Executive Decree No. 35 of February 26, 2007, Law 22 of 1983, and Law 41 of 1998 proposed for the level of reference for emissions from deforestation of natural forests. Additionally, all regulatory frameworks associated with the greenhouse gas mitigation initiative are presented comprehensively. Additionally, the document of the management system allowing for tracking of each of the legal requirements presented is available in *13_Gestión de información\GI-P04_Procedimiento_de_identificacion_legislacion_aplicable.pdf.*

5.1 Regulatory Framework Related to the Rights of the Emberá Wounaan Indigenous Peoples

Below is a mention of the regulatory framework that regulates the rights of the Emberá Wounaan indigenous peoples in Panama, providing a description of its foundation and how it is articulated in the different stages of the project, especially in the REDD+ activities (see in **Table 19**).

Table 19. Regulatory framework related to the rights of the Emberá Wounaan indigenous peoples.

Legislation	Year	Regulatory framework	Description
Constitution of Panama	1972	Article 5	The law may create other political divisions subject to special regimes, meaning that special laws will apply in indigenous territories and national laws will apply subsidiarily.
		Article 88	Indigenous languages will be the subject of special study, conservation, and dissemination, and the State will promote bilingual literacy programs in indigenous communities.

Legislation	Year	Regulatory framework	Description
		Article 90	The State recognizes and respects the ethnic identity of national indigenous communities, will carry out programs aimed at developing the material, social, and spiritual values of each of their cultures, and will create an institution for the study, conservation, dissemination of these cultures and their languages, as well as for the promotion of the integral development of these human groups.
		Article 104	The State will develop education and promotion programs for indigenous groups, as they possess their own cultural patterns, in order to achieve their active participation in civic functions.
Law N° 34 Education	1995	Article 10	Education for indigenous communities is based on their right to preserve, develop, and respect their identity and cultural heritage.
Law N° 17 Health - Traditional Medicine	2016	Article 1	This law establishes a special regime to protect and promote respect for the knowledge of traditional indigenous medicine and to create mechanisms for the protection of traditional knowledge through the special system of collective intellectual property. It also guarantees the full and effective participation of indigenous congresses, councils, or traditional authorities at their different levels.
Law N° 42 Family, women and adolescence	1997	Article 13	The National Directorate of Social Promotion and Community Action is the technical body for planning, promotion, and execution through which the Ministry organizes, directs, develops, coordinates, executes, and monitors policies, programs, and standards related to social welfare and community action.

Legislation	Year	Regulatory framework	Description
		Article 14	To plan, develop, and execute programs and projects for the prevention, guidance, care, and protection of indigenous groups, peasants, and other ethnicities.
Law No. 27 Protection, Promotion, and Development of Handicrafts	1997	Article 10	In order to preserve national traditions and cultures, it prohibits the importation of products or goods that imitate Panamanian indigenous and traditional pieces or garments such as molas and naguas.
		Article 17	It covers handicrafts as an industrial expression; therefore, it includes the handicrafts produced by these peoples.
Law No. 35 Board of Fairs of the Indigenous Peoples of the Republic of Panama	2000	Article 2	Trust of Indigenous Peoples' Fairs of the Republic of Panama, its purpose is to organize and carry out national and international agroforestry, handicraft, cultural, educational, touristic, maritime, traditional medicine, and general trade fairs and exhibitions, in order to highlight the cultural and national richness of Panama's indigenous peoples.
Law No. 3 Commission of Indigenous Affairs	1995	Article 64	Its functions include studying, proposing draft laws, and issuing opinions to create or modify indigenous territories.
Decree No. 1 National Council for Indigenous Development	2000	Article 2 item 1	One of its objectives is to promote effective actions to support indigenous peoples and their development. In the Executive Decree that creates this Council, the first consideration states "that the Panamanian State is of a multi-ethnic, pluricultural, and multilingual nature"; therefore, the existence of indigenous peoples is recognized.

Legislation	Year	Regulatory framework	Description
		Article 7	Promote, coordinate, supervise, and evaluate policies, plans, programs, and projects with a gender perspective for the development of indigenous peoples, respecting their ethnic and cultural identity, and their forms of organization.
Law No. 27 Fund for the Development of Indigenous Peoples of Latin America and the Caribbean	1993	Article 1	The purpose of the Fund for the Development of Indigenous Peoples of Latin America and the Caribbean, hereinafter referred to as the "Indigenous Fund," is to establish a mechanism aimed at supporting the self-development processes of indigenous peoples, communities, and organizations in Latin America and the Caribbean, hereinafter referred to as "Indigenous Peoples.
Universal Declaration of Human Rights	2015	Article 27	Every person has the right to freely participate in the cultural life of the community, to enjoy the arts, and to participate in scientific progress and the benefits derived from it.
Convention 169 ILO on Indigenous and Tribal Peoples	2014	Article 1	It corresponds to tribal peoples in independent countries, whose social, cultural, and economic conditions distinguish them from other sectors of the national community, and who are governed wholly or partly by their own customs or traditions or by special legislation.
		Article 2 item 2-c	To assist the members of the indigenous peoples concerned in eliminating socio-economic differences that may exist between indigenous members and other members of the national community in a manner compatible with their aspirations and ways of life, as outlined in Convention No. 169 concerning Indigenous and Tribal Peoples in Independent Countries.

Legislation	Year	Regulatory framework	Description
		Article 4 item 1	Special measures shall be taken as may be necessary to safeguard the persons, institutions, property, labour, cultures, and environment of the peoples concerned.
		Article 5	Measures shall be taken with the participation and cooperation of the peoples concerned to address the difficulties experienced by these peoples in facing new conditions of life and work.
		Article 6	Consultations shall be carried out with the peoples concerned, through appropriate procedures and particularly through their representative institutions, whenever legislative or administrative measures may affect them directly.
		Article 7	The peoples concerned shall have the right to determine their own priorities about the development process, insofar as it affects their lives, beliefs, institutions, and spiritual well-being, as well as the lands they occupy or use in any way, and to control, to the extent possible, their own economic, social, and cultural development.
		Article 23	Crafts, rural and community industries, and traditional activities related to the subsistence economy of the peoples concerned, such as hunting, fishing, trapping, and gathering, shall be recognized as important factors in maintaining their culture and self-sufficiency and in their economic development.

Source: Compiled by CO2CERO S.A.S., 2023.

With the above, we highlight the importance of generating co-benefits for the social well-being of indigenous communities and the conservation of their culture and customs. It is essential to recognize that indigenous peoples hold fundamental value for society and the nation. Furthermore, they are communities that, from their ancestral essence, still preserve the sense of and care for their natural environments.

Therefore, for the REDD+ Emberá Wounaan project, it is crucial to promote actions or initiatives from REDD activities that are aligned and articulated with the laws, decrees, and articles mentioned, thus providing formality and legal regulation without causing harm or prejudice to both the inhabitants and the territory. All of this is done under the participation of the community and their own collective decisions. The documents related to this information are attached in *09_Legislación\2_MatrizlegalDerechosFundamentales_REDD+EmberaWounaan_V2.xlsx*.

5.2 Law and land use

In Panama, the rights of indigenous communities to collective land ownership are recognized in the 1972 Constitution, established in Article 127, declaring the State as the guarantor of indigenous communities in the reservation of their lands and their collective ownership for the achievement of their economic and social well-being. Thus, the law will regulate the procedures to be followed to achieve this purpose and the corresponding demarcations within which private land appropriation is prohibited. Additionally, there are laws that support the provisions of Article 127 of the constitution, as follows:

- **Law 37 of 1962 of the National Assembly of Panama:** Establishes reserve lands for indigenous tribes exempt from being considered as state lands subject to agrarian reforms, they cannot be transferred in property, as they will fulfill a social function, ensuring that the benefits of technical assistance always reach indigenous communities.
- **Cabinet Decree 53 of 1971 of the Provisional Government Board:** Approves provisions related to the protection and integration of indigenous populations, establishing in its article 11, "the recognition of collective property rights, in favor of members of the indigenous population".
- **Law 41 of 1998 of the General Legislative Assembly of the Republic of Panama**: In its article 21 - numeral 2, and article 63, recognizing the right of Comarcas and indigenous peoples regarding the use, management, and sustainable traditional exploitation of renewable natural resources, located within the Comarcas and indigenous reserves created by law.
- **Law 72 of 2008:** through which the National Assembly establishes the special procedure for the adjudication of collective land ownership of indigenous peoples outside the comarcas, corresponding to article 127 of the Political Constitution of Panama. This title of collective property aims to guarantee the economic, social, and cultural well-being of the people who inhabit the indigenous community.
- **Executive Decree No. 223 of 2010 of the Ministry of Agricultural Development:** Establishes the special procedure for the adjudication of

collective land ownership of indigenous peoples that are not within the Comarcas; stating that to recognize such an area as traditionally occupied by indigenous peoples, it must present the "certification issued by the Comptroller General of the nation of the population census of the community, the certification of the national indigenous policy direction of the ministry of government and justice, accrediting the existence of the community". These requirements were met to obtain the titling, demonstrating through the law of assignment the existence of legal representation.

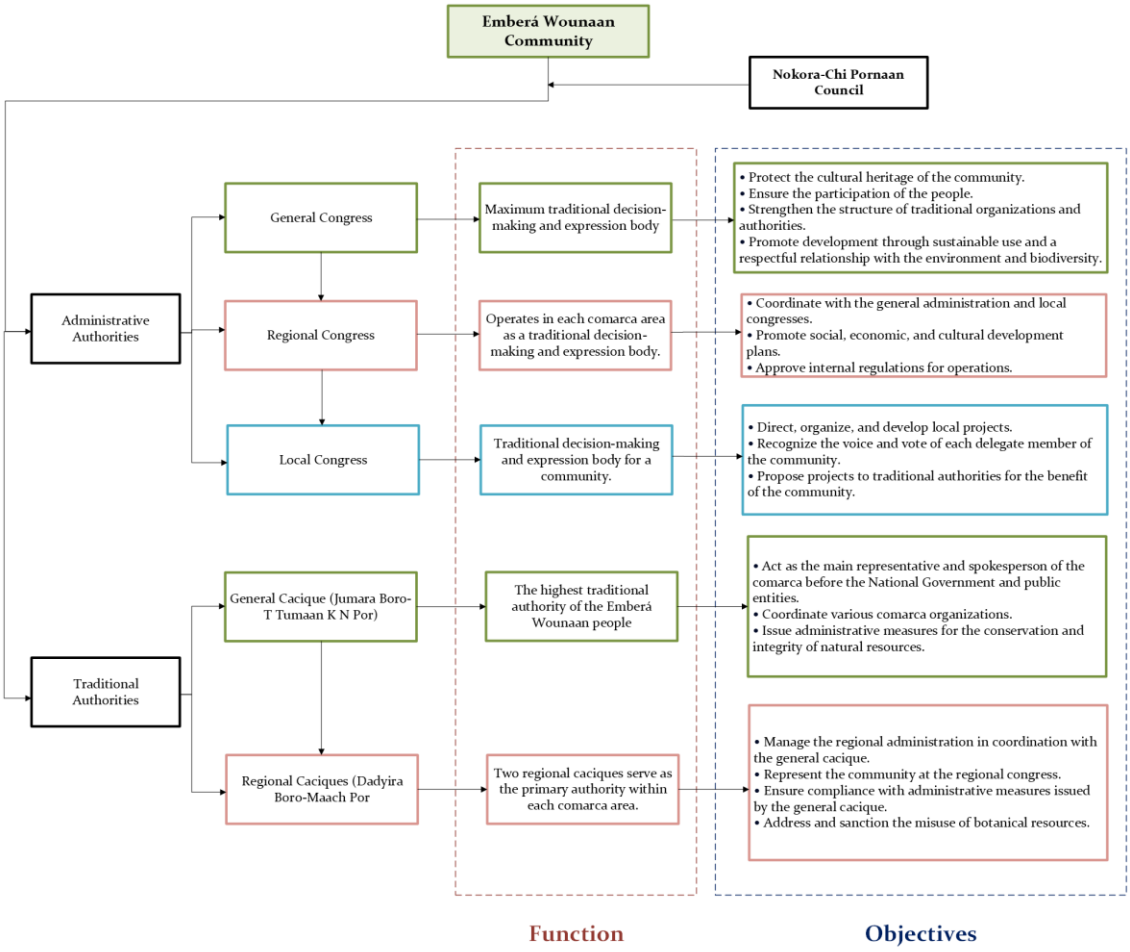
The Emberá Wounaan General Congress will serve as the highest traditional decision-making body and expression of the Comarca. Similarly, the regional and local congresses will have a board of directors, comprised of a president, vice president, secretary, assistant secretary, and treasurer, who will lead the development of plans, programs, and projects at their respective scales. Meanwhile, the Nokora-Chi Por Naan council will serve as a consultative body, where the general chief, regional chief, and presidents of the general, regional, and local congresses will submit plans, programs, and projects for consideration.

Regarding land ownership by the Comarca Emberá Wounaan, it was established and regulated by Law 22 of 1983 of the National Assembly of Corregimientos Representatives. This law recognizes the right to heritage and indigenous autonomy for the collective use of Emberá and Wounaan indigenous groups, for their integral development, prohibiting private appropriation. Similarly, Article 19 assigns responsibility to the community for the conservation and rational use of natural resources, such as flora, forest cover, soil, fauna, and water, aligning with the objectives of the REDD+ project.

The right to collective property of the Comarca Emberá Wounaan is ratified through Executive Decree No. 84 of 1999 of the Ministry of Government and Justice, by which the administrative charter of the Comarca Emberá Wounaan of Darién is adopted, recognizing the right to indigenous autonomy and self-management of the Emberá Wounaan people, in harmony and collaboration with governmental entities. Within its content, the following aspects are defined:

Title III concerning the government and administration of the Comarca: The administration of the Comarca Emberá Wounaan will be exercised by traditional and governmental authorities and bodies, establishing the administrative organization of the Comarca (see **Figure 4**).

Figure 4. Administrative and Traditional Organization of the Comarca Emberá Wounaan.



Source: Adapted by CO2CERO S.A.S, 2023.

Title VI, regarding the land regime:

- Article 83: The land within the Comarca constitutes the community's heritage for the collective use of indigenous groups, with the purpose of dedicating it to integral development activities and sustainable resource use. Therefore, private appropriation or alienation of such lands is prohibited.

- Article 84: Inhabitants within the administrative jurisdiction area of the Comarca shall have the right to land.

- Article 85: Depending on the case, it will recognize forms of land use such as family use, communal use, collective use, forest use, biocultural subsistence, and land for reforestation.

Title VII, regarding the economy: The general congress of the Comarca Emberá Wounaan will establish the finance department, which will be responsible for conducting and controlling accounting operations, ensuring the development of effective and efficient financial self-management.

- Article 94: Revenues are considered Comarcal if they originate from activities and management of land use and rights, applicable in the case of implementing the GHG mitigation project type REDD+. The Comarca will carry out effective and efficient financial self-management of resources through control and administration instruments consistent with territorial reality.

Title VIII, regarding natural resources and the environment, establishes the following:

- Article 95: The natural resources existing within the Comarca Emberá Wounaan are recognized as a collective heritage of the community, in which the general congress of the Comarca will work hand in hand with the National Environmental Authority (ANAM), defining policies for the protection, conservation, use, exploitation, and sustainable utilization of natural resources and the environment, managed by the Natural Resources and Environment Directorate.

- Article 96: The Directorate of Natural Resources and Environment, in coordination with local congresses, will oversee and promote the protection and sustainable management of natural resources, with the aim of not allowing exploitation or use without authorized consent.

- Article 97: The part of the Darién National Park located within the Comarca will be jointly administered by Traditional Authorities and the National Environmental Authority, prioritizing the benefit of the Emberá Wounaan indigenous people.

- Article 98: Rational use activities of natural resources will be carried out when the interested community requests the opinion of the Regional Cacique through the local congress, which will be supported by the Natural Resources Directorate of the general congress to provide an opinion on the feasibility of the project, which will then be submitted to the General Cacique.

In this way, the right to collective property establishes a mechanism to protect cultural identity, promote economic and social development as an ethnic group, recognizing a high degree of autonomous policy in decisions that affect them. This allows us to confirm that the Comarca Emberá Wounaan has the necessary regulatory framework to obtain land titling, demonstrating through law the allocation and existence of legal representation, of a legitimate community and a territory that promotes its development.

5.3 REDD+ in national context

The United Nations Framework Convention on Climate Change (UNFCCC) recognized during the Conference of the Parties (COP 13) held in Bali in 2007, the reduction of emissions from deforestation and forest degradation as a valid mechanism for mitigating the effects of climate change. This mechanism is applied in conjunction with the conservation, sustainable management, and enhancement of forest carbon stocks in developing countries.

Panama has been involved in efforts to reduce the effects of climate change through forest conservation and restoration, considering international commitments, where REDD+ represents an opportunity for improving and strengthening natural resource management. Among its strategies is the National Forest Restoration Program 2021 - 2025, whose objective is the structuring and leadership of processes for watershed restoration, recovery of degraded soils, and achieving carbon neutrality by 2050, favoring its Nationally Determined Contributions to the UNFCCC (MiAmbiente, 2022).

At the national level, the National Strategy for Reducing Emissions from Deforestation and Forest Degradation represents the transformation and commitment of the Ministry of Environment to act on forest resource management and its associated components, consolidating the country's capacity to conserve and increase forest resources, protecting them from latent threats, while supporting farmers and indigenous peoples in the management and use of the resources with which they coexist (MiAmbiente, 2022).

Through the National Forest Development Plan issued in 2008 by the National Environmental Authority, it is established that within the models of sustainable forest management, initiatives for reducing emissions from deforestation and degradation (REDD+) are involved as an important tool to include forest management in the fight against climate change. In this regard, the communities involved will obtain income through the sustainable management of forests as an opportunity cost compared to negative activities on the same.

The national climate change policy provides the principle whereby the commitment to implement adaptation and mitigation actions to counteract the adverse effects of climate change is recognized, considering areas of poverty, with the conservation and recovery

of natural resources, and the preservation of ecosystems. Thus, within its objective 3, it aims to promote actions related to climate change mitigation in a manner compatible with sustainable economic and social development established in the Kyoto Protocol, under the promotion of implementing development projects in the forest production sector, supported by the Clean Development Mechanism (CDM), including a REDD+ type climate change mitigation project.

Meanwhile, Panama's National Climate Change Mitigation Strategy, developed by the Ministry of Environment, is based on four pillars:

i) Emission reduction through changes in land use and forestry;
ii) Emission reduction through deforestation and degradation;
iii) Cleaner production;
iv) Energy.

For the land use change and forestry sector (*Pillar i*), afforestation and reforestation are proposed as mitigation options, while a REDD+ project is established to address actions for emission reduction through deforestation and degradation (*Pillar ii*).

Since 2015, Panama has been part of the UN-REDD+ system, an international alliance aimed at establishing and strengthening the development of national and subnational programs and projects for emission reduction through deforestation and forest degradation. These initiatives are based on the analysis of each nation's specific context, including their carbon reservoir potential, favorable regulatory and legislative scenarios, and social opportunities.

In the consolidated text of Law 41 of 1998, which includes the amendments approved by Law 18 of 2003, Law 44 of 2006, Law 65 of 2010, and Law 8 of 2018 from the National Assembly, the value of environmental management and organized work for carrying out activities that sustainably utilize natural resources is recognized. It acknowledges the right to receive credits as a result of traditional uses and customs related to the forest, provided they are responsible for the care of natural resources during the execution of these activities. Meanwhile, Executive Decree 20 of 2019, which approves the National Forest Strategy 2018-2050 from the Ministry of Environment within the REDD+ framework and the involvement of the indigenous peoples of Panama, established twelve points addressed by this mechanism. This strategy aims to achieve positive economic, environmental, and social outcomes at the local level.

5.4 Laws and decrees

In **Table 20**, some regulatory instruments related to the REDD+ Emberá Wounaan project, as well as greenhouse gas (GHG) mitigation initiatives within the territory, are

presented. The documents related to this information are attached in *09_Legislación\1_MatrizLegalAmbiental_REDD+EmberaWounaan_V2.xlsx*.

Table 20. Laws and decrees related to REDD+ Emberá Wounaan project.

Legislation	Year	Entity	Description
Law 18	1952	National Assembly of Panama	Creating as a governmental dependency a Secretariat of Indigenous Affairs of the Republic, which will handle matters as ordered by law and those directly related to the indigenous administration of the national territory.
Constitution of Panamá	1972	National Assembly of Panama	An instrument created for national strengthening, guaranteeing freedom, democracy, and institutional stability, coupled with the promotion of social justice, general well-being, and regional integration.
Executive decree No. 84	1972	Ministry of Agriculture and Livestock	Declaring the Alto Darien a protective forest, in which the exploitation of forest resources, hunting of animals, agriculture, and livestock are restricted. Dedicated to the protection and sustainable use of natural resources in permitted areas.
Executive decree No. 21	1980	Ministry of Agricultural Developmen t	Establishes the Darien National Park, where logging, burning, land allocation, and activities that destroy natural resources are prohibited. In 1981, the United Nations Educational, Scientific and Cultural Organization (UNESCO) declared it part of the World Biosphere Reserve.
Law 1	1994	National Environment al Authority	This legislation establishes forestry regulations in the Republic of Panama and enacts other provisions to protect, conserve, enhance, increase, educate, research, manage, and rationally exploit the forest resources of the Republic. It sets minimum requirements for sustainable forest management and harvesting natural forests in the required regions will require authorization through a contract with the environmental authority.

Legislation	Year	Entity	Description
Resolution J.D. No. 01-95	1995	INRENARE	This resolution creates the biological corridor of the Bagre mountain range as a tool to ensure the conservation of representative samples of the ecosystems, fauna, and flora of the Darien. It acknowledges the traditional lifestyles of local communities.
Law 41	1998	Legislative Assembly	Establishes ANAM as the authority promoting the environmental management of the national territory. In its article 66, it creates the National System of Protected Areas (SINAP) through Law 41 of July 1, 1998 "ANAM," which is later corroborated by the creation of the Ministry of Environment in Law No. 8 of March 25, 2015.
Resolution JD-05-98	1998	Ministry of Agricultural Development	To establish the minimum requirements in forest management plans, where the environmental authority may establish a mechanism that encourages and promotes the management of natural forests, with the aim of capturing and sequestering carbon dioxide (CO_2) and contributing positively to the national balance and global emissions of greenhouse gases. For this purpose, a promotion, monitoring, and control office will be established.
Executive Decree 84	1999	Ministry of Government and Justice	By which the administrative organic charter of the Comarca Emberá Wounaan of Darién is adopted.
Law 20	2000	National Assembly of Panama	Establishes as its purpose the protection of the collective rights of intellectual property and traditional knowledge of indigenous peoples. Customs, traditions, beliefs, spirituality, worldview, and any other form of their cultural heritage shall be objectives of protection. From a standpoint where there are no industrial commercialization activities, such that the benefits perceived by the community from the commercialization of carbon certificates establish activities for the protection of traditional knowledge.

Legislation	Year	Entity	Description
Executive decree No. 2	2003	Ministry of Economy and Finance	Through which the basic principles and guidelines of Panama's Forest Policy are approved, establishing mechanisms for the promotion, encouragement, and incentives in the social and market valuation of goods and services generated through socio-economic assessment and their inclusion in national watersheds for the review and design of economic incentives.
Resolution AG No. 0358	2007	ANAM	Through which Resolution A.G. No. 0334 of 2004 is modified, by which a protected area is declared under the category of the Serranía del Darién hydrological reserve, with the purpose of adequately protecting the sources of rivers and halting the expansion of the agricultural frontier.
Law 8	2015	National Assembly	Creates the Ministry of the Environment as the governing body in matters of protection, conservation, preservation, and sustainable utilization of natural resources. In its Chapter II, it establishes the state's relationship for climate change mitigation, conducting a national inventory of greenhouse gas emissions and absorptions, and establishing mechanisms to promote the transition to a low-carbon economy.
Executive Decree No. 393	2015	Ministry of Foreign Affairs	Adopts the Sustainable Development Goals (SDGs) as part of a nationally binding process involving all societal levels.
Executive Decree No. 59	2016	Ministry of Environment	Allows and regulates co-management in the protected areas system, in those areas overlapping with indigenous Comarcas. This is corroborated in Law No. 72 of 2008, which establishes the relationship between the national environmental authority and indigenous authorities for the execution of sustainable natural resource management plans.
Executive Decree No. 34	2019	Ministry of Environment	By means of which the National Climate Change Strategy 2050 is approved.

Legislation	Year	Entity	Description
Executive Decree No. 100	2020	Ministry of Environment	The Reduce Your Footprint National Program is created for the management and monitoring of low-carbon economic and social development in the Republic of Panama.
Executive Decree No. 137	2021	Ministry of Environment	The National Forest Restoration Program 2021-2025 is created, promoting the low-carbon economic and social development strategy, increasing ambition regarding NDCs for 2050.
Executive Decree No . 142	2021	Ministry of Environment	By means of which the national Carbon Market of Panama is established progressively and gradually.
Executive Decree No. 10	2022	Ministry of Environment	Which adopts the National Climate Action Plan and dictates other provisions.

Source: Compiled by CO2CERO S.A.S., 2022.

6 Climate change adaptation

The Intergovernmental Panel on Climate Change defines climate change adaptation as "*the adjustment in natural or human systems in response to actual or expected climatic stimuli or their effects, which moderates harm or exploits beneficial opportunities*."

Within Panama's territory, climate change adaptation is governed by Executive Decree No. 34 of 2019, which approves the National Climate Change Strategy 2050. This strategy is based on the principles of ensuring a healthy, pollution-free environment, with natural resources such as air, water, and adequate food to meet the requirements for ideal human development. Among the objectives of the law are the protection, conservation, and enhancement of existing forest resources in the country, while promoting their management and rational, sustainable use. It also involves encouraging and implementing forestry projects to mitigate climate change.

Table 21. Relationship between REDD+ activities and the national climate change strategy.

Objective	Contribution of the project	Measurement Indicator	Outcome 2018 - 2022

Ensure the protection and restoration of riparian zones, water recharge areas, protected areas, buffer zones, and biological corridors.	4.2.3 Recovery of the original forest	Reforested hectares in the year 2019.	1) 15 hectares of coffee plantation in restored areas, converting the zone into an Agroforestry System (AFS).

Source: Compiled by CO2CERO S.A.S., 2022.

The Law 1 of 1994 defines forest carbon capture as an environmental service. Accordingly, mechanisms will be established to attract financial and economic resources, where the REDD+ Mechanism is an alternative. In this context, this project favors the expression of such mechanisms as an alternative that contributes to mitigating climate change. It also derives activities that allow populations to adapt to the changes generated, with resilience and a constant increase in their quality of life.

According to the effects on the objectives for the AFOLU sector of the National Climate Change Strategy 2050, as stated in section 2.3 Long-Term Mitigation Actions, table 2 mitigation measures by sector and their possible effects, it is possible to identify some contributions generated by the REDD+ Emberá Wounaan project with its activities to reduce them, as presented in **Table 22**.

Table 22. Relationship between REDD+ activities and the National Climate Change Strategy.

