Bogotá, D.C., 22 de noviembre de 2023

Señores,
INDEPORTES ANTIOQUIA
Calle 48 No. 70-180
Medellín, Antioquia

.
ASUNTO: Entrega Documentos proceso de Mínima Cuantía N° MC 019 DE 2023– Adquisición de bonos de carbono para la compensación de la huella de carbono de Indeportes Antioquia".

Esperamos se encuentren muy bien, a continuacion nos permitimos confirmar que se realizó la entrega de **140 tCO2** a nombre de **INSTITUTO DEPARTAMENTAL DE DEPORTES DE ANTIOQUIA - INDEPORTES ANTIOQUIA** para su proceso de compensacion de huella de carbono.

De acuerdo a lo anterior nos permitimos compartir el enlace de la plataforma donde se puede ingresar a realizar la validacion correspondiente de los certificados de carbono https://www.ecoregistry.io/projects/89, allí encontrara informacion del proyecto REDD+PAZCIFICO como lo es Datos generales, Datos Técnicos y Créditos de Carbonos en general y su respectiva entrega.

	177	CDC_89_1_11_321_14_R4_1X_CO_1_1_2017_117279 un CDC_89_1_11_321_14_R4_1X_CO_1_1_2017_117418	Compensación voluntaria	811.007.127-0 - INSTITUTO DEPARTAMENTAL DE DEPORTES DE ANTIOQUIA - INDEPORTES ANTIOQUIA	- - -	2023-11-20 15:03:06	140	

Quedamos atentos a sus indicaciones

Atentamente,

Edgar Mauricio Rodriguez Castro
C.C. 79.561.641 De Bogotá
Representante Legal
CO2CERO SAS
NIT 901.245.493-8

CERCARBONO
Certified Carbon Standard

Powered by EcoRegistry.

CERTIFICADO DE RETIRO DE UNIDADES DE CARBONO

Programa de certificación: Cercarbono

EcoRegistry certifica que el **2023-11-20** se han retirado **140** certificados de carbono del proyecto **REDD+ PAZCÍFICO** identificado con el ID **89**, asociado al titular identificados con NIT o CC **CO2CERO (901.245.493-8),, Consejo Comunitario Cuenca del Río Iscuande (900.163.922-1),, Consejo Comunitario Guapi Abajo (817.002.431-4),, Consejo Comunitario Prodefensa del Río Tapaje (900.231.305-7),, Consejo Comunitario Unicosta (840.000.387-2),, FUNDACION AGRO IMPULSO (901.211.139 -9)**. Dichos certificados están asignados al siguiente número serial:

Total TonCO2e: 140

Serial Inicial: CDC_89_1_11_321_14_R4_1X_CO_1_1_2017_117279
Serial Final: CDC_89_1_11_321_14_R4_1X_CO_1_1_2017_117418
Año de remoción (vintage): De 2017-01-01 al 2017-12-31



Usuario final: INSTITUTO DEPARTAMENTAL DE DEPORTES DE ANTIOQUIA - INDEPORTES ANTIOQUIA
NIT: 811007127 - 0

El retiro se realiza como compensación voluntaria

Periodo de acreditación: 2015-01-01 a 2034-12-31

Fecha: 2023-11-20
Nro. certificado: 177

Aporta a los siguientes ODS:



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Certification Report

PEACEFUL REDD+	
Certifier	Álvaro Vallejo Rendón - Jenny Catalina Romero Vargas
Audit class	Validation-verification
Audit type	Mixed
Ordinal verification	1
OVV auditor	Icontec
Initial review date	22.04.2022
Final review date	01.06.2022
Evaluation criteria	
Protocol	Protocol for the voluntary carbon certification of Searcher V 2.1
Methodology	M/UT-REDD+01 For the execution of REDD+ projects consistent with the reference levels presented by Colombia to the UNFCCC. V 1.1.
Tools	Cercarbono tool to report contributions of climate change mitigation initiatives to the Sustainable Development Goals. V 1.2.
ISO standards	ISO 14064-3:2019 - Greenhouse gases - Part 3: Specification with guidance for the verification and validation of greenhouse gas statements.
	ISO 14065:2013 - Greenhouse gases - Requirements for greenhouse gas validation and verification bodies for use in accreditation or other forms of recognition.
Legal framework	Resolution 1447 of 2018 of the Ministry of Environment and Sustainable Development (Colombia).
Others	Support of ownership or right to use the area; Law 70 of 1993 and Decree 1745 of 1995. This was verified by the audit team through Resolutions 2432 of December 1, 2005, 1121 of May 16, 2001, 1500 of August 1, 2005 and 0158 of 9 February 1998, respectively.

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PEACEFUL REDD+

General and specific information about the PMCC	
Owner information	
Name of institution (if applicable)	Iscuande River Basin Community Council; Guapi Down Community Council; Tapaje River Prodefense Community Council; Unicosta Community Council; CO2ZERO SAS; Agroimpulso Foundation.
Role(s) or responsibility(s)	Management of the design of the project document, along with the exclusive granting of the emission and marketing rights of the emission reduction certificates generated by the REDD+ project.
Legal identification	Iscuande River Basin Community Council. NIT: 900,163,922-1; Guapi Down Community Council. NIT: 817,002,431-4; Tapaje River Prodefense Community Council. NIT: 900,231,305-7; Unicosta Community Council. NIT: 840,000,387-2; CO2ZERO SAS NIT: 901,245,493-8; Agroimpulso Foundation. NIT: 901,211,139-9.
contact person	Ferdinand Peace; Theodore Mountain Diaz; Iter Javier Olaya; Light Mirley Montaño.
Telephone	313 724 91 31; 313 411 95 96; 311 701 54 74; 313 647 94 67
Email	THAT
PMCC developer information (and monitoring)	
Name of institution (if applicable)	CO2CERO SAS and Agroimpulso Foundation
Legal identification CO2CERO SAS NIT: 901.245.493-8; Agroimpulso Foundation. NIT: 901.211.139-9.	
contact person	Edgar Mauricio Rodríguez Castro CC: 79,786,878 / Francis Elena Cornejo CC: 66,982,138.
Telephone	THAT
Email	THAT
Role(s) or responsibility(s)	PDD development, monitoring, validation – verification and certification of the PMCC.
PMCC Information	
Sectoral scope	Land use - forestry
Type of PMCC	GHG Removal and Reduction of GHG Emissions (REDD+)
PMCC Scale	PMCC TYPE 1
PMCC Location	Municipalities of Magüí (Payan), Santa Barbara (Iscuandé), La Tola, El Charco and Guapi (Departments: Cauca and Nariño)
PMCC ID EcoRegistry	89
Total area of the PMCC	287,779.22 (1,764,410.55 ha, the reference area)
(ha) Total validated area (ha) of	275,032.12 (eligible area)
the PMCC Total verified area (ha) of the PMCC 275,032.12	
PMCC start date	01.01.2015
PMCC End Date	31.12.2034
Total duration of the PMCC	20 years
PDD Date	20.05.2022
Monitoring report date	Not specified, but supports the monitored period.
Monitoring period	01.01.2015 - 15.09.2021
Accreditation period *The	01.01.2015 - 12.31.2034 (20 years)

period is a thousands separator, the comma is a decimal separator.

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Documentary and technical review

Element		Does it comply?	Observations	EcoRegistry associated file
Project Description Document (PDD)				**Verification documents No. 1**
	Clearly identified version(s)	Yeah	Cercarbono requested on 04/26/2022 to make changes to the PDD to integrate the reduction of emissions generated in mangrove areas, within the deforestation and forest degradation segments. Also review the wording around the results generated by the PMCC (reduction of GHG emissions). The owner has updated the PDD in accordance with the findings generated, generating a version 8 document.	Project design documents folder: PDD REDD PAZcífico_V8.pdf and PDD REDD PAZcífico_V7 Publico.pdf. Validation calculations folder: Ex Ante Estimate.rar.
	Completeness of the document and compliance with legal regulations and the program	Yeah	It presents the PDD template developed by Cercarbono with all the complete items of the version used.	
	Review of potential overlaps (REDD+ only)	Yeah	The review of overlaps has been carried out and none of a temporal or geographical nature were detected.	
	Mitigation calculations (validation) for the crediting period 01/01/2015 - 12/31/2034 (20 years)	Yeah	They were reviewed and requested to be updated.	
PMCC Supporting Documents				
	Legal document of accreditation as holder of the PMCC	Yeah		**Verification documents No. 1** Special power of representation: Convenios_CCPAZcifique.pdf; Documents PAZcifico Poder.pdf. Supporting documents: Land tenure.pdf.

tierra.pdf.

Element		Does it comply?	Observations	EcoRegistry associated file
	Power of attorney with or without withdrawals	Yeah	On 04/26/2022, Cercarbono requested clarity on the correct name of two of the owners listed in the PMCC. The titutar provided support for agreements made with the indigenous communities where their names are related.	
	Migration statement from another standard or program	THAT		
	Location file(s)	Yeah	The geographical boundaries were checked to ensure that they did not overlap with other PMCCs.	**Folder Location** Cartography: AreaProyecto_REDDPAZcifico.rar
	Other important information that supports the validation of the PMCC (includes specific documentation, proof of land ownership, property rights or ownership, proof of contracts, among others) is complete and sufficient.	Yeah		**Verification documents No. 1** Project design document folder: PDD REDD PAZcífico_V8.pdf and PDD REDD PAZcífico_V7 Publico.pdf.
	Environmental requirements	Yeah	They detail and justify the environmental regulatory instruments applicable at national, regional and local levels.	
	Land ownership (if applicable)	Yeah	They reference Law 70 of August 27, 1993, which supports the occupation of territories by black communities. The community councils that are part of the PMCC each present the regulations that support them in this way: Resolution 1121 of May 16, 2001 (Guapi below); Resolution 2432 of December 1, 2005 (Iscuandé River Basin); Resolution 1500 of August 1, 2005 (Prodefensa del Río Tapaje) and Resolution 0158 of February 9, 1998 (Unicosta). Land tenure awarded by INCORA (Guapi Abajo and Unicosta) and INCODER (The Iscuande River basin and Prodefensa of the Tapaje River): Article 8 of Law 70 of 1993.	**Verification documents No. 1** Special power of representation: Convenios_CCPAZcifique.pdf; Documents PAZcifico Poder.pdf. Supporting documents: Land tenure.pdf.

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Element		Does it comply?	Observations	EcoRegistry associated file
	Information management	Yeah	There was very organized support information.	**Verification documents No. 1** Project design document folder: PDD REDD PAZcífico_V8.pdf and PDD REDD PAZcífico_V7 Publico.pdf.
Validator Conflict of Interest Statement		Yeah	Complete.	**Verification documents No. 1** Validator conflict of interest folder:
ID		Yeah	A mixed audit was carried out, in the field and remotely. The remote audit was justified due to the pandemic situation, but those that could be implemented post-pandemic were carried out in the field.	
Validation report and annexes		Yeah		**Verification documents No. 1** Verification report folder and annexes: INF VAL VER REDD PAZCIFICO23052022.pdf (Updated in this folder).
	Duly signed	Yeah	Signed by the validation and verification manager.	
	Report of findings or corrective validation actions with evidence that demonstrates their correction.	Yeah	Presented jointly with verification.	
Validation statement		Yeah		**Verification documents No. 1** Validation declaration folder: FPS777v1 Declaration VAL-PACIFIC 23052022.pdf
	Duly signed	Yeah	Signed by the validation and verification manager and lead auditor.	

Element		Does it comply?	Observations	EcoRegistry associated file
	Corresponds to the PMCC, areas and actions	Yeah	It did not mention the number of areas, which is why Cercarbono requested on 04/26/2022 to include in this declaration the list of areas validated and eligible for PMCC activity and to consistently reference the version of ISO 14064 implemented in the audit. The OVV issued a new statement listing the areas validated and the results generated over the 20-year accreditation period. An error persists in the name of the project activity "GHG removal" when it should be reduction of GHG emissions, a new request is generated by Cercarbono (05/23/2022), that same day the OVV issued a new statement with the requested information .	FPS777v1 Declaration VAL-PACIFIC 23052022.pdf
Methodological elements				
	Eligibility	Yeah	In the PMCC area it was demonstrated that it has had coverage native forest forest for more than 10 years, prior to the start date of the PMCC.	**Verification documents No. 1** Project design documents folder: PDD REDD PAZcífico_V8.pdf and PDD REDD PAZcífico_V7 Publico.pdf. Monitoring report folder: PAZcífico REDD Monitoring Report_V6.pdf
	Additionality	National		
	Baseline scenario	Yeah	Based on sources of academic information and investigative (high-resolution global maps of forest cover change) and in the methodological reconstruction of the updated reference level (NREF).	
	GHG emission sources	Yeah	GHGs generated by the elimination or burning of biomass due to deforestation and forest degradation processes.	

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Element		Does it comply?	Observations	EcoRegistry associated file
	Carbon reservoirs	Yeah	In accordance with the NREF: Aerial biomass; Underground biomass; and Soil Organic Carbon. In accordance with the methodology: Dead wood; Leaf litter.	
	Leaks	Yeah	Taken into account in the potential leak area. Which were extracted from the net emissions reduction deGEI.	
	Non-permanence	Yeah	A carbon reserve of 15% of the credits obtained by reducing GHG emissions was established to guarantee non-permanence.	
	No double counting	Yeah	It is reviewed that this situation does not arise in the PMCC.	
	Co-benefits and contributions to the SDGs	Yeah	Contributions to the SDGs were reviewed by the OVV.	
	Safeguards	Yeah	Detailed in the safeguards section.	
	Methodological deviations	THAT	Methodological deviation to the NREF to estimate the PMCC emission factor.	
Verification calculations		Yeah	Cercarbono requested the calculations obtained on 04/26/2022 by the PMCC for the verification event. The owner provided all the calculation sheets and which were reviewed, but it was requested again on 05/20/2022 to adjust the terminology presented in them, since sometimes they present baseline emissions and other reductions, as well as when they denote what was obtained by the project. The head of the PMCC corrected all findings requested by the certification program.	**Verification documents No. 1** Verification calculations folder: 3_Carbono_PAZcifico.rar
Monitoring report		Yeah	Cercarbono requested on 04/26/2022 to update the online monitoring report with requests made to the PDD, erification calculations and verification report. The owner presented a complete and updated document.	**Verification documents No. 1** Monitoring report folder: PAZcífico REDD Monitoring Report_V6.pdf

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Element	Does it comply?	Observations	EcoRegistry associated file
Verifier Conflict of Interest Statement	Yeah	Complete.	**Verification documents No. 1** Conflict of interest verifier folder:
Remote audit requirements	Yeah	In line with the statement issued by Cercarbono.	
Verification report and annexes			**Verification documents No. 1**
Duly signed	Yeah		
Report of verification findings or corrective actions with evidence that demonstrates their correction.	Yeah	The OVV detected 23 findings: 18 SAC, 3 SA and 2 SAF. The 2 SAF are pending, the rest are completed.	Verification report folder and annexes: INF VAL VER REDD PAZCIFICO23052022.pdf.
Total PMCC area verified (ha, if applicable)	Yeah	275,032.12 ha	
Verification report date Verification period	Yeah	Actualized document	
	Yeah	It agrees with what is established in the monitoring report.	
Total GHG emissions reductions or total GHG removals of the monitored period	Yeah	It is established that the main activity of the project focuses on the reduction of emissions, evaluated in the segments of deforestation and forest degradation.	
Reserve of GHG emission reductions or GHG removals	Yeah	15% is extracted from the total emission reduction obtained by the PMCC.	
Net reductions in GHG emissions or net GHG removals for the period	Yeah	They are consistent with what was presented in the documents updated at the request of Cercarbono.	
Verification statement			**Verification documents No. 1**
Duly signed	Yeah	Signed by the validation and verification manager and lead auditor.	Verification declaration folder: FPS778v1 VER-PAZCIFICO Statement 23052022.pdf.
Verification statement date	Yeah	Actualized document.	
Amount of tons of CO2e removed or reduced on the EcoRegistry platform agrees with reality.	Yeah	Disaggregation updated according to Cercarbono requirements.	Verification report folder and annexes: INF VAL VER REDD PAZCIFICO23052022.pdf.

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Element		Does it comply?	Observations	EcoRegistry associated file
	Other verification supporting documents	Yeah		Verification report folder and attachments: INF VAL SEE REDD PAZCIFICO23052022.pdf.
GHG removals or GHG emissions reductions (check 1)				**Verification documents No. 1**
	OVV in charge	Yeah	ICONTEC	Verification calculations folder:3_Carbono_PAZcifico.rar
	Total PMCC area verified (ha, if applicable)	Yeah	275.032,12	
	Verification period	Yeah	01.01.2015 - 15.09.2021	
	Verification report date	Yeah	23.05.2022	Verification declaration folder: FPS778v1 VER-PAZCIFICO Statement 23052022.pdf
	Verification Statement Date	Yeah	23.05.2022	
	Total reduction of estimated GHG emissions or total GHG removals during the period	Yeah	3.753.988	
	Collective reservation of the period (if applicable)	Yeah	563.091	
	Individual reservation of the period (if applicable)	THAT		
	Net GHG removal or net emissions reduction of GHG during the period	Yeah	3.190.897	

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carbon credits

GHG emissions reductions and GHG removals (t-CO2e) from the PMCC																
Year	Reductions in emissions from deforestation (t-CO2e)						Emission reductions due to forest degradation (t-CO2e)						Granddaughters			OK
	Project Baseline		Leaks	Totals	Reservation	Granddaughters	Line base	Project o	Total Leakage Reserve			Granddaughters	Segment			
													Deforestation	Degradaci from the		
2015	541.001	226.775	0	314.226	47.133	267.093	104.226	3.641	289	100.296	15.044	85.252	267,093	85,252	Yes	
2016	538.882	143.822	0	395.060	59.259	335.801	104.226	1.112	0	103.114	15.467	87.647	335,801	87,647	Yes	
2017	536.772	245.061	0	291.711	43.756	247.955	104.226	2.553	0	101.673	15.250	86.423	247,955	86,423	Yes	
2018	638.949	85.859	0	553.090	82.963	470.127	104.226	2.894	15	101.317	15.197	86.120	470,127	86,120	Yes	
2019	668.940	139.762	0	529.178	79.376	449.802	104.226	1.103	0	103.123	15.468	87.655	449,802	87,655	Yes	
2020	694.883	397.886	0	296.997	44.549	252.448	104.226	9.902	15	94.309	14.146	80.163	252,448	80,163	Yes	
2021	715.974	22.572	26.870	666.532	99.979	566.553	104.226	0	864	103.362	15.504	87.858	566,553	87,858	Yes	
Total	4.335.401	1.261.737	26.870	3.046.794	457.015	2.589.779	729.582	21.205	1.183	707.194	106.076	601.118	2.589.779	601.118		

Total reduction of GHG emissions	3.753.988
Net reduction of GHG emissions	3.190.897
Collective reservation	563.091

ID

Additionality in international context:	No

Grantable carbon credits	Deforestation	Degradaci from the
Carboncer applicable to Decree 926, supported under the date on which they are issued.	1.986.885	0
Carboncer not applicable to Decree 926.	602.894	601.118
Total	2.589.779	601.118
Is the issuance of the reported Carboncer approved?	Yeah	Yeah

Observations
The credits have been separated according to the reason for use.

*The period is a thousands separator, the comma is a decimal separator.

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PMCC voluntary contributions to the SDGs

Element		Does it comply?	Observations	EcoRegistry associated file
Reporting process				
	OVV authorized to audit SDG compliance	Yeah		**Verification documents No. 1** Report Tool Folder ODS: Tool_CERCARBONO_Report_ ODS_PAZcifico.xlsx
	OVV approved review rubric Yes		Completed and audited.	
	Available and sufficient evidence	Yeah	Support in activities implemented and to be implemented.	
	Report tool	Yeah	The PMCC presents the Cercarbono tool, audited by the OVV.	

Contributions to SDGs accepted		Does it apply?	Observations	EcoRegistry associated file
X	SDG 01 - End of poverty	Yes	Presents a list of activities with the implementation of productive projects that communities will implement to achieve this SDG.	**Verification documents No. 1** Report Tool Folder ODS: Tool_CERCARBONO_Report_ ODS_PAZcifico.xlsx
X	SDG 02 - Zero hunger	Yeah	They present evidence of how they will improve the basic diets of the communities.	
X	SDG 03 - Health and well-being	Yeah	Not audited by the OVV but they present supports to generate compliance.	
	SDG 04 - Quality education	THAT		
X	SDG 05 - Gender equality	Yeah	Implementation of the PMCC will generate a favorable environment for training and equitable gender participation.	
X	SDG 06 - Clean water and sanitation Yes		They will implement the creation of a water purification and bottling plant as well as the adoption of management and care practices for bodies of water in the communities.	
	SDG 07 - Affordable and clean energy	THAT		
X	SDG 08 - Decent work and economic growth	Yeah	They support will improve the income levels of the communities.	

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Element		Does it comply?		EcoRegistry associated file
ID		Observations	Does it apply? Observations	EcoRegistry associated file
	SDG 09 - Industry, innovation and infrastructure	THAT		Verification documents No. 1 Report Tool Folder ODS: Tool_CERCARBONO_Report_ ODS_PAZcifico.xlsx
	SDG 10 - Reduction of inequalities	THAT		
	SDG 11 - Sustainable cities and communities	THAT		
	SDG 12 - Responsible production and consumption	THAT		
X	SDG 13 - Climate Action	Yeah	In line with the mitigation activities to be implemented by the PMCC.	
	ODS 14 - Vida submarine	THAT		
X	SDG 15 - Life of ecosystems terrestrial	Yeah	The PMCC will implement the protection and management of native and threatened species.	
	SDG 16 - Peace, justice and strong institutions	THAT		
	SDG 17 - Partnerships to achieve the goals	THAT		

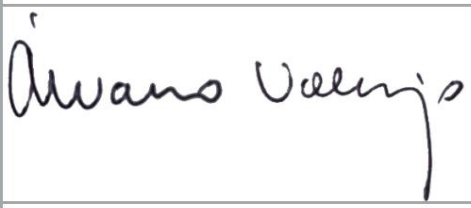
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Safeguards

Element		Response level NM*	NDN*	AP*	Observations
Safeguard					
S1	Compatibility of measures with the objectives of national forestry programs, Conventions and international agreements on the matter.			x	The PMCC demonstrates 100% compliance with this safeguard
S2	Transparency and effectiveness of national forest governance structures, taking into account national legislation and sovereignty.			Pending	During the audit it was evident that the PMCC must establish better communication ties and promote the dissemination of information within the entire project area, including isolated areas.
S3	Respect for the knowledge and rights of ethnic and local peoples and communities, taking into account relevant international obligations, national circumstances and legislation, and the United Nations declaration on The rights of indigenous peoples.			x	They have the support of legal representatives of the areas for the development of the PMCC and distribution of its benefits.
S4	Full and effective participation of stakeholders, particularly ethnic and local peoples and communities.			Pending	During the audit it was evident that the PMCC must establish better communication ties and promote the dissemination of information within the entire area of the project, including areas isolated.
S5	Compatibility of conservation measures for natural forests and biological diversity, to encourage the protection and conservation of these forests and the services derived from their ecosystems and to enhance other social and environmental benefits.			x	Development and implementation of forest restoration and conservation activities.
S6	Adoption of measures to address reversal risks.			x	I work with family units towards this safeguard.
S7	Adoption of measures to reduce the displacement of emissions.			x	Control and management of leaks evident.
*NM	Not mentioned/addressed.				
*NDN	No net damage.				
*AP	Positive action.				
Does it comply with safeguards?		Yeah			

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Data for the carbon credit emission certificate - Carboncer

PMCC	**PEACEFUL REDD+**
Titular	Iscuande River Basin Community Council; Guapi Down Community Council; Tapaje River Prodefense Community Council; Unicosta Community Council; CO2ZERO SAS; Agroimpulso Foundation.
Legal identification	Iscuande River Basin Community Council. NIT: 900,163,922-1; Guapi Down Community Council. NIT: 817,002,431-4; Tapaje River Prodefense Community Council. NIT: 900,231,305-7; Unicosta Community Council. NIT: 840,000,387-2; CO2ZERO SAS NIT: 901,245,493-8; Agroimpulso Foundation. NIT: 901,211,139-9.
Total reduction of GHG emissions	**3.753.988**
Reservation of reductions GHG emissions	563.091
Net reduction of GHG emissions	**3.190.897**
Protocol version	Protocol for voluntary carbon certification of Cercarbono V 2.1
Methodology used	M/UT-REDD+01 For the execution of REDD+ projects consistent with the reference levels presented by Colombia to the UNFCCC. V 1.1.
Tools	Cercarbono tool to report contributions of climate change mitigation initiatives to the Sustainable Development Goals. V 1.2.
ISO standards	ISO 14064-3:2019 - Greenhouse gases - Part 3: Specification with guidance for the verification and validation of greenhouse gas statements.
	ISO 14065:2013 - Greenhouse gases - Requirements for greenhouse gas validation and verification bodies for use in accreditation or other forms of recognition.
Legal framework	Resolution 1447 of 2018 of the Ministry of Environment and Sustainable Development (Colombia).
Others	Support of ownership or right to use the area; Law 70 of 1993 and Decree 1745 of 1995. This was verified by the audit team through Resolutions 2432 of December 1, 2005, 1121 of May 16, 2001, 1500 of August 1, 2005 and 0158 of 9 February 1998, respectively.
Contribution to the SDGs	Presentation of the Cercarbono SDG tool, audited by the OVV.
PMCC Certifier	Alvaro Vallejo Rendon
ID	70.556.916
Certifying signature	
PMCC Certifier	Jenny Catalina Romero Vargas
ID	38.142.925
Certifying signature	
Issue date of report	01.06.2022

*The period is a thousands separator, the comma is a decimal separator.