Effect	Contribution of the REDD+ project activities (2018 - 2022).	Type of action	Status of the activitie	Evidence
Diversification of income sources and market access:	Institutionalization of good practices for economic development and well-being.	Adaptation	Developed on August 13, 2022.	11_Anexos y complementarios/1_Asistencia/Sesiones_Lideres_Encargados.pdf/Pg 5

Effect	Contribution of the REDD+ project activities (2018 - 2022).	Type of action	Status of the activitie	Evidence
Additional income for sustainable landscape management:	1) Support in the certification and marketing of reduced GHG emissions 2) Training in REDD+ and socio-environmental safeguards	Adaptation	1) In development since 2021. 2) Developed since December 2021 until October 2022.	1) Part 1 – ENG PDD_Emberá Wounaan_V14 y Parte 2- ENG PDD_Emberá Wounaan_V14 2) See support of the activitie 4.1.1 Capacitación en REDD+ y salvaguardas socioambientales en 02_Cobeneficios\3_Actividades REDD+*ActividadesREDD+_Emberá Wounaan_V4*
Increase in cultural and recreational habitats through forest management:	1) Design of strategies for the conservation of indigenous ancestral knowledge 2) Identification of territorial boundaries	Mitigation	1) Developed in the first half of January each year since 2016, and also in the years 2018n 2021 and 2022. 2) Developed on January 28, 2019, and August 1, 2022.	1) 2_Cobeneficios\Soportes Actividades\2.1 Planeación y prospectiva\2.1.2 Concurso de piraguas_2018.jpg 2_Cobeneficios\Soportes Actividades\2.1 Planeación y prospectiva\2.1.2 Concurso de piraguas_2021.jpg 2) 2_Cobeneficios\Soportes Actividades\2.2 Límites y territorio\2.2.1 Fallo Corte Suprema_08 abril 2015.pdf 2_Cobeneficios\Soportes Actividades\2.2 Límites y territorio\2.2.1 Verificación e Inspección de límites_Chatí.pdf 2_Cobeneficios\4_Soportes Actividades\2.2 Límites y territorio\2.2.1 Identificación de límites_Sambu (1).jpeg
Reduction in burning practices:	1) Strategies for protecting territorial boundaries 2) Institutionalization of good practices for economic development	Mitigation	1) Developed on August 1, 2022. 2) Developed on August 13, 2022.	1) 2_Cobeneficios\Soportes Actividades\2.2 Límites y territorio\2.2.1 Verificación e Inspección de límites_Chatí.pdf 2_Cobeneficios\Soportes Actividades\2.2 Límites y territorio\2.2.1 Res_Adm_03_2019.pdf 2) 11_Anexos y

Effect	Contribution of the REDD+ project activities (2018 - 2022).	Type of action	Status of the activitie	Evidence
	and well-being.			complementarios\1_Asistencia\Sesiones_Lideres_Encargados.pdf\Pg. 5
Equitable participation in benefit distribution:	1) Guidance in defining governance structures and good living. 2) Creation of consultation and decision-making spaces by authorities and members of the Emberá Wounaan community. 3) Training in good leadership practices	Adaptation	1) Developed in different locations: Sambú: November 24-25, 2022; Cémaco: December 16-17, 2022, August 13, 2022, and March 21, 2023. 2) Developed in different locations: October 25-26, 2022; December 17, 2022 (Cémaco); November 24, 2022 (Sambú); November 11, 2022; December 5, 2022; and October 26, 2022. 3) August 5, 2022, and September 12, 2021.	1) 1_Acuerdos\01_Acuerdo comunidad\AprobacionRegional_Cemaco.pdf 1_Acuerdos\01_Acuerdo comunidad\AprobacionRegional_Sambu.pdf 2_Cobeneficios\Soportes Actividades\1.1 Gobierno y administración\Acta_PlanQuinquenal_13 08 2022.pdf; 11_Anexos y complementarios\1_Asistencia\Asistencia_PlanQuinquenal_13 08 2022.pdf. 2_Cobeneficios\3_Actividades REDD+\SoporteActividades\1.1 Gobierno y administración\1.1.1 Resolucion003_ConsejoNokoraChiPorNaan.pdf 2) See support of the activitie 1.2.1 Creación de espacios de consulta y decisión por parte de las autoridades e integrantes de la comunidad Emberá Wounaan en 02_Cobeneficios\3_Actividades REDD+*ActividadesREDD+_Emberá Wounaan_V4* 3) 11_Anexos y complementarios\1_Asistencia\Sesiones_Lideres_Encargados.pdf\Pg. 8 11_Anexos y complementarios\1_Asistencia\Asistencia_Cirilo Guainora_12 09 2021.pdf; 2_Cobeneficios\Soportes Actividades\1.2

Effect	Contribution of the REDD+ project activities (2018 - 2022).	Type of action	Status of the activitie	Evidence
				Transparencia y participación\1.2.2 Acta_Cirilo Guainora_12 09 2021.pdf
Conservation and management of ecosystems:	1) Strategies for protecting territorial boundaries 2) Training in REDD+ and socio-environmental safeguards	Mitigation	1) Developed on August 1, 2022. 2) Developed from December 2021 to October 2022.	1) 2_Cobeneficios\Soportes Actividades\2.1 Planeación y prospectiva\2.1.2 Concurso de piraguas_2018.jpg 2_Cobeneficios\Soportes Actividades\2.1 Planeación y prospectiva\2.1.2 Concurso de piraguas_2021.jpg 2) See suppport of the activity 4.1.1 Capacitación en REDD+ y salvaguardas socioambientales en 02_Cobeneficios\3_Actividades REDD+*ActividadesREDD+_Emberá Wounaan_V4*
Access to participation mechanisms and decision-making:	1) Guidance in defining governance structures and good living. 2) Creation of consultation and decision-making spaces by authorities and members of the Emberá Wounaan community. 3) Training in good leadership practices.	Adaptation	1) Developed in different locations: Sambú: November 24-25, 2022; Cémaco: December 16-17, 2022, August 13, 2022, and March 21, 2023. 2) Developed in different locations: October 25-26, 2022; December 17, 2022 (Cémaco); November 24, 2022 (Sambú); November 11, 2022; December 5, 2022; and	1) 1_Acuerdos\01_Acuerdo comunidad\AprobacionRegional_Cemaco.pdf 1_Acuerdos\01_Acuerdo comunidad\AprobacionRegional_Sambu.pdf 2_Cobeneficios\Soportes Actividades\1.1 Gobierno y administración\Acta_Plan Quinquenal_13 08 2022.pdf; 11_Anexos y complementarios\1_Asistencia\Asistencia_PlanQuinquenal_13 08 2022.pdf. 2_Cobeneficios\3_Actividades REDD+\SoporteActividades\1.1 Gobierno y administración\1.1.1 Resolucion003_ConsejoNokoraChiPorNaan.pdf

Effect	Contribution of the REDD+ project activities (2018 - 2022).	Type of action	Status of the activitie	Evidence
			October 26, 2022. 3) August 5, 2022, and September 12, 2021.	2) See support of the activity 1.2.1 Creación de espacios de consulta y decisión por parte de las autoridades e integrantes de la comunidad Emberá Wounaan en 02_Cobeneficios\3_Actividades REDD+*ActividadesREDD+_Emberá Wounaan_V4* 3) 11_Anexos y complementarios\1_Asistencia\Sesiones_Lideres_Encargados.pdf\Pg. 8 11_Anexos y complementarios\1_Asistencia\Asistencia_Cirilo Guainora_12 09 2021.pdf; 2_Cobeneficios\Soportes Actividades\1.2 Transparencia y participación\1.2.2 Acta_Cirilo Guainora_12 09 2021.pdf"
Application of existing policies for sustainable resource management:	1) Training in project management, finance, and resource administration 2) Training in REDD+ and socio-environmental safeguards	Adaptation	1) Developed in the following spaces: July 22, 2022, July 30, 2022, August 5, 2022, August 13, 2022, November 14, 2022, November 15, 2022, November 17, 2022, and November 22, 2022. 2) Developed from December	1) 11_Anexos y complementarios\1_Asistencia\Sesiones_Lideres_Encargados.pdf 11_Anexos y complementarios\1_Asistencia\Asistencia_CongresoGeneral_22 11 2022.pdf; 2_Cobeneficios\Soportes Actividades\1.1 Gobierno y administración\Acta_CongresoGeneral_22 11 2022.pdf.

Effect	Contribution of the REDD+ project activities (2018 - 2022).	Type of action	Status of the activitie	Evidence
			2021 to October 2022.	2) See support of the activity 4.1.1 Capacitación en REDD+ y salvaguardas socioambientales en 02_Cobeneficios\3_Actividades REDD+*ActividadesREDD+_Emberá Wounaan_V4*

Source: Compiled by CO2CERO S.A.S., 2022.

Considering the REDD+ strategy designed for Panama, it is possible to identify common points with other strategies in the country and with the activities designed within the initiative. In this way, the project engages with the following enabling conditions:

1. Execution of an operational institutional framework: The project generates analyses and identifies common factors among international, national, and local policies and project actions. Resource management units and climate change mitigation initiative management at the national level play a necessary role in implementing actions under a regulated context. The REDD+ context-specific operational actions aim to achieve objectives such as reducing deforestation and degradation, increasing carbon reservoirs, and sustainable forest management, in line with international frameworks.
2. Allocation of funds: The project currently involves investments in the territory that favor conservation and sustainable forest management activities. It aligns with the government's restoration and planting goals. The project has also shared mechanisms for the equitable distribution of benefits generated, emphasizing the importance of contributing sustainably to community development. The project's payments are strictly associated with reducing deforestation and forest degradation.
3. Adaptation to climate change: The project analyzes activities contributing to reducing climate change effects and the adaptation mechanisms designed by the country. The project's objectives entirely focus on contributing to this end. REDD+ initiatives are a sustainable way to promote the sustainable development of indigenous communities and expand their positive externalities to other sectors aiming to mitigate climate change.

4. Promotion of the national Carbon market: The REDD+ Emberá Wounaan project aims to be a pioneer in generating carbon credits within indigenous territories. It identifies the necessary requirements and variables in its execution to contribute to the consolidation of a carbon market, recognizing the successes of this initiative as the phases that Panama must apply to establish itself in this sector.
5. Regulation on carbon ownership: The project ensures the ownership of avoided GHG emissions by the Emberá Wounaan region, aligning with constitutional authority and laws protecting them, and complying with socio-environmental safeguards determined by the international framework.

The REDD+ Emberá Wounaan project has promoted the implementation of restoration processes involving the Capetí, Unión Choco, and Nazareth communities. Capacity-building related to the establishment of forest nurseries has been strengthened. The material comes from forest management activities such as recruitment, seed collection, and acquisition of seedlings in situ, favoring community adaptation to climate change, increasing carbon reservoirs, improving the provision of ecosystem services, and sustainable forest resource management. Educational axes related to REDD+ initiatives, social and environmental safeguards, sustainable forest management, and vegetation cover monitoring have been included. The goal is to integrate technical elements at the territorial level that support the initiative's objective, convincing the community of the reality in their territory and the increasing demand for care by the world over time.

Ensuring sustainable economic activities is a fundamental factor during the project, understanding agriculture as the direct means of family sustenance and as a scenario for productive improvement, increasing food availability, and strengthening technical and operational capacities related to land work. A sustainable and resilient model adapted to climate change and respectful of community traditions is achieved. Institutionalization of agricultural management knowledge, combined forest systems, and harvesting strategies ensures that knowledge is established in the scenario permanently, leading to self-management processes based on agriculture.

Additionally, cultural and traditional knowledge strengthening activities have been implemented since 2012, generating participation and community cohesion scenarios, opening doors to communication and transparency among stakeholders. This makes decision-making scenarios more effective. Defense spaces for territorial boundaries have been promoted, where forest and community guardianship figures have been configured to increase community ownership of natural resources and reduce the effects of external agents who do not conceive the rules associated with natural resource management.

Table 23. Alignment of REDD+ activities of Emberá Wounaan project with the guidelines of the national REDD+ strategy.

REDD+ Activities	A. Promotion and implementation of sustainable forest management initiatives	B. Promotion of productive activities and livelihoods	C. Design and implementation of actions in indigenous territories	D. Implementation of facilitating actions
1.1.1 Guidance in defining governance structures and well-being				d11
1.1.2 Training in project management, finance, and resource administration			c9	
1.2.1 Creation of spaces for consultation and decision-making				d10
1.2.2 Training in good leadership practices			c9	
2.1.1 Development of community planning and development tools				d11
2.1.2 Design of strategies for the conservation of indigenous ancestral knowledge			c9	
2.1.3 Assessment of the provision and availability of basic services				d10
2.2.1 Identification of territorial boundaries			c9	
2.2.2 Strategies for the protection of territorial boundaries			c9	
3.1.1 Technical support in sustainable family production models		b6		
3.1.2 Design of sustainable economic alternatives and production chains		b7		
3.2.1 Training in good production practices		b6		

REDD+ Activities	A. Promotion and implementation of sustainable forest management initiatives	B. Promotion of productive activities and livelihoods	C. Design and implementation of actions in indigenous territories	D. Implementation of facilitating actions
3.2.2 Improvement of tools and work materials			c9	
3.2.3 Institutionalization of good practices in economic development and well-being		b6		
4.1.1 Training in REDD+ and socio-environmental safeguards				d10
4.1.2 Monitoring of vegetation and biodiversity				d10
4.1.3 Training in Sustainable Forest Management (SFM)	a3			
4.2.1 Creation of the Emberá Wounaan forest nursery	a3			
4.2.2 Forest restoration	a2			
4.2.3 Reforestation	a1			
4.3.1 Non-timber forest production		b7		

Source: CO2CERO S.A.S., 2023.

With this relationship, it is possible to identify that the axes under which the REDD+ activities of the project have been designed align with the guidelines and their components, within which it is possible to differentiate the following, which in turn are linked in **Table 23**.

a1. Restoration of lands with forestry vocation and agricultural use.

a2. Commercial reforestation.

a3. Conservation and sustainable management of natural forests.

b6. Organic agriculture.

b7. Biocommerce.

c9. Participation and contribution of indigenous peoples.

d10. Facilitating actions that promote and encourage the participation and involvement of all relevant actors.

d11. Establishing a conducive framework for the implementation of direct interventions aimed at modifying, creating, or implementing appropriate regulatory frameworks to ensure that direct interventions are effective and efficient.

Additionally, in compliance with the standard, the project demonstrates adherence to Chapter 10.8 Adaptation to Climate Change, as shown below (**Table 24**):

Table 24. Compliance with climate change adaptation requirements addressed by the REDD+ Emberá Wounaan project.

Requirement	Compliance
(a) **Considers one or more of the strategic lines proposed in the National Climate Change Policies and/or addresses aspects outlined in the regulations of the country where the project is implemented;**	The project's relationship with strategic policy elements or regulatory aspects outlined at the national level in Panama is supported in *09_LegislaciónAmbiental/1_MatrizLegalAmbiental_REDD+EmberaWounaan_V2/Column G. Compliance*. Additionally, its alignment with the National Climate Change Strategy 2050 (Tables 39 and 40) and the National REDD+ Strategy (Table 41) of the Project Document is revealed.
(b) Improves conditions for the conservation of biodiversity and its ecosystem services in	The project has designed activities 4.1.2 Monitoring of vegetation and biodiversity, 4.2.2 Forest restoration, and 4.2.3 Recovery of native forests, whose expected outcome is associated with biodiversity conservation (See *02_Cobeneficios/3_Actividades REDD+/ActividadesREDD+_Emberá Wounaan_V4*).

Requirement	Compliance
the areas of influence, outside the project boundaries; that is, natural coverage in environmentally critical areas, biological corridors, water management in watersheds, among others;	
(c) Implements activities that generate sustainable, low-carbon productive landscapes;	The project has designed the investment line 3.1 Indigenous productive improvement to promote sustainable family production models and production chains (See *02_Cobeneficios/3_Actividades REDD+/ActividadesREDD+_Emberá Wounaan_V4*).
(d) Proposes restoration processes in areas of specific environmental importance;	The project carries out restoration of degraded areas through activity 4.2.2 Forest restoration; the identification of areas of specific environmental importance will be gradually revealed in the spatial analyses of activity 2.2.1 Identification of territorial boundaries (See *02_Cobeneficios/3_Actividades REDD+/ActividadesREDD+_Emberá Wounaan_V4*).
(e) Designs and implements adaptation strategies based on an ecosystem approach;	The project proposes activity 3.1.1 Technical support in sustainable family production models as a mechanism to strengthen traditional production, which reduces impacts from its establishment and production, harmonizing with other nearby natural and human systems and reducing risks to sufficient food provision at the territorial level. The implementation of green infrastructure is subject to territorial assessment and diagnosis (See *02_Cobeneficios/3_Actividades REDD+/ActividadesREDD+_Emberá Wounaan_V4*).
(f) Strengthens the local capacities of institutions	The project has designed activities 1.1.1 Guidance in defining governance structures and well-being, 1.2.1 Creation of consultation and decision-making spaces by the authorities and members of the Emberá Wounaan community, 1.2.2 Training in good leadership practices, and 2.1.1 Development of planning and community development tools, to strengthen governance,

Requirement	Compliance
and/or communities to make informed decisions that allow them to anticipate the negative effects of climate change (recognition of vulnerability conditions); as well as to take advantage of the opportunities arising from the expected or evidenced changes.	decision-making, and efficient resource management in the face of vulnerabilities and their response (See *02_Cobeneficios/3_Actividades REDD+/ActividadesREDD+_Emberá Wounaan_V4).*

Source: CO2CERO S.A.S., 2023.

Additionally, within the framework of developing an AFOLU sector project, the project holder demonstrates actions and/or measures for climate change adaptation, such as (**Table 25**):

Table 25. Actions and/or measures for climate change adaptation taken by the REDD+ Emberá Wounaan project.

Action and/or Measure	Compliance/Adaptation	Progress in the 2018-2022 Period
(a) Agricultural, forestry, and fishery production systems better adapted to high temperatures, droughts, or floods to improve competitiveness, income, and food	The project has designed and expects to implement activities 3.1.1 Technical support in sustainable family production models, 3.1.2 Design of economic alternatives and sustainable production chains, 4.1.3 Training in Sustainable Forest Management (SFM), and 4.3.1 Non-timber forest production (See *02_Cobeneficios/3_Actividades*	To be developed

security, especially in vulnerable areas;	*REDD+/ActividadesREDD+_Emberá Wounaan_V4*), as climate change adaptation strategies through actions that allow adjustments to current human systems to promote sustainable development, including reducing projected future damages, ensuring the flow of raw materials and products generated at the community level, promoting viable and sustainable economic alternatives, strengthening the production of handicrafts and women's ancestral practices, and contributing to community economic development through activities inherent to their culture. This also increases the productive capacities and skills of community members and the levels of formal and informal education within the comarca.	
(b) Integrated actions that help with efficient land use, including, for example, conservation of existing natural cover, land use in accordance with land vocation and agroecological conditions, family farming, and the transfer of agricultural technology that increases competitiveness while reducing vulnerability to climate change;	The project has designed activities 2.2.2 Strategies for protecting territorial boundaries, 4.2.3 Recovery of the original forest, 2.1.1 Development of planning and community development tools, 3.1.1 Technical support in sustainable family production models, and 3.1.2 Design of economic alternatives and sustainable production chains, with goals oriented towards sovereignty, conscious land use, increased competitiveness, and protection of natural resources (See *02_Cobeneficios/3_Actividades REDD+/ActividadesREDD+_Emberá Wounaan_V4*).	1) Report from a round conducted in the Chatí sector supports the administrative resolution for the expulsion of settlers. 2) Creation and design of the five-year strategic plan for the Comarca Emberá Wounaan 2022 - 2027. Other activities are to be developed.
(d) Actions causally related to climate change adaptation measures, such as	Sustainable agricultural practices within the investment line 3.1 Indigenous productive improvement seek to frame within an adaptation	To be developed

the use and management of temperature-resistant seeds, water management through rainwater harvesting, recycling, drainage and irrigation, reforestation of watersheds to prevent erosion, soil management practices that reduce compaction, and techniques to reduce fertilizer use.	approach that reduces the impacts of their implementation and protects the resources associated with their care, manifesting the knowledge acquired in activity 3.2.1 Training in good productive practices and 4.1.3 Training in Sustainable Forest Management (SFM). Furthermore, it aims to reduce the impacts of unsustainable forest exploitation, strengthen capacities regarding forest resources and forests, and involve techniques for managing forest cover within the community's productive and traditional habits.	

Source: CO2CERO S.A.S., 2023.

7 Carbon ownership and rights

Below is a description of the party assuming responsibility for the carbon credits generated by the initiative.

7.1 Project holder

Below, are the proponents of REDD+ Emberá Wounaan project.

Individual or organization	**Comarca Emberá Wounaan**
Contact person	Cacique Leonides Cunampia [25]
Job position	Cacique General within the Comarca Emberá Wounaan
Address	Bal Harbou Plaza, Local 23 Second floor, Panama City
Phone number	+507 6900-7584
Email	NA

[25] It's pertinent to underscore that the contact cellphone number of the incumbent Cacique, Leonides Cunampia, serves as a provisional point of contact, considering the nature of the position which is subject to changes in accordance with the governance structures of the Comarca Emberá Wounaan.

Comarca Emberá Wounaan owns the territory where the initiative is implemented, thus being the proponent of the initiative and the owner of the reduced greenhouse gas emissions generated within the project boundary. **Table 26** and **Table 27** present the communities comprising the districts of Cémaco, totaling 29 communities, and Sambú, totaling 12 communities.

Table 26. Communities in the Cémaco District.

N.º	Community	N.º	Community	N.º	Community
Cirilo Guaynora Township		**Manuel Ortega Township**		**Lajas Blancas Township**	
1	Capetí	5	Barranquillita	16	Canán
2	El Puente	6	La Esperanza	17	Sinaí
3	Unión Choco	7	La Pulida	18	Maach Pobor
4	Vista Alegre	8	Punta Grande	19	Alto Playón
		9	Nuevo Belén	20	Peña Bijagual
		10	El Común	21	El Salto
		11	Naranjal	22	Baja purú
		12	Corozal	23	Lajas Blancas
		13	Villa Nueva	24	Tortuga
		14	Boca Tigre	25	Dosake Purú
		15	Nazareth	26	Nuevo Vigía
				27	Villa Caleta
				28	Marraganti
				29	Bajo Chiquito

Source: Compiled by CO2CERO S.A.S., 2022.

Table 27. Communities in the Sambú district.

N.º	Community
Rio Sábalo Township	
1	Puerto Indio
2	Bayamón

N.º	Community
3	La Chunga
4	Boca Trampa
5	Villa Kerecia
6	Dai-Puru
Jingurudo Township	
7	Pavarandó
8	Boca Wina
9	Jingurudo
10	Churuco
11	Condoto
12	Borobichi

Source: Compiled by CO2CERO S.A.S., 2022.

7.2 Other Project participants

Additionally, some external roles have been involved in supporting the implementation of the GHG mitigation initiative; however, they do not have ownership or control over the GHG reductions obtained. These correspond to B-Terra Corp. and CO2CERO SAS.

Table 28. Contact information of the managing partner.

Individual or organization	**B-Terra Corp**
TIN[26]	155631614-2-2016 DV 57
Contact person	Omar Fricentese
Job position	Project Coordinator
Address	Brazil Commercial Center, Mall Of 522, 5th Floor. Panama City, Panama.
Phone number	+507 213-0000

[26] Taxpayer Identification Number (Registro Único de Contribuyentes - RUC). This is defined according to Resolution 201-1946 of July 11, 2007, as the unique number that will serve to identify the taxpayer before the Tax Administration.

Email	*info@b-terra.com*

Source: Compiled by CO2CERO S.A.S., 2022.

Table 29. Contact information of the technical partner.

Individual or organization	**CO2CERO S.A.S.**
TIN[27]	
Contact person	Jose Luis Rivera Micán
Job position	General director
Address	*Cra 45a# 104b-16 Bogotá D.C. (Colombia).*
Phone number	+601 6047279
Email	*info@co2cero.co*

Source: Compiled by CO2CERO S.A.S., 2022.

7.3 Agreements related to carbon rights

Through contractual agreements, the proponent of the initiative and the managing associates determine their responsibilities and rights in it. In the "*1_Acuerdos\01_Acuerdo comunidad*" folder, the understanding agreement established between the managing associate B-Terra Corp and the authorities of the Emberá Wounaan Territory is presented. It defines that the participation in the commercialization of the reduced emissions of GHG, after deducting the expenses incurred by the project, will be 56% for the 41 communities of the Territory and 44% for the managing and technical associates during the 30-year lifespan of the project, ensuring that most of the benefits are given to the community. It is also determined that the management of resources will be regulated by a fiduciary figure, while the management is applied jointly between the managing associate (B-Terra Corp.) and the general congress of the Territory, guaranteeing improvement in five pillars: health, food, education, health, and infrastructure.

[27] Tax Identification Number (Número de Identificación Tributaria - NIT). This is defined according to Article 555-1 of the Tax Statute for taxes administered by the DIAN, as the number by which, for tax purposes, the DIAN identifies taxpayers, liable parties, withholding agents, and declarants.

In the partnership agreement established between the parties, namely the General Cacique of the Emberá Wounaan Territory and the managing associate B-Terra Corp., established on March 15, 2022, it is considered that the Territory owns the land and therefore the project. Thus, its design and structuring are based on the uses, traditions, and customs of the indigenous people[28,29].

8 Environmental Aspects

Following the guidelines defined in the Environmental Net Damage and Socio-environmental Safeguards tool of the BioCarbon Standard version 1.0, it is demonstrated that the project activities do not cause impacts on the environment and local communities or society in general. For the normative analysis within the national and international framework, the environmental legal matrix related to the initiative is presented, justifying the applicability of the different laws and regulations that regulate the project[30].

In order to analyze the predictable effects on biodiversity and ecosystems within the project boundaries, an environmental assessment was conducted based on the categorization of effects adopting the methodology developed by (Conesa, 2011). This methodology assigns an importance value to each effect by using value scales for the criteria established by it, allowing them to be classified into different ranges depending on their nature. The parameters of this methodology were adapted to fit the specific characteristics of the REDD+ Emberá Wounaan project.

In total, seven (7) criteria were analyzed for negative effects and five (5) for positive effects, because the qualification for recoverability and reversibility criteria is not conducted as indicated by the (Conesa, 2011) methodology. For all effects, the characteristics, intensity, extent, persistence, and timing were evaluated. In *11_Anexos y complementarios\4_NNH\01_Environmental aspect*, you can find the definition of each criterion and the rating of environmental effects with the respective justification of the assigned value in the assessment conducted.

Table 30. Rating and level of environmental importance of the effects determined in the environmental assessment.

[28] See in: *01_Acuerdos\01_Acuerdo comunidad\Contrato_B Terra_Emberá.pdf*
[29] See in: *01_Acuerdos\01_Acuerdo comunidad\Nota aclaratoria_Cláusula 7.pdf*
[30] See in: *09_Legislación*

N°	Effect	Rating	Environmental leve lof importance
1	Increase in Forest Governance	11	Positive: Low
2	Conservation of forest mass	27	Positive: High
3	Provision of habitats for fauna	33	Positive: High
4	Reduction of pressure on natural ecosystems	29	Positive: High
5	Conservation of biological corridors	27	Positive: High
6	Forest fires	-29	Negative: Moderate
7	Emergencies due to floods or hurricanes	-29	Negative: Moderate
8	Impact on vulnerable or endangered species (terrestrial or aquatic) according to IUCN in the area of the Comarca	-27	Negative: Moderate
9	Soil and water pollution with anthropogenic waste	-27	Negative: Moderate
10	Increase in the construction of unsustainable housing and the existence of traditional housing in precarious conditions	-23	Negative: Moderate
11	Limited knowledge of sustainable forest management within the Comarca	-15	Negative: Irrelevant
12	Susceptibility to scams related to carbon markets	-13	Negative: Irrelevant

N°	Effect	Rating	Environmental leve lof importance
13	Insufficient access routes to transport forest and agricultural production to consumers	-17	Negative: Irrelevant
14	Inappropriate land use	-36	Negative: Critical
15	Pressure from private timber companies on forest resources	-37	Negative: Critical
16	Illegal logging	-37	Negative: Critical

Source: CO2CERO S.A.S., 2022.

Finally, it is determined that for the REDD+ Emberá Wounaan project, there are five (5) positive effects, of which four (4) were classified as having a high level of environmental importance and one (1) with a low level of environmental importance. Additionally, there are ten (11) negative effects, five (5) moderate, three (3) irrelevant, and three (3) critical.

Once the environmental context has been assessed in terms of the primary and secondary effects involved in the execution of the project, the environmental evaluation results sheet (see **Table 31**[31]) applies the corresponding relationships with REDD+ activities. This ensures that these activities address their prevention and/or mitigation transversally. Thus, the performance obtained in each of them responds to the enhancement and/or mitigation of these effects[32].

Table 31. Strategies to Decrease or Increase Environmental Effects Related to REDD+ Activities

N°	Effect	Related REDD+ Activity	Specific REDD+ Activity	Result 2018-2022	Strategy
1	Increase in Forest Governance	1.1.1 Guidance in defining governance structures and good living	1) Two regional congresses with election of representatives and ratification of	1) 1 regional meeting in Cémaco 1 regional meeting in	**Good Governance:** Strengthening political participation and justice tools in articulated governance within state scenarios will ensure the promotion and development of a sustainable

[31] See in: *11_Anexos y complementarios/04_NNH*
[32] See in: *02_Cobeneficios\03_ActividadesREDD+\ ActividadesREDD+_Emberá Wounaan_V4.xlsx*

N°	Effect	Related REDD+ Activity	Specific REDD+ Activity	Result 2018-2022	Strategy
			the approval of the REDD+ project. 2) Socialization of the five-year government plan 3) Suspension of logging companies	Sambú 2) 1 administrative meeting 3) Nokora Chi Por Naan meeting	cultural identity, reinforcing and maintaining new behaviors oriented towards good living, conservation, protection, and optimization of the ecosystems in the forested areas of the region. The activities of congresses, socializations, and meetings developed during the certification period allow for strengthening governance structures through regional work and the ratification of commitments within the Comarcas towards the project.
2	Conservation of Forest Mass	4.1.2 Monitoring of vegetation and biodiversity 4.2.1 Creation of Emberá Wounaan forest nursery 4.2.2 Forest restoration 4.2.3 Recovery of original forest	4.1.2: 1) Forest inventory conducted in the districts of Cémaco and Sambú, using a conglomerate model with 4 subplots of 20 m x 250 m. 2) Support and provision of services in the establishment of monitoring plots 3) Analysis of vertebrate fauna biodiversity on a farm in Metití, Darién Province 4.2.1 To be developed 4.2.2 To be developed 4.2.3 Coffee planting in restored areas, turning the area into an Agroforestry System (SAF) 4.2.3 To be developed	4.1.2: 1) Regional forest inventory 2) 21 women, 105 men 3) Biodiversity analysis of fauna 4.2.3: 15 hectares The other activities are to be developed.	The **recognition of existing natural resources** through forest inventories and biodiversity analyses within the territory allows for consolidating a future vision on the best practices to ensure their long-term integrity, strengthening the perspective of sustainable development where everyone can enjoy the goods and services provided by this capital. Moreover, the creation of **forest nurseries** in the Comarca constitutes one of the first steps in this project to ensure the best path towards forest repopulation in terms of reforestation or restoration (selecting, producing, and propagating an adequate quantity and quality of species) in areas that have not been adequately treated by common practices. Continuing with the process, **forest restoration and recovery of the original forest** implies the effort to restore the ecosystem. We are talking not only about trees but also about vegetation in general, considering fauna, soil, water, among other components, to the point where the life of communities becomes an integral part of the ecosystem and includes species that allow the survival of the fauna found in the biodiversity analysis carried out for this monitoring period, which will continue to develop to maintain control over the individuals present and establish actions for their persistence, allowing even for strengthening access to improvements in the quality of life of the population through agroforestry systems, in this
3	Offer of Habitats for Fauna	4.2.1 Creation of Emberá Wounaan forest nursery 4.2.2 Forest restoration 4.2.3 Recovery of original forest	4.2.1 To be developed 4.2.2 To be developed 4.2.3 Coffee planting in restored areas, turning the area into an	4.2.3 15 hectares The other activities are to be developed.	

N°	Effect	Related REDD+ Activity	Specific REDD+ Activity	Result 2018-2022	Strategy
			Agroforestry System (SAF) 4.2.3 To be developed		case, with coffee, providing a fundamental food product for these communities. Additionally, reforestation is contemplated, as there is a clear forest vocation in the territory of the Comarca and its inhabitants, making reforestation key to generating the ecosystemic balance that guarantees the increase and protection of carbon reservoirs and the consequent mitigation of climate change.
4	Decrease in Pressure on Natural Ecosystems	4.3.1 Non-timber forest production	To be developed	The activities are to be developed	The production of non-timber forest resources represents a unique opportunity for their proper management and use. It reduces pressure on timber resources to ensure the livelihoods of communities and generates new and attractive sources of income.
5	Conservation of Biological Corridors	4.2.1 Creation of Emberá Wounaan forest nursery 4.2.2 Forest restoration 4.2.3 Recovery of original forest	4.2.1 To be developed 4.2.2 To be developed 4.2.3 Coffee planting in restored areas, turning the area into an Agroforestry System (SAF)	4.2.3 15 hectares The other activities are to be developed.	The **recognition of existing natural resources** through forest inventories and biodiversity analyses within the territory allows for consolidating a future vision on the best practices to ensure their long-term integrity, strengthening the perspective of sustainable development where everyone can enjoy the goods and services provided by this capital. Moreover, the creation of **forest nurseries** in the Comarca constitutes one of the first steps in this project to ensure the best path towards forest repopulation in terms of reforestation or restoration (selecting, producing, and propagating an adequate quantity and quality of species) in areas that have not been adequately treated by common practices. Continuing with the process, **forest restoration and recovery of the original forest** imply the effort to restore the ecosystem. We are talking not only about trees but also about vegetation in general, considering fauna, soil, water, among other components, to the point where the life of communities becomes an integral part of the ecosystem and includes species that allow the survival of the fauna found in the biodiversity analysis

N°	Effect	Related REDD+ Activity	Specific REDD+ Activity	Result 2018-2022	Strategy
					carried out for this monitoring period, which will continue to develop to maintain control over the individuals present and establish actions for their persistence, allowing even for strengthening access to improvements in the quality of life of the population through agroforestry systems, in this case, with coffee, providing a fundamental food product for these communities. Additionally, **reforestation** is contemplated, as there is a clear forest vocation in the territory of the Comarca and its inhabitants, making reforestation key to generating the ecosystemic balance that guarantees the increase and protection of carbon reservoirs and the consequent mitigation of climate change.
6	Forest Fires	4.1.3 Training in Sustainable Forest Management (SFM) Development and implementation of the risk management plan	To be developed	The activities are to be developed	Training in Sustainable Forest Management (SFM), supported by contributions from science and technology, is an essential requirement to guarantee the sustainability of the forest, incorporating techniques for managing forest cover in the productive habits and lifestyles of the Comarca. Additionally, a risk management plan is established with the following activities to monitor: - Execution of controlled burns as a mechanism for establishing cultivation areas. - Establish mechanisms for early warning of fires and their suppression through satellite monitoring and forest surveillance reports from the Comarca.
7	Emergencies from Flooding or Hurricanes	Development and implementation of the risk management plan	To be developed	The activities are to be developed	A risk management plan is established with the following activities to monitor: - Establish early communication mechanisms for alerts during tropical storm and hurricane seasons to minimize their effects on communities. - Familiarize communities with climate prediction management and weather forecasts through information technologies. - Coordinate with competent national and international bodies to implement

N°	Effect	Related REDD+ Activity	Specific REDD+ Activity	Result 2018-2022	Strategy
					early and necessary assistance to repair damages.
8	Impact on Vulnerable or Endangered Species (terrestrial or aquatic) according to the IUCN in the area of the Comarca	4.2.2 Forest restoration	To be developed	The activities are to be developed	**Forest restoration** involves the effort to recover the ecosystem. We are talking not only about trees but also about vegetation in general, considering fauna, soil, water, among other components, to the point where the life of communities becomes an integral part of the ecosystem and includes species that allow the survival of the fauna found in the biodiversity analysis carried out for this monitoring period, which will continue to develop to maintain control over the individuals present and establish actions for their persistence, allowing even for strengthening access to improvements in the quality of life of the population through agroforestry systems, in this case, with coffee, providing a fundamental food product for these communities.
9	Soil and Water Source Contamination with Anthropogenic Waste	4.1.3 Training in Sustainable Forest Management (SFM) 2.1.3 Assessment of the status of provision and availability of basic services, sanitation, health, and education.	4.1.3: To be developed 2.1.3: 1) Structural improvement of "Chingue Buche" in the Comarca and church 2) Provision of water pumps and piping 3) Delivery of computer equipment and printer	2.1.3: 1) 1 Structural adjustment of meeting room. 2) An initiative for water provision 3) 1 Delivery of computer equipment The other activities are to be developed	Training in Sustainable Forest Management, supported by contributions from science and technology, is an indispensable requirement to ensure the sustainability of the forest, incorporating forest cover management techniques into the productive habits and lifestyles of the Comarca. Forest management practices must be transferred so that, upon accessing the forest, actions that degrade the forests or facilitate access for other actors to deforestation are not carried out. Furthermore, through the assessment of the state of provision and availability of basic services, sanitation, health, and education, pioneering individual and community projects and initiatives aimed at satisfying basic needs (also safety, social, recognition, and self-realization), good habits, and work practices have been carried out and will be carried out; focused on their sense of belonging and love for nature, generating spontaneous and conscious care for their territory. Specifically, an initiative for the provision of water pumps and piping has been delivered to reduce

N°	Effect	Related REDD+ Activity	Specific REDD+ Activity	Result 2018-2022	Strategy
					contamination in soils and water sources due to anthropogenic waste.
10	Increase in the construction of unsustainable housing and existence of traditional housing in precarious conditions	2.1.1 Development of planning and community development tools	Creation and design of the five-year strategic plan for the Comarca Emberá Wounaan 2022 - 2027.	25% progress	**Prospective and participatory planning** promotes the recovery and strengthening of ethnic-cultural identity, enhances the governance system, organizes, zones, and regulates the use of land and natural resources, and contributes to the improvement of quality of life, promoting the identity of its essential values that link them to actions of a cultural, social, political, and economic nature in a leading and sustainable manner. Without this participatory diagnosis, scientific support, combined with ancestral knowledge and the creation and design of the five-year strategic plan for the Comarca Emberá Wounaan 2022 - 2027, the project would not be viable.
11	Lack of knowledge on sustainable forest management within the Comarca	4.1.3 Training in Sustainable Forest Management (SFM)	To be developed	Activities are to be developed.	Training in Sustainable Forest Management (SFM), supported by contributions from science and technology, is an indispensable requirement to ensure the sustainability of the forest, incorporating forest cover management techniques into the productive habits and lifestyles of the Comarca. Forest management practices must be transferred so that, upon accessing the forest, actions that degrade the forests or facilitate access for other actors to deforestation are not carried out.
12	Propensity to scams related to carbon markets	1.1.2 Training in project management, finance, and resource administration 4.1.1 Training in REDD+ and socio-environmental safeguards	**1.1.2: 1)** 7 trainings on project management, benefit distribution, and resource management. **2)** Definition of agreements for resource management and knowledge of the REDD+ project.	**1.1.2:** 1) 2 men 2) 8 men **4.1.1:** 1) 5 men 2) 13 women, 13 men 3) 3 women, 17 men 4) 16 women, 40 men 5) 2 men	**Participation and voluntary:** Through all the training and socialization carried out, the development and strengthening of capacities and skills in budget and finance management at the community level are encouraged, generating full, equitable, and transparent participation in the social roles of the community, leading to better forest quality in the region and improved profiles in education, health, and housing. Furthermore, the safeguards of the Cancun Convention (COP 16, 2010) originate from the recognition that the implementation of REDD+, if properly implemented, represents an opportunity to promote multiple benefits for the Emberá Wounaan.

N°	Effect	Related REDD+ Activity	Specific REDD+ Activity	Result 2018-2022	Strategy
			4.1.1: 1) Socialization of REDD+ initiatives and carbon capture **2 - 4)** Socialization of REDD+ and analysis of deforestation and degradation factors. **5)** Definition of safeguard indicators 6) Basic training on Climate Change **7** - 18; 20) Training on Climate Change, REDD+, and carbon market for Comarcanos and the Nokora Council. **19)** Socialization of the REDD+ project, scope, and objectives at the Comarcal level. **20)** Training on topics related to REDD+ such as climate change, REDD+ initiatives, socio-environmental safeguards, and factors of deforestation and forest degradation.	6) 8 women, 53 men 7) 12 women, 58 men 8) 3 men 9) 12 men 10) 24 women, 40 men 11) 9 women, 16 men 12) 10 women, 35 men, 4 Not legibles. 13) 10 women, 23 men 14) 7 women, 23 men 15) 9 women, 8 men 16) 16 women, 10 men 17) 4 women, 16 men 18) 7 women, 18 men 19) 9 women, 24 men 20) 20 reported meetings	These safeguards cover a wide range of issues, including good forest governance, respect for the rights of local communities and indigenous peoples, protection of biodiversity and sustainability, thus contributing to emission reductions and facilitating their financing.
13	Insufficient access routes to transfer	2.1.1 Development of planning and	Creation and design of the five-year strategic	25% progress	**Prospective and participatory planning** promotes the recovery and strengthening of ethnic-cultural

N°	Effect	Related REDD+ Activity	Specific REDD+ Activity	Result 2018-2022	Strategy
	forest and agricultural production to consumers	community development tools	plan for the Comarca Emberá Wounaan 2022 - 2027.		identity, enhances the governance system, organizes, zones, and regulates the use of land and natural resources, and contributes to the improvement of quality of life, promoting the identity of its essential values that link them to actions of a cultural, social, political, and economic nature in a leading and sustainable manner. Without this participatory diagnosis, scientific support, combined with ancestral knowledge and the creation and design of the five-year strategic plan for the Comarca Emberá Wounaan 2022 - 2027, the project would not be viable.
14	Inadequate land use	2.2.1 Identification of territorial boundaries	1-2) Verification of the presence of invaders and settlers for their eviction, according to the ruling of the Supreme Court of Justice. 3) Verification of regional boundaries of Sambú 4) Map of the boundaries of Sambú 5) Identification of territorial boundaries of Sambú and Cémaco	1-3) 3 routes carried out 4-5) 2 cartographic approximations	Effective social organization, through the identification and verification of territorial boundaries and the presence of invaders and settlers, generates trust and security in territorial recognition, reaffirmation of their duties and rights, conscious land use, effective community work for the comprehensive and sustainable supply of the comarca, safeguarding natural resources and protecting the forest from foreign attempts at illegal exploitation.
15	Pressure from private logging companies on forest resources	2.2.1 Identification of territorial boundaries 4.3.1 Non-timber forest production	**2.2.1:** 1-2) Verification of the presence of invaders and settlers for their eviction, according to the ruling of the Supreme Court of Justice. 3) Verification of regional boundaries of Sambú 4) Map of the boundaries of Sambú	**2.2.1:** 1-3) 3 routes carried out 4-5) 2 cartographic approximations The other activities are to be developed**.**	Effective social organization, through the identification and verification of territorial boundaries and the presence of invaders and settlers, generates trust and security in territorial recognition, reaffirmation of their duties and rights, conscious land use, effective community work for the comprehensive and sustainable supply of the comarca, safeguarding natural resources and protecting the forest from foreign attempts at illegal exploitation. Additionally, the production of non-timber forest resources represents an unparalleled opportunity for their good

N°	Effect	Related REDD+ Activity	Specific REDD+ Activity	Result 2018-2022	Strategy
			5) Identification of territorial boundaries of Sambú and Cémaco 4.3.1: To be developed		management and use. This reduces the pressure on timber resources to ensure the livelihood of communities and generates new and attractive sources of income.
16	Illegal logging	2.2.2 Strategies for protecting territorial boundaries	1) Report of the round conducted in the Chatí sector supports the administrative resolution for the expulsion of settlers. The other activities are yet to be developed.	1 round conducted The other activities are yet to be developed.	Territorial defense is generated through the execution of rounds that ensure the protection of the forest and its resources, thanks to a strategy of territorial integrity, which will contribute to the reduction of deforestation and external environmental degradation, along with the proper management of conflicts with negative external agents.

Source: CO2CERO S.A.S., 2022.

The design of the REDD+ Emberá Wounaan activities, as well as their indicators, was based on the diagnosis of deforestation and forest degradation factors, including both direct and indirect agents that endanger the environmental and socioeconomic integrity of the region. This involved a comprehensive analysis of the different contexts of the project, transforming them into the most effective means of community response and protection against the manifestation of these issues. Finally, the degree of impact that these effects have on the environmental context and the expected outcomes from the implementation of the REDD+ activities are evidenced in the environmental assessment[33], characterizing them as either positive or negative, with impact levels ranging from low to high.

9 Socioeconomic Aspects

According to the results obtained from the socioeconomic assessment, several effects are identified as relevant and important for the continuous development of the project in the short, medium, and long term. It is noteworthy that these effects arise from the socialization processes that have been ongoing with the communities, where they

[33] See in the sheet “Resultado” column F “Nivel de importancia ambiental” of the document *11_Anexos y complementarios/04_NNH/01_Environmental aspect/Evaluacion_ambiental_EW_V3.xlsx.*

identify the positive or negative benefits that REDD+ activities can generate for both the social and economic components of the Comarca Emberá Wounaan.

Below is **Table 32**, where the effects and their level of importance are identified. For this result, five (5) criteria were considered for qualification: directness, scope, magnitude, timing, and persistence. In *11_Anexos y complementarios\4_NNH\02_Socioeconomic aspect*, you can find the definition of each criterion and the rating of the socioenvironmental effects.

Table 32. Rating and socio-economic importance level of the effects determined in the assessment.

N°	Analysis Units- Socioeconomic Effects	Qualification	Level of Socioeconomic Importance
1	Hiring of local labor	21	Positive: High
2	Access to economic resources	23	Positive: High
3	Development of agricultural productive projects	23	Positive: High
4	Development of ethnic productive projects	23	Positive: High
5	Economic territorial growth	23	Positive: High
6	Devaluation of the carbon market	-19	Critical
7	Misuse of economic resources	-21	Critical
8	Abandonment of entrepreneurship	-19	Critical
9	Community disarticulation	-17	Moderate
10	Strengthening of good governance	-19	Critical
11	Community participation	19	Positive: High
12	Strengthening of land tenure	17	Positive: Medium
13	Improvement of roads	23	Positive: High
14	Recognition of territorial boundaries	19	Positive: High
15	Incursion of groups outside the law or drug traffickers	-21	Critical
16	Strengthening of territorial boundary security	23	Positive: High
17	Participation of Children, youth, elderly	15	Positive: Medium
18	Gender participation	19	Positive: High
19	Non-participation of children, youth, women, and elderly	-13	Moderate
20	Strengthening of community relationships	19	Positive: High
21	Strengthening of health	23	Positive: High

N°	Analysis Units- Socioeconomic Effects	Qualification	Level of Socioeconomic Importance
22	Strengthening of Education	23	Positive: High
23	Food security	23	Positive: High
24	Housing improvement	21	Positive: High
25	Improvement of basic services	23	Positive: High
26	Strengthening of family welfare	21	Positive: High
27	Solid waste management	15	Positive: Medium
28	Exposure to future pandemics	-17	Moderate
29	Rescue of cultural activities	19	Positive: High
30	Loss of cultural identity	-19	Critical
31	Disrespect for dignity and cultural diversity	-19	Critical
32	Self-rejection of indigenous identity and culture	-19	Critical

Source: CO2CERO S.A.S., 2023.

With the aforementioned information, 32 effects are obtained, with eighteen (18) having a Positive importance level: High, three (3) with Positive: Medium, three (3) with Moderate, and eight (8) with Critical importance. The latter are identified in the risk management section along with their possible strategies.

While a significant number of effects with relevance for both communities and the territory are obtained, it can be analyzed that executing the project in the most transparent, honest, efficient manner, with joint and constant participation, generates well-being for the beneficiaries, improving their living conditions. However, there is a contrasting significant value of critical impact level that, if not taken into account and considered, may lead to a project reversal.

Therefore, from the REDD+ Emberá Wounaan project and following the criteria of the Cancun safeguards, assurance is given for participation and collective action, as well as respect for the rights of indigenous communities. This allows for the strengthening of relationships based on trust, individuals with leadership for decision-making, and actions in response to the challenges of their own dynamics. It also reinforces bonds in each of its members to work for the common good, through social inclusion, ancestral and ethnic knowledge, and community participation.

The results obtained from the socioeconomic evaluation highlight the relationship between the identified effects and the REDD+ activities, whose strategies also

correspond to the benefits derived from their implementation. The design of these activities was based on a comprehensive diagnosis that, in addition to understanding the agents of deforestation and forest degradation in the territory, included the effects on the social and economic dynamics of the community, closely linked to both direct and underlying causes of these phenomena. Thus, the indicators used to evaluate the performance of the REDD+ activities in the project also aim to prevent, favor, and mitigate these effects, which are manifestations of the benefits and strategies outlined in their formulation.

Table 33. Strategies to decrease or increase the socioeconomic effects related to REDD+ activities

N°	Units of analysis	Involved REDD+ Activity	Specific REDD+ Activity	Results 2018-2022	Strategy
1	Hiring local labor	3.2.2 Improvement of tools and work materials. 3.2.1 Training in good productive practices	To be developed	Activities are to be developed	Establishing a Routine Management System allows for continuous improvement in all areas of life at the personal, family, work, and community levels. It is the virtuous circle of planning, educating, doing, checking, eliminating the causes of anomalies or chronic problems, and eventually standardizing best practices, the use of the best tools, and the best life and work habits: -Improve efficiency and productivity in labor. -Increase the quality of work performed by members of the Emberá Wounaan community. -Familiarize workers with efficient materials and work techniques. A unfavorable scenario may lead to the adaptation of new extensive production models that increase deforestation. Moreover, increasing levels of education (permanent) within the Comarca, supported by activating the potential of talent, from the development of the being, transversalized by an accredited sustainability curriculum, generating the imaginative cultural skill, creating renewing institutions of ecological balance, implementing a human and environmental development proposal based on adaptation and mitigation to climate change, complementing an increase in resilience and capacity for regional

					response to vulnerabilities derived from climate change.
2	Access to economic resources	3.2.3 Institutionalization of good practices of economic development and well-being. 1.2.1 Creation of consultation and decision-making spaces by authorities and members of the Emberá Wounaan community.	3.2.3: Training on methodologies for the diagnosis, detection, and participatory solution of community problems. 1.2.1: 1) Doubt resolution meetings 2) Regional congresses of Cémaco and Sambú districts 3) Meeting with authorities and Nokora council 4) Planning Regional Assembly Cémaco 5) Approval of REDD+ project Extraordinary Session. 6) General congress to reject the forest utilization plan. 7) Approval of plenary of congress for training on REDD+ 8) Approval of implementation of REDD+ project with B Terra Corp in Sambú 9) Approval of implementation of REDD+ project in Cémaco	3.2.3: 1 Pedagogical meeting 1.2.1: 1-5) 5 Consultation and decision-making meetings 6) 1200 indirect persons 7) 1200 indirect persons 8) 1500 indirect persons 9) 1200 indirect persons Other activities are to be developed	The implementation of the project manages to implement all REDD+ activities through access to economic resources; this is why participatory diagnostics, detections, and solutions manage to resolve community problems. This is developed under the creation of practices based on sustainability and the environment, contributing to the formation of healthy environments and lifestyles in the family and in indigenous communities, generating the internalization and implementation of specific capacities to address changes as opportunities for improving quality of life. Moreover, through governance, the creation of consultation and decision-making spaces, and transparent financial management, transparent action control is generated in the procedures for accountability and governance in land use, which generates community empowerment of the project and is another guarantee element against the return to initial conditions regarding forest practices and the unsustainable use of land resources.

3	Development of agricultural productive projects	3.1.1 Technical support in sustainable family production models 3.1.2 Design of sustainable economic alternatives and production chains	To be developed	Activities are to be developed	The development of productive projects increases sustainable food sovereignty, generating a reorganization of the food production chain from ancestral agricultural originality, safeguarding and promoting local varieties of traditional crops, increasing family and community productivity through the application of good production practices and efficient agricultural management, generating organization, food security, and the development of sustainable agriculture. An unfavorable scenario may lead to the adaptation of new extensive production models that increase deforestation. Moreover, organizational and business empowerment of the community is increased through the training and education of children, youth, and women, in promoting production, commercialization, and entrepreneurship chains, contributing to the creation and consolidation of productive and sustainable scenarios compatible with traditional artisanal practices, promoting diversified economic alternatives.
4	Development of ethnic productive projects	2.1.2 Design of strategies for the conservation of indigenous ancestral knowledge. 3.1.2 Design of sustainable economic alternatives and production chains	2.1.2: 1) Annual canoe contest 2) Sports meeting	Two annual meetings Other activities are to be developed	Permanent indigenous education is strengthened through the application of an original and contextualized curriculum force, activating talent from the Emberá-Wounaan being, with the purpose of conserving their ethnic authenticity, all within the Emberá Wounaan Strategic Life Plan (2022-2052), whose platform, as mentioned, is a system of permanent education and human activation. Moreover, organizational and business empowerment of the community is increased through the training and education of children, youth, and women, in promoting production, commercialization, and entrepreneurship chains, contributing to the creation and consolidation of productive and

					sustainable scenarios compatible with traditional artisanal practices, promoting diversified economic alternatives.
5	Territorial economic growth	3.2.1 Training in good productive practices	To be developed	Activities are to be developed	Training in good productive practices increases education levels (permanent) within the Comarca, supported by activating the potential of talent, from the development of the being, transversalized by an accredited sustainability curriculum, generating the imaginative cultural skill, creating renewing institutions of ecological balance, implementing a human and environmental development proposal.
6	Devaluation of the carbon market	4.1.1 Training in REDD+ and socio-environmental safeguards	1) Socialization on REDD+ initiatives and carbon capture 2 - 4) Socialization on REDD+ and analysis of deforestation and degradation factors. 5) Definition of safeguard indicators 6) Training on basic concepts of Climate Change 7 - 18; 20) Training on Climate Change, REDD+, and Carbon Market to Comarcanos and Nokora Council. 19) Socialization on REDD+ project, scope, and objectives at the regional level. 21) Training on topics related to REDD+ such as climate change, REDD+ initiatives, socio-environmental safeguards, and factors of deforestation and forest degradation.	1) Nokora President, General Cacique, Congress President, and team. 2) 26 members of the Vista Alegre community (Cémaco) 3) 56 members of the Capetí community 4) 2 members of the governing board 5) 61 members of the Unión Chocó, Vista Alegre, and Capetí communities. 6) 70 members of the Capetuira community 7) 3 members of the Nokora Council 8) 12 members of the Metetí community 9) 64 members of the Nuevo Vigía community 10) 25 members of the Bajo Purú community 11) 49 members of the La Esperanza community	The safeguards of the Cancun Convention (COP 16, 2010) originate from the recognition that the implementation of REDD+, if implemented properly, represents an opportunity to promote multiple benefits for the Emberá Wounaan. These safeguards cover a wide range of issues, including good forest governance, respect for the rights of local communities and indigenous peoples, protection of biodiversity and sustainability, thereby contributing to emission reduction and facilitating its financing.

				12) 33 members of the Barranquillita community 13) 30 members of the Bajo Chiquito - Tuqueza community 14) 17 members of the Villa Caleta community 15) 26 members of the Vista Alegre community 16) 20 members of the Unión Chocó community 17) 25 members of the Capetí community 18) 5 members of the new general congress 19) 33 members of the Corozal community 20) 581 beneficiaries	
7	Misuse of economic resources	3.2.3 Institutionalization of good practices of economic development and well-being. 1.2.1 Creation of consultation and decision-making spaces by authorities and members of the Emberá Wounaan community.	3.2.3: Training on methodologies for the diagnosis, detection, and participatory solution of community problems. 1.2.1: 1) Doubt resolution meetings 2) Regional congresses of Cémaco and Sambú districts 3) Meeting with authorities and Nokora council 4) Planning Regional Assembly Cémaco 5) Approval of REDD+ project Extraordinary Session. 6) General congress to reject the forest utilization plan.	3.2.3: 1 pedagogical meeting 1.2.1: 1-5) 5 consultation and decision-making meetings 6) 1200 indirect persons 7) 1200 indirect persons 8) 1500 indirect persons 9) 1200 indirect persons Other activities are to be developed	The implementation of the project manages to implement all REDD+ activities through access to economic resources; this is why participatory diagnostics, detections, and solutions manage to resolve community problems. This is developed under the creation of practices based on sustainability and the environment, contributing to the formation of healthy environments and lifestyles in the family and in indigenous communities, generating the internalization and implementation of specific capacities to address changes as opportunities for improving quality of life. Moreover, through governance, the creation of consultation and decision-making spaces, and transparent financial management, transparent action control is generated in the procedures for accountability and governance in land use, which generates community empowerment of the project and is another guarantee

			7) Approval of plenary of congress for training on REDD+ 8) Approval of implementation of REDD+ project with B Terra Corp in Sambú 9) Approval of implementation of REDD+ project in Cémaco		element against the return to initial conditions regarding forest practices and the unsustainable use of land resources.
8	Abandonment of enterprises	2.1.2 Design of strategies for the conservation of indigenous ancestral knowledge. 3.1.2 Design of sustainable economic alternatives and production chains	2.1.2: 1) Annual canoe contest 2) Sports meeting	2.1.2: Two annual meetings Other activities are to be developed	Permanent indigenous education is strengthened through the application of an original and contextualized curriculum force, activating talent from the Emberá-Wounaan being, with the purpose of conserving their ethnic authenticity, all within the Emberá Wounaan Strategic Life Plan (2022-2052), whose platform, as mentioned, is a system of permanent education and human activation. Moreover, organizational and business empowerment of the community is increased through the training and education of children, youth, and women, in promoting production, commercialization, and entrepreneurship chains, contributing to the creation and consolidation of productive and sustainable scenarios compatible with traditional artisanal practices, promoting diversified economic alternatives.
9	Community disarticulation	1.2.2 Training in good leadership practices 2.2.1 Identification of territorial boundaries	1.2.2: 1) Training on the implications of the REDD+ project in the comarca, community development, and governance. 2) Conflict resolution and territorial differences. 2.2.1: 1-2) Verification of the presence of invaders and settlers for their	1.2.2: 1) 2 men 2) 9 men, 2 women. 2.2.1: 1-3) 3 site visits 4-5) 2 cartographic approximations Other activities are to be developed	Community disarticulation is reduced through participatory leadership practices, such as training, conflict resolution spaces, and the creation of a strategic agenda that allows for the alignment and execution of policies protecting the forest ecosystem, with the full and effective participation of relevant stakeholders in the comarca, consolidating a transformative, social, and sustainable leadership for community management. Additionally, effective social organization, through the

			eviction, according to the ruling of the Supreme Court of Justice. 3) Verification of regional boundaries of Sambú. 4) Map of the boundaries of Sambú. 5) Identification of territorial boundaries of Sambú and Cémaco		identification and verification of territorial boundaries and the presence of invaders and settlers, generates trust and security in territorial recognition, reaffirmation of their duties and rights, conscious land use, effective community work for the integral and sustainable supply of the comarca, safeguarding natural resources and protecting the forest from attempts at illegal exploitation.
10	Strengthening good governance	1.1.1 Guidance in defining governance structures and well-being	1) 1 regional meeting in Cémaco 1 regional meeting in Sambú 2) 1 administrative meeting 3) Nokora Chi Por Naan meeting	1) Two regional congresses with the election of representatives and ratification of the approval of the REDD+ project. 2) Socialization of the five-year government plan 3) Suspension of forestry companies Other activities are to be developed	**Good Governance**: The strengthening of political participation and justice tools in articulated governance, within state scenarios, will ensure the promotion and development of a sustainable cultural identity, strengthening and maintaining new behaviors aimed at well-being, conservation, protection, and optimization of the ecosystems of the forested areas of the comarca. The activities of congresses, socializations, and meetings developed during the certification period allow for strengthening governance structures through regional work and the ratification of commitments within the Comarcas toward the project.
11	Community Participation	1.1.2 Training in project management, finance, and resource administration 1.2.1 Creation of consultation and decision-making spaces by the authorities and members of the Emberá Wounaan community	1.1.2: 1) 7 trainings on project management, benefit distribution, and resource management. 2) Definition of agreements for resource management and knowledge of the REDD+ project. 1.2.1: 1) Doubt resolution meetings 2) Regional congresses for the Cémaco and Sambú districts 3) Meeting with authorities and the Nokora council	1.1.2: 1) 2 men 2) 8 men 1.2.1: 5 Consultation and decision-making meetings 6) 1200 indirect persons 7) 1200 indirect persons 8) 1500 indirect persons 9) 1200 indirect persons	The trainings, meetings, congresses, and all community participation spaces generated by the project encourage active and voluntary participation, fostering the development and strengthening of skills in budget and finance management at the community level. This results in full, equitable, and transparent participation in the social roles of the community, leading to better forest quality in the region and improved profiles in education, health, and housing. Additionally, transparent governance and financial management generate control over transparent actions in accountability procedures and governance in land use, empowering the community in the

			4) Planning Regional Assembly Cémaco 5) Approval of the REDD+ project in Extraordinary Session. 6) General congress to reject the forest utilization plan. 7) Approval of plenary session of the congress for training on REDD+ 8) Approval of implementation of the REDD+ project with B Terra Corp in Sambú 9) Approval of implementation of the REDD+ project in Cémaco.		project. This serves as another guarantee against a return to initial conditions regarding forest practices and unsustainable exploitation of land resources. The spaces must be convened with clear objectives, which must be socialized and explained to the community members to avoid discussions, confrontations, or decisions unfavorable to territorial development.
12	Strengthening Land Tenure	2.2.1 Identification of territorial boundaries 2.2.2 Strategies for protecting territorial boundaries	2.2.1: 1-2) Verification of the presence of invaders and settlers for their eviction, according to a ruling by the Supreme Court. 3) Verification of regional boundaries of Sambú 4) Map of the boundaries of Sambú 5) Identification of territorial boundaries of Sambú and Cémaco 2.2.2: 1) Report from the round carried out in the Chatí sector supports the administrative resolution for the expulsion of settlers.	2.2.1: 1-3) 3 rounds conducted 4-5) 2 cartographic approaches 2.2.2: 1 round conducted Other activities are to be developed	The effective social organization, through the identification and verification of territorial boundaries and the presence of invaders and settlers, generates trust and security in territorial recognition, reaffirmation of their duties and rights, conscious use of soils, and effective community work for the integral and sustainable supply of the region, safeguarding natural resources and protecting the forest from foreign attempts at illegal exploitation. Additionally, territorial defense is generated through rounds that guarantee the protection of the forest and its resources, thanks to a strategy of territorial integrity, which will contribute to reducing deforestation and foreign environmental degradation along with proper conflict management with negative external agents.

13	Improvement of Roads	2.1.1 Development of planning and community development tools	Creation and design of the five-year strategic plan for the Comarca Emberá Wounaan 2022 - 2027.	25% progress	**Prospective and participatory planning** promotes the recovery and strengthening of ethnic-cultural identity, favors the governance system, organizes, zones, and regulates land use and natural resources, and contributes to improving the quality of life while promoting the identity of essential values that connect them with cultural, social, political, and economic actions in a proactive and sustainable manner. Without this participatory diagnosis and scientific support, combined with ancestral knowledge, the creation and design of the five-year strategic plan for the Comarca Emberá Wounaan 2022 - 2027 would not make the project viable.
14	Recognition of Territorial Boundaries	2.2.1 Identification of territorial boundaries 2.2.2 Strategies for protecting territorial boundaries	2.2.1: 1-2) Verification of the presence of invaders and settlers for their eviction, according to a ruling by the Supreme Court. 3) Verification of regional boundaries of Sambú 4) Map of the boundaries of Sambú 5) Identification of territorial boundaries of Sambú and Cémaco 2.2.2: 1) Report from the round carried out in the Chatí sector supports the administrative resolution for the expulsion of settlers. Other activities are to be developed	1 round finished The other activities are yet to be developed.	Effective social organization, through the identification and verification of territorial boundaries and the presence of invaders and settlers, generates trust and security in territorial recognition, reaffirmation of their duties and rights, conscious use of the land, effective community work for the integral and sustainable supply of the comarca, safeguarding natural resources and protecting the forest from foreign attempts at illegal exploitation. Additionally, territorial defense is generated through the implementation of patrols that ensure the protection of the forest and its resources, thanks to a territorial integrity strategy, which will contribute to the reduction of deforestation and environmental degradation caused by outsiders, along with the proper management of conflicts with negative external agents.