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DOCUMENT OF PROJECT

Proyecto REDD+ PAZCÍFICO

Text here

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Document version control			
Produced by:	Brian Guerrero	**Reviewed and approved by:**	Andrés Eduardo Alfonso Montoya
VERSION	**DATE** 05/15/2021	**RESPONSIBLE**	**CHANGE**
1	12/13/2021	Andrew Alfonso	Initial version
2	12/23/2021	Andrew Alfonso	Adjustments during audit
3	02/07/2022	Andrew Alfonso	Post audit adjustments
4		Andrew Alfonso	Second post audit adjustment
5	15/02/2022	Cristian Aldana Felipe Silva	Third post-audit adjustment
6	08/03/2022	Brian Guerrero Felipe Silva	Fourth post-audit adjustment
7	06/05/2022	Brian Guerrero Felipe Silva	Fourth post-certifying review adjustment
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Proyecto REDD+ PAZCÍFICO

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1.DEFINITIONS AND ACRONYMS

Definition / Acronym	Description
DANE	National Administrative Department of Statistics
IAvH	Alexander von Humboldt Institute
IDEAM	Institute of Hydrology, Meteorology and Environmental Studies of the Ministry of Environment and Sustainable Development of Colombia
IGAC	Augustine Codazzi Geographical Institute
ENCOURAGE	Colombian Institute of Agrarian Reform
MADS	Ministry of Environment and Sustainable Development
MINI INTERIOR	Ministry of the Interior
ODS	Sustainable development goals

Source: CO2CERO SAS (2020)

2.PROJECT DETAILS

2.1 Project description

This chapter describes the general aspects of the project, which allow dimensioning the characteristics of the initiative such as location, description, activities and property.

2.1.1 Project name

The project developed below is called “REDD+ PAZcífico”, which groups together administratively and geographically delimited communities according to the limits
territorial, which classifies the project as grouped in nature, given the instances defined in the community councils that comprise it.

2.1.2 Project Description Summary

The REDD+ PAZcífico project involves the community councils of Unicosta, Prodefensa del Río Tapaje, Guapi Abajo and Cuenca del Río Iscuande in the improvement of their natural, social and cultural capital through conservation and protection activities of the natural forest in their jurisdiction, based on a participatory and autonomous approach. In turn, this community construction will contribute to the national goals of reducing greenhouse gases in the atmosphere and will improve the subsistence practices implemented in the territory, focusing on a lower impact on the environment, reduction of deforestation and degradation, and community forest management. In addition, the project seeks to generate positive externalities on the biodiversity and socioeconomic environment of the community, through connectivity between areas, flow of resources and design of new production alternatives aligned with conservation, forest management and mangrove protection.

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The PAZcífico REDD+ project involves a total area of 287,779.22 hectares of which 272,785.86 hectares (94.79%) are stable forest over time, distributed in the municipalities of Guapi, Santa Bárbara (Iscuandé), El charco , La tola and Magüí (payán) in the departments of Nariño and Cauca; The territories involved in the project have been awarded through a legislative act (Resolution) by INCORA and INCODER and are home to approximately 17,320 families, which have intervened in the project under different roles, guaranteeing transparency, legitimacy and free, prior and informed consent. of community councils. REDD+ PAZcífico seeks to reduce a total of 7,821,579 tCO2e over a 20-year time horizon.

2.1.2.1 Project activities

The activities developed within the project limits to reduce deforestation and degradation are divided into the strategic lines of Table 1.

Table 1 Strategic lines of the REDD+ PAZcífico project

Strategic line Investment line		Activity
Line 1. Natural resource management	Reforestation and restoration	Activity 1.1 Establishment of forest nursery for native species
		Activity 1.2 Reforestation of areas devoid of vegetation
		Activity 1.3 Restoration of areas with coverage degradation actions
	Vegetation diagnosis	Activity 1.4 Spatial diagnosis of areas subject to reforestation and restoration
		Activity 1.5 Monitoring of forest cover
Line 2. Community development	Production sustainable	Activity 2.1 Design of sustainable production chains
		Activity 2.2 Sustainable management of productive activities that generate forest degradation
	Strengthening productive	Activity 2.3 Improvement of equipment for the development of community work and activities
Line 3. Governance and strengthening of capabilities	Strengthening of environmental capabilities	Activity 3.1 Training in vegetation monitoring
		Activity 3.2 Training in conservation and sustainable management of natural resources
	Governance	Activity 3.3 Training in governance and good leadership practices
	Environmental development	Activity 3.4 Management for investment in the co-financing fund for conservation and sustainable production projects of community councils

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Strategic line Investment line		Activity
	Transparency and citizen participation	Activity 3.5 Creation of socio-environmental and financial control and surveillance spaces

Source: CO2CERO SAS (2020)

2.1.2.2 Start date

The REDD+ PAZcífico project began activities to reduce deforestation and degradation in 2015, the different activities are described in Table 2 (See 7_Start date).

Table 2 Supports REDD+ PAZcífico Project Start Date.

Date	Description	Description
2014	Affidavit Iscuande River Basin Community Council	Deforestation is prohibited in the watersheds of the Juan Ventura, Iscuandesito and Matambi creeks.
17 of March of 2014	Partnership contract between Corponariño and Foundation Possible worlds	Restoration of mangrove areas affected by logging exploitation, promotion of conservation and protection of the mangrove ecosystem.
18 of December 2014	Cooperation agreement between CRC and social organization of black communities Angela Davis.	Support for the operation of the Integrated Management of Coastal Zones committee MIZC – Cauca and development of actions for the recovery of mangrove areas in community territories of the community councils of the municipalities of the Pacific Coast of Cauca.
2015	UAC environmental management plan LIAS	Institutional and community management for the implementation of the water management plan coastal environmental unit alluvial plain of the Colombian southern Pacific AUC-LIAS.
April 14, 2015	Institutional actions for the conservation of the ecosystem of Mangrove on the Pacific Coast Caucana	The Regional Autonomous Corporation of Cauca and its subdirectorate of Environmental Management, presented in Popayán a series of restoration activities based on the National Mangrove Program, carried out in the Guapi Abajo Community Council.
May 29, 2015	Inter-administrative agreement CRC IIAP	Management of participatory processes of an environmental nature on the Pacific Cauca coast, strengthening local capacities for the conservation, recovery and use of the mangrove ecosystem.

Source: CRC, IIAP, Agroimpulso Foundation (2021).

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The activities involving the start date provided spaces for citizen participation and education for the conservation, restoration and reestablishment of altered and deteriorated areas, mainly mangroves, as well as the strengthening of capacities related to the conservation and restoration of degraded ecosystems.

2.1.2.3 REDD+ event activities developed

Below are the activities developed to date within the limits of the REDD+ PAZcífico project, taking into account the community's commitment to reducing deforestation and degradation based on different sustainable actions and the conservation of its cultural, social and economic capital. . It is important to clarify that this initiative and the activities to reduce deforestation and degradation have been designed under the principles of respect for the environment, social interest and the maintenance of the cultural heritage of the territories, in accordance with the only paragraph of article 49 of law 70 of 1993.

Activity 1.2 Reforestation of areas devoid of vegetation

In accordance with the historical dynamics of deforestation, some communities have identified the effects on some of their economic activities or associated ecosystem services. In order to reverse these scenarios, reforestation activities have been implemented in the areas identified by the community and defined as deforested, thereby increasing carbon reservoirs and improving the provision of goods and services generated by forest covers. . Additionally, individuals of dual-purpose species are established mainly for timber purposes or with restoration potential, which contributes to environmental and socioeconomic development; Currently, logging activity occurs for subsistence purposes without any management or control by environmental authorities. The community intends to guide forestry activity under sustainable practices and regulated by its own authority.

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Illustration 1 Reforestation carried out in the Chico Pérez sector (Unicosta Community Council).

Source: Agroimpulso Foundation (2021).

It is highlighted that the community has developed some projects resulting from the optimal provision of ecosystem services such as the regulation of water resources and improvement of their quality, among these the preliminary project for the design of a biodegradable bottled water processing plant. Furthermore, some communities have identified the influence of external actors from neighboring community councils in generating deforestation, mainly of mangroves, as well as the acquisition of associated valuable species; For this purpose, spaces for conciliation between communities have been generated autonomously given the institutional absence.

Activity 1.3 Restoration of areas with coverage degradation actions

Community councils in collaboration with institutions such as SENA and the Pacific Research Institute (IIAP) have acquired technical tools and skills in the field that have allowed them to recognize the importance of increasing carbon stocks within their territory. Once the knowledge was acquired, the communities took ownership of the improvement of forest cover through restoration in mangrove areas, which is determined as the beginning of actions to reduce deforestation and degradation within the community councils that constitute the REDD+ PAZcífico project, with the community council of Guapi Below being the promoter of these initiatives with the support of the Cauca Regional Autonomous Corporation (CRC) since 2015.

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Illustration 2 Mangrove restoration and recovery activities in the Unicosta community council.

Source: Agroimpulso Foundation (2021).

The acquisition and management of the plant material necessary to carry out the restoration comes from actions of recruiting and capturing seedlings on site, generating sustainable management, controlling the activity of the plant population and guaranteeing persistence over time through special care of the plants. individuals from early stages. The community council of Prodefensa del Río Tapaje has implemented recovery and restoration activities in the Estero Martínez (See Illustration 3), while the community council of Unicosta has acted on degraded mangrove areas affected by neighboring community councils and external actors from other municipalities. .

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Illustration 3 Recovery activities of the Martínez estuary (Prodefensa del Rio Tapaje).

Source: Agroimpulso Foundation (2021).

In accordance with article 21 of law 70 of 1993, community councils have carried out the conservation, maintenance and regeneration of vegetation that protects water resources on collectively owned territories and has guaranteed the permanence of fragile ecosystems such as mangroves and wetlands, at the same time it protects and conserves threatened or endangered species of wild flora and fauna, such as the three-toed sloth bear or parakeet (

Bradypus tridactylus).

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Activity 1.5 Monitoring of forest cover

In order to recognize the state of natural forests within the project areas, training and education spaces were generated in measuring forest cover, with which the community accompanied the process of monitoring vegetation in transects of 0.1 has obtained data on stems, latizas and saplings, applying some measurements mainly of diameter within the plots (See Illustration 4). This exercise consolidates the strengthening of capacities in technical aspects of monitoring and measuring vegetation. Additionally, the information collected favors the estimation of existing biomass, reducing uncertainty about the behavior of forests and their emission rates.



Illustration 4 Monitoring of forest cover within the REDD+ PAZcífico community councils.
Source: Agroimpulso Foundation (2021).

Activity 2.1 Design of sustainable production chains

Currently, difficulties have been identified in the development and improvement of working conditions and the performance of economic activities; the execution of illicit activities such as coca planting and illegal wood extraction is still evident.

This diagnosis influences the design of alternative production chains that guide the economic performance of the community and reduce exposure to illegality and violence from external actors.

Currently, the Prodefensa community council of the Tapaje River is designing the rice production chain in areas previously established for both licit and illicit agricultural activities, involving links in the chain that include production and first transformation. Additionally, market studies are being carried out that allow production to be oriented to the parameters required by it.

The design of productive chains and their sustainable management seeks to support community councils in compliance with article 19 of law 70 of 1993, regarding the guarantee of persistence of natural resources used for community well-being, maintaining and increasing their quantity and quality, without detriment to the environment in which they are developed.

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Activity 2.2 Sustainable management of productive activities

Community councils, according to their economic potential, have generated production chains where knowledge and skills are involved mainly in the establishment and harvest of Coconut, Vanilla and Annatto. According to the state of development of each production chain, adjustments have been made to the state of the production chain or improvement of its links, evidenced in the file as a plan seeking the implementation of coconut, vanilla and cardamom production units. . AUDIT_VV_2021\2_Co benefits\Evidence in SDG1.1._20.12.21_Evidencia_ODS_89.pdf

The development of these activities aims to improve income and employability in community councils, as well as align economic activities with the care of environmental goods and services, in order to guarantee sustainable and peaceful development, away from negative effects on the environmental, social and economic context.



Illustration 5 Coconut marketing chain

Source: Agroimpulso Foundation (2021).

The initiatives are developed with the support of Fundación Agroimpulso, which has acquired the necessary personnel and knowledge to transmit the necessary tools for the consolidation of defined areas of improved production, aligning with traditional and cultural knowledge, in addition to generating appropriation of traditional knowledge, It is an environment that generates employment, economic alternatives and diversification of production in the area, which enables new commercial horizons and redirects traditional production activities that have generated degradation of forest cover and effects on the environment.

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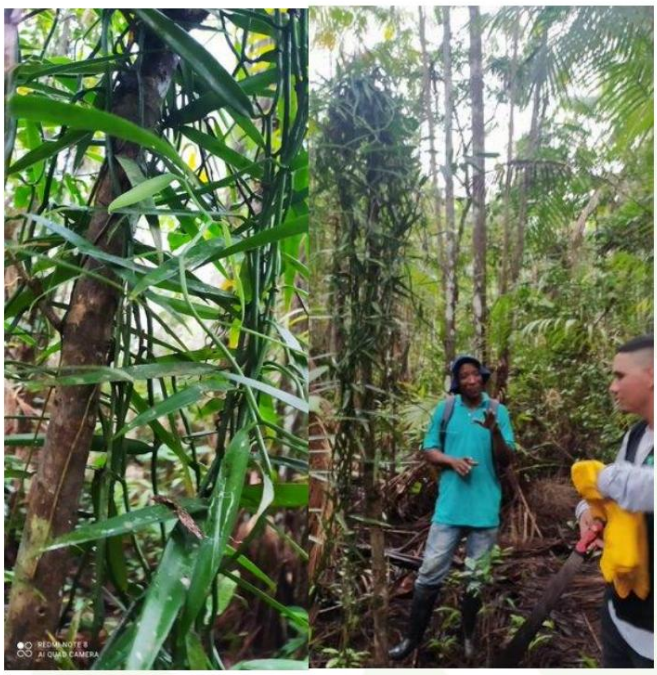


Illustration 6 field training on vanilla production by community members.
Source: Agroimpulso Foundation (2021).

Activity 3.1 Training in vegetation monitoring

The recognition of natural resources is important when it is necessary to protect and improve their condition; in the case of forest covers, this procedure requires the sizing of individuals through forest inventories. The communities have strengthened their capacities in measuring tree individuals through field training by experts in collecting forest information, whose purpose is to generate self-management of the communities with respect to the forest.

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Illustration 7 Field training on vegetation monitoring and measurement.
Source: Agroimpulso Foundation (2021).

The monitoring of vegetation within the area of influence of the PAZcífico project aims to reduce uncertainty about the information managed at the national level for forest covers in the Pacific region, couple communities with the natural resources with which they coexist and on which they depend. , and contribute to the knowledge of biodiversity. The recognition activities are based on instruction and technical training in measuring forest cover; the activities carried out by the community with the support of experts are presented in the document (REDD inventory methodology report.pdfOutput AUDIT_VV_2021\12_FieldReport.pdf of monitoring), described in the Report (see AUDITORIA_VV_2021\8_Informacion) and displayed in campoSoporte_CapacitacionCampo\ (see AUDITORIA_VV_2021\11_Annexes).

The strengthening of capacities embodied in the REDD+ PAZcífico project addresses the right of communities and ethnic groups to education at different levels, mainly for the preservation and management of the natural resources of their property, in accordance with article 68 of the political constitution of Colombia The members of the ethnic groups will have cultural a training that respects development and identity rights .".

Activity 3.5 Creation of socio-environmental and financial control spaces

Within the concertation actions carried out in the different community councils, issues related to the administration and management of both natural and economic resources present within the different jurisdictions are involved. With the support of the Agroimpulso Foundation and CO2CERO SAS, the community councils have assessed the importance of generating oversight and control meetings, which allow, together with

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restoration and conservation projects, verify the effectiveness of the actions of each population; This in turn will lead to a perception of economic benefits, obtained from payment for results that are intended to be subject to administration and control, guaranteeing the effectiveness of the investment.



Illustration 8 Conferences for consultation and internal organization of community councils.
Source: Agroimpulso Foundation (2021).

This activity is aligned with compliance with article 58 of the political constitution of Colombia, in which case the holders of collectively owned properties must comply with their obligations to protect the environment and renewable natural resources, as well as contribute to the authorities or under their authority. own autonomy in the defense of this heritage.

On September 17, 2021, the CO2CERO SAS team and Fundación Agroimpulso held a socialization with the environmental authorities and legal representatives, in which the community's commitments to the conservation and reduction of deforestation, as well as improvement of living conditions based on sustainable economic activities (See 11_Anexos\Asistencia_SocializacionAutoridad.pdf).

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Illustration 9 socialization of the project cycle to environmental authorities and legal representatives.
Source: CO2CERO SAS (2020)

2.2 Project objectives

Reduce emissions generated by deforestation and forest degradation within the four (4) Community Councils that make up the project.

- Evaluate the emissions avoided by community councils through their conservation, restoration and sustainable management actions.
- Identify activities that mitigate and prevent the growth of risk factors. deforestation and degradation at the local level.
- Guarantee compliance with the regulatory and socio-environmental framework related to the REDD+ PAZcífico project.
- Generate a transparent and equitable distribution of benefits according to the resources obtained from the commercialization of GHG emissions avoided within the project limits.

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2.3 Project proponents

The community councils that propose the REDD+ PAZcífico project are described below. The approaches of the Managing Associate Fundación Agroimpulso allowed the following four councils to be consolidated into a single REDD+ PAZcífico initiative.

Organization	Iscuande River Basin Community Council
Resolution	Resolution 2432 of December 1, 2005
NIT	900.163.922-1
Legal representative	Fernando Paz
Telephone	313 724 91 31

Organization	Guapi Abajo Community Council
Resolution	Resolution 1121 of May 16, 2001
NIT	817.002.431-4
Legal representative	Teodoro Montaño Diaz
Telephone	313 411 95 96

Organization	Tapaje River Prodefense Community Council
Resolution	Resolution 1500 of August 1, 2005
NIT	900.231.305-7
Legal representative	Iter Javier Olaya
Telephone	311 701 54 74

Organization	Unicosta Community Council
Resolution	Resolution 0158 of February 9, 1998
NIT	840.000.387-2
Legal representative	Luz Mirley Montaño
Telephone	313 647 94 67

The initiative and its results are the property of these community councils, without legal representation exceeding or evading the legitimacy, equity and consent of each of the community members.

2.4 Project ownership and actors involved

The actors defined as owners of the initiative and the benefits generated by it are described below.

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2.4.1 Project proponents

The quantified emissions reductions within the project limits are the sole and exclusive property of the community councils that are members of the REDD+ PAZcífico initiative, corresponding to:

1. Guapi Abajo Community Council
2. Iscuande River Basin Community Council
3. Tapaje River Prodefense Community Council
4. Unicosta Community Council

Additionally, the benefits generated by the implementation of actions to reduce deforestation and degradation are also the property of said community councils. In ratification of this, in the paragraph of the sixth clause of the different association agreements (See 1_Agreements\02_Community contract), it is defined that:

> **"HE COMMUNITY COUNCIL** will deliver a AGROIMPULSO, the due authorizations for the commercialization of the bonds, the understanding that the ownership of the community bonds is that and is in commercialization in head of Agroimpulso."

Also, it is determined in the contract between managing and technical associate (See), 1_Agreements\01_Technical Associate Contract\01_Contract_CO2CERO_AGROIMPULSO where its eighth clause indicates that:

> **"CLAUSE EIGHTH RIGHTS OF CARBON AND PDD DOCUMENT OF OWNERSHIP OF THE BONDS** The ownership of the rights over the bonds issued and corresponding properties will be the object of the contract, the property of The Community Councils of DEL DEFENSE River TAPPING, OF THE BASIN RIVER ISCUANDÉ AND UNICOSTA like this GUAPI DOWN, same he document Conception of Project (PDD) that will be delivered part by CO2CERO SAS."

From the above, it is documented that the ownership of the project belongs to the community councils and any transaction or movement carried out on them must be authorized and socialized with each of them. With this determination, the REDD+ PAZcífico project seeks to comply with the principles of article 3 of Law 70 of 1993, determined as follows:

> That of autonomy: to the participation 3. black communities their organizations without and the equality, standing are detriment of decisions that affect them in accordance with the law. the Nation in

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"The black communities with nature."
environmental protection taking into account 4. the relationships established by

Article 5 of Law 70 of 1993 defines the functions of the community councils within the territories assigned to them as collective property, as follows:

> "In addition to the regulations, the areas are: to functions of the Councils that foresee assigning Community interior of the awarded lands; delimit and protect the rights of collective property, the for and preservation of cultural identity, the use and conservation of natural resources; choose the legal representative of the respective community as a legal entity, act as friendly composers and conciliators. in the conflicts in feasible internal

Finally, article 6 of the law defines that the lands and forests will be awarded to black communities in accordance with the law, whose ownership is exercised in a social function and the ecological function is inherent. For its use, the following parameters are defined:

> "a) Both forestry for of the forests that with exercise ministry by of law, as the commercial purposes must guarantee resources. To advance the latter, authorization the required. from the competent entity for the forest resource is driving

> b) The land use in the Pacific Basin, will do taking into account ecological fragility conservation management practices compatible the successful bidders will develop with and ecological. For this purpose, appropriate production models conditions of such as agroforestry, agroforestry, and other similar models will be developed, suitable with mechanisms to stimulate them and design sustainable practices." in environmental

The REDD+ PAZcífico project has been designed and oriented to satisfy parameter (b) defined in article 6 of law 70 of 1993, ratifying its responsibility with the optimal use of land, the preservation of natural resources and the sustainable management of coverage forested, finding a balance with culturally developed productive uses; Likewise, REDD+ initiatives seek to satisfy the regulatory approaches established for rural communities, based on stimulating the conservation, preservation, management and expansion of carbon reservoirs.

Understanding the regulatory and legal support that the communities have, they are granted ownership over the avoided GHG emissions within the territory, as well as

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decisions on the subsequent marketing, negotiation and certification processes of the avoided emissions determined within the project limits.

2.4.2 Land tenure

Law 70 of August 27, 1993 "Its purpose is to recognize the black communities in the Pacific, production, collective rural areas along the rivers of those in the watershed protection of the lands of black communities and the cultural group and promotion of social and economic development, in order to guarantee that these of equal opportunities compared to that of Colombian society" conditions

rest

The community councils involved in the development of the REDD+ PAZcifico project are mentioned in Table 3, as well as their area of influence at the administrative level, corresponding to the departments of Cauca and Nariño, within the municipalities of Guapi, Santa Barbara (Iscuande). , El Charco, La Tola and Magüí (Payán).

Table 3 Community councils involved in the REDD+ PAZcífico project

Community Council	Department	Municipality	Normative
Guapi down	Cauca	Guapi	Resolution 1121 of May 16, 2001
	Nariño	Santa Barbara (Iscuandé)	
The river basin Iscuandé	Cauca	Guapi	Resolution 2432 of December 1, 2005
	Nariño	The puddle	
		Santa Barbara (Iscuandé)	
River defense Brawl	Nariño	The puddle	Resolution 1500 of August 1, 2005
		the tola	
		Magüí (payán)	
		Santa Barbara (Iscuandé)	
Unicosta	Cauca	Guapi	Resolution 0158 of February 9, 1998
	Nariño	Santa Barbara (Iscuandé)	

Source: CO2CERO SAS (2020)

Land ownership in the case of these community councils is awarded by INCORA (Guapi Abajo and Unicosta) and INCODER (The Iscuande River basin and Prodefensa of the Tapaje River), resorting to article 8 of law 70 of 1993, the which determines the process for allocating territories to Afro-descendant communities. The results of the award for the community councils involved in the initiative are described below:

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For **Guapi below,** a total of 43,196 hectares with 8,066 square meters were awarded. The registration and titling process began on May 20, 1998 by Walberto Banguera Montaño as legal representative of the community council of Guapi Abajo, based on Law 70 of 1993 and decree 1745 of 1995, INCORA was requested to obtain collective titling in quality of "Lands of black communities", in this way with Resolution 01121 of May 16, 2001 of INCORA.

The **Unicosta** community council is located in the jurisdiction of the municipality of Santa Barbara de Iscuande (Nariño), and was requested on November 8, 1996 by the current legal representative Florentino Carvajal Tenorio; 16,063 hectares were awarded with approval by INCORA.

The **Iscuandé River Basin** community council was awarded under the request of Héctor Toloza Estupiñán legal representative on duty, which was filed on March 5, 2002 before the Cauca regional INCORA. The territory is located in the jurisdiction of the municipality of Santa Barbara de Iscuandé (Nariño) and occupies 77,269 hectares with 9,205 m2 .

The **Prodefensa community council of the Tapaje River** obtained the allocation of land from black communities at the request of Mr. Sandro Estupiñan Portocarrero on July 31, 2000, which was filed with INCORA regional Cauca. The collective territory has 149,994 hectares with 9,081 m2 .

From the above, it is possible to ratify the ownership of the nation's vacant lands that has been granted to each of the community councils, by virtue of transitional article 55 of the political constitution of Colombia on the right to collective ownership of the territories. vacant lands traditionally occupied by them. Likewise, Decree 1745 of 1995 is complied with, on the procedure to make effective the collective titling of territories of Afro-descendant communities, under the jurisdiction of INCORA or the entity that makes the their times.

2.5 Other entities involved in the project

Below, the entities other than the proponent, linked to the execution of the REDD+ PAZcífico project, are presented.

2.5.1 Managing Associate

The role of managing partner involved in the REDD+ PAZcífico project is held by the Agroimpulso Foundation. Its main objective is to provide practical tools for the sustainable development of community projects, establishing alliances with entities, institutions and companies that, through what they do, contribute to the improvement and quality of life in the areas where the Foundation has its field of action. Among its main activities are:

- Structuring of environmental projects and technical support for social and productive entrepreneurship.

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- Execution of compensation projects for environmental services (Bonds of Carbon and GHG reduction initiatives).
- Creation of environmentally and financially sustainable productive projects, and environmental management plans to promote the development of the region and its inhabitants.

Within its commitment and responsibility with the initiative, is the management of activities with the community, approaches with authorities and other relevant actors within it, support in the financing of socialization activities, design and formulation of the project. Also, it generates the communication channels necessary to achieve the achievement of information and requirements specific to the creation of the REDD+ initiative.

2.5.2 Technical Associate

The role of technical partner for the REDD+ PAZcífico project is CO2CERO SAS, which is a private company that offers solutions to different actors in the environmental and agricultural sector in Colombia. Among its services offered are the development of carbon projects in the forestry sector and other uses. of the soil, the execution of sustainability consultancies associated with planting days, green markets, calculation of the carbon footprint, environmental education and support in sustainability certifications.

Contributes as a technical associate of the project, its main responsibilities are the execution of technical activities, which are involved in the design, formulation and structuring of the project document and its specific requirements such as cartography, image analysis, analysis of deforestation factors, among others; Additionally, it has financial responsibility for the execution of the project in its different phases. The technical associate is able to represent the project before external third parties who evaluate its relevance, covering all the elements determined to be accepted, according to the choice of program most appropriate to the national, regional and local context.

2.5.3 Environmental authorities

In order to generate a framework of reference at the regional and local level, a process of socialization of the initiative is carried out with the environmental authorities that have jurisdiction within the territory, among which are the following:

2.5.3.1 Agency rural development (ADR)

The fundamental task of this agency is to execute the agricultural and rural development policy with a territorial approach formulated by the Ministry of Agriculture and Rural Development.

As well as strengthening the Association and contributing to improving the living conditions of rural residents, the competitiveness of the country and building a countryside with a future. Its function is as an ally of the country's agricultural products, in order to promote rural businesses, through structuring, co-financing and execution of comprehensive Agricultural and Rural Development Plans.

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Within the REDD+ PAZcífico project, activities for the design and sustainable management of productive practices have been proposed, which are related to economic activities culturally implemented at the local level. Within the promotion and leverage that is expected to have on these activities, the support of entities related to the rural environment and its development is sought, in order to obtain alternatives for management, development and
strengthening, achieving a scope greater than that proposed with the REDD+ project.

2.5.3.2 Regional Autonomous Corporation

The municipalities present within the REDD+ project have jurisdiction in the Regional Autonomous Corporation of Nariño (Corponariño) and the Regional Autonomous Corporation of Cauca (CRC). Its purpose is the execution of policies and portfolios on the environment and renewable natural resources, as well as compliance and timely application of the current legal provisions on their disposal, administration, management and use, in accordance with the regulations, guidelines and directives issued by Ministry of Environment. Some of the functions of the Regional Autonomous Corporation are:

1. Execute the national environmental policies, plans and programs approved in the National Development Plan, National Investment Plan and Ministry of the Environment, as well as those approved at the regional level in accordance with the law.
2. Exercise the function of maximum environmental authority and in the area of its jurisdiction in accordance with the criteria and guidelines established by the Ministry of the Environment.
3. Promote and develop community participation in activities and programs of environmental protection, sustainable development and adequate management of natural resources.
4. Promote and carry out jointly with the national organizations attached and linked to the Ministry of the Environment, and with the technical and scientific support entities of the National Environmental System -SINA-, studies and research on the environment and renewable natural resources.
5. Exercise functions of evaluation, control and environmental monitoring of the uses of the water, soil, air and other renewable natural resources.

Taking into account the role of this entity within the project, as the highest environmental authority at the regional level, the existence of the initiative is made known to it. Likewise, the willingness of the community councils to establish a reciprocal scenario in the which the environmental objectives and responsibilities of both parties are achieved.

2.5.3.3 National Agricultural Institute (ICA)

The national agricultural institute works for agricultural health and agri-food safety in the Colombian countryside. In addition, its objective is to contribute to the sustained development of the agricultural, fishing and aquaculture sector, through the prevention, surveillance and control of sanitary, biological and chemical risks. in animal and plant species, with

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which ensures the conditions of commerce and consumer health. Among the functions of the ICA are:

1. Carry out research and technology transfer activities in partnership with natural or legal persons
2. Plan and execute actions to protect agricultural production from pests and diseases that affect or may affect the country's animal or plant species or associate for the same purposes.
3. Exercise technical control of the production and marketing of agricultural inputs, animal genetic material and seeds for sowing, in order to prevent risks that may affect agricultural health and food safety in primary production.
4. Adopt, in accordance with the law, the Sanitary and Phytosanitary Measures that are necessary to effectively control animal and plant health and the prevention of biological and chemical risks.

The REDD+ PAZcífico project promotes sustainable agricultural development on economic activities traditionally developed by community councils, however, an improvement in these processes requires the intervention and support of entities with experience and recognition of the subject. Furthermore, by establishing a prospective of the initiatives carried out, the implementation of production chains with import and export of products is expected, which requires approval.
by the entity. The entity is made aware of the existence of the avoided emissions initiative within the jurisdiction of the community councils, as an alternative for linking with other actors to achieve reciprocal compliance with institutional and community functions.

2.5.3.4 Departmental governments

Within the limits of the project there is jurisdiction of the governorates of Cauca and Nariño, which play an important role in the administration of resources and allocations at the territorial level, with the economic, social and environmental approach being fundamental axes of their mission, which They are strategic within the implementation of the REDD+ PAZcífico project whose horizon is the improvement of community well-being in these contexts.
The governorates carry out planning, management and promotion of the economic, social, environmental and cultural development of the population, based on the principles of transparency, social sensitivity and efficient public administration. Among its functions related to the initiative are:

1. Formulate portfolios that effectively address territorial needs
2. Strengthen capacities at the institutional level within its territory based on the productivity, competitiveness and sustainability.
3. Implement actions that allow the institutional improvement goals to be met

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4. Achieve the population's satisfaction with the timely care of their requirements

In order to generate links of development and fulfillment of goals at the institutional and territorial level, based on the approaches established within the initiative, it is intended that the governorates identify the potential of the REDD+ PAZcífico project to improve the quality of life of the inhabitants of the region, active participation in actions with a social, economic and environmental focus is guaranteed, and spaces for inter-institutional cooperation are promoted.

2.5.3.5 Municipal mayors

At the project level, five (5) municipal mayors' offices with jurisdiction are identified, corresponding to Guapi, Santa Bárbara (Iscuandé), El charco, La tola and Magüi (payán). In general, the mission of the municipal mayor's office can be defined as a territorial entity in charge of generating the necessary conditions for the provision of public and social community services, through the planning and development of all sectors, promoting citizen participation in the management of the municipality, promoting peace and improving the quality of life. Among the fundamental axes of work of the municipal mayors are:

1. Reconciliation, Coexistence and Peace Construction
2. Equity and Social Inclusion to Overcome Poverty
3. Infrastructure for Integration and Competitiveness
4. Green Growth, Productive Transformation and Income Generation
5. Regional Integration for Territorial Development
6. Territorial Governance for Good Government

REDD+ initiatives aim to strengthen different strategic axes at the territorial level, which is based on community particularities, being essential to satisfy some needs within the areas of coexistence, peace building, equity, improvement of competitiveness, green growth, sustainability and territorial governance. The project has designed actions that allow an improvement of the social context, reducing violence, conflict and inequality, it also seeks to generate environmental sustainability through the improvement of economic activities and the administration of natural resources and thirdly, governance, dimensioning the importance of establishing fair principles and values at the community level, recognized by the institutions related to it, with which a scenario of cooperation is foreseen from the financial, legal or administrative point of view.

2.5.3.6 Ministry of environment and sustainable development

The Ministry of Environment and Sustainable Development is the public entity in charge of defining environmental policies that promote the recovery, conservation, protection, organization, management and use of renewable natural resources,

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ensuring sustainable development and the right of citizens to enjoy a healthy environment. Among the functions related to the initiative are:

1. Manage the environment and renewable natural resources
2. Guide and regulate the environmental planning of the territory
3. Direct the National Environmental System SINA in order to ensure the execution of portfolios that guarantee compliance with the duties and rights of the state in relation to the environment and natural heritage.
4. Participate with the Ministry of Foreign Affairs in the formulation of international policies on environmental matters, defining cooperation instruments and procedures.
5. Prepare portfolios on environmental matters and natural resources with the DNP renewable.
6. Evaluate the scope and economic effects of environmental factors, their incorporation into the value of the market of goods and services and their impact on the development of the national economy.
7. Resolve discrepancies caused by the exercise of the functions carried out by the assigned research institutes, establishing criteria and decisions regarding the standards applicable to the management and use of renewable natural resources or the environment.
8. Carry out control and surveillance actions on Autonomous Corporations Regional
9. Coordinate, promote and guide research actions on the environment and renewable natural resources and on alternative models of sustainable development.

Based on what has been described, it is important to highlight the role of the Ministry of Environment within the development of the REDD+ initiative, understanding that its participation influences the technical and socio-environmental contexts. The intervention of different research institutes is a fundamental support in the precision of the information necessary to determine the emissions avoided in terms of deforestation within the territory, the identification of early warnings of deforestation and the regulations designed for its reversal; Likewise, its work as an axis of control and verification over the actions of other entities gives institutional support to the project to guide its requests regarding cooperation for different entities such as regional autonomous corporations, mayors and governorates. Additionally, the recognition that the ministry grants to initiatives that reduce deforestation and forest degradation, in addition to improving the well-being of communities, is of vital importance, since it generates a contribution to the mitigation goals set at the national level.

2.5.3.7 Institute of Environmental Studies (IDEAM)

IDEAM is the public entity in charge of providing technical and scientific support to the National System. Environmental, which generates knowledge, produces reliable, consistent and

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timely information on the state and dynamics of natural resources and the environment, facilitating the definition and adjustments of environmental policies and decision-making by the public and private sectors and citizens in general. Among its functions are:

1. Provide the knowledge, data and environmental information required by the Ministry of the Environment and other entities of the SINA
2. Carry out the collection and management of scientific and technical information on the ecosystems that are part of the country's environmental heritage
3. Establish the technical bases to classify and zone the use of the national territory for planning and management purposes
4. Obtain, store, analyze, study, process and disseminate basic information on biophysical aspects, soils and plant covers for the management and use of biophysical resources.
5. Monitor the Nation's biophysical resources, especially with regard to their contamination and degradation, necessary for decision-making by environmental authorities.
6. Carry out studies and research on natural resources, especially those related to forest resources and soil conservation
7. Direct and coordinate the Environmental Information System and operate it in collaboration with the scientific entities linked to the Ministry of the Environment, with the Corporations and other entities of the SINA.

IDEAM is a fundamental technical complement in the development of avoided emissions initiatives, given its extensive knowledge in the investigation of forest resources, it is the guide in the calculation of parameters, indicators and variables necessary to correctly estimate fundamental parameters within the required calculation. The PAZcífico REDD+ project has worked in line with the IDEAM guidelines regarding the estimation of avoided emissions in REDD+ projects, reducing uncertainty about the calculations and transparently complying with the requirements of the GHG reduction program.

2.6 Presence of other groups or initiatives

The following subchapter presents the ethnic groups, initiatives, plans or programs that are involved with the REDD+ PAZcífico project, understanding the importance of avoiding double accounting or non-compatible overlap thereof.

2.6.1 Projects and adjacent communities

REDD+ initiatives are focused on generating well-being, strengthening environmental, social and economic factors through sustainable actions linked to the reduction of deforestation and degradation. Additionally, it is essential to promote equality and reduce conflicts between initiatives or neighboring communities, understanding the existence of territorial limits and natural resources assigned to each community. In

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Based on the above, the identification of surrounding communities and projects is carried out (See Table 4), where eight (8) reservations of the people Eperara Siapidara Trua, Eperara Siapidara, Embera Katío and Eperara Siapidara are located, as shown in Figure 1.

Table 4 Indigenous reservations surrounding the REDD+ PAZcífico project.

Name of reservation Department Municipality	Town		
San Juan de Pampón	EPERARA SIAPIDARA SORRY	Nariño	The Tola
Big break	EPERARA SIAPIDARA	Nariño	Saint Barba Iscuande - The Puddle
The forest, Santa Rosa and San Francisco	EMBERA KATÍO	Nariño	Olaya Herrera
Satinga River	EMBERA KATÍO	Nariño	La Tola - Olaya Herrera
Morrito	EPERARA SIAPIDARA	Nariño	The puddle
Sanquianguita	EPERARA SIAPIDARA	Nariño	Mosquera – Olaya Herrera
Integrated El Charco	EPERARA SIAPIDARA	Nariño	The puddle
White corn	EPERARA SIAPIDARA	Nariño	The puddle

Source: Shapefile Indigenous Reservations Ministry of the Interior (2020).

When verifying other ethnic groups, the presence of sixteen (16) community councils surrounding the project is identified (See Table 5) and as shown in Figure 1.

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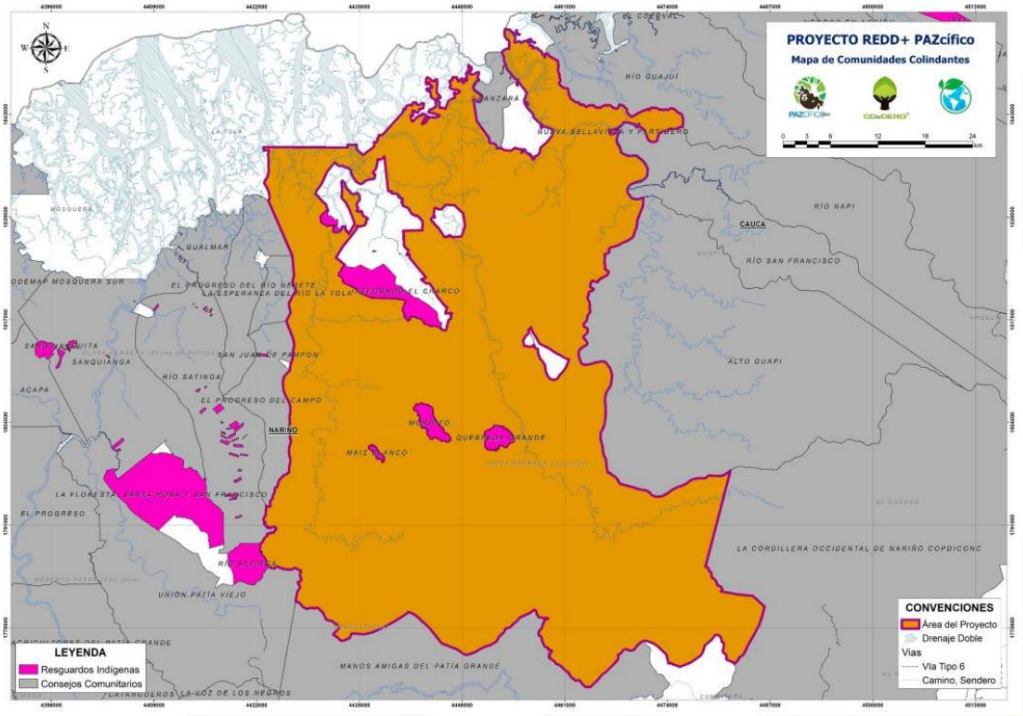


Figure 1. Map of indigenous reservations and community councils adjacent to the project area.
Source: CO2CERO SAS (2021).

Table 5 Community councils surrounding the REDD+ PAZcífico project.

Department	Municipality	Community Council La Cordillera Occidental de
Cauca	Algeria	Nariño COPDICONC
		River napi
	Balboa	The Western Cordillera of Nariño COPDICONC
	Guapi	tall handsome
		Chanzará
		The Western Cordillera of Nariño COPDICONC
		The iscuandé river basin
		guajuí river
		River napi
	Timbiqui	guajuí river
		River napi
Nariño	Cumbitara	The Western Cordillera of Nariño COPDICONC
	The puddle	tall handsome
		High river sequihonda
		The progress of the field
		The progress of the Nerete River

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Department	Municipality	Community Council
Nariño		The Western Cordillera of Nariño COPDICONC
		The hope of the river tola
		Helping hands from the big pathy
	The rosary	The Western Cordillera of Nariño COPDICONC
	The Tola	The progress of the field
		The progress of the Nerete River
		The hope of the river tola
		Satinga river
		old pathy union
	Bread	The Western Cordillera of Nariño COPDICONC
	Magüí (Payan)	Helping hands from the big pathy
		Satinga river
		old pathy union
	Olaya Herrera (mouths of Satan)	The progress of the field
		The progress of the Nerete River
		Satinga river
		old pathy union
	Policarpa	The Western Cordillera of Nariño COPDICONC
	Roberto Payan (Saint Joseph)	old pathy union
	Saint Barbara (Iscuandé)	tall handsome
		High river sequihonda
		Chanzará
		The Western Cordillera of Nariño COPDICONC

Source: Shapefile Entitled Black Communities (2020)

Compared to other protection figures, the project borders the Sanquianga National Natural Park in the northern sector. When carrying out a more detailed analysis of the territory, it does not overlap within its administrative limits with the National Natural Park.

In the northeastern sector, approximately 10 kilometers away, is the El Comedero Regional Natural Park, while 36 km to the northwest is the Gorgona National Natural Park (See Figure 18).

When verifying the existence of Biotic Environment Compensation, 1% Investment and other investments, there is no activity of this type registered by ANLA within the REDD+ PAZcífico project limits as shown in Figure 2. Finally, the existence of national reserve areas in accordance with Law 2 of 1959, where a total of 184,432 hectares are identified, defined in accordance with resolution 1926 of 2013 as areas with a prior planning decision (See Figure 18).

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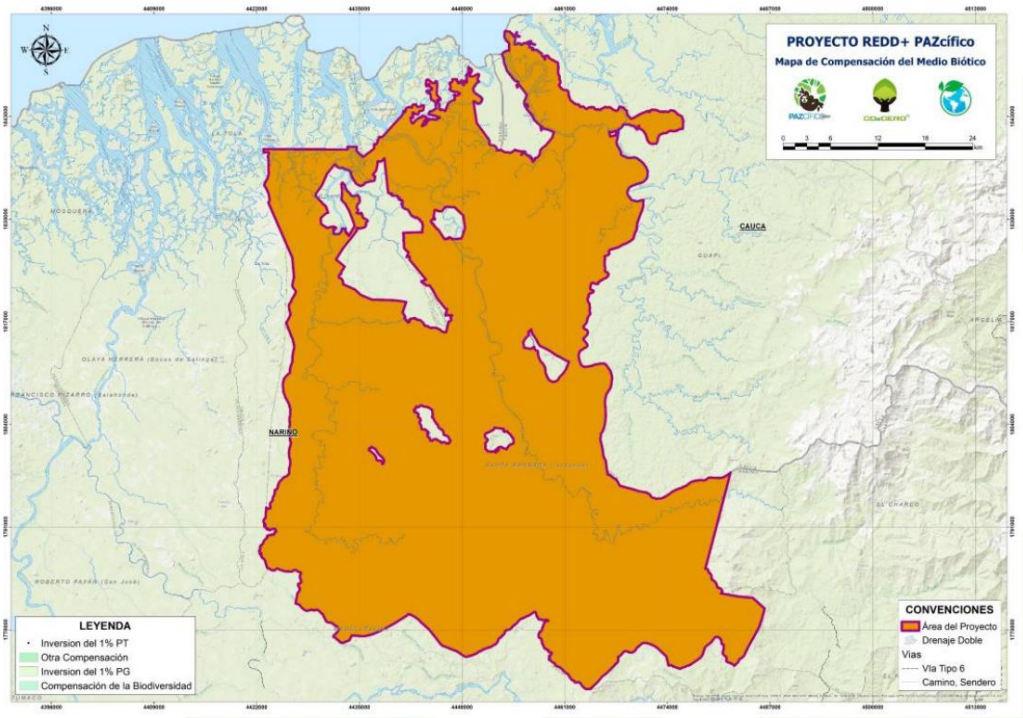


Figure 2. Compensation Map of the Biotic Environment adjacent to the project area.
Source: CO2CERO SAS (2021).

2.6.2 Presence of other climate change mitigation initiatives

Currently, Colombia has promoted the implementation of initiatives to reduce emissions and remove GHG from the atmosphere, given the value that natural and planted forest covers take as an effective carbon sink, in addition to committing as a country to the contribution to mitigating the effects of climate change at a global level. The National Reference Level proposal raises Colombia's potential as a carbon sink at the national level, given its tropical forest environment, with a wide degree of biological diversity worldwide and its extensive forest coverage, which is 52% of the territory (IDEAM & MinAmbiente, 2019), which makes it attractive from a national and international point of view to promote actions on the effects of climate change.

When verifying possible projects surrounding the initiative through the mapping system of the National Emissions Reduction Registry (RENARE), it is determined that the PAZcífico REDD+ project does not overlap with any climate change mitigation initiative within the national territory (See Figure 3), while nearby initiatives are the Acapa REDD+ Project – Bajo Mira y Frontera in the department of Nariño, the Cajambre REDD+ Project in Valle del Cauca and the Concosta REDD+ Project in the Choco department.