15	Incursion of Lawless Groups or Drug Traffickers	2.2.1 Identification of territorial boundaries 2.2.2 Strategies for protecting territorial boundaries	2.2.1: 1-2) Verification of the presence of invaders and settlers for their eviction, according to a ruling by the Supreme Court. 3) Verification of regional boundaries of Sambú 4) Map of the boundaries of Sambú 5) Identification of territorial boundaries of Sambú and Cémaco 2.2.2: 1) Report from the round carried out in the Chatí sector supports the administrative resolution for the expulsion of settlers. Other activities are to be developed	1 round finished The other activities are yet to be developed.	Effective social organization, through the identification and verification of territorial boundaries and the presence of invaders and settlers, generates trust and security in territorial recognition, reaffirmation of their duties and rights, conscious use of the land, effective community work for the integral and sustainable supply of the comarca, safeguarding natural resources and protecting the forest from foreign attempts at illegal exploitation. Additionally, territorial defense is generated through the implementation of patrols that ensure the protection of the forest and its resources, thanks to a territorial integrity strategy, which will contribute to the reduction of deforestation and environmental degradation caused by outsiders, along with the proper management of conflicts with negative external agents.
16	Strengthening Security of Territorial Boundaries	2.2.1 Identification of territorial boundaries 2.2.2 Strategies for protecting territorial boundaries	2.2.1: 1-2) Verification of the presence of invaders and settlers for their eviction, according to a ruling by the Supreme Court. 3) Verification of regional boundaries of Sambú 4) Map of the boundaries of Sambú 5) Identification of territorial boundaries of Sambú and Cémaco 2.2.2: 1) Report from the round carried out in the Chatí sector supports the administrative	1 round finished The other activities are yet to be developed.	Effective social organization, through the identification and verification of territorial boundaries and the presence of invaders and settlers, generates trust and security in territorial recognition, reaffirmation of their duties and rights, conscious use of the land, effective community work for the integral and sustainable supply of the comarca, safeguarding natural resources and protecting the forest from foreign attempts at illegal exploitation. Additionally, territorial defense is generated through the implementation of patrols that ensure the protection of the forest and its resources, thanks to a territorial integrity strategy, which will contribute to the reduction of deforestation and environmental degradation caused by outsiders, along with the proper management

			resolution for the expulsion of settlers. Other activities are to be developed		of conflicts with negative external agents.
17	Participation of children, youth, elderly	3.2.1 Training in good productive practices 3.1.2 Design of economic alternatives and sustainable production chains	To be developed	Activities are yet to be developed.	Organizational and business empowerment in the community generates training and education for children, youth, and women, promoting production chains, marketing, and entrepreneurship that contribute to the creation and consolidation of productive and sustainable scenarios, compatible with traditional artisanal practices, promoting diversified economic alternatives. An unfavorable outlook can lead to the adaptation of new extensive production models that increase deforestation. Additionally, training, production, and social and gender inclusion are encouraged, generating an increase in education levels (permanent) within the Comarca, supported by activating the potential of talent, from personal development, cross-cut by a curriculum force accredited in sustainability, generating imaginative cultural skills, creating institutions that renew ecological balance, implementing a human and environmental development proposal based on adaptation and mitigation to climate change, complementing an increase in resilience and response capacity at the comarcal level against vulnerabilities arising from climate change.
18	Gender participation	3.2.1 Training in good productive practices 3.1.2 Design of economic alternatives and sustainable production chains	To be developed	Activities are yet to be developed..	Organizational and business empowerment in the community generates training and education for children, youth, and women, promoting production chains, marketing, and entrepreneurship that contribute to the creation and consolidation of productive and sustainable scenarios, compatible with traditional artisanal practices, promoting diversified economic alternatives. An unfavorable outlook can lead to the adaptation of new extensive production models that increase deforestation.

					Additionally, training, production, and social and gender inclusion are encouraged, generating an increase in education levels (permanent) within the Comarca, supported by activating the potential of talent, from personal development, cross-cut by a curriculum force accredited in sustainability, generating imaginative cultural skills, creating institutions that renew ecological balance, implementing a human and environmental development proposal based on adaptation and mitigation to climate change, complementing an increase in resilience and response capacity at the comarcal level against vulnerabilities arising from climate change.
19	Lack of participation of children, youth, women, and elderly	3.2.1 Training in good productive practices 3.1.2 Design of economic alternatives and sustainable production chains	To be developed	Activities are yet to be developed.	Organizational and business empowerment in the community generates training and education for children, youth, and women, promoting production chains, marketing, and entrepreneurship that contribute to the creation and consolidation of productive and sustainable scenarios, compatible with traditional artisanal practices, promoting diversified economic alternatives. An unfavorable outlook can lead to the adaptation of new extensive production models that increase deforestation. Additionally, training, production, and social and gender inclusion are encouraged, generating an increase in education levels (permanent) within the Comarca, supported by activating the potential of talent, from personal development, cross-cut by a curriculum force accredited in sustainability, generating imaginative cultural skills, creating institutions that renew ecological balance, implementing a human and environmental development proposal based on adaptation and mitigation to climate change, complementing an increase in resilience and response capacity at the comarcal level against

					vulnerabilities arising from climate change.
20	Strengthening community relations	1.2.1 Creation of consultation and decision-making spaces by the authorities and members of the Emberá Wounaan community.	1.2.1: 1) Resolution meetings 2) Regional congresses of the Cémaco and Sambú districts 3) Meeting with authorities and Nokora council 4) Planning Regional Assembly Cémaco 5) Approval of REDD+ project Extraordinary Session. 6) General congress for rejection of forest utilization plan. 7) Approval of congress plenary for REDD+ training 8) Approval of REDD+ project implementation with B Terra Corp in Sambú 9) Approval of REDD+ project implementation in Cémaco	1.2.1: 1-5) 5 Consultation and decision-making meetings 6) 1200 indirect participants 7) 1200 indirect participants 8) 1500 indirect participants 9) 1200 indirect participants Other activities are yet to be developed	Governance and transparent financial management generate control of transparent actions in accountability procedures and governance in land use, which empowers the community within the project and is another guarantee against returning to initial conditions regarding forestry practices and unsustainable land resource use. Meetings must be convened with clear objectives, which should be socialized and explained to the community members, so that they do not lead to discussions, confrontations, or unfavorable decisions for territorial development.
21	Strengthening health	2.1.3 Assessment of the provision and availability of basic services, sanitation, health, and education.	1) Delivery of sports equipment for soccer and basketball teams Maintenance of soccer field 2) Structural improvement of the "Chingue Buche" in the Comarca and the church 3) Provision of water pumps and pipes 4) Delivery of computer equipment and printer	1) 1 Comarcal sports meeting 2) 1 structural adjustment of meeting room 3) An initiative for water provision 4) 1 delivery of computer equipment	Through the assessment of the provision and availability of basic services, sanitation, health, and education, pioneering projects and initiatives, both individual and community-based, have been and will be implemented to satisfy basic needs (including security, social, recognition, and self-realization), focusing on good habits and work practices; centered on their sense of belonging and love for nature, generating spontaneous and conscious care for their territory. Specifically, an initiative for the provision of water pumps and pipes has been delivered to reduce contamination in soils and water sources due to anthropogenic waste, along with structural improvements and the delivery of equipment to strengthen access to health for the population.

22	Strengthening education	1.1.2 Training in project management, finance, and resource administration 2.1.2 Design of strategies for the conservation of indigenous ancestral knowledge. 3.2.1 Training in good productive practices 4.1.1 Training in REDD+ and socio-environmental safeguards 4.1.3 Training in Sustainable Forest Management (MFS)	1.1.2: 1) 7 training sessions on project management, benefit distribution, and resource management. 2) Definition of agreements for resource administration and knowledge of the REDD+ project. 2.1.2: 1) Annual canoe contest 2) Sports meeting 4.1.1: 1) Socialization on REDD+ initiatives and carbon capture 2 - 4) Socialization on REDD+ and analysis of deforestation and degradation factors. 5) Definition of safeguard indicators 6) Training on basic concepts of Climate Change 7 - 18; 20) Training on Climate Change, REDD+, and Carbon Market to community members and Nokora Council. 19) Socialization on REDD+ project, scope, and objectives at the Comarcal level. 21) Training on topics related to REDD+ such as climate change, REDD+ initiatives, socio-environmental safeguards, and factors of deforestation and forest degradation.	1.1.2: 1) 2 men 2) 8 men 2.1.2: Two annual meetings 4.1.1: 1) 5 men 2) 13 women, 13 men 3) 3 women, 17 men 4) 16 women, 40 men 5) 2 men 6) 8 women, 53 men 7) 12 women, 58 men 8) 3 men 9) 12 men 10) 24 women, 40 men 11) 9 women, 16 men 12) 10 women, 35 men, 4 unreadable 13) 10 women, 23 men 14) 7 women, 23 men 15) 9 women, 8 men 16) 16 women, 10 men 17) 4 women, 16 men 18) 7 women, 18 men 19) 5 men 20) 9 women, 24 men 21) 20 reported meetings. Other activities are yet to be developed.	**Permanent education:** Implementation of an indigenous and contextualized curricular force, activating talent from the Emberá-Wounaan identity, aimed at conserving their ethnic authenticity. This is all within the Emberá Wounaan Strategic Life Plan (2022-2052), whose platform, as mentioned, is a unique system of permanent education and human activation. The forest management practices must be transferred in such a way that accessing the forest does not involve actions that degrade the forests or facilitate access for other actors leading to deforestation.

23	Food Security	**3.1.1** Technical support in sustainable family production models **3.1.2** Design of sustainable economic alternatives and production chains	To be developed	Activities are yet to be developed	The development of productive projects increases sustainable food sovereignty, creating a reorganization of the food production chain rooted in ancestral agricultural originality, safeguarding and promoting local varieties of traditional crops, increasing family and community productivity through the application of good agricultural production and management practices, thereby generating organization, food security, and the development of sustainable agriculture. An unfavorable scenario may lead to the adaptation of new extensive production models that increase deforestation. Additionally, training, production, and social and gender inclusion are encouraged, resulting in increased levels of (permanent) education within the Comarca, supported by the activation of the potential of talent, from the development of being, transversalized by a curriculum force accredited in sustainability, fostering imaginative cultural skills that create innovative institutions for ecological balance, implementing a proposal for human and environmental development based on adaptation and mitigation to climate change, complementing an increase in resilience and community response capacity to vulnerabilities arising from climate change.
24	Housing Improvement	**2.1.1** Development of planning and community development tools **2.1.3** Evaluation of the status of provision and availability of basic services, sanitation, health, and education.	Creation and design of the five-year strategic plan for the Comarca Emberá Wounaan 2022 - 2027.	25% completed The other activities are yet to be developed.	**Prospective and participatory planning** promotes the recovery and strengthening of ethnic-cultural identity, enhances the governance system, organizes, zonifies, and regulates land use and natural resources, contributing to improved quality of life, promoting the identity of essential values that link them with cultural, social, political, and economic actions in a proactive and sustainable manner. Without this participatory diagnosis, scientific support, combined with ancestral knowledge and the creation and design of the five-year strategic plan for the Comarca

					Emberá Wounaan 2022 - 2027 would render the project unviable. Through the evaluation of the status of provision and availability of basic services, sanitation, health, and education, pioneering projects and initiatives will be carried out, both individual and community-oriented, aimed at satisfying basic needs (including security, social, recognition, and self-actualization), good habits, and work practices; focused on their sense of belonging and love for nature, generating spontaneous and conscious care for their territory. Specifically, an initiative to provide water pumps and pipes has been implemented to reduce soil and water source contamination from anthropogenic waste, structural improvements, and the delivery of tools that strengthen access to housing for the population.
25	Improvement of Basic Services	**2.1.3** Evaluation of the status of provision and availability of basic services, sanitation, health, and education.	**2.1.3:** 1) Structural improvement of "Chingue Buche" in the Comarca and church 2) Provision of water pumps and pipes 3) Delivery of computer equipment and printers	**2.1.3:** 1) 1 structural adjustment of the meeting room. 2) An initiative for water provision 3) 1 delivery of computer equipment	The other activities are yet to be developed. Through the evaluation of the status of provision and availability of basic services, sanitation, health, and education, pioneering projects and initiatives will be implemented, both individual and community-oriented, aimed at satisfying basic needs (including security, social, recognition, and self-actualization), good habits, and work practices; focused on their sense of belonging and love for nature, generating spontaneous and conscious care for their territory. Specifically, an initiative to provide water pumps and pipes has been implemented to reduce soil and water source contamination from anthropogenic waste, structural improvements, and the delivery of tools that strengthen access to basic services for the population.
26	Strengthening Family Well-being	**3.2.3** Institutionalization of good practices for economic development and well-being.	To be developed	Activities are yet to be developed.	**Support in strengthening well-being:** The creation of practices based on sustainability and the environment contributes to forming healthy environments and lifestyles in families and indigenous communities, generating the

					internalization and implementation of specific capabilities to address changes as opportunities for improving quality of life.
27	Solid Waste Management	**2.1.3** Evaluation of the status of provision and availability of basic services, sanitation, health, and education.	**2.1.3:** 1) Structural improvement of "Chingue Buche" in the Comarca and church 2) Provision of water pumps and pipes 3) Delivery of computer equipment and printers	**2.1.3:** 1) 1 structural adjustment of the meeting room. 2) An initiative for water provision 3) 1 delivery of computer equipment. The other activities are yet to be developed.	Through the evaluation of the status of provision and availability of basic services, sanitation, health, and education, pioneering projects and initiatives will be carried out, both individual and community-oriented, aimed at satisfying basic needs (including security, social, recognition, and self-actualization), good habits, and work practices; focused on their sense of belonging and love for nature, generating spontaneous and conscious care for their territory. Specifically, an initiative to provide water pumps and pipes has been implemented to reduce soil and water source contamination from anthropogenic waste, structural improvements, and the delivery of tools that strengthen solid waste management for the population.
28	Exposure to Future Pandemics	**2.1.3** Evaluation of the status of provision and availability of basic services, sanitation, health, and education.	**2.1.3:** 1) Structural improvement of "Chingue Buche" in the Comarca and church 2) Provision of water pumps and pipes 3) Delivery of computer equipment and printers	**2.1.3:** 1) 1 structural adjustment of the meeting room. 2) An initiative for water provision 3) 1 delivery of computer equipment The other activities are yet to be developed.	Through the evaluation of the status of provision and availability of basic services, sanitation, health, and education, pioneering projects and initiatives will be carried out, both individual and community-oriented, aimed at satisfying basic needs (including security, social, recognition, and self-actualization), good habits, and work practices; focused on their sense of belonging and love for nature, generating spontaneous and conscious care for their territory. Specifically, an initiative to provide water pumps and pipes has been implemented to reduce soil and water source contamination from anthropogenic waste, structural improvements, and the delivery of tools that strengthen access to health and prevention of future pandemics for the population.
29	Rescue of Cultural Activities	**2.1.2** Design of strategies for the conservation of indigenous ancestral knowledge.	1) Annual canoe competition 2) Sports meeting	Two annual meetings. The other activities are yet to be developed.	Permanent original education is strengthened through the application of an original and contextualized curricular force, activating talent from the Emberá-Wounaan identity, aimed at

					conserving their ethnic authenticity. This is all within the Emberá Wounaan Strategic Life Plan (2022-2052), whose platform, as mentioned, is a unique system of permanent education and human activation.
30	Loss of Cultural Identity	**1.1.1** Guidance in defining governance structures and good living **2.1.2** Design of strategies for the conservation of indigenous ancestral knowledge.	**1.1.1:** 1) Two regional congresses with the election of representatives and ratification of the REDD+ project approval. 2) Socialization of the five-year governance plan. 3) Suspension of forestry companies. **2.1.2:** 1Annual canoe competition 2) Sports meeting	**1.1.1:** 1) 1 regional meeting in Cémaco and 1 regional meeting in Sambú 2) 1 administrative meeting 3) Nokora Chi Por Naan meeting **2.1.2:** Two annual meetings. The other activities are yet to be developed.	**Good Governance:** Strengthening political participation and justice tools in articulated governance within state scenarios will ensure the promotion and development of a sustainable cultural identity, reinforcing and maintaining new behaviors oriented towards good living, conservation, protection, and optimization of the ecosystems of the forested areas of the comarca. Activities such as congresses, socializations, and meetings developed during the certification period will help strengthen governance structures through regional work and the ratification of commitments within the Comarcas towards the project.
31	Disrespect for Dignity and Cultural Diversity	2.1.1 Development of Planning and Community Development Tools 4.1.1 Training on REDD+ and Socio-environmental Safeguards	**2.1.1:** Creation and design of the five-year strategic plan for the Comarca Emberá Wounaan 2022 - 2027. **4.1.1:** 1) Socialization on REDD+ initiatives and carbon capture. 2 - 4) Socialization on REDD+ and analysis of deforestation and degradation factors. 5) Definition of safeguard indicators. 6) Training on basic concepts of Climate Change. 7 - 18; 20) Training on Climate Change, REDD+, and Carbon Market	**2.1.1:** 25% progress **4.1.1:** 1) 5 men 2) 13 women, 13 men 3) 3 women, 17 men 4) 16 women, 40 men 5) 2 men 6) 8 women, 53 men 7) 12 women, 58 men 8) 3 men 9) 12 men 10) 24 women, 40 men	**Prospective and participatory planning** promotes the recovery and strengthening of ethnic-cultural identity, enhances the governance system, organizes, zones, and regulates land and natural resource use, contributes to improving quality of life, promoting the identity of essential values that connect them with cultural, social, political, and economic actions in a proactive and sustainable manner. Without this participatory diagnosis, scientific support, combined with ancestral knowledge, and the creation and design of the five-year strategic plan for the Comarca Emberá Wounaan 2022 - 2027, the project would not be viable. Additionally, the safeguards of the Cancun Convention (COP 16, 2010) originated from the recognition that the implementation of REDD+, if implemented properly, represents an opportunity to promote multiple benefits for the Emberá Wounaan. These safeguards cover a wide range of issues, including good forest governance, respect for the rights of local communities and

			for community members and the Nokora Council. 19) Socialization about the REDD+ project, its scope, and objectives at the Comarca level. 20) Training on topics related to REDD+, such as climate change, REDD+ initiatives, socio-environmental safeguards, and factors of deforestation and forest degradation.	11) 9 women, 16 men 12) 10 women, 35 men, 4 Not elegibles. 13) 10 women, 23 men 14) 7 women, 23 men 15) 9 women, 8 men 16) 16 women, 10 men 17) 4 women, 16 men 18) 7 women, 18 men 19) 9 women, 24 men 20) 20 reported meetings	indigenous peoples, protection of biodiversity and sustainability, thereby contributing to emission reductions and facilitating their funding.
32	Self-Rejection of Indigenous Identity and Culture	2.1.2 Design of Strategies for the Conservation of Indigenous Ancestral Knowledge	**2.1.2:** 1) Annual canoe contest 2) Sports meeting	**2.1.2:** Two annual meetings have been held; other activities are yet to be developed. The other activities are yet to be developed.	Permanent indigenous education is strengthened through the application of an original and contextualized curriculum force, activating talent from being Emberá-Wounaan, with the purpose of conserving their ethnic authenticity, all within the Emberá Wounaan Strategic Life Plan (2022-2052), whose platform, as mentioned, is a system of permanent education and human activation. Furthermore, the implementation of activities achieves: - Conservation of the cultural and social value that ethnic communities possess in the national territory. - Positioning of teachers, knowledge holders, and elders as contributors to community development. - Inclusion of new generations in the ancestral and ethnic learning within the comarca.

In the REDD+ activities file[34], the results obtained to date regarding the activities and the achievements derived from their benefits at the societal and economic levels can be identified. It is noted that these benefits are not fully evident due to the premature implementation of many actions during the initiative's lifecycle and the restricted access to financial resources for its solid implementation. Finally, the degree of impact of the effects on the socioeconomic environment and the expected results from implementing REDD+ activities is reflected in the socioeconomic evaluation[35], categorized as positive or negative with impacts ranging from low to high.

10 Stakeholders' Consultation

The Emberá Wounaan REDD+ project guarantees, in accordance with the Cancun safeguards, the flow of information, respect for culture and free, prior and informed consent. The following is a description of the processes and activities used to achieve the consultation and approval phases of this project by the indigenous comarcas, considering their governance and decision-making models[36].

10.1 Project idea

The initial consolidation of the REDD+ project idea emerged between the managing and technical partners (B-Terra Corp and CO2CERO S.A.S.) as a result of an analysis of the regulatory, legal, and technical framework, which was necessary to ensure that the project benefits the community, reduces GHG emissions, and is permanent for a minimum period of thirty (30) years. Ensuring a responsible and committed workflow, these two parties establish a temporary partnership contract[37], wherein they commit, according to their abilities, to contribute to the fulfillment and achievement of the objectives of the REDD+ initiative within the national territory, specifically in the Comarca Emberá Wounaan, involving the districts of Darién, Cémaco, and Sambú.

Within this phase of communication between partners, the percentages of participation related to management and technical application, payment mechanisms, benefit transfer, general project objectives, and certification program based on the analysis of alternatives are defined. From this framework, the first direct communication channel of

[34] See in: *02_Cobeneficios\03_ActividadesREDD+\ ActividadesREDD+_Emberá Wounaan_V4.xlsx*
[35] See in the sheet 'Resultado' column L 'Nivel de importancia socioecónomica' of the document *11_Anexos y complementarios/04_NNH/02_Socioeconomic aspect/Evaluación_socioeconómica_EW_V2.xlsx*
[36] See in: 11 Anexos y complementarios\8_Guia_AcercamientoSocial_ Emberá Wounaan_V2.pdf.
[37] See in: *01_Acuerdos\02_Acuerdos empresas\Contrato_BTerra-CO2CERO.pdf*.

the project is created, wherein B-Terra Corp establishes a direct relationship with the community or their representatives to gather the necessary information for the design and structuring of the initiative. At the same time, this channel extends to the technical developer, consistently consolidating it with the certification program. The information channels designed in this phase include direct contact with field visits, phone calls, and intermediation through workers of the B-Terra Corp and/or CO2CERO S.A.S. company.

Once the essential structuring elements of the project and the possible benefits generated by the initiative are consolidated, approaches are made to the communities to provide a frame of reference on REDD+ initiatives, their influence on climate change mitigation, conservation, and the improvement of the living conditions of community members through nature-based solutions and result-based payments. According to the guidelines set by B-Terra Corp, these approaches to the communities are made due to the trust and closeness that the company has with the community. Similarly, community engagement with the population is conducted under the principles of the governance structure of the territory, articulated with the second Cancun safeguard (Transfer and effectiveness of forest governance structures), ensuring open, honest, transparent, and participatory dialogues. This generates interest from the population in developing a REDD+ project within their territory, safeguarding their cultures, traditions, lifestyles, and land.

In the first socialization, the aim was to convey to the participating population the idea and importance of implementing a REDD+ project as a strategy to promote the development of the territory through the improvement of the quality of life of indigenous communities and the preservation of the High Conservation Values of the territory, starting from a sustainable approach. It is explained that this idea arises from rigorous work to assess the feasibility of the project's execution, the monetary and non-monetary benefits of its implementation, and the joint responsibilities, where the population is essential for the project's cycle durability. This is based on good leadership, community and collective engagement, equitable and fair benefits, inclusive participation, and democratic decision-making, respecting their collective and fundamental rights as ethnic peoples and territories of the country.

Ilustration 1. Socializations of the REDD+ Emberá Wounaan project.

Source: B-Terra Corp, 2022.

For the implementation of this phase, B-Terra Corp personnel were deployed to the territories, ensuring the greatest possible participation of the population in the different communities, giving it a representative character, in order to generate an internal discussion that could lead to the approval of the initiative within the territory in later stages of the visit, with the understanding of autonomy and respect for the decision-

making tradition of each community[38]. For the execution of the socialization of the REDD+ project, the previous procedures before the traditional authorities were considered, using methods and channels of communication with the representatives of the communities.

Table 34 describes the different spaces[39] generated by B-Terra Corp with the communities that make up the district of Cémaco; and **Table 35** describes the spaces generated with the communities that make up the district of Sambú. Ensuring transparency of information, active participation for decision making, primary information gathering, and strengthening indigenous governance.

Table 34. Socialization and approval of the Emberá Wounaan REDD+ project in the District of Cémaco.

Community	Date	Meeting object	Meeting place
Corregimiento Cirilo Guaynora			
Capetí	12 September 2021	Meeting of the communities of Corregimiento Cirilo Guaynora	Panama City, Parque Omar Torrijos
	31 October 2021	Capetí Local Congress - REDD+ project training	Community Capetí
	5 y 6 November 2021	First workshop seminar on climate change, REDD+ and the carbon market.	Community Capetí
	14 November 2021	Capetí Local Congress - Extraordinary Session - Resolution No. 04-2021	Community Capetí
	13 April 2022	Workshop on socialization and deforestation drivers	Community Capetí
	29 January 2023	Workshop on Factors and Agents of Deforestation and Degradation. Benefit Sharing	Lajas Blancas, River Chucunaque, Cémaco

[38] See in: *11 Anexos y complementarios\07_Actas y 11 Anexos y complementarios\ 1_Asistencia.pdf*
[39] See in: *11_Anexos y complementarios/07_Actas/Matriz de registro de socializaciones.xlsx*.

Community	Date	Meeting object	Meeting place
El Puente	12 September 2021	Meeting of the communities of Corregimiento Cirilo Guaynora	Panama City, Parque Omar Torrijos
	31 October 2021	Delivery of resolution, local congress and - REDD+ project training	Community Puente
	5 y 6 November 2021	First workshop seminar on climate change, REDD+ and the carbon market.	Community Capeturía
	13 April 2022	Socialization workshop	Community Unión Chocó
	10 January 2023	Puente Local Congress-Resolution No. 04 of January 10, 2023	Community Puente
	29 January 2023	Deforestation and Degradation Factors and Agents Workshop. Distribution of benefits.	Lajas Blancas, River Chucunaque, Cémaco
Unión Choco	25 April 2016	Presentation of conservation project idea	Hotel Continental, Panama City
	20 January 2020	Discussion on the items proposed by the timber company with the pro-road committee and B-Terra Corp.	Community Unión Chocó
	5 Aprill 2021	Training	Community Unión Chocó
	12 September 2021	Meeting of the communities of Corregimiento Cirilo Guaynora	Panama City, Parque Omar Torrijos
	5 y 6 November 2021	First workshop seminar on climate change, REDD+ and the carbon market.	Community Capetí
	13 April 2022	Workshop on socialization and deforestation drivers	Community Unión Chocó
	29 January 2023	Deforestation and Degradation Factors and Agents Workshop. Distribution of benefits.	Lajas Blancas, River Chucunaque, Cémaco
	8 January 2023	Resolutions of approval	Community Unión Chocó
Vista Alegre	25 April 2016	Presentation of conservation project idea	Hotel Continental, Panamá city
	5 August 2021	Resolutions of approval	Community Vista Alegre

Community	Date	Meeting object	Meeting place
	12 September 2021	Meeting of the communities of Corregimiento Cirilo Guaynora	Panamá city, Parque Omar Torrijos
	5 y 6 November 2021	First workshop seminar on climate change, REDD+ and the carbon market.	Community Capetí
	12 April 2022	Workshop on socialization and deforestation drivers	Community Vista Alegre
	29 January 2023	Deforestation and Degradation Factors and Agents Workshop. Distribution of benefits.	Lajas Blancas, River Chucunaque, Cémaco
Corregimiento Manuel Ortega			
Barranquillita	18 January 2022	Socialization workshop	Metetí
	24 March 2022	Socialization workshop	Community Barranquillita
	30 December 2022	Resolutions of approval	Community Barranquillita
La Esperanza	15 March 2022	Resolutions of approval	Community la Esperanza
	24 March2022	Socialization workshop	Community la Esperanza
	29 January 2023	Deforestation and Degradation Factors and Agents Workshop. Distribution of benefits.	Lajas Blancas, River Chucunaque, Cémaco
La Pulida	15 March 2022	Resolutions of approval	Community la Pulida
	24 March 2022	Socialization workshop	Community la Esperanza
	27 June 2022	Socialization workshop	Community la Pulida
	27 June 2022	Resolutions of approval	Community la Pulida
	29 January 2023	Deforestation and Degradation Factors and Agents Workshop. Distribution of benefits.	Lajas Blancas, River Chucunaque, Cémaco
	14 February 23	Training and socialization	Community la Pulida
Punta Grande	18 January 2022	Socialization workshop	Metetí
	15 March 2022	Resolutions of approval	Community Punta Grande

Community	Date	Meeting object	Meeting place
	24 March 2022	Socialization workshop	Community la Esperanza
	27 June 2022	Socialization workshop	Community Punta Grande
	29 January 2023	Deforestation and Degradation Factors and Agents Workshop. Distribution of benefits.	Lajas Blancas, River Chucunaque, Cémaco
	13 February-23	Training and socialization	Community Punta Grande
Nuevo Belén	28 June 2022	Training and resolution search	Yaviza
	30 December 2022	Resolutions of approval	Community Nuevo Belén
	29 January 2023	Deforestation and Degradation Factors and Agents Workshop. Distribution of benefits.	Lajas Blancas, Río Chucunaque, Cémaco
	13 February 23	Training and socialization	Community Nuevo Belén
El Común	30 December 2022	Resolutions of approval	Community el Común
	29 January 2023	Deforestation and Degradation Factors and Agents Workshop. Distribution of benefits.	Lajas Blancas, Río Chucunaque, Cémaco
	13 February 2023	Training and socialization	Community el Común
	25 October 2023	Emberá Wounaan REDD+ Project Training	Community el Común
Naranjal	1 January 2022	Resolutions of approval	Community Naranjal
	13 December 2022	REDD+ project presentation	Community Naranjal
	16 February 2023	Training and socialization	Community Naranjal
	25 October 2023	Emberá Wounaan REDD+ Project Training	Community Naranjal
Corozal	25 October 2022	Socialization workshop	Corregimiento Manuel Ortega
	25 y 26 October 2022	Informative forum and resolution of concerns about the current B-Terra Corp situation in communities	Corregimiento de Río Sábalo
	30 December 2022	Resolutions of approval	Community Corozal