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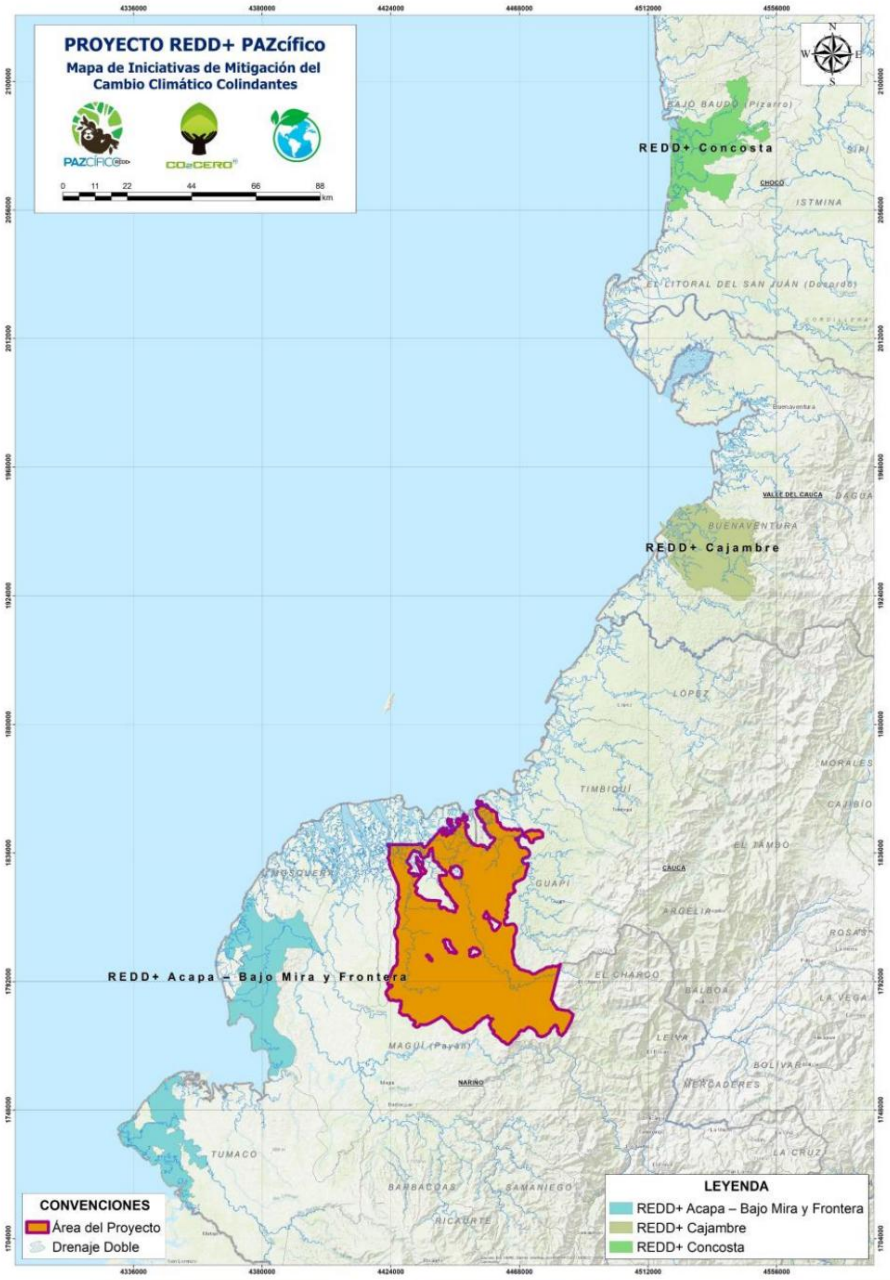


Figure 3. Map of Neighboring Climate Change Mitigation Initiatives.
Source: CO2CERO SAS (2021).

2.7 Conditions prior to the start of the project

The following chapter describes the diagnostic, physical and biotic conditions of the area of influence of the PAZcífico REDD+ Project.

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Proyecto REDD+ PAZCÍFICO

2.7.1 Pacific Subregion

Below is a description of the Pacific subregion.

2.7.1.1 Generalities

The Colombian Pacific is located in the west of the country, with an extension that goes from the south of Panama in the Tapín del Darién, to the north of Ecuador, bounded by the national limits of both countries, to the northeast with the Urabá of Antioquia and to the west with the Pacific Ocean, with an approximate area of 116,000 km2 of Colombian territory.

The Pacific Region is part of the so-called biogeographic Choco, which covers the western territory of Panama, Colombia and Ecuador with an approximate area of 175,000 km2 . At the national level it contains four departments, with greater representation by Choco, along with Valle del Cauca, Cauca and Nariño Colombiano (Defensoria del Pueblo Colombiano, 2016). Within the region, four subregions are identified, as presented in Table 6.

Table 6. Pacific subregions

Subregion	Description
Coastal plains of Pacific	It includes areas bordering the Pacific Ocean in western Colombia, with mangrove ecosystems, flooded forests, swamp vegetation and coasts. It has wide landscape and cultural diversity, with levels of social development in fishing activities, timber harvesting and artisanal mining.
Baudó mountain range	Composed of a low mountain system, north of the mouth of the Baudó River to the Pacific Ocean, with an extension to the Serranía del Limón, Colombian-Panamanian province of Darién, with a peak elevation of 1,400 meters above sea level in Alto del Buey.
Alluvial river valleys Atrato and San Juan	Dominated by alluvial valleys, with humidity characteristics marked by high rainfall associated with its proximity to the coast and the confluence that occurs with the mountainous areas that make up the valley, promoting the presence of endemisms and high plant biodiversity. It ends when it connects with the Micay River.
Andean – Pacific	It has a warm dry to temperate climate, with steep to broken relief, with the presence of some formations of volcanic origin due to the presence of the western mountain range. It houses the main urban agglomerations of the region, economic business activities associated with the sugar production chains.

Source: Delgado et al. (2007) & Hernández *et al.* (1992).

It has a great variety of ecosystems with representation of 13 biomes with coastal ecosystems, mountain ranges, flooded forests to ecosystems with altitudinal gradients in Andean, sub-Andean and high Andean forests, wide and floodable valleys (Galindo, 2009). et al.

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Proyecto REDD+ PAZCÍFICO

2.7.1.2 Geology

The Colombian Pacific coastal basin as a convergence zone of the Nazca, South American and Caribbean plates, is limited by the Pacific Ocean on the western side, and on the eastern side by the Pacific platform and the western mountain range, with the presence of a relatively flat relief. , with the presence of characteristic elevations that generate dominance of igneous and sedimentary rocks mainly and with the presence of thrust and strike-slip faults (IGAC, 2001).

Its evolution is the result of a continuous process of subduction and accretion at the edge of the South American plate, generating a configuration of basins ahead of the volcanic arc (Agencia Nacional de Hidrocarburos, 2006).

The geology of the region is distinguished in different ways according to its geomorphology; in the plain areas there is a dominance of sedimentary material, with a wide presence of Pliopleistocene deposits. The Andean-Pacific zone is made up of volcanic and metasedimentary rocks from the Cretaceous with the presence of quartzdioritic plutons from the Tertiary with the presence of volcanic activity in the department of Nariño (Delgado. In the area al.et , 2007). of the alluvial valleys and depressions there is a dominance of sedimentary rocks from the Tertiary , with the presence of igneous rocks from the Pliopleistocene (Delgado, 2007 et al). The Serranía del Baudó is dominated by the UVA formation, on the western margin of the Pacific with the presence of alluvial-type sedimentary material, alluvial terraces, homoclinal spines and conglomeratic sandstone (IIAP , 2015).

2.7.1.3 Hydrography

The Pacific Macrobasin covers longitudinally an approximate distance of 740 km, with greater representation in area by the direct basin of the Patía River. The average flow of the Pacific River basin corresponds to 9,419 m3 /s (IIAP, 2013). It has the presence of 78 second-order basins, several of which empty their mouth into the sea, six (6) empty their waters into the Atlantic Ocean directly (Atrato, León, Sinú, Acandí, Tolo and Mulato) and twenty-one (21) drain to the Pacific Ocean (some such as Baudó, San Juan, Mira, Patía, San Juan del Micay) which are established as the fundamental unit of planning and territorial ordering (IIAP, 2016).

The Pacific slope is fed by water from the western mountain range, from the Pacific hydrographic zone, which contains the Atrato, San Juan, Baudó, Mira, Patía, and San Juan de Micay rivers, of which those that have The highest average is the Mira River with 827.06 m3 /s and the Patía with 213.5 m3 /s, while the one with the lowest flow is the Blanco with 3.39 m3 /s. Allowing the identification of a 13% reduction according to historical data from 1988 to 2003 (Delgado, 2007). et al.

The basins of the 240 rivers and tributaries of the region are characterized by short, fast-flowing rivers rich in minerals such as gold, magnesium, nickel, tin, among others; which are widely exploited. There is also the presence of complexes

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water resources that make up the hydrography of the area with lagoons, estuaries and mangroves; lagoons such as Telpis, Santo Domingo, Verde, La Cocha, among others, the latter considered a Ramsar wetland. The water network constitutes an important transportation and communication system between communities, presenting itself as the main means for transportation, marketing, mobilization and cultural exchange (IIAP, 2015).

2.7.2 Biomes

The project area presents three (3) large biomes and five (5) biomes, as shown in Table 7, with the tropical humid Zonobiome being the most representative, which is equivalent to 166,477.04 hectares (57.85%).).

It should be noted that the information base Shapefile is the one generated by the IDEAM (2017) of Continental, Maritime and Coastal Ecosystems of Colombia, this presents some areas without interpretation within the project limits, due to this the interpretation of the biomes was carried out missing, from the dynamics of double drainage associated with areas with information gaps. In this way, the double drainage layer was intercepted with the Continental Ecosystems layer, identifying that 98.00% of the areas coincide with the Pedobiome of the Tropical Humid Zonobiome, of the Hydrobiome Biome, while at the Biome level according to the IAvH, the 97.73% of the areas correspond to the Nariño-Tumaco Pacific Hydrobiome; which in turn coincides with the description of the closest interpreted polygons, in this way the missing area to be interpreted was added to said categories.

Table 7. Biomes present in the project area

Great Biome	Biome	Area (ha)	Area (%)
Orobioma del Zonobioma Wet Tropical	Orobioma Subandino	6.319,23	2,20%
Pedobioma del Zonobioma Wet Tropical	Halobiome	21.221,05	7,37%
	Helobiome	84.452,50	29,35%
	Hydrobiome	9.309,40	3,23%
Tropical Wet Zonobiome Tropical	Wet Zonobiome **Total general**	166.477,04	57,85%
Source: IDEAM		**287.779,22**	**100%**

(2017).

The second most representative biome corresponds to the Helobiome with 84,452.50 hectares (29.35%), followed by the Halobiome with 21,221.05 hectares (7.37%), Hydrobiome 9,309.40 hectares (3.23%) and finally the Subandino Orobiome with 6,319.23 hectares (2.20 %). The classification generated by the Alexander von Humboldt Institute (IAvH), indicates the presence of nine (9) biomes within the project area as shown in Table 8 and graphically in Figure 4.

Table 8. Biomes present in the project area according to IAvH

Biome	Area (ha)	Area (%)
Halobiome Micay	29.89	0,01%
Halobiome Pacific Nariñense-Tumaco	21,191.16	7,36%
Helobiome Micay	520.34	0,18%
Helobiome Pacific Nariñense-Tumaco	83,932.17	29,17%

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Biome	Area (ha)	Area (%)
Hydrobiome Micay	27.68	0,01%
Hydrobiome Pacific Nariñense-Tumaco	9,281.72	3,23%
Orobiome Subandine Pacific Nariñense-Tumaco	6,319.23	2,20%
Tropical Humid Zonobiome Micay	1,747.77	0,61%
Tropical Humid Zonobiome Pacific Nariñense-Tumaco **General**	164,729.27	57,24%
total *Source:*	287,779.22	100,00%

IDEAM (2017).

The biome of the tropical humid Pacific zonobiome of Nariñense-Tumac with 57.24% of the total area, corresponding to 164,729.27 hectares is of greater representativeness, in second instance the Pacific helobiome of Nariñense-Tumac with 29.17% belonging to 83,932.17
hectares, while the Pacific Nariñense-Tumaco halobiome is less representative with 21,191.16 hectares (7.36%), the Pacific Nariñense-Tumaco hydrobiome (3.23%), the Pacific sub-Andean orobiome Nariñense-Tumaco (2. 20%), and with less than one percent (1%) the tropical humid micay zonobiome, micay helobiome, micay halobiome and finally the micay hydrobiome.

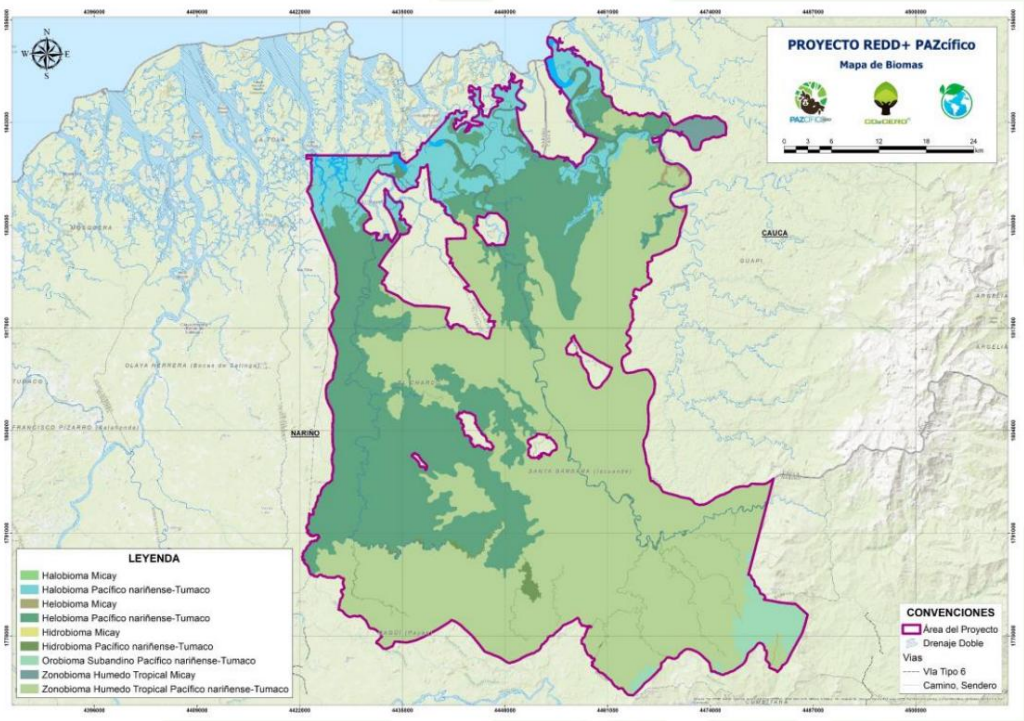


Figure 4. Map of biomes according to IAvH within the project.
Source: CO2CERO SAS (2021).

2.7.3 Ecosystems

According to the information reported in the Continental Ecosystems Shapefile,
Maritime and Coastal of Colombia generated by IDEAM in 2017, the natural forest ecosystem is the one with the greatest representation with 72.53% of the total area

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corresponding to 208,727.15 hectares, secondary vegetation is the second most representative corresponding to 54,795.20 hectares with 19.04% of the total area, and in third position are the heterogeneous agricultural areas with 16,038.42 hectares (5.57 %) as presented in Table 9.

Table 9. Ecosystems present in the project area

Ecosystem	Area (ha)	Area (%)
Heterogeneous agricultural areas	16,038.42	5,57%
Urban areas	2.37	0,00%
Natural forests	208,727.15	72,53%
Coastal herbaceous and shrubby plants	16.40	0,01%
Coastal lagoons	3,250.55	1,13%
Missing	4,949.13	1,72%
Secondary vegetation	54,795.20	19,04%
Total general	**287,779.22**	**100%**

Source: IDEAM (2017).

The mangrove ecosystem occurs in 4,241.24 hectares, equivalent to 1.72%, while the coastal lagoons represent 3,250.55 hectares (1.13%); Among the least representative ecosystems, with less than 1% of the area are coastal herbaceous and shrubby areas and finally urban areas; as presented graphically in Figure 5.

To cover some information gaps evident within the shapefile of Continental, Maritime and Coastal Ecosystems of Colombia generated by IDEAM in 2017, the intersection of the double drainage layer with the Continental Ecosystems layer was carried out, identifying that 34.63 % of the intercepted area coincides with the coastal lagoon ecosystem, which in turn coincides with the description of the interpreted polygons closest to the areas without interpretation, in this way the missing area to be interpreted was added to said category.

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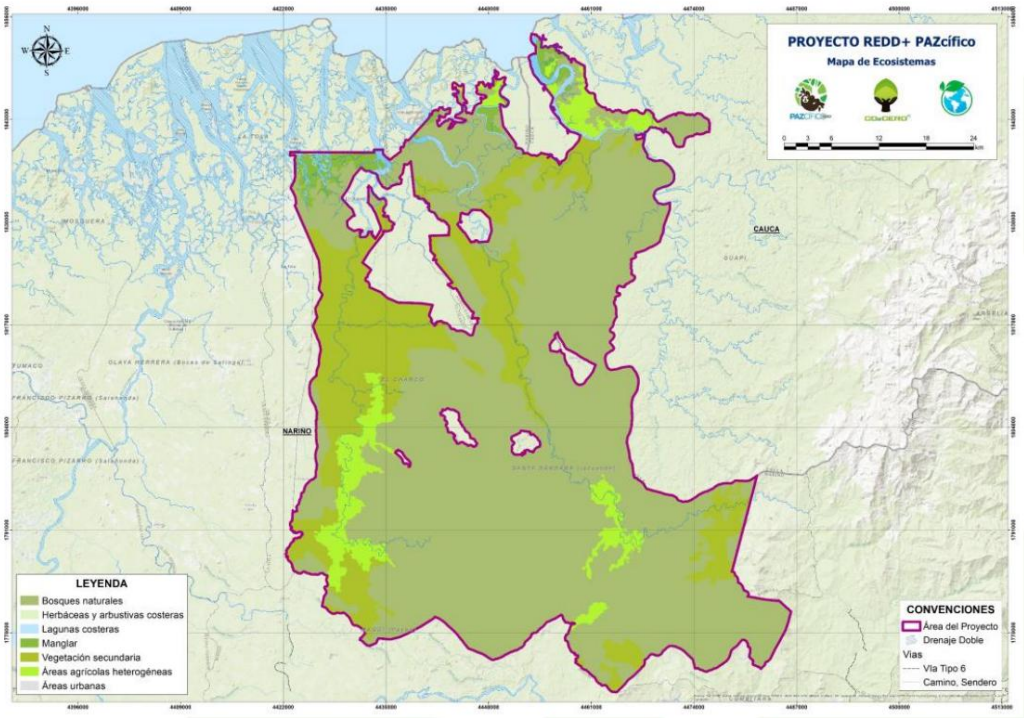


Figure 5. Map of ecosystems present in the project area
Source: CO2CERO SAS (2021).

2.7.4 Vegetation

The land covers come from the information reported by IDEAM in the 2018 Land Cover shapefile, identifying that the most representative coverage corresponds to the dense forest with 231,187.31 hectares equivalent to 80.33% of the total area. of the project, with second representativeness is the secondary or transition vegetation with 13,771.91 hectares corresponding to 4.79% of the total area, the fragmented forest occupies the third position with 11,227.28 hectares corresponding to 3.9% of the total area , as shown in Table 10 and Figure 6.

Table 10. Coverage according to Corine Land Cover present in the project area

Biome	Area (ha)	Area (%)
Continuous urban fabric	19.00	0.01%
Discontinuous urban fabric	4.06	0.00%
Clean pastures	443.98	0.15%
Wooded pastures	102.21	0.04%
Weeded pastures	113.98	0.04%
Mosaic of crops	127.88	0.04%
Mosaic of pastures and crops	1,203.89	0.42%
Mosaic of crops, pastures and natural spaces Mosaic	9,185.63	3.19%
of pastures with natural spaces Mosaic of	4,931.80	1.71%
crops with natural spaces Dense forest	5,858.04	2.04%
	231,187.31	80.33%

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Biome	Area (ha)	Area (%)
Open forest	253.41	0.09%
Fragmented forest	11.227,28	3.90%
Grassland	2.012,79	0.70%
Exposed sediments at low tide Mining	27,21	0.01%
extraction areas Secondary or	680,10	0.24%
transition vegetation Permanent tree crops	13.771,91	4.79%
Rivers **General total** *Source:*	292,27	0.10%
	6.336,47	2.20%
IDEAM (2018).	**287.779,22**	**100.00%**

The Mosaic of crops, pastures and natural spaces has 9,185.63 hectares (3.19%), the rivers with 6,336.47 hectares (2.20%), the mosaic of crops with natural spaces with 5,858.04 hectares (2 .04%) and the mosaic of pastures with natural spaces with 4,931.80
hectares (1.71%); while the others presented in Table 10 and Figure 6 have a representativeness of less than 1%. The IDEAM 2018 Land Cover Shapefile presents some areas of the project without interpretation, for which an adjustment was made to the missing land covers (19.49 hectares), adding them to the most representative category of their surroundings, as well as the homologation of visual patterns.

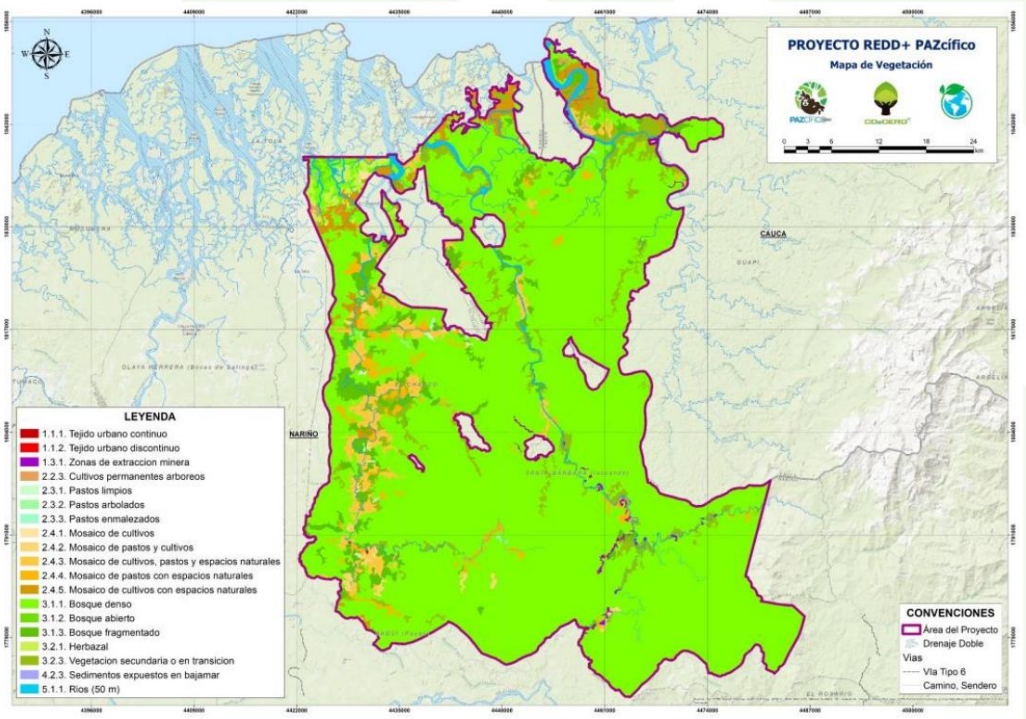


Figure 6. Land cover map according to Corine Land Cover in the project area.
Source: CO2CERO SAS (2021).

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According to INVEMAR (2003), some of the forest species identified within the area of dense, open and fragmented forests are those in Table 11, where additionally, the threat status is established according to IUCN, finding in vulnerable state to two species (), Mora megistosperma and Fur coat rhizophorae Pterocarpus officinalis It is in a state of almost threatened, while the remaining majority is in a state of least concern.

Table 11. Forest species identified in dense, open and fragmented forests

Scientific name Common name Nato mangrove Piñuelo		Threat status
Mora megistosperma	mangrove	Vulnerable
Pelliciera rhizophorae	Red mangrove	Vulnerable
Rhizophora spp.	Anime	Minor concern
Protium heptaphyllum		Not rated
Alchornea obtusifolia	Balsomacho	Not rated
Abarema jupumba	Barbasquillo	Minor concern
Hirtella racemosa	Carbonero	Minor concern
Matisia idroboi	Chestnut	Minor concern
Goupia glabra	Chaquiro	Minor concern
Cocos nucifera	Coco	Not rated
Otoba gracilipes	Cuangare	Not rated
Swartzia amplifolia	Cuña	Not rated
Pourouma chocoana	Guagay	Not rated
Symphonia globulifera	Machare	Minor concern
Ardisia manglillo	Manglesillo	Not Evaluated
Tapirira myriantha	Manteco	Not Evaluated
Isertia pitteria	Mapan	Not Evaluated
Calophyllum longifolium	María	Minor concern
Euterpe oleracea	Naidi	Not Evaluated
Cespedesia macrophylla	Pacora	Not Evaluated
Hieronyma chocoensis	Pantano	Not Evaluated
Apeiba membranacea	Peinemono	Minor concern
Andira inermis	Purga	Minor concern
Terminalia amazonia	Roble	Minor concern
Campnosperma panamense	Sajo	Minor concern
Brosimum utile	Sande	Minor concern
Vismia macrophylla	Sangre gallina	Minor concern
Pterocarpus officinalis	Suela	almost threatened
Carapa guianensis	Tangare	Minor concern
Aniba puchury	Jigua pava	Minor concern

Source: INVEMAR et al. (2003).