Community	Date	Meeting object	Meeting place
	29 January 2023	Deforestation and Degradation Factors and Agents Workshop. Distribution of benefits.	Lajas Blancas, River Chucunaque, Cémaco
	24 October 2023	Emberá Wounaan REDD+ Project Training	Community Corozal
Villa Nueva	18 January 2022	Training and socialization	Metetí
	5 December 2022	Consultation and understanding process between B-Terra Corp and the county	Panamá, salon sky park
	30 December 2022	Resolutions of approval	Community Villa Nueva
	29 January 2023	Deforestation and Degradation Factors and Agents Workshop. Distribution of benefits.	Lajas Blancas, River Chucunaque, Cémaco
	15 February 23	Training and socialization	Community Villa Nueva
	24 October 2023	Emberá Wounaan REDD+ Project Training	Community Villa Nueva
Boca Tigre	1 January 2022	Resolutions of approval	Community Boca Tigre
	28 June 2022	Training and resolution search	Distrito Cémaco
	29 January 2023	Deforestation and Degradation Factors and Agents Workshop. Distribution of benefits.	Lajas Blancas, River Chucunaque, Cémaco
	15 February 23	Training and resolution search	Community Boca Tigre
	23 October 2023	Emberá Wounaan REDD+ Project Training	Community Boca Tigre
Nazareth	1 January 2022	Resolutions of approval	Community Nazareth
	5 December 2022	Consultation and understanding process between B-Terra Corp and the county	Panamá, salon sky park

Community	Date	Meeting object	Meeting place
	29 January 2023	Deforestation and Degradation Factors and Agents Workshop. Distribution of benefits.	Lajas Blancas, Río Chucunaque, Cémaco
	15 February 2023	Training and socialization	Community Nazareth
	23 October 2023	Emberá Wounaan REDD+ Project Training	Community Nazareth
Corregimiento Lajas Blancas			
Canáan	28 June 2022	Training and resolution search	Distrito Cémaco
	29 January 2023	Deforestation and Degradation Factors and Agents Workshop. Distribution of benefits.	Lajas Blancas, River Chucunaque, Cémaco
	2 July 2023	Resolutions of approval	Community Canáan
	23 October 2023	Emberá Wounaan REDD+ Project Training	Community Canáan
Sinaí	29 February 2023	Deforestation and Degradation Factors and Agents Workshop. Distribution of benefits.	Lajas Blancas, Río Chucunaque, Cémaco
	25 October 2023	Emberá Wounaan REDD+ Project Training	Community Sinaí
	30 June 2023	Resolutions of approval	Community Sinaí
Maach Pöbör	24 June 2022	Resolutions of approval	Comunidad Maach Pöbör
	28 June 2022	Training and resolution search	Distrito Cémaco
	29 January 2023	Deforestation and Degradation Factors and Agents Workshop. Distribution of benefits.	Lajas Blancas, River Chucunaque, Cémaco
	24 October 2023	Emberá Wounaan REDD+ Project Training	Community Maach Pöbör
Alto Playón	25 June 22	Training and resolution search	Community Alto Playón
	3 July2022	Resolutions of approval	Community Alto Playón

Community	Date	Meeting object	Meeting place
	29 January 2023	Deforestation and Degradation Factors and Agents Workshop. Distribution of benefits.	Lajas Blancas, River Chucunaque, Cémaco
	16 February 23	Socialization workshop	Community Villa Caleta
	26 October 2023	Emberá Wounaan REDD+ Project Training	Community Alto Playón
Peña Bijagual	18 January 2022	Socialization workshop	Metetí
	20 February 2022	Socialization workshop	Community Peña Bijagual
	28 December 2022	Resolutions of approval	Community Peña Bijagual
	29 January 2023	Taller Factores y Agentes de Deforestation and Degradation Factors and Agents Workshop. Distribution of benefits.	Lajas Blancas, River Chucunaque, Cémaco
	28 October 2023	Emberá Wounaan REDD+ Project Training	Community Peña Bijagual
El Salto	26 October 2022	Extraordinary minutes of the Cémaco Board of Directors and the Regional Cacique of Cémaco	El Salto, official venue of the Emberá Wounaan General Congress
	30 December 2022	Resolutions of approval	Community El Salto
	29 January 2023	Deforestation and Degradation Factors and Agents Workshop. Distribution of benefits.	Lajas Blancas, River Chucunaque, Cémaco
	27 October 2023	Emberá Wounaan REDD+ Project Training	Community El Salto
Baja Purú	20 February 2022	Socialization workshop	Community Baja Purú
	30 December 2022	Resolutions of approval	Community Baja Purú
	29 January 2023	Deforestation and Degradation Factors and Agents Workshop. Distribution of benefits.	Lajas Blancas, River Chucunaque, Cémaco
	27 October 2023	Emberá Wounaan REDD+ Project Training	Community Baja Purú
Lajas Blancas	18 January 2022	Training and socialization	Metetí

Community	Date	Meeting object	Meeting place
	2 October 2022	Training and socialization	Community Lajas Blancas
	29 January 2023	Deforestation and Degradation Factors and Agents Workshop. Distribution of benefits.	Lajas Blancas, River Chucunaque, Cémaco
	1 June 2023	Resolutions of approval	Community Lajas Blancas
	29 October 2023	Emberá Wounaan REDD+ Project Training	Community Lajas Blancas
Tortuga	29 January 2023	Deforestation and Degradation Factors and Agents Workshop. Distribution of benefits.	Lajas Blancas, River Chucunaque, Cémaco
	9 March 2023	Resolutions of approval	Community Tortuga
	27 October 2023	Emberá Wounaan REDD+ Project Training	Community Tortuga
Dosake Purú (Riocito)	29 January 2023	Deforestation and Degradation Factors and Agents Workshop. Distribution of benefits.	Lajas Blancas, River Chucunaque, Cémaco
	30 June 2023	Resoluciones de aprobación	Community Dosake Purú (Riocito)
	28 October 2023	Emberá Wounaan REDD+ Project Training	Community Dosake Purú (Riocito)
Nuevo Vigía	18 January 2022	Training and socialization	Metetí
	8 February 2022	Training and socialization	Community Nuevo Vigía
	28 February 2022	Resolutions of approval	Community Nuevo Vigía
	29 January 2023	Deforestation and Degradation Factors and Agents Workshop. Distribution of benefits.	Lajas Blancas, River Chucunaque, Cémaco
	26 October 2023	Emberá Wounaan REDD+ Project Training	Community Nuevo Vigía
Villa Caleta	18 January 2022	Training and socialization	Metetí

Community	Date	Meeting object	Meeting place
	5 April 2022	Training and socialization	Community Villa Caleta
	30 June 2022	Resolutions of approval	Community Villa Caleta
	29 January 2023	Deforestation and Degradation Factors and Agents Workshop. Distribution of benefits.	Lajas Blancas, Río Chucunaque, Cémaco
	15 February 23	Training and socialization	Community Villa Caleta
	25 Octubre 2023	Emberá Wounaan REDD+ Project Training	Community Villa Caleta
Marraganti	18 January 2022	Training and socialization	Metetí
	29 January 2023	Deforestation and Degradation Factors and Agents Workshop. Distribution of benefits.	Lajas Blancas, River Chucunaque, Cémaco
	15 February 23	Training and socialization	Community Marraganti
	24 October 2023	Training and socialization	Community Marraganti
	4 July 2023	Resolutions of approval	Community Marraganti
Bajo Chiquito	18 January 2022	Training and socialization	Metetí
	25 March 2022	Presentación de la compañía B-Terra Corp y Fundación Panamá Canal de Vida	Corregimiento Lajas Blancas
	30 December 2022	Resolutions of approval	Community Bajo Chiquito
	29 January 2023	Deforestation and Degradation Factors and Agents Workshop. Distribution of benefits.	Lajas Blancas, River Chucunaque, Cémaco
	23 October 2023	Emberá Wounaan REDD+ Project Training	Community Bajo Chiquito

Source: CO2CERO S.A.S., 2022.

Table 35. Socialization and approval of rhe Emberá Wounaan REDD+ Project in the District of Sambú.

Community	Date	Meeting object	Meeting place
Corregimiento Río Sabalo			
Puerto Indio	25 y 26 October 2022	Informative forum and resolution of concerns about the current B-Terra Corp situation in communities	Community Puerto Indio
	27 October 2022	Training and socialization of REDD+ project	Community Puerto Indio
	31 December 2022	Resolutions of approval	Community Puerto Indio
	29 January 2023	Deforestation and Degradation Factors and Agents Workshop. Distribution of benefits.	Community Puerto Indio
Bayamón	25 y 26 October 2022	Informative forum and resolution of concerns about the current B-Terra Corp situation in communities	Puerto Indio
	27 October 2022	Training and socialization of REDD+ project	Puerto Indio
	31 December 2022	Resolutions of approval	Community Bayamón
	29 January 2023	Deforestation and Degradation Factors and Agents Workshop. Distribution of benefits	Puerto Indio
La Chunga	25 y 26 October 2022	Informative forum and resolution of concerns about the current B-Terra Corp situation in communities	Puerto Indio
	27 October 2022	Training and socialization of REDD+ project	Puerto Indio
	31 December 2022	Resolutions of approval	Community La Chunga

Community	Date	Meeting object	Meeting place
	29 January 2023	Deforestation and Degradation Factors and Agents Workshop. Distribution of benefits	Puerto Indio
Boca Trampa	25 y 26 October 2022	Informative forum and resolution of concerns about the current B-Terra Corp situation in communities	Puerto Indio
	27 October 2022	Training and socialization of REDD+ project	Puerto Indio
	28 December 2022	Resolutions of approval	Community Boca Trampa
	29 January 2023	Deforestation and Degradation Factors and Agents Workshop. Distribution of benefits	Puerto Indio
Villa Keresia	25 y 26 October 2022	Informative forum and resolution of concerns about the current B-Terra Corp situation in communities	Puerto Indio
	27 October 2022	Training and socialization of REDD+ project	Puerto Indio
	30 December 2022	Resolutions of approval	Community Villa Keresia
	29 January 2023	Deforestation and Degradation Factors and Agents Workshop. Distribution of benefits	Puerto Indio
Dai- Purú	25 y 26 October 2022	Informative forum and resolution of concerns about the current B-Terra Corp situation in communities	Puerto Indio
	27 October 2022	Training and socialization of REDD+ project	Puerto Indio

Community	Date	Meeting object	Meeting place
	31 December 2022	Resolutions of approval	Community Dai Purú
	29 January 23	Deforestation and Degradation Factors and Agents Workshop. Distribution of benefits	Puerto Indio
Corregimiento Jingurudó			
Pavarandó	25 y 26 October 2022	Informative forum and resolution of concerns about the current B-Terra Corp situation in communities	Puerto Indio
	27 October 2022	Training and socialization of REDD+ project	Puerto Indio
	31 December 2022	Resolutions of approval	Community Pavarandó
	29 January 2023	Deforestation and Degradation Factors and Agents Workshop. Distribution of benefits	Puerto Indio
Boca Wina	25 y 26 October 2022	Informative forum and resolution of concerns about the current B-Terra Corp situation in communities	Puerto Indio
	27 October 2022	Training and socialization of REDD+ project	Puerto Indio
	31 December 2022	Resolutions of approval	Community Boca Wina
	29 January 2023	Deforestation and Degradation Factors and Agents Workshop. Distribution of benefits	Puerto Indio
Jingurodó	25 y 26 October 2022	Informative forum and resolution of concerns about the current B-Terra Corp situation in communities	Puerto Indio

Community	Date	Meeting object	Meeting place
	27 October 2022	Training and socialization of REDD+ project	Puerto Indio
	30 December 2022	Resolutions of approval	Community Jingurudó
	29 January 2023	REDD+ project presentation	Puerto Indio
Churuco	25 y 26 October 2022	Informative forum and resolution of concerns about the current B-Terra Corp situation in communities	Puerto Indio
	27 October 2022	Training and socialization of REDD+ project	Puerto Indio
	30 December 2022	Resolutions of approval	Community Churuco
	29 January 2023	REDD+ project presentation	Puerto Indio
Condoto	25 y 26 October 2022	Informative forum and resolution of concerns about the current B-Terra Corp situation in communities	Puerto Indio
	27 October 2022	Training and socialization of REDD+ project	Puerto Indio
	30 December 2022	Resolutions of approval	Community Condoto
	29 January 2023	REDD+ project presentation	Puerto Indio
Borobichi	25 y 26 October 2022	Informative forum and resolution of concerns about the current B-Terra Corp situation in communities	Puerto Indio
	27 October 2022	Training and socialization of REDD+ project	Puerto Indio

Community	Date	Meeting object	Meeting place
	30 July 2023	Resolutions of approval	Community Borobichi
	29 January 2023	REDD+ project presentation	Puerto Indio

Source: CO2CERO S.A.S., 2022.

10.2 Stablishment of agreements

Once socialized with the legal representatives of each community in the two districts, a deadline is granted for the Nokora Councils, General Congress Board, District Authorities, and General Cacique, representative authorities for decision-making, to deliberate the possibility of establishing a REDD+ project model in their territory, considering the factors of positive and negative impacts that may arise. In this way, an approach is made to ratify: firstly, the related concepts associated with the project, followed by profiling the development possibilities, and finally, the decision made by both the communities in general and the legal representatives of Cémaco and Sambú.

It is worth mentioning that the agreement is a contractual model that commits the communities and the associated developers in the different phases of diagnosis, design, execution, evaluation, and monitoring of the project's development. Likewise, the managing partner is the guarantor figure of the process, generating joint and collective work supported by technical teams in the social and environmental areas, whose results largely depend on the performance of the communities in the execution of alternative and sustainable activities capable of reducing emissions from deforestation and degradation.

Ilustration 2. Establishment of agreements with decision-makers' representatives of the Comarca.

Source: B-Terra Corp, 2021.

Additionally, the agreement presents the bases of benefit distribution mechanisms, commitments, and responsibilities of the parties, ensuring compliance with principles of equality, gender equity, and inclusion, according to the UN; likewise, it is stated and confirmed that the ownership of the reduced GHG emissions is the responsibility of all the involved communities[40].

[40] See in: *01_Acuerdos\Acuerdo comunidad\Contrato_B Terra_Emberá.pdf*

10.3 Analysis of deforestation and forest degradation factors

Considering the Cancun safeguards, as per (Camacho A., 2017) Full and effective participation and respect for traditional knowledge and rights of the communities are linked to the communities as holders of the initiative, in its design and structuring, as well as in the creation and definition of the project's objectives, according to the specific needs of each community and the territory in general. To this end, a territorial diagnosis is conducted, in which the economic, social, and cultural activities generating deforestation and forest degradation, their underlying causes, and their effects on well-being are identified.

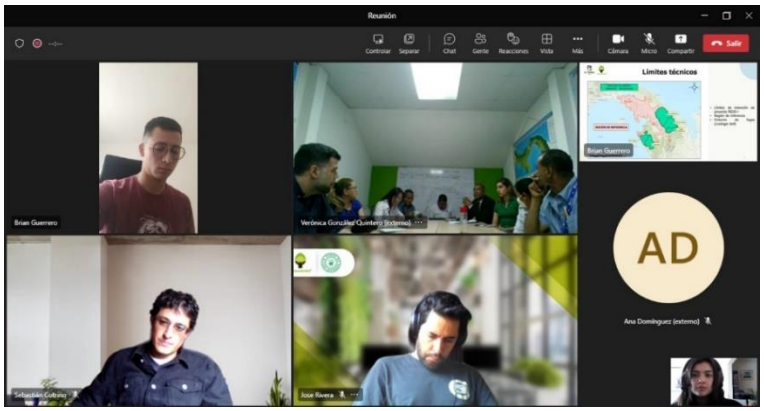
Bearing in mind the collection of data from primary sources, a direct communication model[41] is consolidated and integrated into the development of the project document, which in turn provides the developer with elements that allow structuring and establishing action plans and activities to reduce deforestation and forest degradation and improve the living conditions of ethnic communities, with greater certainty given the level of recognition acquired. As a result, the main causes and factors of deforestation are described in terms of their temporality, actor, frequency and current manifestation, together with a prospective analysis, which indicates where community interests and possible project activities are oriented.

10.4 Socialization to environmental authorities

Considering the importance of the functionality of environmental authorities within the territory and at the national level, they are considered a fundamental external actor for the project's execution. Therefore, the objectives of the government and regulatory entities regarding the REDD+ initiative are considered to unify goals and design activities in accordance with the normative, legal, social, cultural, economic, and environmental framework of ethnic communities. The development of socializations with environmental authorities is aimed at providing educational insights into the project (objectives, scope, potential benefits, and project activities). Additionally, it aims to establish channels and communication ties between institution actors and project stakeholders to create a conducive context across various dimensions involved in the initiative (legal, regulatory, social, cultural, and economic).

Ilustration 3. Socialization conducted with the Ministry of Environment of Panama.

[41] See in: 08_*Información de campo\Revisiones\Anexo_AnalisisAgentesdefDeg_V1.docx*



Source: CO2CERO S.A.S., 2023.

10.5 Scope of consultation with stakeholders

Once all the stages of socialization and information transfer have been completed, the goal is to ensure transparent and accurate information to the community. This allows them to understand the commitment and responsibility involved in participating in REDD+ projects and implementing activities associated with reducing deforestation and forest degradation. The second scope is to provide stakeholders outside the territory with information that allows them to validate and verify that the initiative complies with the guidelines set by the CMNUCC, the certification standard, and related national strategies, shaping the scenario towards alignment of objectives of different normative and planning instruments at the national level. Finally, it confirms that the initiative falls within the framework of compliance with the Cancun safeguards, with free, prior, and informed consent being the fundamental pillar of engagement and implementation of activities with rural communities.

Within this project, it is possible to identify annexes related to assistance in different engagement spaces, photographic reports, and assembly minutes for events involving multiple actors, as well as contractual documents ratifying decisions made in different consultation spaces with results oriented towards the execution of the initiative[42].

[42] See in: *11_Anexos y complementarios\1_Asistencia.*

10.6 Summary of comments received

Based on the social management developed by B-Terra Corp, during the socialization and consolidation stages of the Emberá Wounaan REDD+ project, concerns were identified by the community regarding technical, social and economic[43] issues. In order to provide the relevant answers and ensure that these were within the reach of the participating population, translators were requested according to the ethnic dialect, guaranteeing clear and transparent information.

10.7 Consideration of comments received

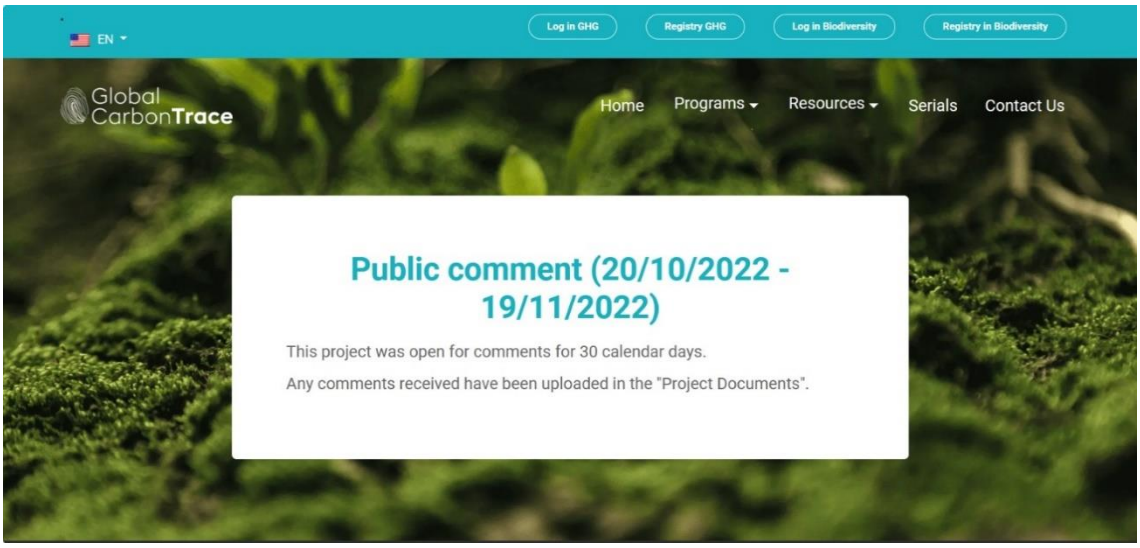
With the commitment to be the effective means of communication between the external parties to the Comarca Emberá Wounaan during the process of development of the initiative and the inhabitants of the same; within these communications and rectifying the ownership of the initiative by the districts, these have the possibility to request at any time and according to their needs, spaces of explanation and accountability, the latter, in a mandatory manner, will be held at least once a year. Likewise, the signed consent documents from the communities belonging to the Comarca Emberá Wounaan contain the acceptance of the project[44]. In addition, a virtual PQRS mechanism is being developed through the e-mail preguntasredd@b-terra.com that will be managed directly by B-Terra Corp. Finally, it should be noted that these mechanisms must complete the development phase in order to be subsequently disseminated and approved through the participation and consensus of the entire comarca before beginning the implementation process.

10.8 Consideration of comments on public consultation

The Emberá Wounaan REDD+ project underwent the public consultation process within the BioCarbon Standard certification program for a period of thirty (30) days between October 20, 2022 and November 19, 2022, as shown in the attached illustration. During this period no comments were obtained from the public, which does not generate modifications within the project documentation.

Figure 5. Results of the public consultation on the Emberá Wounaan REDD+ project within the Global Carbon Trace platform.

[43] See in: *11_Anexos complementarios\6_Anexo_Consolidado de preguntas_ProyectoREDD+.pdf*
[44] See in: *01_Acuerdos\01_Acuerdo comunidad*



Source: BioCarbon Standard, 2022.

11 REDD+ Safeguards

Panama has presented its first summary of safeguards information for REDD+ in the year 2022, covering an assessment period from 2009 to 2021. Among the necessary elements to integrate into the current project is the national interpretation of safeguards that seeks to relate the nation's current situation, and its actions oriented towards REDD+ with the proposed Socioenvironmental Safeguards of the UNFCCC. Thus, the evaluation for this project is based on what is indicated by MiAmbiente in its national interpretation of safeguards and its applicability to the project scale, as well as its correspondence with the tools of the certification program.

To demonstrate compliance with the Cancun Safeguards, the methodology suggested in the Tool for demonstrating compliance with *REDD+ safeguards from the Biocarbon Standard version 1.1* was developed. This can be found in "*11_Anexos y complementarios/09_Herramienta de Salvaguardas_REDD+ Emberá Wounaan_V4.xlsx*", where compliance with the requirements for each safeguard during the design, structuring, and implementation of the REDD+ Emberá Wounaan project and its activities is evidenced.

Within this tool, compliance with the safeguards is identified according to the twelve (12) requirements set forth by the Biocarbon Standard. These are supported by the request for evidence of compliance and its corresponding justification. The evidence is distributed through the different inputs used and generated for the initiative, thus delineating specific routes within the project folder.

With reference to the above, it is justified that the analysis of complementarity and compatibility was addressed as one of the requirements set forth by the Tool for demonstrating compliance with REDD+ safeguards version 1.1 proposed by BioCarbon Standard, taking into account the legal compliance analysis conducted[45]. In this case, laws, decrees, or policies that align with forest management in the Republic of Panama and those referencing climate change mitigation initiatives or strategies were selected. Based on this, complementarity justifies how the project development aligns with the strategic principles of the analyzed regulations, while compatibility analysis accredits how the project activities promote compatibility and avoid contradicting national government provisions.

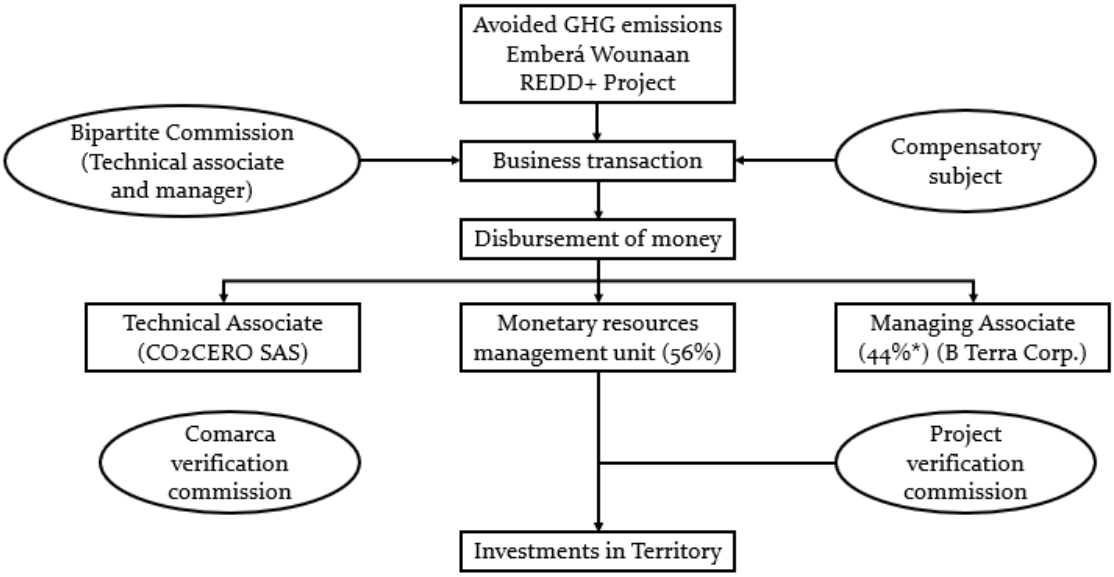
It is important to highlight an element specific to Safeguard C: Respect for traditional knowledge and rights of social and cultural communities, corresponding to benefit distribution. Mechanisms ensuring fair and equitable distribution of results obtained by the project and its respective actions to reduce deforestation and degradation must be considered. The REDD+ Emberá Wounaan project consolidates the Benefit Distribution Annex tool, which presents the legal foundations supporting resource management and allocation processes within the territory, identified beneficiaries, and the classification of the type of benefit to be acquired. These are fundamental aspects for identifying the most appropriate distribution methods.

Additionally, at the project level and in conjunction with its stakeholders, a scheme has been consolidated describing the process for disbursement, the percentage distribution for each of the involved actors (technical associate, managing associate, and Comarca represented by the monetary administration unit), and the application of investments within the territory due to the commercialization of carbon credits generated within the comarca limits[46]. Within this, a Monetary Resource Administration Unit is considered, for the present verification period corresponding to ASSETS TRUST & Corporate Services Inc[47], and two verification commissions: one composed of comarcanos who, through their internal processes, define the relevance of the investments to be managed, and a project verification commission including delegates from the technical team, who will contrast the investments presented by the Comarca Emberá Wounaan with the project's strategic lines.

[45] See in: *09_Legislación ambiental\1_MatrizLegalAmbiental_REDD+EmberaWounaan_V2.xlsx*
[46] See in: *11_Anexos y complementarios\10_Anexo_DistribuciónBeneficios_V3.pdf\Figura 1. Esquema de transacción de beneficios monetarios del proyecto*
[47] See in: *11_Anexos y complementarios\12_IntenciónServicios_Fiduciaria_EmberaWounaan.pdf*

The 44% allocation for the managing associate according to the contract entered into in the Comarca will recognize their management actions to achieve the project in its social, financial, and administrative aspects. This includes the initial investment applied to consolidate agreements and commitments, necessary approaches to address important implementation factors, and recognition of the technical associate's work as a documentation structurer, quantifier, monitor, and analyzer of related and necessary information to present the initiative to different evaluation levels and achieve carbon credit certification. The remaining 56% constitutes the project owner's own income and sustains the implementation of designed REDD+ activities (See **Figure 6**).

Figure 6. Scheme of Monetary Benefits Transaction of the Project.



Source: CO2CERO S.A.S., 2023.

12 Grouped Projects

REDD+ Emberá Wounaan Project is not a grouped project.

13 Implementation of the project

13.1 Implementation status of the project

Below, the contributions generated by the project in the different defined investment lines are described. The indicators for measuring their implementation to date are presented

in "*02_Cobeneficios\3_Actividades REDD+\ActividadesREDD+_Emberá Wounaan_V4.xlsx"* y "*02_Cobeneficios\3_Actividades REDD+\SoporteActividades*".

13.1.1 Governance and administration

One of the relevant actions to be carried out for the project is capacity building, serving as a tool to introduce knowledge at the community level that strengthens the self-management of the initiative over time. Understanding concepts such as project management, finance, and resource administration are crucial to achieving the success of REDD+ activities and their positive, inclusive, and equitable impact at the community level. Administrative roles within the Comarca Emberá Wounaan have been primarily trained, ensuring that the understanding of the content is effective and can be correctly transferred to the community in subsequent socialization exercises. Similarly, the project has accompanied processes for defining governance structures, primarily the election of territorial authorities within the framework of the community development plan[48].

Ilustration 4. Engagement with the Ministry of Environment of Panama.

[48] See in: *02_Cobeneficios\SoportesActividades\1.1 Gobierno y administración*

Source: B-Terra Corp, 2022.

13.1.2 Transparency and participation

Ensuring the full and effective participation of community members in line with their socio-environmental safeguards, the project has facilitated consultation meetings and decision-making processes regarding greenhouse gas mitigation initiatives. These meetings have included general consultations, the definition of memoranda of understanding, mechanisms for resolving doubts, and regional congresses for the districts of Cémaco and Sambú. Additionally, key roles within indigenous authorities have been involved in capacity-building processes, ensuring an initial avenue for the dissemination of knowledge related to good leadership practices within the community. It is crucial that leaders and officials are the first to acquire this knowledge and apply it in the execution of their administrative duties.

Ilustration 5. Processes for the election of territorial authorities in the district of Cémaco.

Source: CO2CERO S.A.S., 2022.

13.1.3 Planning and foresight

A fundamental factor for ensuring a project's long-term sustainability and fostering a sense of belonging within the community is aligning its pillars with the normative and planning frameworks at various levels of influence (national, regional, and local), while respecting indigenous tradition and autonomy. Therefore, it is essential to recognize the planning tools currently in use within the community. This recognition, coupled with insights provided by the community, highlights the need to strengthen these tools, ultimately leading to updated models that accurately identify the population's real needs and incorporate their current intentions. In this way, the REDD+ Emberá Wounaan project is contributing to the development of the Comarca Emberá Wounaan Strategic

Plan for 2022-2027, which involves updating its existing planning tools (internal regulations, resource management standards, etc.)[49].

Ilustration 6. Work teams to build the 2022-2027 Strategic Plan.

Source: B-Terra Corp, 2022.

In the preservation of ancestral knowledge, canoes constitute the most important mode of transportation for the Emberá Wounaan indigenous communities, established ancestrally as the only means capable of meeting needs in the mobility of goods, people, health supplies, among others. With the aim of conserving cultural and ancestral tools at the Comarca level, integrated with forest protection, an annual canoe competition has been created. This competition recognizes, at the family level, the value attributed to the canoe, from the proper selection of individuals for its utilization, the compensation for

[49] See in: *02_Cobeneficios\SoportesActividades\2.1 Planeación y prospectiva*

felled trees, to the care provided to them throughout the year. This strategy aims to ensure the extended use of timber resources while reinforcing cultural values, teamwork, equity, and community ownership. The event is part of the commemoration of the delivery of Comarcal lands with Law 22 of 1983, and participants are required to wear their traditional attire during the competition.

Ilustration 7. Canoe competition held in the Río Tuira sector, developed since 2016 during the first half of January until the present date.

Source: B-Terra Corp, 2018.

From the perspective of community health and well-being, the REDD+ Emberá Wounaan project has also contributed to improving the necessary implements to ensure a good quality of life in the territory. Among these, mechanisms for strengthening teamwork, promoting healthy attitudes, and fostering sportsmanship at the community level have been highlighted. Additionally, it reduces the infiltration of inappropriate habits adopted from external agents with cultural differences. The project encourages sports competitions in soccer and basketball for various members of the community, both men and women.

Ilustration 8. Sports teams for males and females from the Comarca Emberá Wounaan in the years 2018 and 2022.

Source: B-Terra Corp, 2021.

The initiative has fostered equity and cohesion at the community level by including youth populations, improving inter-community communication through the integration of groups from other regions in sports events. Similarly, the fundamental objective is to instill concepts of leadership, healthy competition, and strengthening the dimension of being, aiming to expand the capacity for knowledge acquisition and local-regional benefit appropriation. Ultimately, job opportunities will be created around physical development and sports within the community, reducing activities that require forest exploitation and its resources.

Ilustration 9. Improvement of sports equipment for the community by B-Terra Corp and the Panama Canal Life Foundation in the years 2021 and 2022.

Source: B-Terra Corp, 2021.

Additionally, the water supply conditions in the communities of Puente, Unión Chocó, and Vista Alegre have been improved, optimizing the use of natural resources and reducing the need for Comarcanos to traverse the forest in search of water sources. This

also engages the communities in territorial activities linked to conservation, restoration, and sustainable management (see **Ilustration 10**).

Ilustration 10. Support for infrastructure and economic activities in the communities of Puente, Unión Chocó, and Vista Alegre.

Source: B-Terra Corp, 2021.

Within the community's needs, the importance of improving communal areas, tools, and working conditions, as well as covering basic service needs such as water supply and sanitation, has been highlighted. By improving these conditions, with the help of the Panama Canal Life Foundation and B Terra Corp., it was possible to make some adjustments to communal spaces such as Chingue Buche (Meeting House of the General Congress) in the community of Unión Chocó (See **Ilustration 11**) reducing the use of wood for infrastructure reconstruction within the communities, which is one of the main factors contributing to deforestation.

Ilustration 11. Community within Chingue Buche Improved.

Source: B-Terra Corp, 2021.

Finally, diagnosing the situation related to the provision and availability of basic services, sanitation, and well-being is a fundamental input to guide community development and the creation of strategies for personal and group development, understanding basic needs as a mandatory link to address other project objectives. In this regard, the REDD+ Emberá Wounaan project has designed a survey to assess the state of provision of basic services and population dynamics, providing information that will contribute to identifying future changes after the implementation of actions in the territory. The collected information includes personal and family aspects, the status of existing services in the community, problems related to basic needs within the community, and perceptions about biodiversity[50].

13.1.4 Leakage monitoring

The monitoring of areas experiencing deforestation and degradation during the reference period (2008 – 2018) was conducted according to the delineation of the leakage belt within the REDD+ Emberá Wounaan project area. Subsequently, the avoided emissions in the Ex-Ante scenario due to deforestation (EfdefM) and degradation (EfdegM) were calculated, considering the deforestation and degradation rates identified in the baseline scenario during the reference period and the forest cover in the project's starting year (2018). It was assumed that there would be a linear trend over the 30-year duration of the initiative.

13.1.5 Non permanence risk monitoring

For the current project, an analysis of implementation risks is conducted across its various activity phases. In the document project[51], the method used to assess the identified effects during the initiative's execution in the environmental, social, and financial realms is presented, utilizing the permanence risk management tool consolidated by BioCarbon Standard in its version 1.0. In the **Table 38** lists the risks identified by some stakeholders within the Comarca Emberá Wounaan and by some experts knowledgeable about the forest reality in Panama and, more specifically, in the Darién region. Additionally, the level of control, impact level, and proposed mitigation strategy for each risk are established.

[50] See in: *02_Cobeneficios\3_Actividades REDD+\SoportesActividades\2.1 Planeación y prospectiva\2.1.3 Evaluación del estado de servicios.pdf*
[51] See in: *06_Documento de proyecto\PART 2 - ENG_PDD_EmberáWounaan_V14.docx\8 Risk management*

As mentioned previously, the risks were considered based on impact and probability criteria, both qualitatively and quantitatively, following the parameters of the equation for calculating the risk level, specifying the following:

Equation 1. Formula to estimate the risk level.

$$Risk = Probability \times Impact$$

Where:

1. Based on the probability level of occurrence:
   a. Low (0-30%): The event has a moderate probability of occurring; while not impossible, there is a low likelihood of it happening. It is assigned a score of 1.
   b. Medium (31-60%): The event has a moderate chance of occurring; it is likely but not certain. It is assigned a score of 3.
   c. High (61-100%): It is almost certain that the event will materialize; it is considered inevitable or with a very high probability. It is assigned a score of 5.
2. Based on the level of environmental or social impact of the activity:
   a. High impact: Severe impact with long-term damage; it is assigned a score of 5.
   b. Moderate impact: Medium impact with medium-term damage; it is assigned a score of 3.
   c. Low impact: Minor impact without noticeable short-term effects; it is assigned a score of 1.

After applying the formula, the values are multiplied, and the risk classification is constructed according to the following heat map.

Table 36. Heat map

Impact		Probability		
		1	3	5
	1	11	13	15
	3	31	33	35
	5	51	53	55

Source: B-Terra Corp & CO2CERO S.A.S., 2023.

It is important to clarify that the qualitative rating for determining the probability and impact level of the risk is used to define strategies and contingency measures according to the risk origin derived from the bibliographic review of the documents mentioned later. Meanwhile, the reversal percentage was defined using the probability of occurrence specified in the reference documents, aligning the information with the guidelines in the Permanence Risk Management Tool proposed by BioCarbon Standard V1.0 as follows:

Table 37. Reversal risk rating.

Rating	Type of risk	Rating proposed by BioCarbon Standard
11	Low risk	Less than 5%
13	Low risk	Less than 5%
15	Medium risk	(5-10%)
31	Low risk	Less than 5%
33	Medium risk	(5-10%)
35	High risk	Higher than 10%
51	Medium risk	(5-10%)
53	High risk	Higher than 10%
55	High risk	Higher than 10%

Source: B-Terra Corp & CO2CERO S.A.S., 2023.

It is noted that the risk identification was conducted through secondary information review and primary data collection in collaboration with the community. In this case, reference documents, such as The Main Environmental Problems of Panama issued by the Ministry of the Environment of the Republic of Panama, and documents on indigenous community development and management in the country, were consulted. Additionally, it is important to highlight the work of the managing partner B-Terra Corp, which advised the Comarca in developing the Emberá Wounaan Strategic Plan 2022-2027, where a participatory diagnosis was conducted to identify the community's main strengths, opportunities, weaknesses, and threats[52,53]. Additionally, indicators are established for each mitigation measure and the measurement frequency to monitor these risks[53].

[52] See in: *11_Anexos y complementarios\18_Plan estratégico Emberá Wounaan 2022-2027.pdf.*
[53] See in: *11_Anexos y complementarios/26_Clasificacion_de_riesgos.xlsx*

Table 38. Risk factor management strategies and reversal and non-permanence risks.

Risks	Control	Impact	Risk Level	Reversion percentage	Strategies and Mitigation measures	Risks Origin
Environmental						
Winds (Hurricanes)	Low	Moderate	Low Risk	3%	- Establish early alert communication mechanisms during tropical storm and hurricane seasons to minimize their effects on communities. - Familiarize communities with climate predictions and weather forecasts through information technologies. - Coordinate with relevant national and international agencies to implement timely and necessary assistance to repair damages.	Due to its geographical position, Panama has not been directly affected by hurricanes or tropical storms, as it is not located in the main trajectory of these climatic phenomena in the Tropical Caribbean. (MiAmbiente, 2022) points out, among other factors, strong winds as a threat affecting the coastal areas of Panama. Thus, among the most common threats in this area, it mentions strong winds.

Risks	Control	Impact	Risk Level	Reversion percentage	Strategies and Mitigation measures	Risks Origin
Water	Medium	Moderate	Medium risk	8%	- Establish early alert communication mechanisms during tropical storm and hurricane seasons to minimize their effects on communities. - Familiarize communities with climate predictions and weather forecasts through information technologies. - Coordinate with relevant national and international agencies to implement timely and necessary assistance to repair damages.	The rise in sea level, strong winds, floods, droughts, landslides, and earthquakes are also common threats affecting the coastal areas of Panama. Thus, among the most common threats, we have strong winds, floods, storm surges, and landslides (MiAmbiente, 2022). Additionally, it is observed that inadequate management of solid waste leads to ocean pollution, drainage blockages, flooding, facilitates the transmission of diseases, increases respiratory ailments due to burning, harms animals that consume waste, causes visual pollution, and affects economic development (MiAmbiente, 2022).
Forest fires	High	High	High risk	12%	- Implementation of controlled burns as a mechanism for establishing crop areas. - Establish early warning mechanisms for fires and	The majority of agricultural land use expansion occurs through the conversion of forested areas. Therefore, this transformation leads to the destruction and degradation of forests, loss of

Risks	Control	Impact	Risk Level	Reversion percentage	Strategies and Mitigation measures	Risks Origin
					their suppression through satellite monitoring and forest surveillance reports specific to the comarca.	biodiversity of flora and fauna, soil erosion and degradation, sedimentation of water bodies, landscape degradation, and other significant effects (MiAmbiente, 2022). It has been identified at the national level that the burning of vegetation and solid waste generates the mentioned negative environmental effects, which can also occur naturally. Thus, the project's problems are grouped under the category of forest fires.
Limited knowledge of sustainable forest management within the Comarca.	High	High	High risk	12%	Training in sustainable forest management in all communities.	Environmental education of the population was considered in the study conducted by MiAmbiente (2022), The most relevant external and underlying problem. The problem is not the lack of environmental education but its effectiveness in generating changes in citizens. The institutional context in the Panamanian public sector lacks the appropriate and enough instruments and capacities for its implementation. Consequently, unplanned economic growth,

Risks	Control	Impact	Risk Level	Reversion percentage	Strategies and Mitigation measures	Risks Origin
						inadequate land occupation and use management, and pressure from anthropogenic activities have generated negative impacts on natural resources such as deforestation and increased emissions (MiAmbiente, 2022).
Inappropriate land use.	High	High	High risk	12%	-Training in sustainable forest management and implementation of sustainable land use practices. - Promotion of community forest enterprises. - Control and monitoring of compliance with current regulations.	In Panama, agricultural and livestock activities are the main drivers of land use change. Based on forest coverage data from 2000 to 2012, we can estimate that the area used for agriculture and livestock increased by approximately 130,715 hectares during that period. The majority of the expansion in agricultural land use occurs through the conversion of forested areas (MiAmbiente, 2022). Additionally, for the development of an indicative territorial planning plan, it is found that within the institutional context, the Panamanian public sector lacks

Risks	Control	Impact	Risk Level	Reversion percentage	Strategies and Mitigation measures	Risks Origin
						the appropriate and enough instruments and capacities for its implementation. Consequently, unplanned economic growth, inadequate management of land occupation and use, and the pressure of human activities have generated negative impacts on natural resources such as deforestation and increased emissions (MiAmbiente, 2022).
Impact on Species (terrestrial or aquatic) Vulnerable or Endangered According to IUCN in the Comarca Area	High	Low	Medium risk	5%	- Conduct an inventory of vulnerable or endangered species based on studies by the IUCN. - Establish regulations and protocols for the utilization and commercialization of resources to protect the identified species.	Most of the growth in agricultural land use occurs through the conversion of forested areas. This transformation leads to the destruction and degradation of forests, loss of biodiversity in flora and fauna, soil erosion and degradation, sedimentation of water bodies, landscape degradation, and other significant effects (MiAmbiente, 2022).

Risks	Control	Impact	Risk Level	Reversion percentage	Strategies and Mitigation measures	Risks Origin
Pests and Diseases (Contamination of soils and water sources with anthropogenic waste)	Medium	Low	Low risk	2%	Education on soil and water resource management. Education on proper disposal of household waste. Monitoring, planning, and maintenance of aqueduct systems in all communities, with the participation of Comarca workers.	Domestic wastewater comes from residential areas and other establishments, generated mainly by human metabolism and domestic activities. Inadequate solid waste management leads to ocean pollution, drainage blockages, flooding, disease transmission, increased respiratory conditions due to burning waste, harm to animals consuming waste, visual pollution, and economic impacts (MiAmbiente, 2022). This environmental issue has identified that indigenous comarcas lack formal public services (MiAmbiente, 2022), exposing the community to the mentioned negative effects and increasing environmental contamination.
Human pests and diseases	High	Moderate	High risk	11%	Design and implementation of an awareness program in	According to (MiAmbiente, 2019) , the Comarca Emberá Wounaan is exposed to the proliferation of vector-borne diseases resulting

Risks	Control	Impact	Risk Level	Reversion percentage	Strategies and Mitigation measures	Risks Origin
					Emberá and Wounaan languages about: - Climate change - Sanitary surveillance - Handwashing -Water quality methods Establishment of Early Warning Systems for extreme weather phenomena.	from the contamination of water sources, mainly due to intense precipitation variations.
Social						
Land Disputes (Invasions)	Medium	Moderate	Medium risk	9%	-Strengthen the legal position of the comarca authorities to defend their territory against invasions. -Understand and make use of the traditional laws of the Comarca Emberá Wounaan and national laws. -Conduct peace dialogues.	Social demands and conflicts in communities that are titled or awaiting recognition of their territories. Among these conflicts, we can highlight: 1. Indigenous territories are not respected by various non-indigenous actors, and there is an alarming process of invasion of indigenous territories (titled or under claim) by these non-indigenous actors (Mesa Nacional de Desarrollo, 2020).

Risks	Control	Impact	Risk Level	Reversion percentage	Strategies and Mitigation measures	Risks Origin
					-Strengthen the monitoring and guarding of indigenous territory. -Foster links between individuals, organizations, and institutions to open new spaces for territorial defense.	
Opportunity Cost Pressure from Private Logging Companies on Forest Resources	High	Moderate	High risk	11%	Strengthen existing negotiation mechanisms with private logging companies according to the terms agreed upon by Comarca authorities. Promote conservation and protection practices for forest resources within the comarca. Strengthen the legal and juridical framework for comarca residents as a mechanism to protect themselves in negotiations and contracts with external actors, ensuring the	The Strategic Plan 2022-2027 identifies threats related to third-party pressure on natural resources, leading to illegal logging, poaching, and the presence of intermediaries in the distribution chain. Additionally, primary forests are being cut down and replaced by plantations. Specifically, 21.62% of intervened forest has been replaced by plantations, along with 1.44% of mixed cativo and 0.54% of homogeneous cativo in the Darién region, following the enactment of the Incentives Law (No. 24 of 1992) (Carrera et al, 2021). Some

Risks	Control	Impact	Risk Level	Reversion percentage	Strategies and Mitigation measures	Risks Origin
					prevalence of free, prior, and informed consent.	leaders have granted "concessions" to logging companies for extracting cocobolo (Bech, A, 2014). According to official data from the Ministry of Environment (2017), Darién stands out among the provinces with the highest forest wood utilization from plantations during 2016 and 2017 (Carrera et al, 2021).
Opportunity Cost Illegal Logging	High	Moderate	High risk	11%	Strengthen mechanisms for monitoring, detecting, and reporting illegal logging. Promote forest conservation within the Comarca by increasing employment alternatives. Train the indigenous guard in identifying illegal logging and enforcing prohibition processes.	The lack of control and oversight mechanisms for natural resources within the Comarca Emberá Wounaan facilitates illegal logging of timber and trafficking of wildlife, which is then sold to third parties (COONAPIP, 2009). Roads continue to be built to bring heavy machinery into the forest for logging, after which the timber is sold and the land is burned to make way for livestock (Bilbao, 2019). Deforestation, since 1972, has been driven by restrictions in

Risks	Control	Impact	Risk Level	Reversion percentage	Strategies and Mitigation measures	Risks Origin
						international and national markets that demand only a few species from heterogeneous forests—only 15 of the 300 identified by the FAO's national inventory. Additionally, mechanized selective extraction in Darién was focused on mahogany, cedar, and oak. Since 1955, the exploitation of cativo (*Prioria copaifera*) began, contributing 75% of the timber exported from Darién (FAO, 1972).
Opportunity Cost Abandonment of forestry ventures due to low productivity.	High	Moderate	High risk	11%	Ongoing training in forest management tools, business management, administration, human capital management, finance, cost management, distribution chains, customer service, among others.	Indigenous peoples around the world face various national, local, and community challenges due to a global economy that lacks humanization, compounded by little governmental support in practice. In this regard, many of us continue to live in invisibility and under conditions of marginalization within national and regional development plans

Risks	Control	Impact	Risk Level	Reversion percentage	Strategies and Mitigation measures	Risks Origin
						(Leonidez Cunampia-Cacique General Emberá Wounaan, 2022). Evidence can be found in: *11_Anexos y complementarios\18_Plan estratégico Emberá Wounaan 2022-2027.pdf*" Supporting evidence: *11_Anexos y complementarios\1_Asistencia\Sesiones_Lideres_Encargados_17 11 2022.pdf*"
Increase in the construction of non-sustainable housing and existence of traditional housing in poor conditions.	High	Moderate	High risk	11%	Inventory and maintenance of dignified, environmentally friendly housing in line with the Emberá Wounaan way of life.	The change from agricultural and forest land use to urban and infrastructure development occurs on a smaller scale but affects the potential for food production and public resource use, such as the deterioration of beaches (MiAmbiente, 2022). Additionally, it is found that non-sustainable housing leads to poor disposal of domestic wastewater.

Risks	Control	Impact	Risk Level	Reversion percentage	Strategies and Mitigation measures	Risks Origin
Propensity for scams related to carbon markets	High	Low	Medium risk	7%	- Comprehensive training for Comarcal authorities on topics related to carbon markets. - Establishment of mechanisms to evaluate any offers related to carbon markets. - Timely and public reporting to competent authorities (national and/or international).	Within the development of the Strategic Plan 2022-2027, a threat has been identified arising from scammers seeking to take advantage of the current situation in the Comarcas, which could result in scams in the carbon market. References: *11_Attachments and Complementary\18_Strategic Plan Emberá Wounaan 2022-2027.pdf*
Insufficient access routes to transport forestry and agricultural production to consumers.	Medium	Low	Low risk	3%	- Planning, construction, and maintenance of access roads for strictly agroforestry purposes according to ecological standards, with the participation of Comarca workers. - Verification methods and assurance of legally acquired	It is evident that one of the environmental issues at the national and local levels is the difficulties in reaching the external market (access roads). Additionally, roads continue to be opened to bring heavy machinery into the forest for logging, after which the timber is sold, and the

Risks	Control	Impact	Risk Level	Reversion percentage	Strategies and Mitigation measures	Risks Origin
					products in accordance with traditional authorities.	land is burned to make way for livestock (Bilbao, 2019). References: *11_Attachments and Complementary\13_Strategic Plan Emberá Wounaan 2022-2027.pdf*
Political Risk Incursion of armed groups or drug traffickers, as well as transit immigrants within the limits of the Comarca.	Medium	Low	Low risk	3%	Maintenance and strengthening of the National Defense authorities in the border area with Colombia to ensure physical integrity and the right to life.	The province has the lowest crime rate. Between 2009 and the first semester of 2010, the homicide rate per 100,000 inhabitants increased in Darién from 6.6 to 23.9. In the country, the rate rose in 2009 to 23.7 per 100,000 inhabitants from a rate of 19.3 in 2005 and 11.3 in 2005, representing an increase of 4.4 points during the period analyzed in this report(Perez, 2011). See Evidence *11_Anexos y complementarios\4_NNH\02_Socioeconomic aspects*.
Loss of cultural	High	High	High risk	12%	Constant dialogue with national authorities to	Indigenous peoples around the world face various national, local,

Risks	Control	Impact	Risk Level	Reversion percentage	Strategies and Mitigation measures	Risks Origin
identity, the ancestral worldview, their history and knowledge about the forest, their language, and their traditions.					incorporate into formal educational and social programs content related to indigenous cultures, their traditions and histories, and their aspirations, led by community-trained teachers in Human Activation and various areas of Emberá Wounaan knowledge.	and community challenges due to a global economy that lacks humanization, compounded by little practical government support. In this regard, many of us continue to live in invisibility and under conditions of marginalization within national and regional development plans. However, collective leadership has proven to be an effective tool for addressing the various barriers that prevent our just aspiration for cultural, social, and economic development, within the context of our territories, the surrounding environment, and our ancestral desire to live in harmony with it. (Leonides Cunampia - General Chief of Emberá Wounaa, 2022) Evidence can be found in: *AUD_VV_2022\11_Anexos y complementarios\18_Plan estratégico Emberá Wounaan 2022-2027.pdf"*

Risks	Control	Impact	Risk Level	Reversion percentage	Strategies and Mitigation measures	Risks Origin
						Supporting documents can be found in: *11_Anexos y complementarios\1_Asistencia\Sesiones_Lideres_Encargados_17 11 2022.pdf"*
Disregard for the dignity and cultural diversity inherent in being Emberá Wounaan.	Medium	High	High risk	11%	Continuous dialogue with national authorities to incorporate content related to indigenous cultures, their traditions, stories, and aspirations into formal educational and social programs.	The demands and social conflicts in communities awaiting recognition of their territories are significant. Among these conflicts are: 1. Non-indigenous actors do not respect indigenous territories, leading to an alarming process of invasion of indigenous territories (whether titled or under claim) by these non-indigenous actors (National Development Forum, 2020). There is a strong presence of extractive companies in indigenous territories with licenses from the State, but without the consent of traditional authorities

Risks	Control	Impact	Risk Level	Reversion percentage	Strategies and Mitigation measures	Risks Origin
						and communities (National Development Forum, 2020). See *11_Anexos y complementarios\4_NNH\02_Socioeconomic aspecto*
Self-rejection of indigenous identity and culture.	High	High	High risk	12%	- Permanent motivation towards self-discovery, self-awareness, self-image, self-respect, self-esteem. - Incorporation of the Strategic Life Plan of the Comarca Emberá Wounaan 2022-2052.	The indigenous peoples of the world face various national, local, and community challenges due to a global economy that lacks humanity, coupled with little practical governmental support. In this sense, many of us continue to live in invisibility and conditions of marginalization within national and regional development plans. However, collective leadership has proven to be an effective tool for addressing the various barriers that prevent our just aspiration for cultural, social, and economic development, within the context of our territories, the surrounding environment, and our ancestral desire to live in harmony with it."

Risks	Control	Impact	Risk Level	Reversion percentage	Strategies and Mitigation measures	Risks Origin
						(Leonidez Cunampia - General Cacique of the Emberá Wounaan, 2022) Evidence can be found in: *11_Anexos y complementarios\18_Plan estratégico Emberá Wounaan 2022-2027.pdf* Supporting documentation can be found in: *11_Anexos y complementarios\1_Asistencia\Sesiones_Lideres_Encargados_17 11 2022.pdf*
Exclusion of women, youth, and children from project activities.	High	Moderate	High risk	11%	Training of women, youth, and children in their potentialities to actively participate in all relevant project activities.	The loss of culture has been evident in the new generations, where there is a lack of interest in ethnic practices, which raises concerns about the transfer of holistic worldviews and ethnic loss (Velasquez, 2020). Previous studies have highlighted that, in many indigenous communities, women have 'a leading role in making decisions on important

Risks	Control	Impact	Risk Level	Reversion percentage	Strategies and Mitigation measures	Risks Origin
						aspects of their societies, such as health, care, and education of children, adults, and elders, spiritual ceremonies and rituals that restore community harmony, knowledge transfer between generations, as well as agricultural tasks, crops, water management, and other natural resources, family feeding, among other areas' (ECLAC, 2014: 107). See evidence in *11_Anexos y complementarios\4_NNH\02_Socioeconomic aspect*
Exposure to future pandemics that threaten the health of the inhabitants of the Comarca.	Low	Moderate	Low risk	3%	- Systematization of disease prevention practices and their combat using the ancestral medicine offered by the forest, knowledge of which is possessed by elders and shamans. - Constant dialogue to ensure the active presence of the Ministry of Health regarding	Traditional territories of indigenous peoples face greater deprivations in access to sanitation, which entails an additional burden of unpaid work for indigenous women and girls and exposes them to a higher risk of contagion. Precisely, in municipalities where the indigenous population predominates, encompassing all

Risks	Control	Impact	Risk Level	Reversion percentage	Strategies and Mitigation measures	Risks Origin
					infrastructure, medical personnel, and supplies.	or part of these territories, the most vulnerable situations are recorded. Although non-indigenous population also faces a disadvantaged situation there compared to other municipalities, gaps persist to the detriment of the indigenous population (Cepal, 2020). See evidence in *11_Anexos y complementarios\4_NNH\02_Socioeconomic aspect*
Financial						
Financial Capacity of the Project Holder	High	Moderate	High risk	11%	Establish, through fundamental agreements between the project holder and the developing partners, the financial assurance of the project: -Secured resources for the establishment of the project by the project partners.	The Comarca Emberá Wounaan is the project holder and does not have the financial capacity to establish it. It is possible that in the agreements managed between two or more parties, there may be force majeure risks that prevent

Risks	Control	Impact	Risk Level	Reversion percentage	Strategies and Mitigation measures	Risks Origin
					-Participation and legal commitments documented in agreements and contracts between company partners and comarca authorities. -Commitment and capacity of the partners to address contingencies that may arise in the project according to the agreements.	the execution of the responsibilities established in the contractual linkage agreements. *01_Agreements\02_Agreements companies\Contract_BTerra-CO2CERO.pdf* and *01_Agreements\01_Agreement community\Understanding Agreement B Terra - Comarca.pdf.*
Exclusion of national bank credits for forest companies due to the collective land tenure condition.	Low	High	Medium risk	8%	- A reasoned request to the Superintendence of Banks based on the equality of indigenous peoples and individuals compared to the rest of Panamanians. - Seeking resources from international organizations willing to respect land tenure and our commitment to Mother Earth.	On February 8, 2021, the Legislative Branch of Panama approved the Special Regime for the Establishment of Operators and Developers of Agro-parks, Law 196, resulting in impacts on indigenous legislations (IWGIA, 2022). The Law 72 on Collective Lands has not had, to date, adequate implementation due to lack of political will and economic resources, despite its regulation through Decree 223 of June 29,

Risks	Control	Impact	Risk Level	Reversion percentage	Strategies and Mitigation measures	Risks Origin
						2010 (National Development Plan, 2020).
Secured Resources for Establishment Possible losses in the value of carbon credits generated by the project due to market fluctuations.	Low	High	Medium risk	7%	- Establish marketing strategies for the carbon credits generated by the project at both national and international levels. - Create market value, emphasizing on work and technical and social management. - Conduct a market study to develop offerings according to demand	According to the dynamics of carbon credit values observed over the last 6 months, there has been a downward trend in prices. This trend is attributed to national-level publicity highlighting misuse and mismanagement of resources derived from the sale of projects from the AFOLU sector, such as REDD+ projects. This publicity mentions the harm caused to indigenous and Afro-Colombian communities and their territories, affecting governance, participation, and decision-making processes According to a study by Science, most carbon offset programs significantly overestimate the levels of deforestation they prevent. This means that many of the "carbon credits" purchased by companies to offset emissions are

Risks	Control	Impact	Risk Level	Reversion percentage	Strategies and Mitigation measures	Risks Origin
						not linked to forest preservation in the real world as claimed. (tiempo, 2023)
Secured Resources for Maintenance Operational risk due to human errors, inadequate or faulty internal processes, system failures, and as a result of external events.	Low	Low	Low risk	2%	- Monitoring organizational operations of companies, both technically associated and managerial, to prevent this risk. - Conducting the accountability process within established timelines to verify progress in project activities. - Continuous improvement of internal processes within each company and the communities belonging to the Comarca.	Much of this information should be actively published by those who have it, without those seeking it needing to make a request. This is because several of the involved parties, especially indigenous peoples, are less likely to use mechanisms that require information requests. Information should be provided regularly since sporadic workshops, for example, are not enough to generate real participation, transparency, or consent. (ONU REDD, 2013) See in: *02_Cobeneficios\3_Actividades REDD+*
Reversion						
Political Risk	Medium	High	High risk	11%	- Consolidation of measures to protect projects already executed prior to the	The inadequate management of economic resources can translate into a risk that negatively affects

Risks	Control	Impact	Risk Level	Reversion percentage	Strategies and Mitigation measures	Risks Origin
Nationalization of carbon credits.					implementation of new measures. - Creation of a carbon stakeholders association to guide the process of carbon credit nationalization. - Designing a regulatory system capable of protecting the fair, competitive, and equitable distribution of goods obtained within the national market.	the communities involved in the project due to deviations and improper execution of the benefits received by the project. In recent years, technical studies have been conducted worldwide to ensure that the benefits associated with the implementation of REDD+ projects are aligned with reality and to avoid overestimation of credits, as well as improper management of benefits by communities. In order to prevent these situations, national governments in Latin America and the Caribbean have made decisive decisions by granting the state full authority to develop REDD+ initiatives, as is the case with Ecuador and Costa Rica. Through their forest governance and land use policies, they take charge of managing and monitoring these initiatives by creating carbon taxes and international financing funds.) (Ministerio de Ambiente del
Political Risk Regulatory Restriction for the Execution of REDD+ Projects with Private Entities	Medium	High	High risk	11%	- Implementation of projects through best practices and compliance with the rights of the involved communities. - Demonstration of community benefits to competent entities for the redirection of restrictions on private actors.	

Risks	Control	Impact	Risk Level	Reversion percentage	Strategies and Mitigation measures	Risks Origin
						Ecuador, 2016) (Ministerio de Ambiente y Energía, 2016)
Increase in deforestation rates.	Medium	High	High risk	11%	- Conscious implementation of REDD+ activities focused on the management and sustainable use of forest resources and biodiversity. - Support in institutionalizing good practices framed within sustainability and low impact. - Generation of early warnings for deforestation and degradation within the project boundaries. - Implementation of community internal regulations favoring conservation and improvement of forest cover.	According to the ex-ante analysis of the Emberá Wounaan REDD+ project, it is evident that in the scenario without the project, the areas lost due to forest deforestation increase from 552.47 to 1,348.78 ha from 2018 to 2019, as a result of the identification of deforestation agents in the project area (cattle ranching, agriculture and forest harvesting). In addition, according to the document "Principales problemáticas de la República de Panamá" issued by MiAmbiente, a loss of forest cover has been identified since 2012 at an average of 8,618 ha per year (MiAmbiente, 2022).