2.7.5 Physiography

The physiographic information comes from the Shapefile of Continental, Maritime and Coastal Ecosystems of Colombia generated by IDEAM in 2017, where it is obtained that 137,571.25 hectares corresponding to 47.80% of the area correspond to the alluvial plain landscape with the greatest importance. of the relief of terraces; the lomerío occupies the second

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representative position with 86,971.38 hectares corresponding to 30.22% of the total area, with greater evidence of the relief of hills and slopes, and hills and hills, as shown in Table 12.

Table 12. Landscapes and reliefs present in the project area

Landscape	Relieve	Area (ha) Area (%)
Lomerio	Hills	26,15 0,01%
	Hills and hills Hills	42.570,93 14,79%
	and slopes Rows	44.374,30 15,42%
Mountain	and beams	721,35 0,25%
	Hills and hills NA	29.658,46 10,31%
THAT		9.309,40 3,23%
floodplain	Flood plan	5.654,07 1,96%
	Terraces	55.445,08 19,27%
	Terraces level 1	76.472,08 26,57%
A plain with a river and a sea	Flood plan	7.422,95 2,58%
Marine plain	deltaic flood plane	1.203,32 0,42%
	Tide plan	13.899,14 4,83%
Valley	Flood plan	1.022,00 0,36%
Total general		**287.779,22 100%**

Source: IDEAM (2017).

With the third level of representativeness is the mountain landscape with 30,379.81 hectares corresponding to 10.56% of the total area with greater relevance of the relief of hills and hills. With less significance are the areas of marine plain (5.25%), marine river plain (2.58%) and Valley (0.36%), as seen in Figure 7; Areas without information are classified as NA associated with areas with bodies of water, in which it is not possible to define a relief.

It should be noted that the base Shapefile of Continental, Maritime and Coastal Ecosystems of Colombia generated by IDEAM in 2017 presents some areas without interpretation within the project, for this the adjustment of the missing landscapes was carried out, understanding that the absence of data is due to in areas with double drainages, which are located at the northern limits of the project. The double drainage layer was intercepted with the Continental Ecosystems layer, identifying that 98.00% of the areas coincide with the NA landscape; which in turn coincide with the interpreted polygons closest to the areas without data, this area was added to said category.

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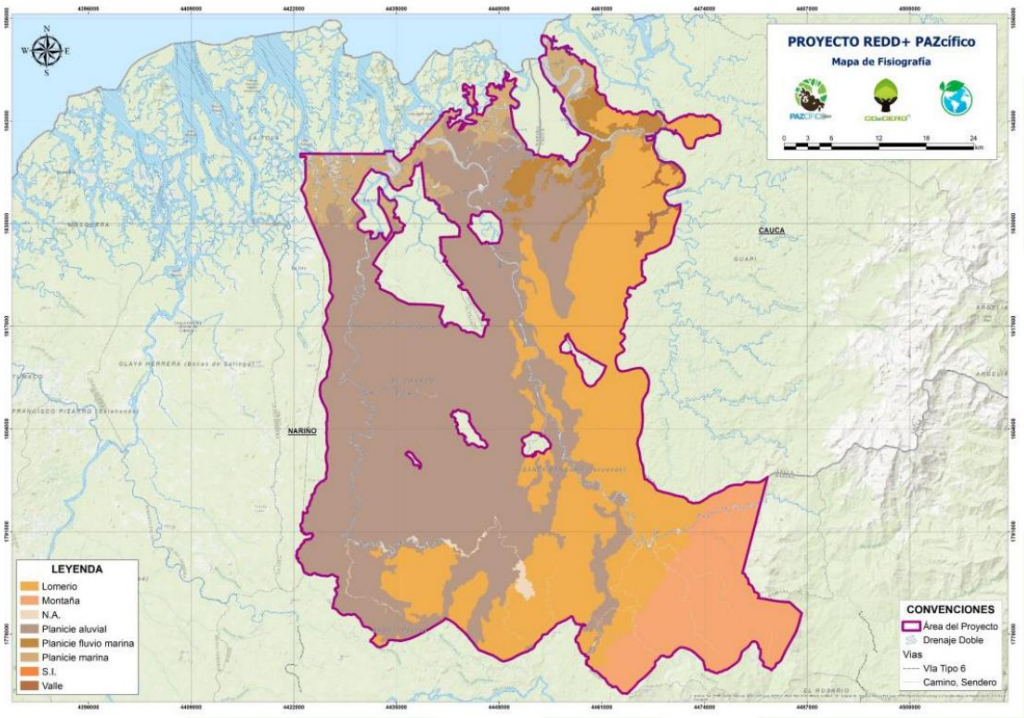


Figure 7. Physiography map in the project area.
Source: CO2CERO SAS (2021).

2.7.6 Climate classification

According to the climate classification of Caldas-Lang (2012) generated by IDEAM, it is evident that the warm superhumid climate with 203,664.42 hectares (70.77%) presents dominance in the project area, mainly in the central sector of the project, followed by the warm humid climate with 67,305.06 hectares (23.39%), located mainly in the northwestern area, as shown in Table 13.

Table 13. Climates according to Caldas Lang present in the project area

Ecosystem	Area (ha)	Area (%)
Warm Humid	67,305.06	23,39%
Warm Semiarid	49.49	0,02%
Warm Semihumid	935.00	0,32%
Warm Superhumid	203,664.42	70,77%
Temperate Humid	6,498.01	2,26%
Temperate Semiarid	970.15	0,34%
Temperate Semihumid	8,357.08	2,90%
General total	**287,779.22**	**100%**

Source: IDEAM (2012).

In a smaller area, the semi-humid temperate climate is present with 8,357.08 hectares (2.90%), humid temperate with 6,498.01 (2.26%) and less than 1% as is the case of climate

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temperate semi-arid, warm semi-humid and warm semi-arid that are concentrated in the southwestern part of the project, as presented in Figure 8.
It should be noted that the Caldas-Lang (2012) climate classification Shapefile generated by IDEAM presents some areas without interpretation within the project, therefore, the adjustment of the missing climate areas was carried out. Thus, the double drainage layer was intercepted with the climate classification layer, identifying that 72.51% of the areas coincide with the warm superhumid climate, while 27.49% with the warm humid climate; coinciding with the interpreted polygons closest to the areas without information. In this way, the uninterpreted area was adjusted according to the area of influence of the surrounding polygons.

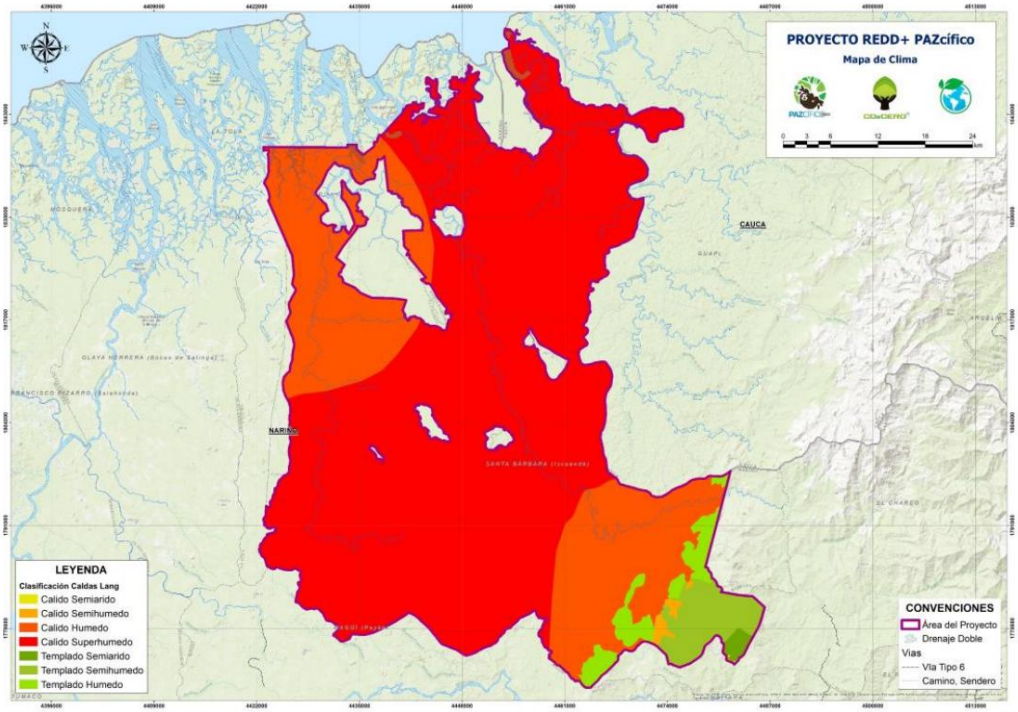


Figure 8. Caldas-Lang climatic zoning for the project area
Source: CO2CERO SAS (2021).

2.7.7 Precipitation and temperature

According to the shapefile of total annual precipitation generated by IDEAM in 2012, within the project area there are seven categories of precipitation that range within the ranges of 1000 to 7000 mm per year (See Table 14), with a reduction in precipitation as it approaches the South East part of the project as seen in Figure 9.

Table 14. Annual rainfall for the project area

Precipitation Categories	Area (ha)	Area (%)
1000-1500 mm	2,638.62	0,92%
1500-2000 mm	4,777.28	1,66%
2000-2500 mm	4,724.02	1,64%

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Precipitation categories 2500-3000	Area (ha)	Area (%)
mm 3000-4000	7,979.89	2,77%
mm 4000-5000	56,567.96	19,66%
mm 5000-7000	129,591.05	45,03%
mm **Grand total**	81,500.41	28,32%
Source: IDEAM	**287,779.22**	**100%**

(2012).

In Table 14 it can be seen that the precipitation category that presents the greatest dominance within the project area is between 4000-5000 mm with 129,591.05
hectares that correspond to 45.03% of the total area, in second place, there are areas with rainfall of 5000-7000 mm with 28.32% of the project area corresponding to 81,500.41 hectares, in third place, there are 56,527 .96 hectares (19.66%) with rainfall between 3000-4000 mm.

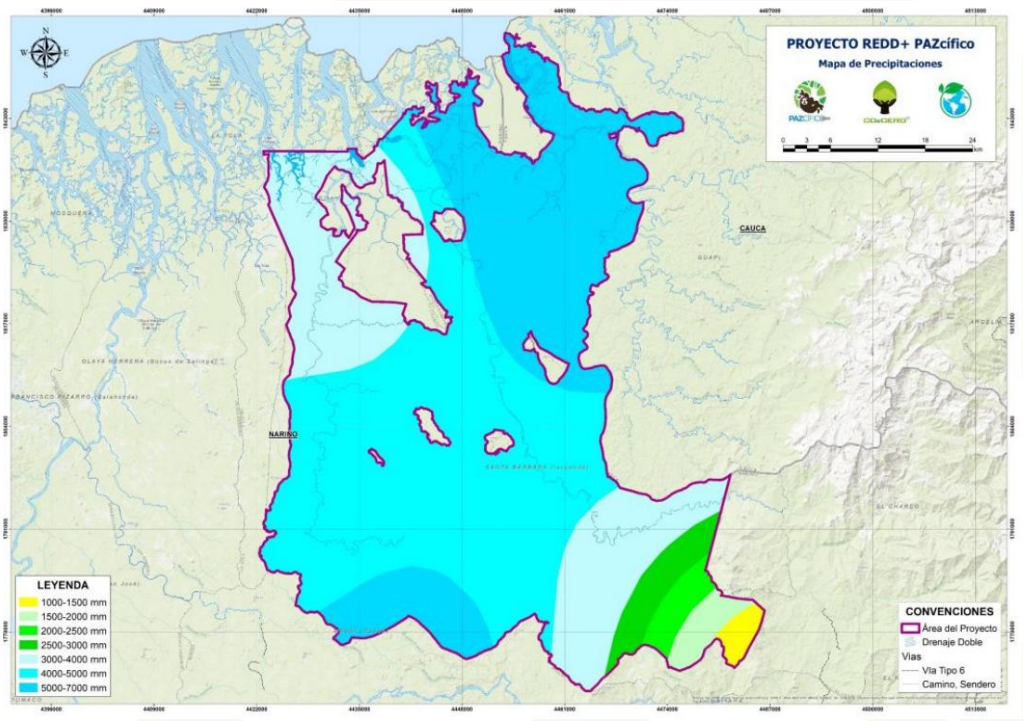


Figure 9. Precipitation map for the project area.
Source: CO2CERO SAS (2021).

The other precipitation categories occur in less than 3% of the areas, corresponding to precipitation less than 3000 mm per year. Regarding temperature, according to the annual average temperature shapefile generated by IDEAM in 2012, two categories are presented, the most representative corresponds to the category greater than 25°C with 271,953.93 hectares, which corresponds to 94.50 % of the area, while from 18 to 24°C represents 15,825.29 hectares that correspond to 5.50% of the total area, this representation can be seen in Figure 10.

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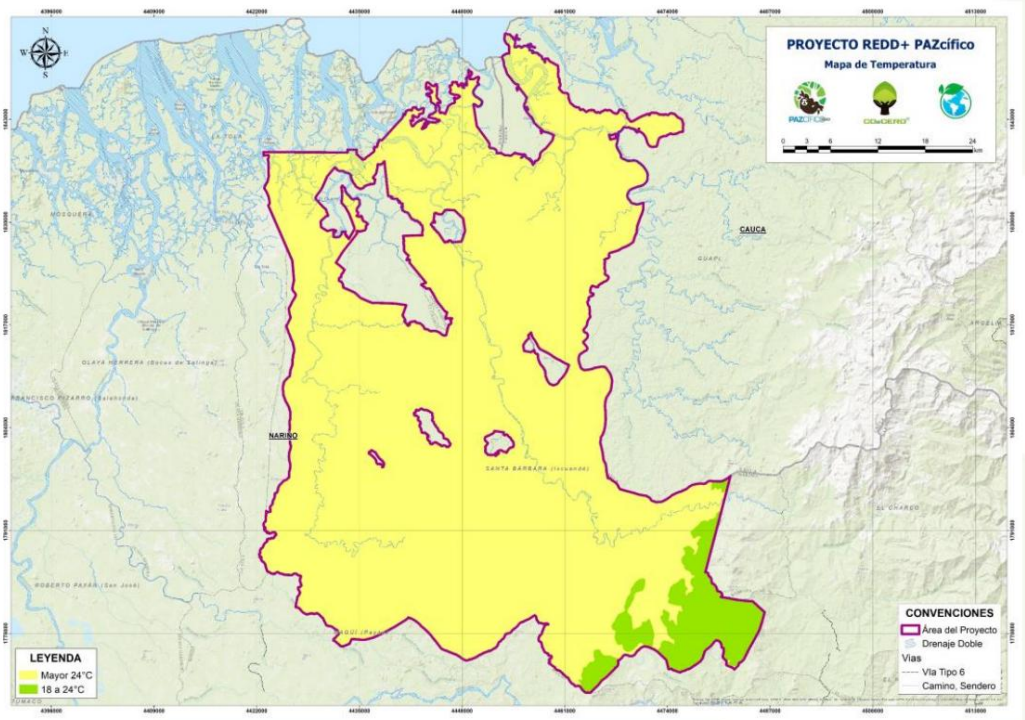


Figure 10. Map of temperatures present in the project area
Source: CO2CERO SAS (2021).

The shapefile of total annual precipitation and average annual temperature generated by IDEAM in 2012, present areas without interpretation within the limits of the project, for this the interpretation of the missing precipitation and temperatures was carried out, intercepting the double drainage layer with the temperature and precipitation layers corresponding, identifying that 42.85%, 31.88% and 25.27% of the areas coincide with rainfall of 5000-7000 mm, 4000-5000 mm and 3000-400 mm respectively. In this way, the missing area to be interpreted was distributed according to the area of influence of said categories. In the case of temperature, 100% of the intercepted areas correspond to the presence of temperatures greater than 24°C, distributing the remaining area in this category.

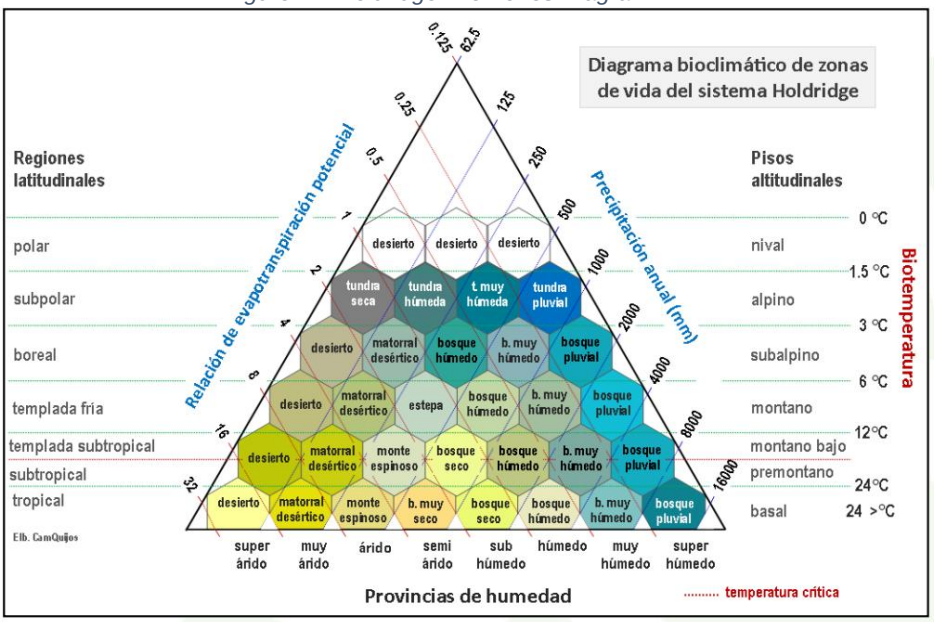
2.7.8 Bioclimatic zoning

According to the classification of life zones proposed by Holdridge (1967) in which he classifies the areas according to the conditions of annual precipitation (mm) and the average annual temperature (°C) (see Figure 11), five categories are classified. bioclimatics present within the project area, as shown in Table 15.

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Figure 11. Holdridge Life Zones Diagram



Fuente: Holdridge (1967)

The very humid tropical forest (bmh-T) is the one that has the greatest representation with 211,091.46 hectares, equivalent to 73.35% of the total area, in areas with rainfall between 4000 and 8000 mm and temperatures greater than 24°C, in Secondly, the tropical humid forest (bh-T) is presented with 60,810.52 hectares corresponding to 21.13% and with rainfall conditions between 2000 and 4000 mm and temperatures greater than 24°C.

Table 15. Bioclimatic zoning categories

Bioclimatic zoning categories Premontane	**Area (ha)**	**Area (%)**
Humid Forest Tropical Humid	7,363.95	2,56%
Forest Premontane Very	60,810.52	21,13%
Humid Forest Tropical Very Humid	8,461.34	2,94%
Forest Tropical Dry Forest **Grand**	211,091.46	73,35%
total *Source: CO2CERO*	51.94	0,02%
SAS (2021).	**287,779.22**	**100%**

The other bioclimatic categories are represented with less than 3% of the total area, as is the case of the very humid premontane forest (bmh-PM), humid premontane forest (bh-PM) and some small relicts of dry tropical forest (bs-T) (See Figure 12). It should be noted that the maps generated by IDEAM present some areas without interpretation within the project, for this the adjustment of the missing bioclimatic zones was carried out. In this way, the double drainage layer was intercepted with the climate classification layer, identifying that 74.73% of the areas coincide with the very humid tropical forest, while 25.27% coincide with the tropical humid forest; which in turn match the description

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of the interpreted polygons surrounding the areas without information. In this way, the missing area to be interpreted was defined according to the percentage of influence of these categories.

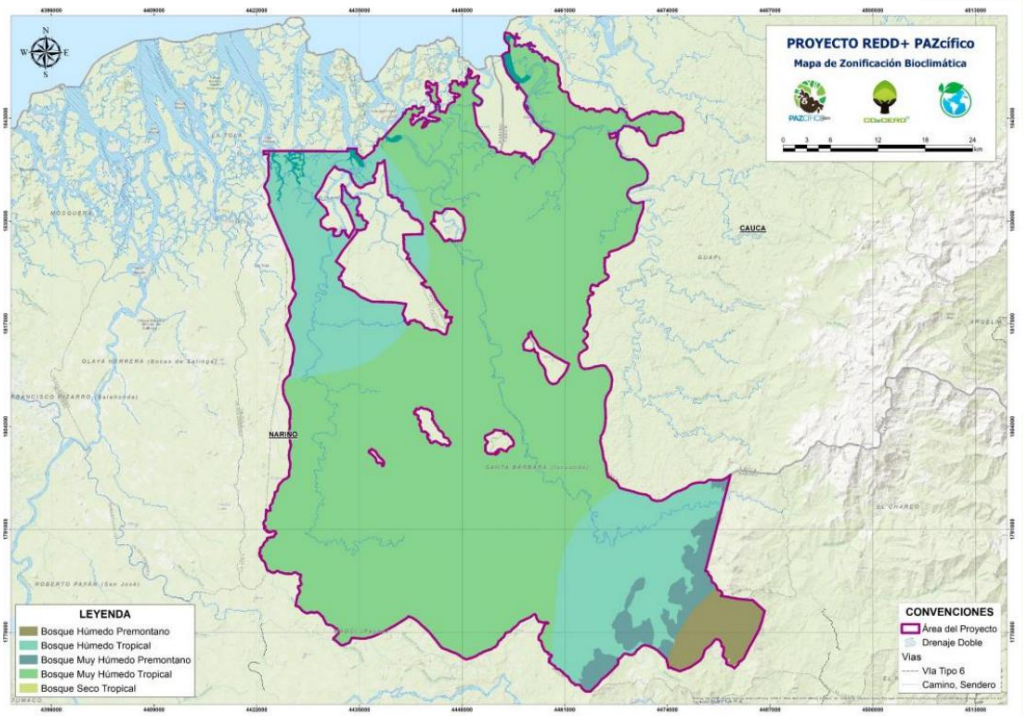


Figure 12. Map of biogeographic zones within the project area.
Source: CO2CERO SAS (2021).

2.7.9 Soils

Within the project area, the soil associations represented in Table 16 are identified, being the most representative association Fluvaquentic Endoaquepts, Typic Humaquepts, Vertic Endoaquepts covering 82,198.11 hectares (28.56%), followed by Oxic Dystrudepts, Xanthic Hapludoxs , Plinthic Haplaquox owning 46,552.38 hectares (16.18%); in third place is the association Typic Dystrudepts, Lithic Dystrudepts, Lithic Udorthents with 44,374.30 hectares (15.42%), in fourth place is Humic Dystrudepts with 39,660.21 hectares (13.78%), in fifth place is Typic Dystrudepts, Typic Udorthents with 29,658.46 hectares equivalent to 10.31% of the total area.

Table 16. Soil associations present in the project area

Bioclimatic zoning categories	Area (ha)	Area (%)
Acrudoxic Hapludands, Alic Hapludands, Aquic Eutrudepts	8,892.70	3,09%
Fluvaquentic Endoaquepts, Typic Fluvaquents, Fluvaquentic Dystrudepts	8.613,97	2,99%
Fluvaquentic Endoaquepts, Typic Humaquepts, Vertic Endoaquepts	82.198,10	28,56%
Fluventic Dystrudepts, Typic Fluvaquents, Fluventic Eutrudepts	1.022,00	0,36%

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Bioclimatic zoning categories Humic	Area (ha)	Area (%)
Dystrudepts Humic	39,660.21	13,78%
Dystrudepts,Typic Udorthents, Lithic Udorthents Inceptic	721.35	0,25%
Hapludoxs, Typic Hapludults, Oxic Dystrudepts NA	1,319.53	0,46%
	9,309.40	3,23%
Oxic Dystrudepts, Xanthic Hapludoxs, Plinthic Haplaquox	46,552.38	16,18%
Typic Dystrudepts, Humic Dystrudepts, Lithic Dystrudepts Typic	1,617.35	0,56%
Dystrudepts, Lithic Dystrudepts, Lithic Udorthents Typic	44,374.30	15,42%
Dystrudepts, Typic Udorthents Typic	29,658.46	10,31%
Hydraquents, Hydric Haplohemists, Typic Fluvaquents **Total**	13,839.49	4,81%
general *Fuente:*	**287,779.22**	**100%**

IDEAM (2017).

With a representativeness of less than 4%, there are a total of nine (9) pedological associations such as Fluvaquentic Endoaquepts, Typic Fluvaquents, Fluvaquentic Dystrudepts; Fluventic Dystrudepts, Typic Fluvaquents, Fluventic Eutrudepts; Humic Dystrudepts,Typic Udorthents, Lithic Udorthents; Inceptic Hapludoxs, Typic Hapludults, Oxic Dystrudepts; among others. The distribution of the soils and their corresponding taxonomy can be seen in Figure 13.

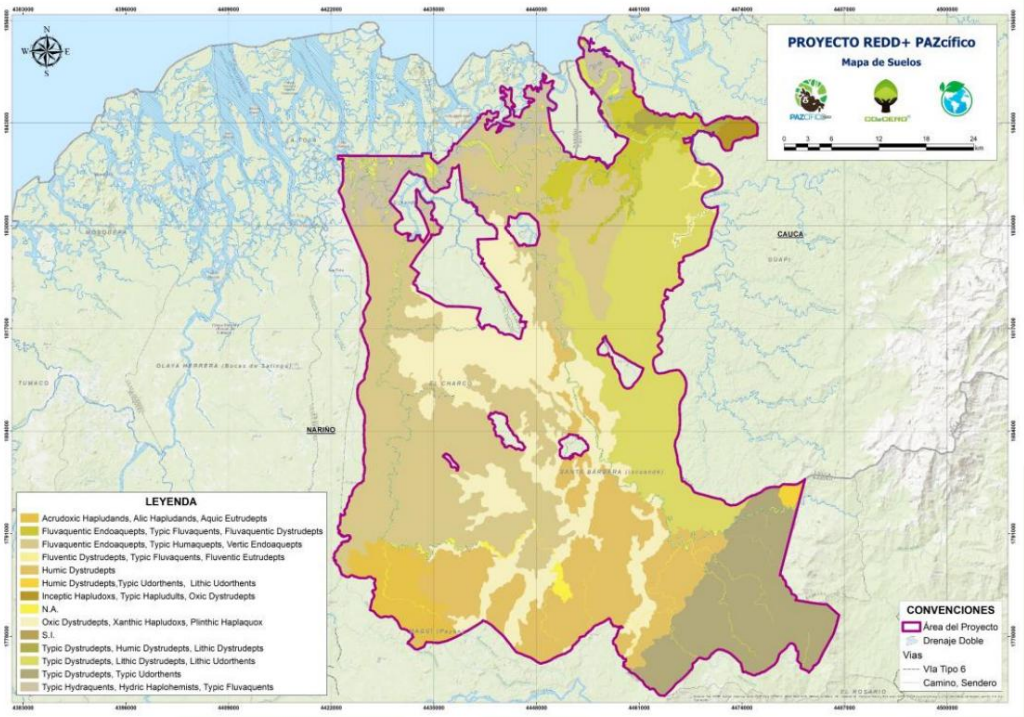


Figure 13. Map of soil associations present in the project area.

The base Shapefile of Continental, Maritime and Coastal Ecosystems of Colombia generated by IDEAM in 2017 presents some areas without interpretation within the project, for this the interpretation of the missing soil associations was carried out, based on the presence of double drainages in the northern limit of the project. The layer of

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double drainages with the Continental Ecosystems layer, identifying that 98.00% of the areas coincide with the NA landscape, according to the absence of soils due to the presence of double drainages; which in turn coincide with the description of the interpreted polygons closest to the areas without information, in this way the missing area to be interpreted was added to said category.

2.7.10 Fauna

Within the project area there is a highly diverse faunal component, associated with the presence of strategic ecosystems, ideal habitats and protection of forests; in addition to presenting cultural relevance of the communities associated with the consumption, commercialization and protection of some of these. The fauna groups identified within the project limits are described below.

2.7.10.1 Ichthyofauna

habitat conditions, INVEMAR al. (2003) and The confluence of rivers and seas generates particular which are related to the availability of food and shelter for different fish (freshwater and marine), mollusks and crustaceans.

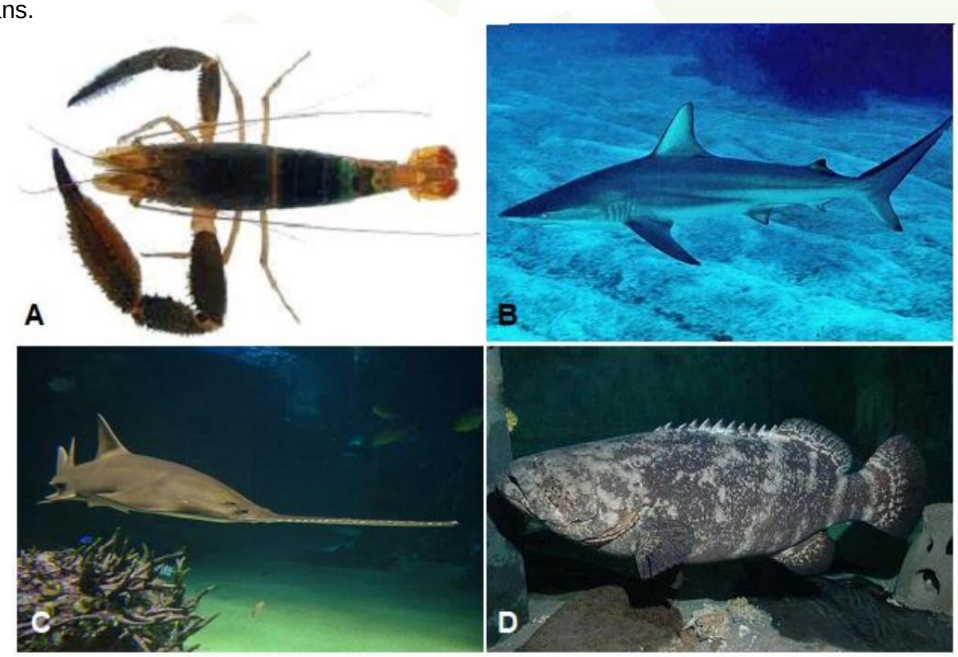


Illustration 10. Threatened fish fauna associated with the project area
Taken from: Naturalista CR (2019), Smithsonian Institute (2018), García et al (2013).
A: Macrobrachium panamense, B: Carcharhinus limbatus, C: Pristis pectinata, D: Epinephelus itajara

Table 17 and Illustration 10 show the individuals with the greatest abundance and importance within the communities of the municipalities of Guapi and Santa Barbara de Iscuande.

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Table 17. Ichthyofauna of the area and degree of threat

Scientific name	Common name	Degree of threats
Macrobrachium panamense	Chambero shrimp	Minor concern
Panamanian lollipops	Squid	Insufficient data
Arius the plains	Catfish	Minor concern
Arius multiradiata	Canchimalo	Minor concern
Caranx spp.	Mackerel	Minor concern
Centropomus spp.	sea bass	Minor concern
Diapterus peruvianus	Mojarra	Minor concern
Lutjanus sp.	snapper	Minor concern
Polydactylus approximans	White chin	Minor concern
Peprilus sp.	Popcorn	Minor concern
Gymnura sp.	hose stripe	almost threatened
Carcharhinus limbatus	I will take off the black one	Vulnerable
The former are combed	Pez penalty	Critically endangered
Epinephelus will be full	Guasa grouper	Vulnerable
Cetengraulis mystic	Carduma	In critical danger

Source: INVEMAR et al. (2003) & Conservation International Colombia (2011).

2.7.10.2 Mast fauna

Two large groups of animals can be found within this category, the first susceptible to hunting and subsistence use by the community and the second related to the care and protection of the environment. Some species have high abundance, and others are decimated by the decrease in their habitat (INVEMAR 2003). Among the priorities of the community councils is the et al., protection of fauna, understanding the impacts that have been generated in their habitat, due to deforestation and degradation activities, as well as the excessive impact applied to their populations. Likewise, family sustainability in some cases depends on the mammals or other taxonomic groups, but this has been transformed into actions of illegality and trafficking, which do not represent the essence of the communities as administrators of natural resources and the biotic component that there it manifests itself.

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Illustration 11. Threatened mammals associated with the project area
Taken from: Payan et al (2015), Mosquera et al. (2018), Naturalista (2019) & Ecosbosque (2019).
A: Panthera onca, B: Long-tailed otter, C: Alouatta palliata, D: Felis concolor

It is evident that the most diverse and abundant group corresponds to bats; Table 18 and Illustration 11 show some species present in the area.

Table 18. Animal fauna of the area and degree of threat

Scientific name	Common name Threat status	
Dasypus nineteen	rain	Minor concern
Mexican anteater	horse anteater	Minor concern
Cyclops didactylus	royal bear	Minor concern
Bradypus variegatus	white parakeet	Minor concern
American Mazama	Deer	Insufficient data
Panthera onca	Tigre	almost threatened
The color of the cat	Puma	Minor concern
Leopard cat	butterfly tiger	Minor concern
Felis yagouaroundi	Banana wallet	Minor concern
Long-tailed otters	Nutria	almost threatened
Squirrel granatensis	Squirrel	Minor concern
Alouatta palliata	Mono carinegro	Vulnerable
Didelphis marsupialis	The debt	Minor concern
Proechimys semispinosus	mountain mouse	Minor concern

Source: INVEMAR et al. (2003).

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2.7.10.3 Ornitofauna

The country is categorized as the richest in the world in birds, the Pacific area is no exception, showing a high abundance and diversity of birds, however, like the mastofauna, there are illegal hunting and extraction actions that reduce diversity. of the area. Some species of this group are presented in Table 19 and Illustration 12.

Table 19. Ornithofauna of the area and degree of threat

Scientific name	Common name	Degree of threats
Tigrisoma mexicanum	They know everything	Minor concern
A magnificent frigate	Tiereta	Minor concern
Quiscalus Mexicanus	monkey	Minor concern
Western pelican	pelican or gaban	Minor concern
Tringa sp.	Chelos	Minor concern
Thalasseus maximus	Seagull	Minor concern
Phalacrocorax olivaceus	crow duck	Not rated
Anas sp.	Be specific	Minor concern
Crax Paujil sp.	Colorado	Minor concern
Penelope purpurascens	Pava	Minor concern
Phalacrocorax olivaceus	Crow Duck	Minor concern
Amazona farinosa	Lora Cejiverde	almost threatened
Ramphastos swainsonii	Yellow-billed Paleton	Minor concern
Tinamus major	Partridge	almost threatened
Aramides wolfi	Chilacoa cafe	Vulnerable
Understood quinticolor	Multicolored bull	Vulnerable

Source: INVEMAR et al. (2003)

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Illustration 12. Threatened ornithofauna associated with the project area
Taken from: Palacio (2012), Arango (2017), InaturalistPa (2019) & Arango (2015).
A: Amazona farinosa, B: Tinamus major, C: Aramides wolfi, D: Capito quinticolor

2.7.10.4 Herpetofauna

The conditions of high humidity and rainfall present within the region favor the habitat of Herpetofauna, creating a niche in the area. In addition, the presence of mangroves encourages specific spaces for the reproduction and development of some species; Like the other faunal categories, there are conditions of illegal hunting and extraction that reduce the diversity and abundance of herpet species in the area.

Some species of this group are presented in Table 20.

Table 20. Herpetofauna of the area and degree of threat

Scientific name Degree of threats	Common name	
Eretmochelys imbricata	Tortuga carey	Critical danger
Lepidochelys olivacea	loggerhead turtle	Vulnerable
Dermochelys coriacea	leatherback turtle	Critical danger
Boa constrictor	Petacona	Minor concern
Iguana iguana	Iguana	Minor concern
Caiman crocodylus	Tulicio	Minor concern
A sharp crocodile	lizard or caiman	Endangered
Rhinoclemmys melanosterna	Tortoise	almost threatened
Chelydra serpentina	turtle	Minor concern
Kinosternon leucostomun	Tapacula turtle	Minor concern
Rhinoclemmys melanosterna	palm turtle	almost threatened

Source: INVEMAR et al. (2003) & Conservation International Colombia (2011).

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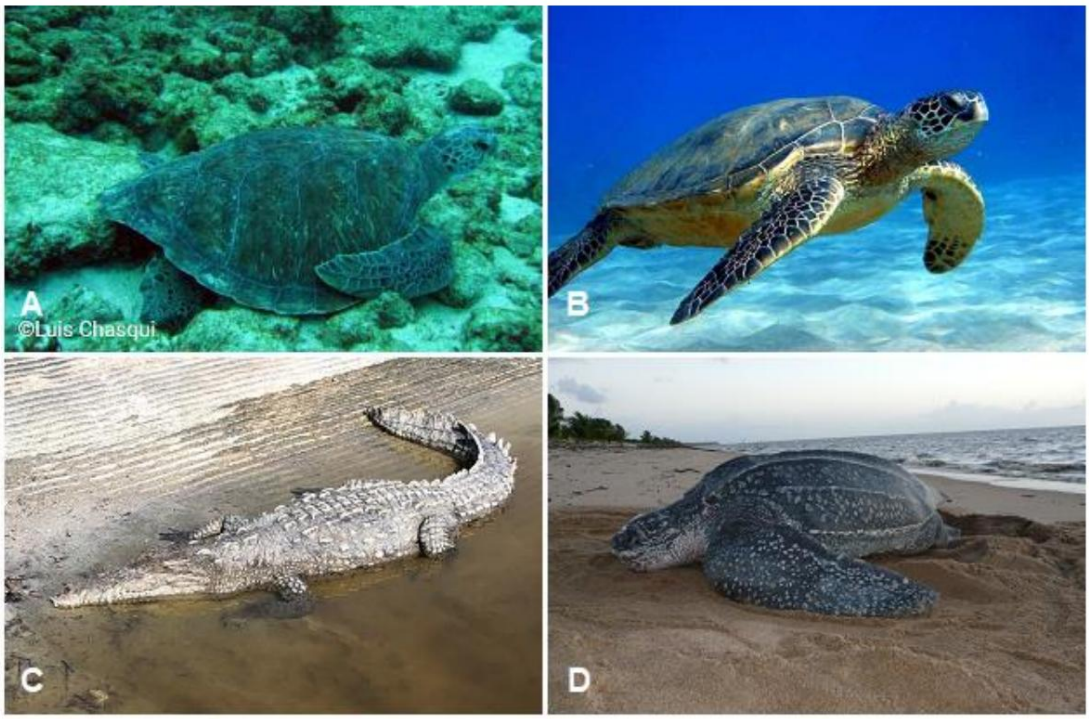


Illustration 13. Threatened herpetofauna associated with the project area
Taken from: invemar (2018), Naturalista (2017), Barameda (2018) & Naturalista (2015).
A: Amazona farinosa, B: Tinamus major, C: Aramides wolfi, D: Capito quinticolor

2.7.11 Social, cultural and economic aspects of the community

Below, the social, cultural and economic aspects that represent the community councils of Guapi Abajo, Cuenca del Río Iscuande, Comunitario Prodefensa del Río Tapaje and Unicosta are presented.

2.7.11.1 Social aspects

The relevant social aspects of the communities involved in the REDD+ PAZcífico project corresponding to Guapi Below, the Iscuandé River Basin, Prodefensa of the Tapaje River and Unicosta are presented. The community councils are associated with the organization ASOCOETNAR, which acts as a group of bordering community councils that maintain the relationship between man and nature (Organizaciones y Consejos Comunitarios del Sur del Pacífico, 2015). al.et

Guapi down

The community council is made up of 16 communities distributed in three areas:

- Upper area: Boca de Napi, Calle Honda, Buena Vista, Partidero and La Pampa.
- Middle zone: Codicia, Temuey, Parcelas and Penitente.

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Proyecto REDD+ PAZCÍFICO

- Lower zone: El Carmen, La sabana, Santa Rosa, Chamón, Chamoncito and Playa obregons.

The general assembly is made up of the community council with all its inhabitants, each community delegates 10 assembly members who are the ones who elect the board of directors starting with the legal representative, the council board is made up of one participant from each of the communities to their respective representation like this:

- Legal representative: Boca de Napi
- Fiscal: Calle Honda
- Secretary: Supporter
- Vowels: La Pampa, Codicia, Samson, Penitente, Las Parcelas, La Sabana, Santa Rosa, Buena Vista, Chamón and Chamoncito
- Vice President: Temuey
- Treasury: El Carmen
- Storekeeper: The Penitent

This structure may vary, however, in a documented manner it is possible to register this one. The community expresses its close social, political, cultural and religious relationship with all neighboring communities. The area shows high relevance in displacement due to armed conflict, which is confirmed as one of the most painful moments in the lower area of the community according to the study carried out there, where clashes between armed groups and the national army led to the displacement of the Carmen community (Ministry of the Interior, 2017).

Iscuande River Basin The

community council is awarded by resolution No. 2432 of December 1, 2005, of INCORA. With greater local representation in the municipality of Santa Barba de Iscuandé. The general assembly elects the board of directors headed by the president or legal representative, a vice president, three prosecutors, a treasurer, a secretary and four members, there is representation of all the communities associated with it. The minor councils are made up of three people per community, who carry out social and planning work.

The community council is made up of approximately 980 families, with about 3,920 people within the territory according to the Internal Census carried out in 2020. Located in the upper area of the river, in the villages of Santa Rita, San Rosco, Chivatillo, Pueblo Nuevo, Regadero, Santa Rosa, San Antonio, Isla del Gallo, Palomino, Chontaduro, Bella Vista, Guayabal, Piscindé, Isla Larga, Caimanes, La Fragua, La Loma, Vuelta Larga, La Quinta, Sandamia, Morongo, Limones, El Placer, Las Marías, Boca San Luis, Milagros, El Ají, Playa Grande, Buga, Guadual, El Alto, Vayanviendo, Cocurugua, Bartulita, Montaño, El Payaso, San José, Las Cejas, Juan Ventura, San Andrés, Pie Salto and Santos de Guabina.

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The conflicts generated by armed activities have fostered serious difficulties within the community council, with victims such as Sócrates Paz Patiño, who acted as legal representative of the community council, being murdered on May 29, 2013, the act being attributed to hitmen related to illegal mining activities. Apart from Socrates, the threats and displacement of social leaders is a difficult situation that the council suffers from (Semana, 2013).

Prodefensa del Río

Tapaje The community council is awarded by Resolution 1500 of August 1, 2005, of INCORA, with greater local representation in the municipality of Charco.
The general assembly is made up of groups of people that are fully representative of the communities that make up the council. Its structure is like this:

- A president or legal representative.
- A vice president
- A secretary
- A treasurer
- A prosecutor
- Five vowels

The community council represents 65 villages that make up all of their communities, with representation of minor councils. Table 21 shows the minor councils with the villages that make them up.

Table 21. Minor community councils of the Pro-Defensa del Río Tapaje community council

Community councils minors	Paths	
Union and Fight	Saint Joseph	Mercedes
Progress With Justice and Peace Matapalo (Cuil Microbasin)	Español Isupi	Santa Catalina (Microbasin Catalina) The Cuil
Promingas Tapajeña	Carmelo Recorito Big beach Boco de Nutria Pambalero	Boca de Agua / Prieta Colorado Mud Balsal Miraculous Painter
Half Coverage Integration	White corn Alteron Morrito	Same Morrito The Vega
People's Tribune	Guajaría Pearling Bellvista	Tribune Californea New town
The Liberator	Tribiño Punishment She was	Magdalena Dry Arm Rosario

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Community councils minors	Paths	
	Pellet Salta Magdalena	Quebraita
Tarijeña Union	Guabillo San Francisco Chachajo San Rafael	Martin Galbe A pillar Brazo Taija
Esperanza Tapajeña	Alfonso Lopez Hojal High Mountain	Arenal Toothless
Socio Tapaje	Guayaquil Barranquillita	Hilario Lopez Anthill
The Coming	Mere Chapel	Campo Alegre
Awakening of Esteros and Mangroves	Esteros Martinez Yasal Outside Boca de Sequonda	Santa Rosa Sundays

Source: Prodefensa del Rio Tapaje Community Council (2016)

The main social difficulties that affect the community council are related to the armed conflict such as displacement activities, terrorist acts, homicides, threats, among others. With an estimated 19,602 people affected in 2016, corresponding to 85% of the victimized inhabitants (DANE, 2016, Taken from the Prodefensa del Rio Tapaje community council, 2016). According to the MIRE (2020), the population has social problems associated with the availability of basic public services, since they do not have energy service, leading to the acquisition of combustion plants, nor does they have an aqueduct and sewage company, and communications are unstable.

Unicosta

The community council is awarded through Resolution 0158 of February 9, 1998 of INCORA, with greater local representation in the municipality of Santa Barbara de Iscuandé. The general assembly is made up of a group of people who are representative of the total number of communities that make it up. Its integration occurs like this:

- A legal representative.
- One president(s) •
One vice-president(s)
- A secretary
- A treasurer
- A prosecutor
- Three vowels

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Proyecto REDD+ PAZCÍFICO

The UNICOSTA community council was the first council to be granted collective lands in the department of Nariño (Baquero, 2014). The community council is made up of approximately 480 families, 1,163 men and 1,126 women for a total of 2,289 community members according to the 2014 internal census. According to the Ombudsman's Office (2020), the community council presents associated risks. with threats from the armed conflict, there is the presence of FARC-EP dissidents
and Gaitanista self-defense groups of Colombia -AGC, with nearly 2,300 members of these groups.

2.7.11.2 Cultural aspects

According to the Community Organizations and Councils of the South Pacific (2015), et al. the communities associated with the ASOCOETNAR organization present a great cultural, gastronomic and knowledge heritage, which are expressed in festivals, dances, meetings, among others; However, there is a fear associated with the loss of cultural identity due to the influence of outsiders related to armed conflict activities present within the territory.

Guapi

Below In the upper area of the community, there are meeting spaces mainly in its festivals such as the patron saint's day of the Virgin of Las Lajas, Easter, Christmas and family celebrations, which are carried out with traditional music with bass drum, guasa, guitar and bottle, thus maintaining their traditions, rituals are also performed such as veleña to the dead with praises, songs and night prayers. In the middle zone, socioeconomic, cultural and religious relations are carried out with 16 communities that make up the lower zone; Among the traditional gatherings there is Easter, Virgin Mary, La Purísima on December 8 and Christmas. In the middle zone of the community, traditions such as folk music, knowledge and subsistence in the territory, wakes and traditional midwives stand out. Clashes between state and illegal armed forces caused the displacement of the communities in the lower area of Guapi Abajo.

In general terms, the Guapi Abajo community council expresses the loss of cultural traditions due to the presence of armed groups, generating restrictions on activities such as fishing, hunting wild animals, meetings between community members and planting. The protection that families currently generate for children and young people causes the loss of traditions and the community's own identity, as many practices cannot be taught due to the social limitations generated by these armed groups.

The lower area of the community expresses its frustration in the face of events of forced displacement, community economic crises, lack of attention from the state, while among its important moments is the development of projects in favor of the community (See Table 22).

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Proyecto REDD+ PAZCÍFICO

Table 22 Families by community inside and outside the territory.

CONSEJO COMUNITARIO	COMUNIDAD	N° DE FAMILIAS DENTRO	N° DE FAMILIAS POR FUERA
GUAPI ABAJO - CAUCA	TEMUEY	80	17
GUAPI ABAJO - CAUCA	CALLE HONDA	12	72
GUAPI ABAJO - CAUCA	PARTIDERO	0	38
GUAPI ABAJO - CAUCA	BOCA DE NAPI	20	50
GUAPI ABAJO - CAUCA	BUENA VISTA	18	41
GUAPI ABAJO - CAUCA	LA PAMPA	50	15
GUAPI ABAJO - CAUCA	LAS PARCELAS	26	20
GUAPI ABAJO - CAUCA	PLAYA OBREGONES	0	50
GUAPI ABAJO - CAUCA	SANSÓN	60	45
GUAPI ABAJO - CAUCA	EL CARMEN	70	10
GUAPI ABAJO - CAUCA	PENITENTE	52	22
GUAPI ABAJO - CAUCA	CHAMONCITO	15	45
GUAPI ABAJO - CAUCA	SANTA ROSA	100	11
GUAPI ABAJO - CAUCA	LA SABANA	50	30
GUAPI ABAJO - CAUCA	CHAMÓN	48	120
GUAPI ABAJO - CAUCA	CODICIA	0	61
GUAPI ABAJO - CAUCA	CHAMONCITO	15	45
GUAPI ABAJO - CAUCA	SANTA ROSA	100	11
GUAPI ABAJO - CAUCA	LA SABANA	50	30
GUAPI ABAJO - CAUCA	CHAMÓN	48	120
GUAPI ABAJO - CAUCA	CODICIA	0	61

Source: Taken from the Ministry of the Interior (2017).