Risks	Control	Impact	Risk Level	Reversion percentage	Strategies and Mitigation measures	Risks Origin
Cancellation of the contract by the Shire .	Medium	High	High risk	11%	- Guarantee of compliance by the parties involved with the contractual premises agreed upon. - Execution of transparent processes, known by the comarca and suitable to its level of understanding. - Ratification of the contractual figures established between the parties. - Ongoing socialization of the performance achieved by the project and the proposed REDD+ activities.	It is imperative in agreements managed between two or more parties that there are risks of force majeure that prevent the execution of the responsibilities established in the contractual agreements, such as national legal provisions, the impossibility of carrying out activities, or possible extreme events of social or environmental origin. To prevent these risks, according to the terms established in the binding contracts, possible causes for the suspension of contracts are presented along with the mechanisms that must be taken in terms of communicating the cessation of activities. Supports see in: "*01_Acuerdos\02_Acuerdos empresas\Contrato_BTerra-CO2CERO.pdf*" y "*01_Acuerdos\01_Acuerdo comunidad\Acuerdo entendimiento B Terra - Comarca.pdf*"
Non-compliance with contractual terms by the	Medium	Moderate	Medium risk	7%	- Monitoring and control of the activities carried out by the parties. - Confirmation of responsibilities and duties	

Risks	Control	Impact	Risk Level	Reversion percentage	Strategies and Mitigation measures	Risks Origin
parties involved.					contractually established between the parties. - Application of penalty clauses and economic measures in case of non-compliance with responsibilities and duties by the parties.	
Depreciation of carbon credits.	Low	Moderate	Low risk	5%	- Establishment of fixed-price contracts. - Guarantees of flexibility in the price of credits in the face of complex market dynamics. - Consolidation of projects with social, climate and environmental value, reflecting a favorable price.	Durante the last 6 months, there has been a downward trend in the price of carbon credits from the AFOLU sector under REDD+ initiatives due to the public scrutiny to which projects have been exposed in terms of overestimation of emission reductions and distribution of benefits with Afro-descendant and indigenous communities, who are the owners of the forests where the projects take place and who have expressed, in some cases, not receiving the promised economic benefits after completing the project stages. Taking the above

Risks	Control	Impact	Risk Level	Reversion percentage	Strategies and Mitigation measures	Risks Origin
						into account and according to market price statistics provided by the Trove Research platform as of September 3 of the current year, it is evident that the price trend per credit has been quite irregular and has been declining for more than 6 months with an estimated 36% reduction compared to the price at the beginning of the year. (Trove Research, 2023) See in: "*11_Anexos y complementarios\14_Reporte de precios TroveResearch.pdf*"

Source: B-Terra Corp & CO2CERO S.A.S., 2023

Finally, preventive and mitigation actions are presented for each REDD+ activity, which carry low risk and represent the risk of releasing 5% of the VCC according to the BioCarbon Standard.

Table 39. Mitigation and prevention measures for risks of REDD+ activities.

REDD+ Activities	Objectives	Identification of Possible Barriers and Risks	Measures to Mitigate
Guidance in defining governance structures and good living	Ensure the protection of the political identity of indigenous peoples and respect for their role in state, administrative, and managerial scenarios. Strengthen political and justice tools present within the indigenous region.	Lack of communication and resistance to new institutional approaches.	Work with focus groups on debatable issues about sustainable justice policies and cultural identity.
Training in project management, finance, and resource management	Train for the management of development alternatives at the community level, focusing on health, education, and housing. Strengthen skills in budget and financial management at the community level.	Community difficulty in operationalizing budget and financial management. Unequal and non-transparent community participation affecting good living and forest quality. Lack of capacity and training to operationalize budget management and financial management at the community level. Restricted participation by the E/W community.	Education of the Emberá Wounaan community in budget and financial management for good living and forest quality.

REDD+ Activities	Objectives	Identification of Possible Barriers and Risks	Measures to Mitigate
Creation of consultation and decision-making spaces by authorities and community members.	Ensure free, prior, and informed consent. Improve information transfer among community members. Strengthen community and minority participation.	It is about the challenge of being a unique project of its kind, which faces the barrier of prevailing assistentialist practices.	Keep the community informed consciously and transparently about the procedures for their community empowerment.
Training in leadership best practices	Strengthen the administrative and governance structure of communities. Build capacities in women, youth, and adults for leadership in cultural, social, and economic spheres. Increase education levels in soft skills.	Resistance to forest ecosystem protection policies' administrative control and limitation of community participation.	Continuous monitoring and recording of project viability progress, from which to continue prospective and participatory planning.
Community planning and development tool development	Generate a strategic rationality promoting the development of the Emberá Wounaan People. Zone the territory with strategic community-interest areas.	Loss of a sense of belonging to their own culture.	Reconstruction of the E/W imaginary in a new sense, as a possibility of re-signification of individual, group, and institutional human experience through the creation of new capacities for cultural cohesion.
Population census and citizen participation	Recognize the population's state in their basic needs. Generate inputs for planning projects and initiatives on the regional territory. Integrate ethnic	Inadequate personal protagonism and poor communication skills.	Promotion of participatory leadership and its benefits among relevant actors within the communities of the Comarca. Development

REDD+ Activities	Objectives	Identification of Possible Barriers and Risks	Measures to Mitigate
	communities into updating national population figures.		of communication and teamwork skills.
Design of strategies for preserving indigenous ancestral knowledge.	Preserve the cultural and social value held by ethnic communities in the national territory. Position traditional knowledge holders, teachers, and elders as contributors to community development. Involve new generations in ancestral and ethnic learning within the region.	As a novel and unique project, the prevailing practices may resist its management.	Strengthen individual and collective trust in E/W social fabric in transformative actions that develop a sustainable achievement mindset.
Assess the provision and availability status of basic services, sanitation, health, and education.	Create strategies to improve the basic needs of the population. Identify focal points for individual and community development planning.	There is a lack of sufficient channels to keep communities informed.	Formation of committees, groups, and/or assemblies, composed of project leaders, to keep the community informed about their perspectives on addressing their basic needs.
Identification of territorial boundaries	Increase the sense of belonging to the territory. Update the Comarca's boundaries and its communities cartographically. Identify external actors, presence of communities, and	Risk associated with disrespecting the Emberá Wounaan territorial ecological zoning.	Organizational and productive empowerment of the community.

REDD+ Activities	Objectives	Identification of Possible Barriers and Risks	Measures to Mitigate
	indigenous territories in the Comarca.		
Territorial boundary protection strategies	nsure territorial integrity and conservation of natural resources owned by the Comarca Emberá Wounaan. Mitigate activities that threaten the economic, social, and environmental integrity of the Comarca Emberá Wounaan. Strengthen the work of indigenous guardians	Resistance to territorial defense control.	Establishment of connections and links between people, organizations, and institutions to open new territorial defense spaces.
Technical support in sustainable family production models.	Conserving traditional agricultural practices and self-sufficiency sustainably. Increasing the productivity of indigenous traditional crops. Reducing degradation and deforestation in specific areas of the region.	he presence of agricultural technology that destroys ecosystems.	Returning to the original production chain to enhance the sustainable quality of ecosystems, drawing from ancestral knowledge and incorporating eco-friendly practices and technologies.

REDD+ Activities	Objectives	Identification of Possible Barriers and Risks	Measures to Mitigate
Designing sustainable economic alternatives and production chains.	Ensuring the flow of raw materials and products generated at the community level. Providing viable and sustainable economic alternatives. Strengthening the production of crafts and ancestral female practices. Contributing to community economic development through activities inherent to their culture.	Loss of a sense of belonging to their own culture.	The new productivity (productive projects) stemming from the social organization of families empowers the community culturally and sustainably in their food security.
Training in good productive practices.	Improving production levels within the indigenous territory. Increasing the capacities and productive skills of community members. Enhancing formal and non-formal education levels within the Comarca.	Historical land uses, current economic practices, and trends both within and outside the region exert pressure and leave little room for sustainable land use practices.	Information and awareness assemblies about what life will be like in the Comarca if current trends continue. Preparing community leaders in sustainability and REDD+ projects. Presenting the benefits associated with innovative practices that do not contradict ancestral practices.
Improvement of tools and work materials	Enhancing efficiency and productivity in tasks. Increasing the quality of work performed by members of the Emberá Wounaan community. Familiarizing workers with efficient work	There is limited experience in implementing quality management elements in indigenous communities, which can lead to disbelief and resistance.	Training a representative team from all communities in Operational Excellence within the communities, who will become multipliers and advocates for the benefits of implementing

REDD+ Activities	Objectives	Identification of Possible Barriers and Risks	Measures to Mitigate
	materials and techniques.		quality in the way we do things.
Institutionalization of good practices for economic development and well-being.	Creating daily practices based on sustainability and the environment. Strengthening the concept of community and quality of life through sustainable development. Increasing the community's capacity to adapt to change and improve their lives.	The process of modifying established habits can be slow and met with resistance.	Intensive campaign through all available means to promote the multiple benefits associated with the healthy lifestyle habits that the project promotes.
Training on REDD+ and socio-environmental safeguards.	Engaging the REDD+ project and its concepts as a strategic axis of the community. Ensuring the flow of information regarding REDD+ projects within the community. Providing theoretical and normative tools to communities related to their socio-environmental safeguards.	Lack of awareness about safeguards.	Continuing to work on consolidating a system of safeguards that are applicable and relevant to the Emberá Wounaan Region.

REDD+ Activities	Objectives	Identification of Possible Barriers and Risks	Measures to Mitigate
Training in Sustainable Forest Management (SFM).)	This aims to reduce negative impacts affecting forest sustainability, enhance capacities regarding forest resources and forests, and integrate techniques for forest cover management into the productive and traditional habits of the community.	Economic pressure on the forest as a means of subsistence to address critical levels of poverty among the inhabitants of the Emberá Wounaan Region, through deforestation and degradation, exists.	Incentives are utilized for those who are actively engaged in sustainable forest management and have access to productive projects within the REDD+ project.
Creation of forest nursery Emberá Wounaan	Provide plant material to the community through on-site production. Facilitate reforestation and restoration processes. Involve the community in the forest production chain. Ensure job options related to forests and the environment.	Costs associated with infrastructure, inputs, training, and putting Emberá Wounaan forest nursery network into production.	Financing the Comarca's forest nursery network with REDD+ project funds.
Forest restoration	Reduce impacts negatively affecting forest sustainability. Increase carbon reservoirs within the Comarca. Involve the population in climate change mitigation activities.	Lack of forest nurseries managed with proper technical knowledge.	Creation of the Emberá Wounaan forest nursery network. Present nursery forest work and reforestation jobs as a dignified employment alternative.

REDD+ Activities	Objectives	Identification of Possible Barriers and Risks	Measures to Mitigate
Reforestation	Increase carbon reservoirs. Provide employment alternatives. Involve new production and conservation activities in the territory. Restore degraded areas and their ecosystem services.	Lack of forest nurseries managed with proper technical knowledge.	Creation of the Emberá Wounaan forest nursery network. Present nursery forest work and reforestation jobs as a dignified employment alternative.
Non-timber forest production	Diversify the economy on a Comarca scale. Involve Emberá Wounaan community members and key actors in forest-based economic activities.	The economic pressure on the forest as a means of livelihood to address the critical levels of poverty among the inhabitants of the Region.	This involves explaining in meetings with regional authorities, general assemblies, meetings with women's groups, and other producers the immense benefits of diversifying the regional economy based on non-timber production.

Source: BTerra Corp, 2023.

The project ensures the continuity of activities over time by strictly adhering to the guidelines established by the BCR standard. For this purpose, committees and working teams are created to fulfill the functions of evaluation, monitoring, and continuous improvement. The project documents show integration with short, medium, and long-term regional strategic plans, the establishment of administrative oversight and control structures for the distribution of benefits, safeguards, and capacity-building plans, all designed to support and sustain the project activities.

Regarding leakage and reversal risks, preventive measures and contingency measures are based on Safeguards F and G of the UNFCCC: *(f) "Actions to address reversal risks"; (g) "Actions to reduce emissions displacement".*

Table 40. Preventive and corrective measures for risks of reversal and leakage.

Risks	% of reversal	Preventive measures	Contingency measures*
Risk of reversal of progress and achievements.	8%	Establishment of commissions and work teams to fulfill the functions of internal evaluation and supervision. Creation of REDD+ project monitoring, control, and oversight committees: Project board integrated by representatives of traditional authorities, 41 local committees. Establishment and institutionalization of the Safeguards Information System, based on Key Performance Indicators (KPIs), for permanent monitoring and for early and effective intervention to block the root cause of each barrier, risk, or threat that arises, applying the scientific method and the ancestral knowledge of the communities of the Comarca.	Strengthening of groups dedicated to overseeing the REDD+ project in their communities.
Risk of leakage	5%	Monitoring and evaluation of land and forest use during the implementation of REDD+ activities. Monitoring of the leakage belt through satellite images and reports from the indigenous guard. The application of safeguards will ensure that risks associated with agents and causes of deforestation and forest degradation are addressed and minimized during the implementation of REDD+ activities.	Forest guards in all communities.

*Contingency measures are actions implemented when an abnormal situation arises, as opposed to preventive measures, which are actions taken to prevent the contingency from occurring. For example, in the case of leakage risk, monitoring is proposed as a preventive measure; however, if the contingency of shifting deforestation and degradation activities occurs, the formation of forest guards will be activated as a contingency measure.

Source: BTerra Corp, 2023.

13.1.6 Uncertainy management

To avoid overestimating reductions, parameters are adjusted in the calculation process. For example, extrapolated calculations are rounded down, meaning that decimal figures are discounted, and therefore, when extrapolating, lower removals are estimated than those that would be obtained if decimals were considered integrally. Additionally, theoretical factors are evaluated conservatively; if two values are available for the same parameter, the more conservative value is used to estimate the parameter conservatively. Moreover, the databases used for the quantification of removals undergo a process to eliminate atypical data, removing extreme values that would otherwise inflate or overestimate reductions. According to the methodological document for the AFOLU sector BCR0002 version 3.1, the management of uncertainty is based on the precision of the maps used to estimate activity data values and the application of discounts to emission factors within the framework of the definition of uncertainty established by (GOFC - GOLD, 2016).

- **Activity data**

For activity data, accuracy must be greater than 90%, as established by the methodology. Based on this requirement, a thematic accuracy assessment is conducted to measure how accurately areas are classified as "forest" or "non-forest" using the maps generated by the model of (Hansen, y otros, 2013), which is employed to evaluate deforestation for the project. To achieve this, a tool called a confusion matrix is used. This matrix quantifies how many elements have been correctly and incorrectly classified in the dataset.

Based on this information, the precision value for activity data in the different areas of the project (leakage area, project area, and reference region) is calculated, reflecting the relationship between correct and incorrect classifications in the model. For more detailed results and processes used, please refer to the document "Geoprocessing Report.[54].

As a result, the following summary table of precisions is obtained, where in each case a value greater than 90% was achieved (**Table 41**):

Table 41. Summary of Precision in Project Areas

[54] See in: *04_SIG\Informe Geoprocesamientos SIG REDD+ Embera Wounaan_V6.docx*

Year	Type of area		
	Leakage area	Project area	Reference area
2008	97,8	98.4	90.8
2013	95,4	N/A	90.1
2017	90,8	97.8	N/A
2018	92,0	97.0	90.8
2019	91,2	96.4	N/A
2020	91,8	96.2	N/A
2021	92,4	96.2	N/A
2022	92,8	96.0	N/A

Source: CO2CERO S.A.S., 2023.

- **Emission factor**

The guidelines stipulate that an evaluation of emission factors must be conducted. Below are the processes and equations used for the uncertainty assessment. The first step involves determining the uncertainty for each reservoir as established by the methodological document BCR0002 v3.1. This is achieved using the following equation from Volume 1, Chapter 3, titled "Uncertainties" of the IPCC 2006 "Guidelines for National Greenhouse Gas Inventories" (Paciornik, y otros, 2006).

According to the results of the uncertainty analysis[55], a result of 17.16% was obtained, and therefore, the lower bound of the confidence interval was used as stipulated by the methodological document BCR0002 v3.1. The lower bound of the confidence interval

[55] See in: Sheet “Incertidumbre” of the document *03_Carbono\FE_EmberaWounaan_V4.xlsx*

was applied to the emission factor of each reservoir. This ensures the process is conservative and properly manages uncertainty.

13.2 Revision of monitoring plan

The monitoring report of the REDD+ Emberá Wounaan project for the period from April 20, 2018, to December 31, 2022, has been reviewed during the year 2023 as part of the validation and verification process by a Conformity Assessment Body.

13.3 Request for deviation applied to this monitoring period

REDD+ Emberá Wounaan Project does not exhibit methodological deviations according to the specifications outlined in section 3.1 of the project document, which details compliance with the BCR 0002 methodology in its version 3.1 proposed by BioCarbon Standard[56].

13.4 Notification or request of approval of changes

As of the date of this monitoring report, the REDD+ Emberá Wounaan Project has not requested any changes or adjustments to the registration process of the initiative.

14 Monitoring system

14.1 Description of the monitoring plan

14.1.1 Procedures established for management of GHG emission reductions

The field information surveys were conducted using forest inventories adapted according to the methodology of the Panama forest inventory. In the conducted forest inventory[57], it is possible to identify the methodology applied for data collection, the logbook describing the field observations, and the database with the results obtained once the inventory was implemented. Additionally, the results of the carbon analysis for soil and litter samples captured within the same methodological framework described are attached. It is important to clarify that the monitoring plan was developed following the guidelines of methodology BCR 0002 version 3.1 and the "monitoring, reporting, and verification tool version 1.0."

[56] See in: *06_Documento de proyecto\PART 1 - ENG_PDD_Emberá Wounaan_V14\3.1 Quantification methodology*
[57] See in: 12_Reporte de monitoreo\01_Inventario forestal

Regarding the field data collection to evaluate the performance of project activities, field visits were carried out by specialist teams, mainly the team from the managing partner. During these visits, sufficient evidence is verified and compiled to confirm that the region has undertaken actions to reduce deforestation and degradation, both retrospectively and to date[58,59]. It is important to highlight that the project will undergo triennial verification processes. If it is not possible to conduct them within the established timeframe, monitoring may be extended for up to a maximum of 5 years.

14.1.2 GHG emission reductions estimation

The estimates[60] of reduced GHG emissions generated within the project boundary were calculated. The results were identified for Ex Ante estimations of deforestation and forest degradation reduction activities. Similarly, the analysis is broken down by activity, with separate estimation scenarios for deforestation and forest degradation, along with their corresponding Ex Ante and Ex Post scenarios (see sections *1.5.2 Total GHG emission reductions achieved in this monitoring period and 13 Implementation of the project*).

14.1.3 Identification of baseline scenario

The baseline estimation of the project is based on the trend of emissions generated during the reference period of the initiative (2008 – 2018) and its behavior over the accreditation horizon of the initiative, which corresponds to 30 years. The determinations of emissions and deforestation dynamics during the historical period for deforestation and forest degradation can be observed[61]. Similarly, in the folder *03_Carbono*, baseline estimations applicable to the initiative for its Ex-Ante and Ex Post scenarios are presented.

14.1.4 Leakages

Monitoring was conducted in areas that experienced deforestation and degradation during the reference period (2008 – 2018), according to the delineation of the leakage belt in accordance with the REDD+ Emberá Wounaan project area. Subsequently, emissions avoided in the Ex-Ante scenario for deforestation (EfdefM) and degradation (EfdegM) were calculated, considering the respective deforestation and degradation rates identified in the baseline scenario during the reference period and the forest cover

[58] See in: *02_Cobeneficios\3_Actividades REDD+\ActividadesREDD+_Emberá Wounaan_V4.xlsx*
[59] See in: *02_Cobeneficios\3_Actividades REDD+\SoporteActividades*
[60] See in: *03_Carbono\Carbono_Total_EmberaWounaan_V11.xlsx*
[61] See in: *06_Documento de proyecto\PART 2 – ENG PDD_EmberáWounaan_V14.docx\ 16.5.1 Activity data*

in the project's starting year (2018), assuming a linear trend over the 30-year duration of the initiative.

14.1.5 Assessment of environmental effects of the project

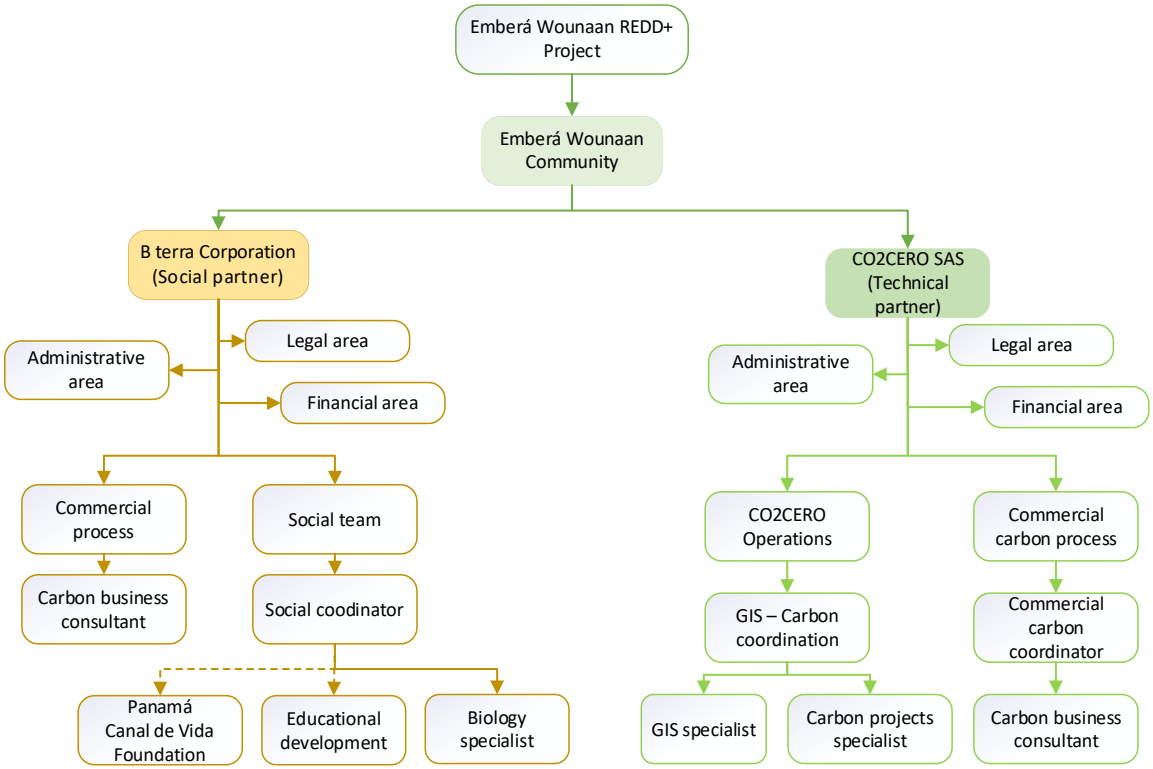
With the aim of examining the foreseeable consequences on biological diversity and ecological systems within the project boundaries, an environmental assessment was carried out using the effect categorization methodology developed by (Conesa, 2011). This methodology assigns a level of relevance to each effect by applying value scales to the criteria established by it, thus allowing classification into different levels according to their nature. The parameters of this methodology were adjusted to fit the specific characteristics of the REDD+ Emberá Wounaan project, as seen in *8 Environmental Aspects*.

14.1.6 Roles and responsibilities

In **Figure 7,** the organizational structure of the REDD+ Emberá Wounaan project is presented, reaffirming that it is the Comarca Emberá Wounaan that is the proponent and owner of the project, while its social and technical management associates are B-Terra Corp. and CO2CERO S.A.S. respectively. The social management associate establishes direct links, communication channels, and mechanisms for community participation necessary for the consolidation of the project. Similarly, it ensures the flow of oral and written information among the various stakeholders, always following the process of free, prior, and informed consent. The technical management associate is responsible for the design and structuring of the project document, the quantification of the reduced GHG emissions, and their certification through procedures issued by certification programs, conformity assessment bodies, and market dynamics. The distribution of responsibilities for each REDD+ activity is described in the document[62].

Figure 7. REDD+ Emberá Wounaan project organizational structure.

[62] See in the column D called “Responsable” of the sheet “Actividades” in the document: *02_Cobeneficios/3_Actividades REDD+/ActividadesREDD+_Emberá Wounaan_V4.xlsx*



Source: CO2CERO S.A.S., 2022.

The REDD+ activities of the Emberá Wounaan project will be monitored by three main roles:

- Community: This includes general, regional, and local comarcal authorities, as well as individual comarcanos, who will have defined roles within the various activities according to the project design being implemented. To ensure proper management and administration of the information from monitoring and control actions, the community is guided through the required processes as well as provided with the necessary materials and equipment for carrying out monitoring activities. The monitoring of forest cover is emphasized as fundamental for recognizing the reduction of deforestation and forest degradation. As part of the process of recognizing and caring for this resource, the comarca will implement surveillance at its territorial boundaries and will be the primary supervisor of its state and conservation. Its results will be fundamental input for ensuring the accuracy of satellite information obtained within project boundaries in terms of forest and non-forest areas.

- Managing Partner: This entity will serve as the liaison with the communities of the comarca and will accompany the monitoring and control processes in the execution and performance of the proposed REDD+ activities, ensuring their implementation by the community and the fulfillment of the objectives for each of them. Additionally, it will support capacity-building processes, education, and the design of territorial planning strategies (five-year plans, adjustments to the life plan, etc.), or it may conduct them when its knowledge allows. It will be the connecting entity between the monitored information on the different REDD+ activities and the technical partner for the project monitoring report.
- Technical Partner: This organization is responsible for generating data and information from digital sources such as cartography, spatial processing, software, and quantification of reduced GHG emissions. Monitoring of carbon reservoirs to determine the trend of deforestation and forest degradation falls under their purview. They will produce all relevant inputs to integrate a monitoring report, quantify reduced GHG emissions, and reveal forest dynamics in different verification periods. Within REDD+ activities mainly associated with quantification, they are responsible for monitoring forest cover and generating early warnings within project boundaries.

14.1.7 Information management

The REDD+ Emberá Wounaan project manages its information following the guidelines established by the project developer and its corresponding information management and data handling processes. In folder *13_Gestión de información*, procedures for information management in Forest Carbon Projects, quality review, and information management in REDD+ projects are presented. Additionally, the document *Caracterización documental REDD*[63] provides the structure of the folders containing the project for evaluation along with their corresponding content. For each of the products and deliverables generated for this initiative, a quality review process has been conducted, which depends on the sources providing the information. In any case, the generator of such information filters their records to transfer appropriate information to the project's requirements. In the current case, B-Terra Corp acquires primary information from direct work with communities and strategic actors at the territorial level. This information undergoes quality review by the technical associate, who verifies the accuracy, transparency, and quality of the generated information, which will be integrated into the project document, monitoring report, and complementary documents of its structure.

[63] See in: *13_Gestión de información/CaracterizacionDocumental_Embera_Wounaan_V2.xlsx*

All inputs obtained from external entities for the consolidation of the project document will be reviewed and checked under the quality parameters defined by the organization, as well as those determined by certification programs, methodologies, and Conformity Assessment Bodies. Finally, the products to be provided to the Conformity Assessment Body will be supervised by the project developer and other project associates if required. Their contents are compared against the certification program and methodological rubrics, reducing the level of uncertainty and improving consistency with them.

The processed and generated information for the projection and quantification of avoided GHG emissions in its baseline, ex-ante, and ex-post scenarios has been managed within a level of uncertainty corresponding to ISO 14064-2, 14064-3, 14065:2020 standards and the provisions of version 3.1 of the BioCarbon Standard's BCR 0002 methodology, equivalent to 95% or higher. Currently, the REDD+ Emberá Wounaan project handles a sampling error of 9.79%, once evaluated on the information gathered in the forest inventory (see "*03_Carbono\FE_EmberaWounaan_V4.xlsx*"). Regarding uncertainty, the parameters outlined in the *'A Sourcebook of Methods and Procedures for Monitoring and Reporting Anthropogenic Greenhouse Gas Emissions and Removals Caused by Deforestation, Gains and Losses of Carbon Stocks in Forests Remaining Forests, and Afforestation*' by GOFC-GOLD 2006 were evaluated.

14.2 Data and parameters to quantify the reduction of emissions

14.2.1 Data and parameters determined at registration and not monitored during the monitoring period, including default values and factors

Data / Parameter	*Forest and non-forest area*
Data unit	*Hectares*
Description	*Forest area at the beginning of the project´s crediticing period.*
Source of data used	*Review of forest boundaries in the project area, vehicle surveys, and coverage control points.*
Value (s)	*426,170 ha*
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	*The parameter is used to establish the baseline.*
Justification of choice of data or description of measurement methods and procedures applied	*Global Positioning System (GPS) and Landsat satellite imagery analysis under the forest/non-forest classification model by Hansen et al, 2010 and Hansen et al, 2013. For further details, see "04_SIG\Informe Geoprocesamientos SIG REDD+ Embera Wounaan V6.docx"*
Additional comments	*NA*

14.2.2 Data and parameters monitored

Within the sub-chapter, variables related to the validation and verification process of the initiative are proposed, considering that its execution horizon is 30 years. These are presented as general parameters, that is, parameters that evaluate the generality of the project, related to deforestation, those that measure actions under this effect, and degradation, those corresponding to partial effects on forest cover; all these parameters will be compiled in the audit folders according to the certifications obtained, thus achieving information management and data conservation.

Data / Parameter	*Deforested and degraded area for the period 2018-2022.*
Data unit	*Hectares*
Description	*The deforested and degraded area of the project according to the geographic information system (GIS) formulation.*
Measured /Calculated /Default:	*Default value according to the geographic analysis*
Source of data	*Hansen model for defining forest and non-forest coverages.*

Value(s) of monitored parameter	*See "03_Carbono\MonitoreoAreas_REDDEmberaWounaan_V7.xlsx" and "03_Carbono\Carbono_Degradacion_REDDEmberaWounaan_V9.xlsx"*
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	*Project and baseline.*
Monitoring equipment (type, accuracy class, serial number, calibration frequency, date of last calibration, validity)	*Global Positioning System (GPS), images from Landsat 7, 8, and 9 satellite missions with a spatial resolution of 30x30m, QGIS Desktop 3.28.7, Google Earth Engine online platform, and ArcMap 10.8 software.*
Measuring/ Reading/ Recording frequency	*At the beginning of the project socialization, during follow-up visits, during validation, and each verification. Each project verification (triennial), maximum quinquennial.*
Calculation method (if applicable)	*NA*
QA/QC procedures applied	*See section 14.1.7. Information management in the document*

Data / Parameter	*CSBim,f*
Data unit	*Hectares*
Description	*Annual change in forest-covered area in the leakage area*
Measured /Calculated /Default:	*Calculated according to the formula in the 'Calculation method' section.*
Source of data	*See "03_Carbono\Carbono_Deforestacion_REDDEmberaWounaan_V10.xlsx "*
Value(s) of monitored parameter	*6,910.31 ha*
Indicate what the data are used for (Baseline/ Project/	*The data is used for monitoring the project and conducting quantification.*

Leakage emission calculations)	
Monitoring equipment (type, accuracy class, serial number, calibration frequency, date of last calibration, validity)	*See "03_Carbono\Carbono_Deforestacion_REDDEmberaWounaan_V10..xlsx"*
Measuring/ Reading/ Recording frequency	*Each project verification (triennial), maximum quinquennial.*
Calculation method (if applicable)	$CSB_{lb} = \left(\frac{1}{t_2 - t_1}\right) x\ (A_1 - A_2)$
QA/QC procedures applied	*See section 14.1.7. Information management of this document*

Data / Parameter	*CSBim,m*
Data unit	*Hectares*
Description	*Annual change in forest covered area in the project area.*
Measured /Calculated /Default:	*Calculated according to the formula in the 'Calculation method' section.*
Source of data	*See "03_Carbono\MonitoreoAreas_REDDEmberaWounaan_V7.xlsx"*
Value(s) of monitored parameter	*738.38 ha*
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	*Emissions from the baseline and the project*
Monitoring equipment (type, accuracy class, serial number,	*See "03_Carbono\Carbono_Deforestacion_REDDEmberaWounaan_V10.xlsx"*

calibration frequency, date of last calibration, validity)	
Measuring/ Reading/ Recording frequency	*Each project verification (triennial), maximum quinquennial.*
Calculation method (if applicable)	$CSB_{im,m} = \left(\frac{1}{t_2 - t_1}\right) x\ (A_i - A_m)$
QA/QC procedures applied	*See section 14.1.7. Information management of this document*

Data / Parameter	*EAim,m*
Data unit	*tCO_2e*
Description	*Annual emission due to deforestation in the project area.*
Measured /Calculated /Default:	*Calculated according to the formula in the 'Calculation method' section.*
Source of data	*See "03_Carbono\Carbono_Deforestacion_REDDEmberaWounaan_V10.xlsx" and "03_Carbono\MonitoreoAreas_REDDEmberaWounaan_V7.xlsx"*
Value(s) of monitored parameter	*346,874 tCO_2e*
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	*Emission from the project area*
Monitoring equipment (type, accuracy class, serial number, calibration frequency, date of	*See "03_Carbono\Carbono_Deforestacion_REDDEmberaWounaan_V10.xlsx"*

last calibration, validity)	
Measuring/ Reading/ Recording frequency	*Each project verification (triennial), maximum every five years.*
Calculation method (if applicable)	$EAim,m = CSBim,m \; x \; CT_{eq}$
QA/QC procedures applied	*See section 14.1.7. Information management of this document*

Data / Parameter	*EAfm*
Data unit	*tCO_2e*
Description	*Annual emissions due to deforestation in the leakage area.*
Measured /Calculated /Default:	*Calculated according to the formula in the 'Calculation method' section.*
Source of data	*See "03_Carbono\Carbono_Deforestacion_REDDEmberaWounaan_V10.xlsx" and " 03_Carbono\MonitoreoAreas_REDDEmberaWounaan_V7.xlsx"*
Value(s) of monitored parameter	*30,854 tCO_2e*
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	*Emissions from the leakage belt.*
Monitoring equipment (type, accuracy class, serial number, calibration frequency, date of last calibration, validity)	*See "03_Carbono\Carbono_Deforestacion_REDDEmberaWounaan_V10.xlsx"*
Measuring/ Reading/	*Each project verification (triennial), maximum every five years.*

Recording frequency	
Calculation method (if applicable)	$EAfm = \left(CSBfm\ x\ CT_{eq}\right) - EAf$
QA/QC procedures applied	*See section 14.1.7. Information management of this document*

Data / Parameter	DFP_{REDD+}
Data unit	*Hectares*
Description	*Annual primary degradation in the Project area*
Measured /Calculated /Default:	*Calculated according to the formula in the 'Calculation method' section.*
Source of data	*See "03_Carbono\Carbono_Degradacion_REDDEmberaWounaan_V9.xlsx" y*
Value(s) of monitored parameter	*1,290.39 ha*
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	*Emissions from the project area*
Monitoring equipment (type, accuracy class, serial number, calibration frequency, date of last calibration, validity)	*See "03_Carbono\Carbono_Degradacion_REDDEmberaWounaan_V9.xlsx"*
Measuring/ Reading/ Recording frequency	*Each project verification (triennial), maximum every five years.*
Calculation method (if applicable)	$DFP_{REDD+proy,año} = \left(\frac{1}{t_2 - t_1}\right) x\ (A_{núcleo} - A_{núcleo-parche})$

QA/QC procedures applied	*See section 14.1.7. Information management of this document*

Data / Parameter	*DFS_{REDD+}*
Data unit	*Hectares*
Description	*Annual secondary degradation in the project area.*
Measured /Calculated /Default:	*Calculated according to the formula in the 'Calculation method' section.*
Source of data	*See "03_Carbono\Carbono_Degradacion_REDDEmberaWounaan_V9.xlsx"*
Value(s) of monitored parameter	*0.00 ha*
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	*Emissions from the project area*
Monitoring equipment (type, accuracy class, serial number, calibration frequency, date of last calibration, validity)	*See "03_Carbono\Carbono_Degradacion_REDDEmberaWounaan_V9.xlsx"*
Measuring/ Reading/ Recording frequency	*Each project verification (triennial), maximum every five years.*
Calculation method (if applicable)	$DFS_{REDD+proy,año} = \left(\frac{1}{t_2 - t_1}\right) x \left(A_{perforado} - A_{perforado-parche}\right)$
QA/QC procedures applied	*See section 14.1.7. Information management of this document*

Data / Parameter	*DFP_{REDD+}*

Data unit	*Hectares*
Description	*Annual primary degradation in the leakage area.*
Measured /Calculated /Default:	*Calculated according to the formula in the 'Calculation method' section.*
Source of data	*See "03_Carbono\Carbono_Degradacion_REDDEmberaWounaan_V9.xlsx"*
Value(s) of monitored parameter	*865.79 ha*
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	*Emissions from the leakage belt.*
Monitoring equipment (type, accuracy class, serial number, calibration frequency, date of last calibration, validity)	*See "03_Carbono\Carbono_Degradacion_REDDEmberaWounaan_V9.xlsx"*
Measuring/ Reading/ Recording frequency	*Each project verification (triennial), maximum every five years.*
Calculation method (if applicable)	$DFP_{f,año} = \left(\frac{1}{t_2 - t_1}\right) x \left(A_{núcleo,f} - A_{núcleo-parche,f}\right)$
QA/QC procedures applied	*See section 14.1.7. Information management of this document*

Data / Parameter	DFS_{REDD+}
Data unit	*Hectares*
Description	*Annual secondary degradation in the leakage area.*

Measured /Calculated /Default:	*Calculated according to the formula in the 'Calculation method' section.*
Source of data	*See "03_Carbono\Carbono_Degradacion_REDDEmberaWounaan_V9.xlsx"*
Value(s) of monitored parameter	*0.00 ha*
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	*Emissions from the leakage belt.*
Monitoring equipment (type, accuracy class, serial number, calibration frequency, date of last calibration, validity)	*See "03_Carbono\Carbono_Degradacion_REDDEmberaWounaan_V9.xlsx"*
Measuring/ Reading/ Recording frequency	*Each project verification (triennial), maximum every five years.*
Calculation method (if applicable)	$DFS_{f,año} = \left(\frac{1}{t_2 - t_1}\right) x \left(A_{perforado,f} - A_{perforado-parche,f}\right)$
QA/QC procedures applied	*See section 14.1.7. Information management of this document*

Data / Parameter	*EAREDD+*
Data unit	*tCO_2e*
Description	*Annual emissions due to degradation in the Project area (Monitoring period).*
Measured /Calculated /Default:	*Calculated according to the formula in the 'Calculation method' section.*
Source of data	*See "03_Carbono\Carbono_Degradacion_REDDEmberaWounaan_V9.xlsx"*

Value(s) of monitored parameter	*414,903.69 tCO_2e*
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	*Emissions in the project scenario*
Monitoring equipment (type, accuracy class, serial number, calibration frequency, date of last calibration, validity)	*See "03_Carbono\Carbono_Degradacion_REDDEmberaWounaan_V9.xlsx"*
Measuring/ Reading/ Recording frequency	*Each project verification (triennial), maximum every five years.*
Calculation method (if applicable)	$EA_{REDD+proy,año} = (DFP_{REDD+proy,año} \; x \; DTBCO_{2eq,1}) + (DFS_{REDD+proy,año} \; x \; DTBCO_{2eq,2})$
QA/QC procedures applied	*See section 14.1.7. Information management of this document*

Data / Parameter	*EAf*
Data unit	*tCO_2e*
Description	*Annual emissions due to degradation in the leakage area (Monitoring period)*
Measured /Calculated /Default:	*Calculated according to the formula in the 'Calculation method' section.*
Source of data	*See "03_Carbono\Carbono_Degradacion_REDDEmberaWounaan_V9.xlsx"*
Value(s) of monitored parameter	*269,766.76 tCO_2e*
Indicate what the data are used for (Baseline/ Project/	*Used in the monitoring and quantification stage of the Project.*

Leakage emission calculations)	
Monitoring equipment (type, accuracy class, serial number, calibration frequency, date of last calibration, validity)	*See "03_Carbono\Carbono_Degradacion_REDDEmberaWounaan_V9.xlsx"*
Measuring/ Reading/ Recording frequency	*Each project verification (triennial), maximum every five years.*
Calculation method (if applicable)	$EA_{f,año} = (DFP_{f,año} \, x \, DTBCO_{2eq,1}) + (DFS_{f,año} \, x \, DTBCO_{2eq,2})$
QA/QC procedures applied	*See section 14.1.7. Information management of this document*

15 Quantification of GHG emission reduction / removals

The present monitoring report quantifies the reduced greenhouse gas (GHG) emissions within the project boundaries of the Comarca Emberá Wounaan, from the project start date of April 20, 2018, until December 31, 2022, equivalent to 4 years, 8 months, and 11 days.

The reduction of emissions generated by the project was quantified annually during the implementation years of the project up to the present date. It is worth noting that the risk buffer value for non-permanence is set at 20% of the emission reductions.

15.1 Baseline emissions

The quantification of the reduced greenhouse gas emissions (GHG) from deforestation and forest degradation for the REDD+ Emberá Wounaan Project is carried out through the BioCarbon Standard's BCR 0002 methodology, version 3.1. The application of this methodology is based on the correspondence of forest cover identified within the project boundaries with the variables and parameters required in the calculation methods. Similarly, the project responds to the biophysical and dynamic conditions of deforestation and forest degradation, which are characterized based on their historical trends in the decade prior to the project start date, considering patterns of agents, factors, and underlying causes caused by these phenomena within the territory.

15.1.1 Deforestation

Here are the activity data for deforestation identified within the project boundary and complementary areas. The change in forest cover surface (CSB) data used for this quantification is derived from the historical average approach. This involved analyzing the coverage change between the project's start date and ten years prior to it, resulting in the gross deforestation of the area. This is defined under the premise that at the first date, the area had forest cover, and for the second period, it was already devoid of it.

To minimize effects from areas without information, Landsat images from reliable platforms are used, ensuring consistent sourcing and providing credible tracking of forest changes over time. The historical period used in this project is 2008 - 2018, ensuring the availability of eligible and suitable areas for analysis.

For estimating the annual change in forest cover surface in the reference region, data from the final and initial years of the reference period, and the forest surfaces identified in each of these periods are used, obtaining the value representing the projected forest loss in the baseline scenario. The obtained value is presented in *03_Carbono\Carbono_Deforestacion_REDDEmberaWounaan_V10.xlsx*.

Based on the emission factor obtained for the project[64], baseline emissions were calculated, resulting in a total of 74,327,561 tCO_2e for all years within the project area (see**Table 42**).

Table 42. Emissions by deforestation of baseline scenario.

Year	EAlb (tCO_2e)		Total
	MMBF	SMBF	
2018	276,504	1,454,412	1,730,916
2019	395,780	2,081,805	2,477,585
2020	395,780	2,081,805	2,477,585
2021	395,780	2,081,805	2,477,585
2022	395,780	2,081,805	2,477,585
2023	395,780	2,081,805	2,477,585
2024	395,780	2,081,805	2,477,585
2025	395,780	2,081,805	2,477,585
2026	395,780	2,081,805	2,477,585
2027	395,780	2,081,805	2,477,585

[64] See in: *06_Documento de proyecto\PART 1 - ENG_PDD_Emberá Wounaan_V14.docx\3.6.2.2.3 Quantification of factor emission*

Year	EAlb (tCO_2e)		Total
	MMBF	SMBF	
2028	395,780	2,081,805	2,477,585
2029	395,780	2,081,805	2,477,585
2030	395,780	2,081,805	2,477,585
2031	395,780	2,081,805	2,477,585
2032	395,780	2,081,805	2,477,585
2033	395,780	2,081,805	2,477,585
2034	395,780	2,081,805	2,477,585
2035	395,780	2,081,805	2,477,585
2036	395,780	2,081,805	2,477,585
2037	395,780	2,081,805	2,477,585
2038	395,780	2,081,805	2,477,585
2039	395,780	2,081,805	2,477,585
2040	395,780	2,081,805	2,477,585
2041	395,780	2,081,805	2,477,585
2042	395,780	2,081,805	2,477,585
2043	395,780	2,081,805	2,477,585
2044	395,780	2,081,805	2,477,585
2045	395,780	2,081,805	2,477,585
2046	395,780	2,081,805	2,477,585
2047	395,780	2,081,805	2,477,585
2048	119,276	627393	746,670
TOTAL	**11,873,397**	**62,454,164**	**74,327,561**

Source: CO2CERO S.A.S., 2023.

Where:

- EAlb (tCO_2e): CO_2e emissions from deforestation in the baseline scenario.
- MMBF: Mature mixed broadleaf forest.
- SMBF: Secondary mixed broadleaf forest.

15.1.2 Forest degradation

The activity data determined for forest degradation identified at the project boundary and complementary areas are presented below. To determine forest fragmentation, related to primary and secondary degradation, the processing is carried out using the Morphological Spatial Pattern Analysis tool available for QGIS® software.

This tool determines the extent in hectares corresponding to each class of fragmentation and subsequently identifies the rate of change or transition occurring between them according to the type of degradation. To obtain greater accuracy in the quantification of degraded areas, a model year (2013) in the middle of the reference period was used to

demonstrate that the transition between classes of degraded areas over the years during the reference period occurs appropriately.

The estimation of annual historical degradation in the baseline is conducted according to its primary and secondary degradation. For primary degradation, the years of the beginning and end of the reference period are identified, considering the area defined for the reference region in the core class in the initial year and its transition in the final year of the reference period. Additionally, secondary degradation considers the area in the reference region in the perforated class in the initial year and its transition in the final year of the reference period. Due to the project's development, a 100% reduction in primary degradation and a 95% reduction in secondary degradation is expected.

For annual historical degradation in the leakage area in the baseline scenario, primary degradation is calculated with values obtained in the leakage area in the core class in the initial year and the transition area in the final year of the period. Additionally, for the estimation of annual secondary degradation, the values of the leakage area in the perforated class in the initial year and its transition in the final year of the period are used.

This is obtained from the forest degradation patterns in the leakage area in the without-project scenario, with an increase of 10% in emissions in the leakage area due to the implementation of REDD+ activities (value suggested by the BCR0002 V 3.1 methodology).

Based on the emission factor obtained for the project, the baseline was calculated, resulting in a total of 12,849,465 tCO_2e emissions for all the years within the project area (see **Table 43**).

Table 43. Emissions by degradation of baseline scenario.

Year	EAlbdeg (tCO_2e) MMBF Annual	EAlbdeg (tCO_2e). SMBF Annual	EAlbdeg (tCO_2e) Annual
2018	86,738	212,496	299,234
2019	124,155	304,161	428,316
2020	124,155	304,161	428,316
2021	124,155	304,161	428,316
2022	124,155	304,161	428,316
2023	124,155	304,161	428,316
2024	124,155	304,161	428,316
2025	124,155	304,161	428,316
2026	124,155	304,161	428,316

Year	EAlbdeg (tCO_2e) MMBF Annual	EAlbdeg (tCO_2e). SMBF Annual	EAlbdeg (tCO_2e) Annual
2027	124,155	304,161	428,316
2028	124,155	304,161	428,316
2029	124,155	304,161	428,316
2030	124,155	304,161	428,316
2031	124,155	304,161	428,316
2032	124,155	304,161	428,316
2033	124,155	304,161	428,316
2034	124,155	304,161	428,316
2035	124,155	304,161	428,316
2036	124,155	304,161	428,316
2037	124,155	304,161	428,316
2038	124,155	304,161	428,316
2039	124,155	304,161	428,316
2040	124,155	304,161	428,316
2041	124,155	304,161	428,316
2042	124,155	304,161	428,316
2043	124,155	304,161	428,316
2044	124,155	304,161	428,316
2045	124,155	304,161	428,316
2046	124,155	304,161	428,316
2047	124,155	304,161	428,316
2048	37,416	91,655	129,081
TOTAL	**3,724,639**	**9,124,827**	**12,849,465**

Source: CO2CERO S,A,S,, 2023,

Where:

- *EAlbdeg (tCO_2e) BLMM*: CO_2e emissions from degradation in Mixed Mature Broadleaf Forest in the baseline scenario,
- *EAlbdeg (tCO_2e), BLMS*: CO_2e emissions from degradation in Mixed Secondary Broadleaf Forest in the baseline scenario,
- *EAlbdeg (tCO_2e)*: Total CO_2e emissions from degradation in the baseline scenario,

15.2 Project emissions/removals

Here are the results of GHG emissions from deforestation and forest degradation for the Emberá Wounaan REDD+ project. It should be noted that the non-permanence risk

buffer value is determined by the Biocarbon Standard, where a fraction of 20% of the total credits generated by the project has been standardized.

15.2.1 Emissions avoided ex ante

The reduction of emissions generated by the project is estimated in the Ex-Ante scenario, which would occur once the project is implemented over a period of 30 years, involving activities to reduce deforestation and forest degradation.

16,2,1,1 Deforestation

For the estimation of the Ex-Ante emission reductions generated by deforestation, a projection of the decrease due to project activities was made, in accordance with the determination of the deforested area from 2018 to 2022 and the historical period (2008-2018), both for the project area and the Potential Leakage Area as follows:

- The projected percentage reduction in deforestation due to the implementation of REDD+ activities was calculated by comparing the historical baseline deforestation rate with the deforestation rate during the initial monitoring period (2018-2022). The difference between these rates, converted into a percentage, demonstrates the effectiveness of the project's activities.
- On the other hand, for the projection of leakage in the project area, the value suggested by the methodology BCR 0002 version 3.1 (10%) is used.

16,2,1,2 Forest degradation

To estimate the Ex-Ante emissions reductions from degradation, a projection was made based on the decrease due to project activities, in accordance with the determination of the transition area for each type of degradation from 2018 to 2022. This was done for both the project area and the leakage area[65].

The projected percentage reduction in degradation due to the implementation of REDD+ activities in the eligible area, as generated by the project's commitment in the Ex-Ante scenario, was evaluated through the percentage decrease in the annual degraded area observed from the analysis conducted between 2018 and 2022 (monitoring period), compared to the annual degraded area of the baseline period (2008-2018). This comparison allows us to demonstrate the reduction in the degraded area achieved by the project relative to the baseline period. Given that this concerns emissions, the result

[65] See in: *03_Carbono\ Carbono_Degradacion_REDDEmberaWounaan_V9.xlsx*

should be subtracted from 100% as it represents the percentage increase in emissions, not their reduction.

Thus, the Ex-Ante emissions reductions from the project due to degradation activities were obtained, considering the net emissions generated by the project estimated from its implementation, as shown in the file *03_Carbono\Carbono_Degradacion_REDDEmberaWounaan_V9.xlsx.* sheet "*Ex Ante*."

15.2.2 Reductions (avoidance, displacement or destruction) of net GHG emissions

In the calculation workbook *03_Carbono\Carbono_Total_EmberaWounaan_V11.xlsx*, in the "Ex ante" sheet, the results of net greenhouse gas emission reductions in the Ex-ante scenario for the entire project are presented, summarizing the behavior of deforestation and degradation activities, where:

- *Ealb:* CO_2e emissions due to deforestation and degradation in the baseline.
- *EAf:* CO_2e emissions due to deforestation and degradation in the leakage belt.
- *RE Totales:* Total emission reductions of CO_2e due to deforestation and degradation.
- *Buffer:* Reserve for the risk of non-permanence for the emission reduction scenario due to deforestation and degradation.
- *RE Netas:* Net emission reductions of CO_2e due to deforestation and degradation.

Considering the selected pools in the project (Deforestation and Degradation), as explained earlier, the total for the project is 56,947,881 tCO_2e net (**Table 44**) for all the years within the project area, with an average annual net emission of 1,837,028 tCO_2e[66].

Table 44. Summary of ex ante emissions in the project scenario.

Year	GHG emission reductions in the baseline scenario (tCO_2e)	GHG emission reductions in the project scenario (tCO_2e)	GHG emissions attributable to leakages (tCO_2e)	Estimated Net GHG Reduction (tCO_2e)
2018	2,030,150	213,979	158,442	**1,326,184**
2019	2,905,901	306,283	226,789	**1,898,263**
2020	2,905,901	306,283	226,789	**1,898,263**

[66] See in: *03_Carbono\Carbono_Total_REDDEmberaWounaan_V11*

Year	GHG emission reductions in the baseline scenario (tCO_2e)	GHG emission reductions in the project scenario (tCO_2e)	GHG emissions attributable to leakages (tCO_2e)	Estimated Net GHG Reduction (tCO_2e)
2021	2,905,901	306,283	226,789	**1,898,263**
2022	2,905,901	306,283	226,789	**1,898,263**
2023	2,905,901	306,283	226,789	**1,898,263**
2024	2,905,901	306,283	226,789	**1,898,263**
2025	2,905,901	306,283	226,789	**1,898,263**
2026	2,905,901	306,283	226,789	**1,898,263**
2027	2,905,901	306,283	226,789	**1,898,263**
2028	2,905,901	306,283	226,789	**1,898,263**
2029	2,905,901	306,283	226,789	**1,898,263**
2030	2,905,901	306,283	226,789	**1,898,263**
2031	2,905,901	306,283	226,789	**1,898,263**
2032	2,905,901	306,283	226,789	**1,898,263**
2033	2,905,901	306,283	226,789	**1,898,263**
2034	2,905,901	306,283	226,789	**1,898,263**
2035	2,905,901	306,283	226,789	**1,898,263**
2036	2,905,901	306,283	226,789	**1,898,263**
2037	2,905,901	306,283	226,789	**1,898,263**
2038	2,905,901	306,283	226,789	**1,898,263**
2039	2,905,901	306,283	226,789	**1,898,263**
2040	2,905,901	306,283	226,789	**1,898,263**
2041	2,905,901	306,283	226,789	**1,898,263**
2042	2,905,901	306,283	226,789	**1,898,263**
2043	2,905,901	306,283	226,789	**1,898,263**
2044	2,905,901	306,283	226,789	**1,898,263**
2045	2,905,901	306,283	226,789	**1,898,263**

Year	GHG emission reductions in the baseline scenario (tCO_2e)	GHG emission reductions in the project scenario (tCO_2e)	GHG emissions attributable to leakages (tCO_2e)	Estimated Net GHG Reduction (tCO_2e)
2046	2,905,901	306,283	226,789	**1,898,263**
2047	2,905,901	306,283	226,789	**1,898,263**
2048	875,751	92,305	68,347	**572,079**
Total	**87,177,026**	**9,188,498**	**6,803,676**	**56,947,881**

Source: CO2CERO S.A.S., 2023,

15.3 Leakages

The monitoring of areas that experienced deforestation and degradation during the reference period (2008 - 2018) was conducted according to the delineation of the leakage belt in accordance with the REDD+ Emberá Wounaan project area. Subsequently, as outlined in the document project[67] the avoided emissions in the Ex-Ante scenario for deforestation (EfdefM) and degradation (EfdegM) are calculated, taking into account the deforestation and degradation rates identified in the baseline scenario during the reference period and the forest cover in the year the project began (2018), assuming a linear trend over the 30-year duration of the initiative.

The identification of the project's leakage area was established through an analysis of the displacement of deforestation and degradation agents, associating access points to the forest given the proximity to navigable rivers, which are the main means of transportation. Additionally, the Pan-American Highway, although not within the project's boundary, serves as a significant driver of mobility, Urban centers and forest edges, which are more susceptible to deforestation or degradation, were also considered. The analysis of mobility identified that potential deforestation and degradation activities defining the leakage area are highly linked to the mentioned deforestation factors.

The factors of the mobility analysis and their importance values were established based on evidence collected from the territory's characteristics, identifying the range of mobility in meters per class, relative weight, and subsequent spatial analysis for the delineation

[67] See in: *06_Documento de proyecto\PART 1 - ENG_PDD_Emberá Wounaan_V14\3.6.1.2 Leakage area*

of the leakage area through a multi-criteria analysis using GIS software ArcMap 10.8. based on the determination of Euclidean distances of each mobility agent.

15.4 Net GHG Emission Reductions / Removals

Considering the selected pools in the project (Deforestation and Degradation), as explained earlier, the total emissions for the project amount net to 56,947,881 tCO_2e for all years within the project area, with an average annual net emission of 1,837,028 tCO_2e[68].

15.5 Comparison of actual emission reductions with estimates in the project document

As mentioned in the project document, the percentage projection of the reduction in deforestation/degradation for the implementation of REDD+ activities in the eligible area generated by the project's commitment in the Ex-Ante scenario is evaluated by the percentage decrease in the annual deforested/degraded area evidenced from the analysis conducted during the monitoring period, compared to the annual area of the baseline period. This allows to demonstrate the difference between the Ex-Ante and Ex Post scenarios.

Table 45. Comparison of ex ante and ex post scenarios

Year	Ex ante tCO_2e	Ex post tCO_2e	Difference %
2018	1,326,184	1,343,429	1.30%
2019	1,898,263	1,848,935	-2.60%
2020	1,898,263	1,966,480	3.59%
2021	1,898,263	1,993,224	5.00%
2022	1,898,263	1,952,037	2.83%
Net emissions	**8,919,234**	**9,104,105**	**2.07%**

Source: CO2CERO S.A.S., 2023,

[68] See in: *03_Carbono\Carbono_Total_REDDEmberaWounaan_V11*

15.6 Remarks on difference from estimated value in the registered project document

In this case, there are no reported increases in the reductions generated by the implementation of the initiative because it is the first monitoring period of the REDD+ Emberá Wounaan project subjected to a validation and verification process, which means that there are no changes in the estimates presented in section 3 Quantification of GHG emission reduction of the Project Document[69].

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[69] See in: *6_Documento de proyecto\PART 1 - ENG_PDD_Emberá Wounaan_V14.docx\3. Quantification of GHG reductions*

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History of the document

Version	*Date*	*Nature*
1,0	*February 15, 2023*	*First version*
2,0	*April 10, 2023*	*Validation and verification adjustments*
3,0	*June 9, 2023*	*Validation and verification adjustments*
4,0	*August 11, 2023*	*Validation and verification adjustments*
5,0	*September 19, 2023*	*Validation and verification adjustments*
6,0	*October 19, 2023*	*Validation and verification adjustments*
7,0	*November 21, 2023*	*Validation and verification adjustments*
8,0	*January 22, 2024*	*Validation and verification adjustments*
9,0	*February 23, 2024*	*Validation and verification adjustments*
10,0	*May 31, 2024*	*Certification adjustments*
11,0	*August 8, 2024*	*Certification adjustments*
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Nature of document: Regulatory *Document Type: Guideline, Form*		

Function: Verification registration and CCV issuance

17 Document version history

Document version control				
Produced by:	**María Fernanda López**	**Reviewed and approved by:**	**Daniel Obando Vargas**	
VERSION	**DATE**	**RESPONSIBLE**	**CHANGE**	**DETAILS**
1	02/15/2023	Brian Guerrero	Initial version (V1)	
2	04/10/2023	Brian Guerrero	Version two (V2)	
3	06/01/2023	Brian Guerrero	Version three (V3)	
4	08/11/2023	Nicolás Canaría	Version four (V4)	
5	09/19/2023	Nicolás Canaría	Version five (V5)	
6	10/19/2023	Nicolás Canaría	Version six (V6)	
7	11/09/2023	Nicolás Canaría	Version seven (V7)	
8	01/22/2023	Nicolás Canaría	Version eight (V8)	
9	02/23/2024	Nicolás Canaría	Version nine (V9)	
10	05/31/2024	María Fernanda López	Version ten (V10)	i. Values related to deforestation and degradation activities are updated for both ex-ante and ex-post assessments. ii. Section 13.1.5 Non-permanence risk monitoring is updated.

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VERSION	**DATE**	**RESPONSIBLE**	**CHANGE**	**DETAILS**
11	06/08/2024	María Fernanda López	Version eleven (V11)	i. Update the sections. ii. Update of Degradation and Total Carbon Figures. iii. Review of Bibliographic References. iv. Addition of IPCC Citation on Forest Fires. v. Change in the Wording of Chapter 10, Stakeholder Consultation. vi. Clarification Paragraph Added in Sections 8 and 9 of the RM, Indicating that REDD+ Activities are Designed Transversally to Generate Favorable and/or Mitigation Results for Identified Effects, with the Monitoring Indicators Being the Same as those Reported for REDD+ Activities. vii. Detailing of Minutes and Socializations Conducted by B-Terra Corp (Table 31 and Table 32).
12	14/10/2024	María Fernanda López	Version twelve (V12)	i. The values are updated, and the comparison of

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VERSION	**DATE**	**RESPONSIBLE**	**CHANGE**	**DETAILS**
				actual reductions with the project document estimates is corrected. ii. Chapter 6 on climate change adaptation is updated, specifying the activities focused on this effect. iii. Chapters 8 and 9 on environmental and socioeconomic aspects are updated, adding how REDD activities mitigate negative effects. iv. Reversal risks are added according to the standard. v. The precision of activity data is updated, changing it annually.
13	15/11/2024	María Fernanda López	Version thirteen (V13)	i. The degradation activity numbers are updated