Iscuande River Basin

One of the historical and cultural places occurs in the presence of two anchors found on the shore of the Iscuandé River, which recognizes the beginning of the circulation of ships through the river port of Iscuandé (Artesanías de Colombia, 2002). The cultural heritage is related to the religious picture of the Animas present within the municipal Catholic parish beginning in the colonial era, holding municipal festivals with more than 300 years of activity (Municipal Mayor's Office of Santa Barbara de Iscuandé, 2020).

Among the most notable cultural activities that take place in the municipality is the festival of the Holy Innocents, celebrated in December, the week of the elderly in the month of August, the intermunicipal meeting of the Pacific in the month of October and the patron saint festivities in December. , associated with marimba musical acts and traditional songs from the South Pacific (Municipal Mayor's Office of Santa Barbara de Iscuandé, 2020).

Due to the loss of cultural identity of the population associated with the armed conflict that the community is experiencing, the community council, through action plans, has attempted to recover cultural identity through self-recognition activities as a cultural community.

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ancestral and own popular (Hernández, 2014). The mechanisms of action are based on the following actions:

- Mechanism of action through orality and memory by inhabitants older and knowledgeable/student of the area.
- Knowledge of constitutional jurisprudence for the protection of black communities, knowing Law 70 of 1993.
- Training for the development of social projects so that the communities present what they want to do to strengthen management capacity.

Prodefensa del Río

Tapaje Within the municipality there is a cultural heritage associated with singing and music activities through traditional instruments such as the marimba, Pacific dances and ancestral traditions. The main festivities and associated celebrations occur in the municipal carnivals and the Sequihonda River festival (Municipal Mayor's Office of El Charco, 2020).

The approach to the conservation of the cultural identity associated with the territory seeks to instill and consolidate through the execution of training programs and dissemination of the knowledge of the elderly of the community council, based on the construction of the cultural center.

Unicosta

The name and origin of the municipality of Santa Barbara de Iscuandé is given by the Sindagua indigenous community, where the name of Iscuandé was taken for the inhabitants of the riverside areas of the River (Artesanías de Colombia, 2002). The presence of cultural expressions is associated with dances such as the lullaby, patron saint festivals, traditional marimba songs and stories, among others; The most important events in the community are associated with the gastronomic carnival of Fisherman's Day and the Petronio Álvarez festival. In seeking to strengthen the cultural identity of the community council and therefore of the municipality, efforts should focus on having a cultural house, instruments musicals to encourage practices associated with cultural events (Alcaldía Municipal Santa Bárbara de Iscuandé, 2016), thus promoting the rescue of historical memory, recognizing traditional and cultural identity. Another project that focuses on the recovery of cultural identity is the construction of a municipal library in order to recognize the history of the territory, which is called (Alcaldía Municipal de Guapi, 2019). educational infrastructure in

that refers to the construction of the Petaca from

2.7.11.3 Economic aspects

According to the results of the 2014 National Agricultural Census, it is possible to identify Agricultural Production Units (UPA) and Non-Agricultural Production Units (UPNA) within the areas

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of influence of the project, Table 23 presents the Agricultural Production Units within the municipalities present in the project, based on the census of the territories of ethnic groups.

Table 23 UPNA and UPA results of dispersed rural areas censused in ethnic group territories

Municipality	With non-agricultural productive activity	No activity observed	Residential use only
Guapi	255 32 334 173 320 1,928 53		3.145
Saint Barbara	432 254 113 *Source: DANE*		1.453
The puddle	*(2014)*		1.308
The Tola			1.190
Magüi (Payan)			1.295

According to the previous result, it is evident that the agricultural units evaluated do not involve obvious agricultural activity, translating into the performance of other sectors; in some cases, housing use was identified in a representative manner. Table 24 presents the UPAs and their performance in specific commercial activities, confirming the absence of agricultural activities within the UPAs.

Table 24 UPA and UPNA results in economic activities in dispersed rural areas censused in ethnic territories.

Municipality	UPA			
	Transformation of agricultural products	Industry	Trade	Services
Guapi	101	105	55	78
Saint Barbara	128	166	45	50
The puddle	395	3	76	41
The Tola	13		18	35
Magüi (Payan)	103	135	14	19

Source: DANE (2014)

According to this result, it is observed that in general terms the UPA in ethnic territories are associated with activities of transformation of agricultural products, however, sectors such as industry, commerce and services are also manifested within the territory, except for the industry sector in which municipality of La Tola. Table 25 presents the UPA and UPNA dedicated to different activities for the transformation of agricultural products, this being the most representative economic activity within the territory according to the census units.

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Table 25 UPA results of agricultural product transformation activities in dispersed rural areas censused in ethnic territories.

	UPA					
	Transfer of products agricultural	Transfer of products forestry	Transfer of products livestock	Elaboration of food and alcoholic beverages	Craftsmanships	Biofuels
Guapi	1	59	1	39	.	1
Santa Barbara	18	52	42	12	3	1
He Puddle	8	22	179	186	.	.
The Tola	4	5	.	4	.	.
Magüi (Payan)	65	3	1	29	5	.
UPNA						
Guapi	18	52	42	12	3	1

Source: DANE (2014)

Within the municipality of Guapi, the transformation of forest products is evident as the main activity followed by the production of food and alcoholic beverages. In the case of Santa Bárbara, UPA associated with the transformation of forest products is evident, with the second occupation being the transformation of livestock products. and transformation of agricultural products. In the case of El Charco, the production of food and alcoholic beverages is relevant, followed by the transformation of livestock products and in third place the transformation of forest products, showing a reduction in forestry activity compared to the other municipalities; A similar situation is identified in Magüi (Payán) with the transformation of agricultural products being relevant, followed by the production of food and alcoholic beverages, in a less representative way there are handicrafts, transformation of forestry products and livestock products. In the case of the municipality of La Tola, there is low representation of UPA in economic transformation activities, with some evident in the transformation of agricultural products, transformation of forest products and production of food and alcoholic beverages.

Table 26 UPA results in trade activities in dispersed rural areas censused in ethnic territories.

Municipality	UPA	
	Trade in food products and alcoholic beverages	Trade in products other than food and alcoholic beverages
Guapi	18	37
Saint Barbara	2	43

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Municipality	UPA	
	Trade in food products and alcoholic beverages	Trade in products other than food and alcoholic beverages
The puddle	24	52
The Tola		12
Magüi (Payan)	6	3

11 *Source: DANE (2014)*

Table 26 shows how the trading activities of products other than food and alcoholic beverages are representative in the UPAs of the different municipalities involved in the project, representatively El Charco is the one with the largest number of UPAs under this activity, followed by Santa Bárbara and Guapi, less representatively La Tola and Magüi. In terms of trade in food products and alcoholic beverages, El Charco and Guapi are the municipalities with the greatest representation of UPA, while La Tola and Santa Bárbara are less representative.

Table 27 UPA results in service activities in dispersed rural areas censused in ethnic territories.

Municipality	a							
Guapi	69	1	6	.	1	1		.
The puddle	27	1	3	.	6	2	2	.
The Tola	29	2	4	.	.	.	.	.
Magüi (Payan)	14	1	2	1	1	.	.	.

Source: DANE (2014)

Regarding the services present within the municipalities involved in the project, Table 27 shows the UPAs associated with this activity, where support for agricultural activities has the greatest significance, with Guapi being the one with the greatest number of associated UPAs, followed by La Tola, El charco and to a lesser extent Magüi. The other services are less significant, with education coming in second place, followed by tourist services and, in a less representative way, recreational services and national security. It is important to highlight that the municipality of Santa Bárbara does not report execution of services, in addition, none of the municipalities have environmental services.

Table 28 UPA results in industrial activities in dispersed rural areas censused in ethnic territories.

Municipality	Petroleum	Mining with titles	Mining without titles	Gas, power generation and transmission	Manufacture of plastic, metallurgical, chemical substances and products
Guapi	1	4	92	6	2

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Municipality	Petroleum	Mining with titles	Mining without titles	Gas, power generation and transmission	Manufacture of plastic, metallurgical, chemical substances and products
Saint Barbara	1	11	143	9	2
The puddle					1
Magüi (Payan)		2	5	130	

Source: DANE (2014)

Table 28 shows the industrial activities identified within the census UPAs, significantly, mining activity without titles is the most representative activity in Guapi, Santa Bárbara and Magüi. The El Charco municipality has low mining activity without titles and only one UPA in the manufacture of plastic, metallurgical products, etc. Guapi, unlike mining activity without a title, has some UPAs in Gas or energy generation and transmission, mining with titles, plastics manufacturing, metallurgical and oil.

Santa Bárbara has the largest number of UPAs in mining with titles compared to Guapi, followed by Gas or energy transmission, plastics manufacturing and only one UPA with Oil. Less significantly, El Charco shows under industrial development involving two UPAs in mining with titles and one in manufacturing of plastics, metallurgical, etc. Magüi has two industrial activities, with mining activity without titles being relevant and mining with titles being of a very low proportion.

Guapi below

The Territorial Development Plan 2016 - 2019 indicates that the economic dynamics of the municipality gives relevance to the selective extraction of wood by the cutters of Guapi, mainly in the communities of Temuey, Codicia and La Pampa, generating the use for carpentry activities. . Among other relevant activities are agriculture, fishing and mining; Within agricultural activities, products such as coconut, corn, chontaduro, rice and Chinese potatoes are grown. In the livestock sector, the raising of poultry and pigs stands out, with fishing standing out as the main activity of the community council's economy given the variety of species of fish, crustaceans and mollusks; Finally, gold and platinum mining activities in areas surrounding rivers as a traditional activity among the communities.

The analysis carried out by the community council allows us to establish that it maintains crops of bread, through manual planting or with artisanal tools. Among its main products, rice, banana, banana, goat and African palm are defined, the latter being given by a INCORA project; The community of plots owes its name to the family organization that the families with African palm plots had. Among the most unfortunate events recorded by the community is the failure of the

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African palm and population displacement due to armed conflict. Their forms of production were organic, using methods such as minga and hand-changed. Some fumigation events have led to a reduction in crop productivity mainly due to environmental damage, this added to the absence of state support, effects due to armed conflict; which has led to crop loss, damage to products and low probability of cultivation due to fear of displacement or assaults in fields (Ministry of the Interior, 2017).

Fishing is a very important activity in the communities present in Guapi due to its position between the riparian zone of the Guapi River and adjacent to the Pacific Ocean. The agricultural census determines that 56% of those surveyed carry out fishing activities, 37.6% in the river, 46.7% in swamps, 23.7% in the sea, 0.2% in reservoirs or lakes and 1% in estuaries. The 16 communities that inhabit the Guapi sector below are dedicated to artisanal fishing activity, generating family subsistence income. Fishing is a complementary activity for 20.6% of the population surveyed, 28.1% define it as influential at certain times of the year, 48.5% define it as self-consumption and 19% carry out the activity for commercial purposes. ; hooking and trammel netting are the most used methods for the activity with 34.3% and 34.9%, respectively (Ministry of the Interior, 2017). Another relevant activity in the territory is mining, where 99.9% carry it out without title, the communities of El Carmen and Penitente practice artisanal mining. Guapi below presents five (5) requests for direct mining concession over the collective territory, the communities recognize their concern about the environmental damage caused by illegal mining practices within the area, reducing agricultural and fishing activities.

Iscuande River Basin

Three major economic activities are recognized: mining, agricultural and logging activities; Timber activities focus on the use of natural forest, with primary transformation of the wood; while agricultural activity is produced by crops of Coconut, Sugar Cane, Cassava, Chontaduro, Borojó and Plantain; However, these activities present difficulties for the transportation of raw materials.

Within the council area, large-scale open-pit mining projects are being developed, driven by the ideologies of the current neoliberal, export-oriented economic model, driven by the FTAs; For this, the community council seeks to direct the economy towards an environmentally friendly model, through projects and/or processes that may be viable according to the public policies given in the area (Hernández, 2014).

Mining development in the area presents a gap in technological development, productive and technical forces, offering buyers raw materials, without any degree of transformation (Artesanías de Colombia, 2002).

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Fishing also becomes important, for the communities living near the banks of the River, as a basic means of subsistence such as self-consumption and retail trade of Prawns, Tuna and Sardines (Artesanías de Colombia, 2002). In search of generating greater economic opportunities, the development of legal mining activities by the community is seen as an option to improve life, for this the community council has decided to develop associative activities with jewelers from Tumaco in association with Artesanías de Colombia SA generating logistical, technical and academic support, for the specialization of the products offered, in order to obtain greater economic benefits (Artesanías de Colombia, 2002).

Prodefense of the Tapaje

River According to the MIRE (2020), the population of Charco meets their economic needs through cash crops, fishing, wood exploitation, and informal jobs generated by small businesses. The development of agriculture is based on banana, coconut and cocoa crops; Logging exploitation is strongly associated with the presence of mangroves and coastal ecosystems of water confluence between saline water and fresh water, in addition to pigeon peas under primary transformation systems (Alcaldía municipal de El Charco, 2020).

Mining of precious metals (gold) is the activity with the greatest presence within the council, using artisanal mining both legally and illegally, with some technological applications such as dredgers and motor pumps and in some areas with machinery such as backhoes, plate of arms and dragons; but to a greater extent with practices such as Mazamorreo, Barequeo and Palero (Organizations and Community Councils of the South of the Pacific, 2015).

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The low educational, technical and technological development has restricted agricultural and associated marketing activities, presenting absenteeism from productive processes that generate added value to the products offered, in this way they are transported as raw materials to nearby cities, posing as a challenge to meet. in the construction of
an economic stability of the municipality (Municipal Mayor's Office of El Charco, 2020).

Unicosta

Within the municipality of Santa Barbara de Iscuandé, the economic activity, most representatively, is associated with the gold mining sector, carried out in the upper part of the municipality. This product is sold to intermediaries, which generates a decrease in the benefit perceived by the community. Another activity is associated with the fishery developed along the coast of the Iscuandé River with about 250 small-scale professional fishermen, with traditional instruments such as hook fishing and net fishing (Alcaldía Municipal de Santa Barbara de Iscuandé, 2020).

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In the flat areas, the main natural resource is the forest, through the exploitation of wood resources, constituting the main source of income and local labor, the primary transformation of wood through local sawmills, constitutes the raw material for export from the area, the species with the greatest use are Sajo, Cuangare, Cedro, Mangle, Peinemono, Tangare, among others (Artesanías de Colombia, 2002).

To improve the community economy, the development of territorial plans is proposed, which improve activities for the use of natural resources. In the case of developed mining, it is planned to reduce the impacts generated on nature, through legislative application mechanisms that generate legality, improving the productive system both technically and technologically, and work safety (Artesanías de Colombia, 2002); The basic organizational chart proposed by the community for mining cooperatives is shown in Illustration 14.

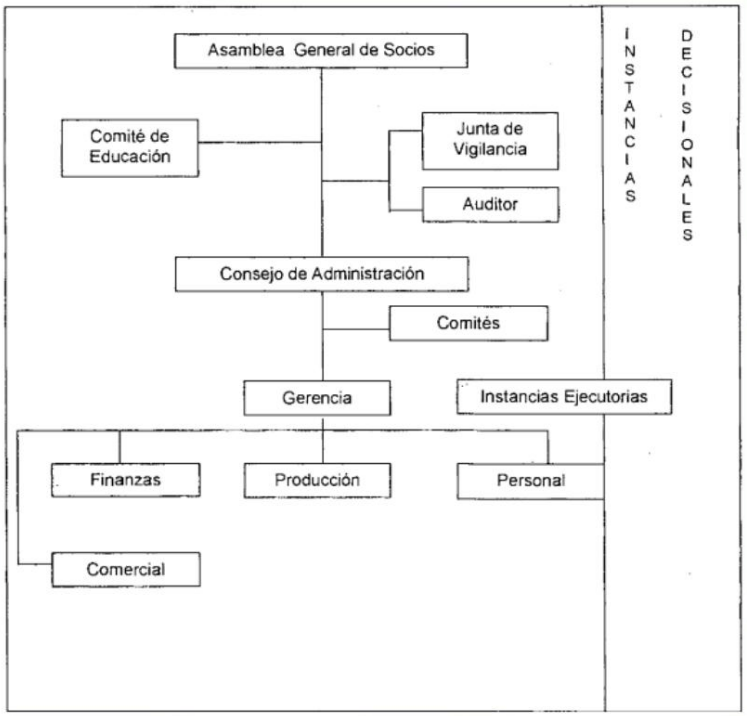


Illustration 14 Proposed basic organizational chart for mining cooperative
Source: (Artesanías de Colombia, 2002) (Artesanías de Colombia, 2002).

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2.7.12 Project context

The REDD+ PAZcífico project arises from an antecedent and historical social, economic and environmental context that has shaped current territorial dynamics. In order to justify the existence of alternatives that reduce effects on forest covers, mainly deforestation and degradation. Figure 14 shows the causes and effects resulting from the phenomenon of deforestation and degradation within the community councils of Guapi Abajo, the Iscuandé River Basin, Prodefensa of the Tapaje River and Unicosta. The feeding of this analysis arises from the community perspectives and experiences obtained in socialization processes, interviews and determination of drivers of deforestation, using tools such as participatory diagnosis and social cartography.

The diagram presents in the lower part the main and secondary causes that lead to deforestation and forest degradation within the limits of the project, the

The central part reflects the central problem that the PEACE REDD+ project requires to solve and at the top the multiple effects generated by the combination of so many causes, understanding the concatenated relationship of all the negative economic, environmental and social factors that lead to the materialization of damages on natural capital.

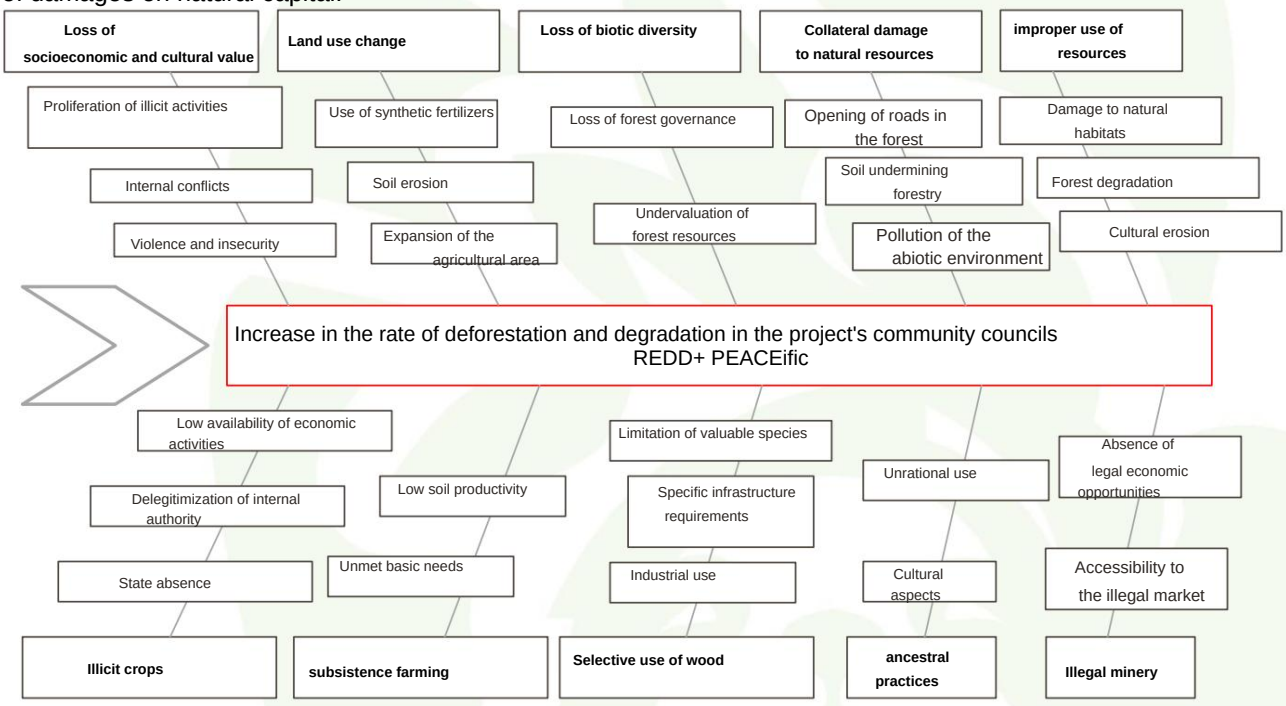


Figure 14 Ishikawa diagram for the REDD+ PAZcífico project.

Source: CO2CERO SAS (2021).

The main causes of deforestation defined by the project's community councils correspond to the establishment of illicit crops, subsistence agriculture,

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selective harvesting of wood, use of specific species for cultural practices and illegal mining. Within these main causes it is possible to determine some underlying phenomena that motivate their manifestation, such as the limitation in economic activities, loss of governance and governability, absence of the state, unsatisfied basic needs, industrial exploitation and illegal market access.

Based on the identification of main, underlying causes and derived effects, it is possible to propose alternatives that avoid, mitigate or eliminate the damage caused by the manifestation of these phenomena, which cover the social, environmental, economic and cultural context; These scenarios are proposed from the identification of local needs reflected in their current territorial dynamics, the diagnoses carried out by external institutions and the information consolidated in the field workshops.

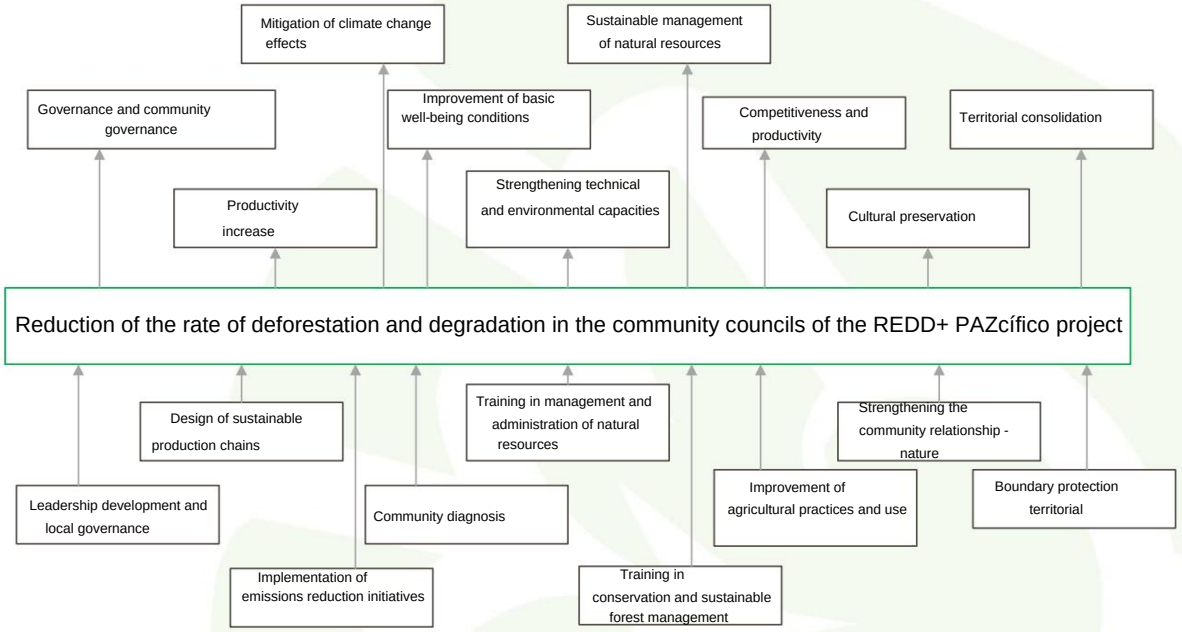


Figure 15 Tree of objectives set for the REDD+ PAZcífico project.

Source: CO2CERO SAS (2021).

The central objective of the REDD+ PAZcífico project is the reduction of the rate of deforestation and degradation within the community councils that make it up. To this end, a series of alternatives were proposed that involve community participation at all times, among these are development of capacities in terms of leadership and local governance, design of sustainable production chains, strengthening of environmental, administrative and technical capacities, improvement of subsistence and exploitation practices, and protection of territorial limits.

The implementation of these activities leads to specific achievements within the community councils, according to the particularities that involve them. In general terms, the project seeks governance and governability of the territory, mitigating the

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effects of climate change, improving well-being, sustainable management of natural resources, preservation of cultural habits, increased commercial competitiveness and productivity and finally a consolidation of the territory as a unit of management, provision and control.

These objectives seek to be met with the REDD+ activities designed and implemented within the territory, responding to the social, environmental and cultural needs of the community councils that propose the initiative. Additionally, it is sought that these activities can evolve to the extent that they encompass community self-management.

2.8 Project accreditation period

The project accreditation period corresponds to twenty (20) years, included between January 1, 2015 (See) to December 31, 2034 equivalent to 19 years, 12 months and 31 days.

Z_Standard

2.9 Project location

The community councils Iscuande River Basin, Guapi Down, Prodefense of the Tapaje River and Unicosta are located in the South-West of the country, north of the department of Nariño and west of the department of Cauca. Municipally speaking, the project is located in the municipalities of Magüí (Payan) to the south, Santa Barbara (Iscuandé) to the center-east, La Tola to the west, El Charco to the center-west in Nariño and Guapi to the north-east in Cauca, as shown in Figure 16.

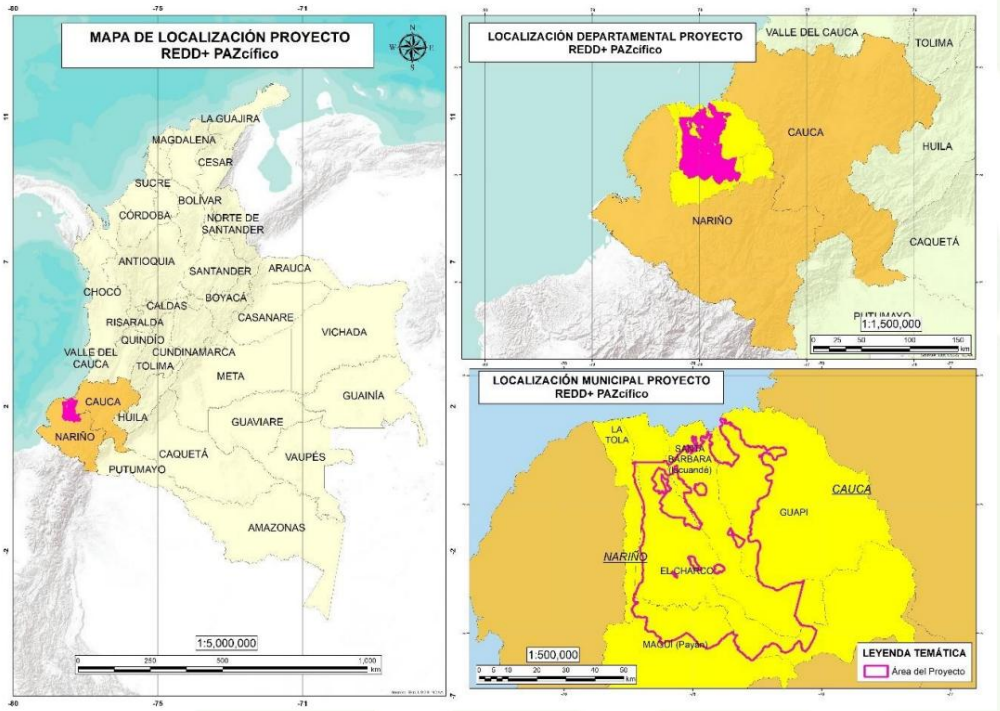


Figure 16 General location of the PAZcífico project.
Source: CO2CERO SAS (2021).

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The project area borders to the north with protection areas (Type A) of the Pacific Forest Reserve established in Law 2 of 1959 and the Chanzará community council; to the South with the Friendly Hands community council of Patía Grande; to the West with the Integrated Embera Katío Río Santiga reservation and the Río Santiga, El Progreso del Campo, La Esperanza del Río La Tola and El Progreso del Río Nerete community councils; to the East with the Río Napi, Río San Francisco, Alto Guapi and La Cordillera Occidental de Nariño Copdiconc community council; to the Northwest with the Sanquiangua National Natural Park; to the Northeast with the Río Guajuí community council and to the South-West with the Unión Patía Viejo community council. The extraction areas within the project area are due to the presence of the Eperara Siapidara indigenous reservations with the Integrated El Charco, Morrito, Quebrada Grande and Corn Blanco reservations, and some of the protection areas (Type A) of the Forest Reserve of the Pacific established in Law 2 of 1959.

2.10 Intervention area in hectares

Table 29 presents the intervention areas involved in the REDD+ PAZcífico project, according to the delimitations made in its design and structuring.

Table 29 Intervention area involved in the REDD+ PAZcífico project.

Type of intervention area	Area (ha)
Total project area 287,779.22	
Stable forest area of the project (2015) 275,032.12	
Stable forest area of the project (2021) 272,785.86	
Reference region 1,764,410.55	
Stable forest area of the reference region (2015) 1,520,878.66	
Potential Leak Area (Leak Belt) 20,012.92	
Stable forest area of potential leakage area (2015) 19,302.43	
Leak Management Area 97.86	
Stable forest area of escape management area (2015) 95.31	

Source: CO2CERO SAS (2021).

The total area of the project is structured by the four community councils that are part of the community councils project legalized until 2021 in the National Land Agency, the stable forest areas come from deforestation models, the reference region together with the Leak Potential comes from the analysis carried out by CO2CERO SAS and the leak management area corresponds to areas with mangrove restoration activities within the reference area; The geographic information of the project is presented in the MAGNA-Sirgas reference system in the Single Origin of

in accordance with the provisions of the Agustín Codazzi Geographic Institute in its Resolution 471 of 2020. To quantify the reductions in GHG emissions due to the

deforestation and degradation, the areas taken into account correspond to those that present stable forest for the defined reference period.

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Taking into account the eligible area of the project, Table 30 describes the eligible area of the project discriminated by community council associated with the project, along with a coordinate of the midpoint of each council.

Table 30. Eligible area by community council

Latitude Community Council Pro-Tapaje River Defense 146,330.48	Eligible area (ha)		Length
71,363.87 The Iscuandé River Basin 43,062.43		2°12'32.20"N	78° 5'39.23"W
275,032.12	14,275.34	2°31'17.68"N	77°59'11.82"W
Guapi Down		2°14'1.12"N	77°52'42.41"W
Unicosta		2°27'31.03"N	77°50'41.79"W
Total			

Source: CO2CERO SAS (2021)

2.11 Carbon emission sources and sinks

The sinks considered for the PAZcífico REDD+ project are described in Table 31.

Table 31. Sinks considered for the PAZcífico REDD+ Project.

Sink Justification	Including	
Air Biomass (Arboreal Vegetation)	And	It is the main sink since it represents the changes in the carbon stock in the forest cover of the project area.
Underground biomass	And	The sink is included since it is a component for the calculation of the Emission Factor according to the methodological reconstruction of the National NREF
dead wood	And	According to the methodology, this sink is taken into consideration.
Leaf litter	And	According to the methodology, this sink is taken into consideration.
Wood products	No	Wood extraction is limited to occasional domestic use, this reservoir is not representative for the project and will be reflected in the deforestation and degradation values monitored since the start date of the project.
Soil Organic Carbon	And	The sink is included since it is a component for the calculation of the Emission Factor according to the methodological reconstruction of the National NREF

Source: CO2CERO SAS (2021)

Regarding the emission sources, those present in Table 32 are considered.

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Table 32. Emission Sources considered for the PAZcífico REDD+ Project

Emission Source	GEI	Included	Justification
Elimination or burning of biomass due to degradation and deforestation processes	CO2	And	They are reflected within the changes in the sinks of the aerial Biomass.
	CH4	No	The sink is excluded since it is not a significant source in the project area.
	N2O	No	The sink is excluded since it is not a significant source in the project area.

Source: CO2CERO SAS (2021).

2.12 Project Eligibility

Eligibility determines the areas that are suitable to be included in the PAZcífico REDD+ project, complying with the premise that the project area has “areas in which it corresponds to the forest category at least ten (10) years before and at the beginning of the project (Also defined as stable forest)”.

The definition of forest will correspond to the characteristics and parameters determined in the definition proposed by the SMByC and the definition of Cercabono as minimum forest area, tree height and level of canopy coverage, defined as “land occupied mainly by trees that can contain shrubs, palms, guaduas, herbs and lianas, in which tree cover predominates with a minimum canopy density of 30%, a minimum canopy height (in situ) of 5 m at the time of identification, and a minimum area of 1.0 ha. Tree covers of commercial forest plantations, palm crops, and trees planted for agricultural production are excluded. For this purpose, the discounting of permanent bodies of water, crops and urban areas present in reliable national geographic information was carried out.

The quantification of forest cover was carried out using Landsat Forest – Non-Forest images from different platforms, because the information from the IDEAM of the SMByC was not considered due to the high presence of areas without information and the appearance of cloudiness, with This quantifies deforestation and degradation for the reference period (Baseline 2005 - 2015), the process of historical deforestation and degradation is also revealed, and the monitoring periods throughout the implementation of the REDD+ project actions.

The quantification of the forest cover was carried out through Landsat images of Forest - Non-Forest from different online platforms that ensure the same source of information and carry out a much more reliable follow-up over the years and also in the change of the forest cover, thereby quantifying deforestation and degradation for the reference period (Baseline 2005 - 2015), also revealing the process of historical deforestation and degradation, and

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monitoring periods throughout the implementation of actions of the REDD+ project.Tabla 33.

Table 33. Non-forest forest within the project area present in the years of interest

Class	Year 2005 Year 2015
Forest	277.649,00 275.032,12
Not Forest	10.130,22 12.747,1
Total general	**287.779,22 287.779,22**

Source: CO2CERO SAS (2021).

Those areas that have gone from the category of forest to non-forest will be called deforested areas, those that change from non-forest to forest are regenerated areas and those that are conserved in the non-forest category are areas without forest, these categories are not considered eligible.

275,032.12 hectares of stable forest are identified between the start date (2015) and 10 years before the start date (2005), corresponding to the eligible areas of the project, as presented in Figure 17.

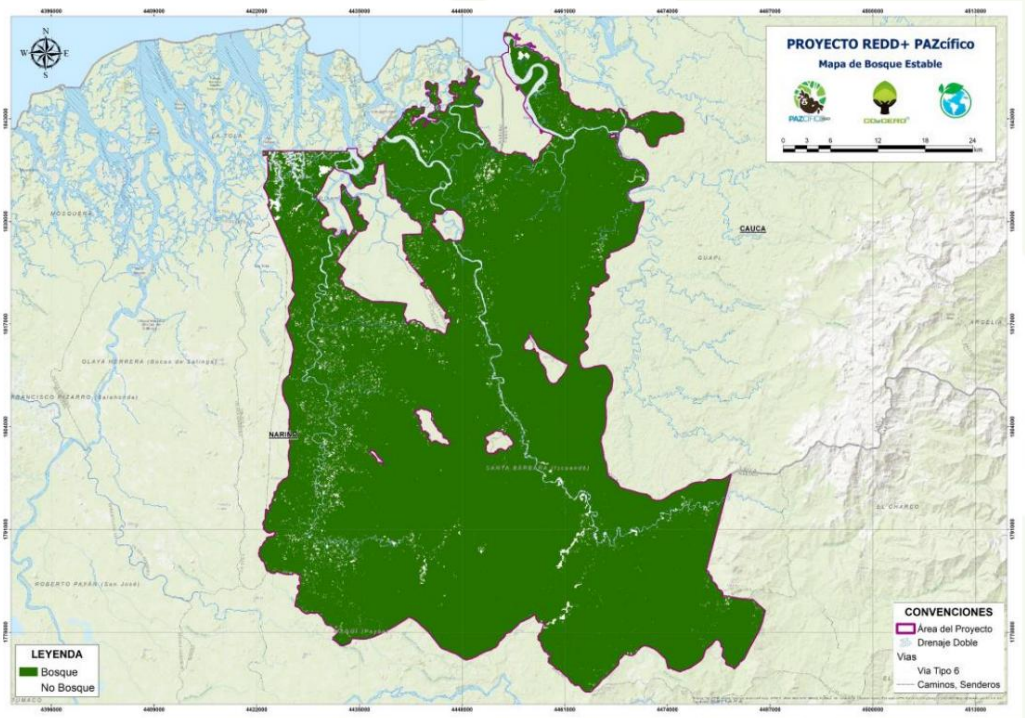


Figure 17 Eligibility map of the areas within the project.
Source: CO2CERO SAS (2021).

2.13 Compliance with laws, statutes and others regulatory frameworks

The initiatives to reduce emissions from deforestation and forest degradation are related to a regulatory context, within which resolution 1447 of

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2018, resolution 471 of 2020, National Interpretation of Social and Environmental Safeguards for REDD+ in Colombia and the Proposal for the reference level of forest emissions from deforestation of natural forests. The regulatory and legislative relevance of the project is described below.

2.13.1 Land law and use

In Colombia, the rights of black communities to collective ownership of the territory are recognized in Law 70 of 1993, which develops transition article 55 of the Political Constitution of 1991, where black communities that have occupied vacant lands, rural areas and riparians of the rivers of the Pacific Basin or with traditional production models in other areas of the country, will have recognition of their existence, through the right to collective property over the areas determined by law.

The right to collective property establishes a mechanism to protect cultural identity, promoting economic and social development as an ethnic group, recognizing a high degree of autonomous politics in the decisions that affect them. Land ownership is mostly described in the Land Tenure chapter, in accordance with the regulations that regulate the allocation of land to these community councils.
The REDD+ PAZcífico project links the community councils Guapibajo, La basin del Río Iscuandé, Prodefensa del Río Tapaje and Unicosta, which fully comply with article 5 of law 70 of 1993, which defines as follows:

> **“ARTICLE 5.** To receive in collective ownership of allocable lands, each community there will be and Community Council as a form of administration internal training, whose requirements will be determined by the regulation that issues the Government National. Besides of The regulations are allocating functions of the Councils that provide for areas: delimiting the interior of the awarded lands; ensure and protect the rights resources, preservation of cultural identity, the use and conservation of natural of collective property the legal representative of the respective community as a legal entity, act as friendly composers and conciliators.” in in the conflicts feasible internal

All community councils have the necessary normative regulations to obtain the title, evidencing through an assignment resolution the existence of legal representation, a legitimate community and a territory that favors its development. In any case, the requests were approved by INCORA, as the entity in charge at the time.

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2.13.2 REDD+ in the Colombian National context

At COP 9 held in Bonn (Germany) in 2008, Colombia joined the initiative of the Convention on Biological Diversity called “Zero Deforestation in the Amazon by 2020”, which was an entry into the development of the national REDD+ strategy.
The United Nations Framework Convention on Climate Change (UNFCCC) recognized during the Conference of the Parties (UNFCCC-COP 13), held in Bali in 2007, the reduction of emissions from deforestation and degradation as a valid mechanism for the mitigation of effects on climate change. REDD+ is constituted as the reduction of emissions derived from deforestation and forest degradation, together with the conservation, sustainable management and improvement of carbon reserves of forests in developing countries.

The National Development Plan 2010 – 2014 includes the formulation of the National Plan for Adaptation to Climate Change which seeks to reduce the risk and socioeconomic impacts associated with climate change and variability. In turn, the Ministry of Environment and Sustainable Development implements the National Policy for the Integrated Management of Biodiversity and its Ecosystem Services, ensuring social development and environmental conservation. The two fundamental strategies in terms of GHG mitigation are:

a) The "Colombian Low Carbon Development Strategy (ECDBC); and
b) The "National Strategy for Reducing Deforestation and REDD+ Degradation.

Colombia is a member country of the World Bank and since 2013 has been part of the UN-REDD+ system, as an international alliance to establish and strengthen the development of programs and projects at the national and subnational scale to reduce emissions from deforestation and forest degradation, based on the analysis of the specific context of each of the nations with their potential in terms of carbon reservoirs, favorable regulatory and legislative scenarios, and social opportunities.

2.13.3 Decrees and Laws

Table 34 presents the regulatory and legislative instruments related to the REDD+ PAZcífico project.

Table 34 Regulatory and legislative instruments applicable to the REDD+ PAZcífico project.

Legislation	Description
Decree 2372 of 2010	The National System of Protected Areas, the management categories that make it up and the general procedures related to it are regulated. By defining the zoning of protected areas and the categorization you agree to the type of use established in the IUCN.
Law 1454 of 2011	By which organic regulations on territorial planning are issued and other provisions are modified.
Decree Law 3573 of 2011	That creates the National Environmental License Agency.

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Legislation	Description
Decree 2041 of 2014	By which Title VIII of Law 99 of 1993 on environmental licenses is regulated.
Decree 1076 of 2015	Single Regulatory Decree on the Environment and Sustainable Development. To demonstrate that the project complies with the environmental restriction zones described in this decree of the Ministry of Environment and Sustainable Development (See Figure 18 on special protection areas such as RUNAP or National Forest Reserves).
Decree 1397 of 2016 Ministry of Environment and Sustainable development	By which the conditions are established for the assembly, installation and operation of areas of the national territory for the temporary location of members of armed organizations outside the law within the framework of a peace process.
Decree 870 of 2017	of the Ministry of Environment and Sustainable Development "By which guidelines are established for payment for environmental services."
Decree 893 of 2017	"By which Development Programs with a Territorial Approach are created: PDET" Which creates the PDET as an instrument of rural planning and management.
Decree 926 of 2017	Belonging to the Ministry of Finance and Public Credit that determines modifications with respect to matters related to the national carbon tax.
Resolution 1447 of 2018	Of the Ministry of Environment and Sustainable Development "By which the monitoring, reporting and verification system of mitigation actions at the national level referred to in article 175 of Law 1753 of 2015 is regulated, and other regulations are issued provisions"
Resolution 831 of 2020	From the Ministry of Environment and Sustainable Development which modifies issues regarding OVV, RENARE and methodological issues concerning carbon credit projects.
CONPES 4021 of 2021	The so-called National Policy for the control of Deforestation and Sustainable Forest Management provides guidelines to substantially counteract deforestation and promote the sustainable management of forests. It proposes deforestation goals for the year 2030.

Source: CO2CERO SAS (2021).

Taking into account the multiple legislative context that involves the initiative and REDD+ projects in general, the folder presents the regulatory instruments applicable at the national, regional and local level.

9.1 Environmental legislation

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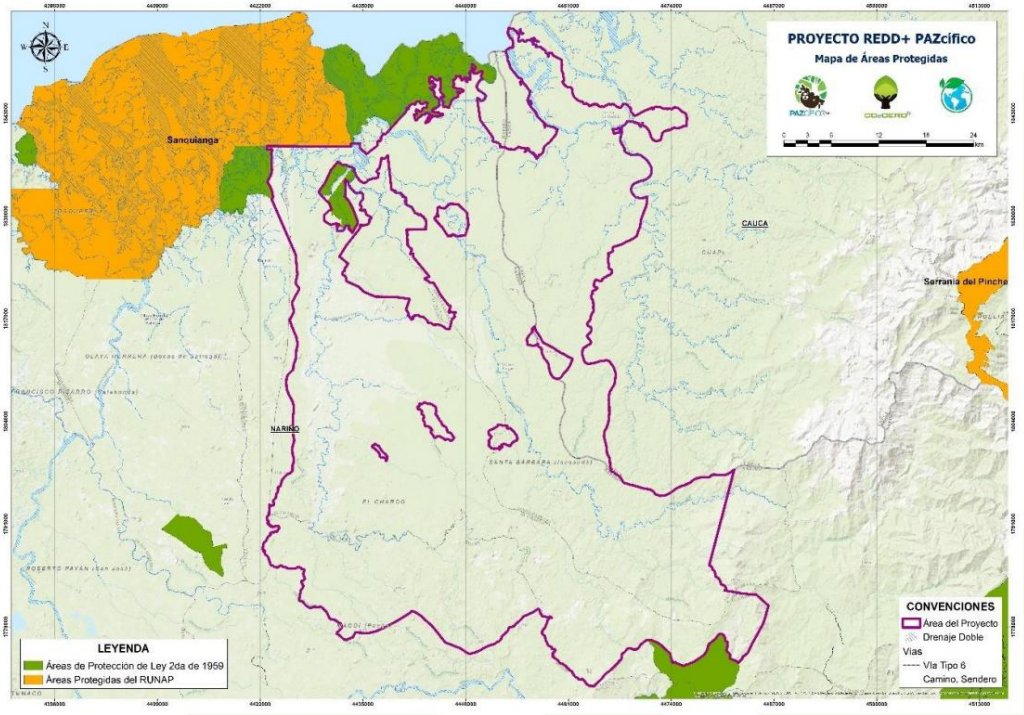


Figure 18 Map of environmental restriction zones.
Source: CO2CERO SAS (2021).

2.13.4 Resolution 1447 of 2018 Below is an analysis of resolution 1447 of 2018 "For which regulates the monitoring system, reporting of the actions of and national level of the verification mitigation a article it deals with 175 Law 1753 of 2015, other regulations dictate and provisions ", as well as its applicability within the project.

2.13.4.1 Relevance of the project

Section 2 of the resolution, related to REDD+ projects, describes the necessary aspects for the development of climate change mitigation initiatives related to natural forests and the reduction of deforestation and degradation within them. Next, the applicability of these parameters is verified with the REDD+ PAZcífico project.

Article **39.** I use **e**f Formulation methodologies implementation of Projects REDD+ , determines the characteristics of the appropriate methodologies for estimating avoided emissions in REDD+ initiatives. The owner of the REDD+ project must use methodologies that meet the following characteristics:

1) Follow the guidelines dictated by the UNFCCC related to REDD+

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The United Nations Framework Convention against Climate Change has determined the responsibilities that the parties must adopt to reduce emissions from deforestation and forest degradation, protect forest reserves, promote sustainable forest management and seek to increase carbon reserves. these being the main activities of REDD+. The project was structured with a focus on reducing emissions generated by deforestation, evidencing the actions of protection, conservation and improvement of socioeconomic activities that have historically generated effects on the forest available in the territory; In addition, it seeks to conserve forest carbon reserves, determining the presence of forest covers typical of very humid tropical forests and the importance of protecting it given its ecological relevance and high rate of biodiversity, which makes it a sacred and essential territory for the survival of communities.

As a result of the project design, new commitments and activities were proposed that seek to reduce deforestation and guide the behavior of community councils around the impacts on the ecosystem. These activities seek to be holistic through the sustainable management of forests, using forest management models, reforestation and restoration actions, generating an increase in carbon reserves. According to decision 18 of COP 16, these five activities are essential for the development of a REDD+ approach aimed at equity, sustainability and well-being of all actors involved in the initiative. According to the particularities of each nation, REDD+ projects must encompass four (4) essential elements within their implementation:

A. **National Strategy or Action Plan:** The country is in the design of the National Strategy for Reducing Emissions from Deforestation and Forest Degradation REDD+ and the Colombian Strategy for Low Carbon Development, for which it is strengthening platforms and databases, that allow them to record progress regarding their strategies. Additionally, it is a member of the group of member countries of the World Bank and since 2013 it has been part of the UN system – REDD+. The REDD+ PAZcífico project encompasses in its development the guidelines proposed by these strategies, which are linked to the basic principles of REDD+ proposed by the UNFCCC.

B. **Forest surveillance and monitoring system:** At the national level, the Forest and Carbon Monitoring System has been established, defined as a set of tools, procedures and resources responsible for generating information that allows the spatial and temporal identification of the causes of changes. in the forest surface and in its carbon content; Within the information used for the baseline analysis and the ex ante and ex post emissions, the Forest – Non-Forest layers of IDEAM were used, as well as

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such as changes in coverage for the reference periods involved in the development of the project, obtained by analysis of satellite images with adequate resolution and supervision of systematized geoprocessing.

C. **National reference level for removals or emissions:** Colombia has put the proposal for a reference level for the UNFCCC under evaluation.
forest emissions from deforestation for payment for REDD+ results, as a second proposal for estimating forest emissions, which involves the entire national territory, given its potential in terms of variability of biomes and natural regions, to reduce emissions from deforestation and increase carbon reserves, aimed at meeting climate change mitigation goals set at the national level. The proposal is currently under technical evaluation and aims to generate the baseline to measure the performance of the implementation of the activities indicated in decision 1 of the COP. 16 regarding the Cancún agreements. The REDD+ PAZcífico project developed its estimates and projections of avoided GHG emissions based on the reconstruction of this methodological proposal.

D. **Information system on safeguards:** in accordance with the commitments acquired by the parties at COP 16, on the implementation of socio-environmental safeguards, the country presents the second summary of safeguards as a preview of the activities developed to date. Within the national proposal proposed to cover safeguards, it is evaluated that the implementation of the initiative includes general principles such as transparency, free, prior and informed consent, participation of the actors involved, protection of biodiversity and ecosystem services, respect for local communities of Afro, indigenous or other recognized minorities, as well as other risks related to ecological and environmental integrity. This project bases its evaluation of safeguards on the seven (7) principles established at the national level, which are the basis for designing the actions, resources and characteristics that ratify their manifestation and compliance.

2) Have a mechanism to manage the risk of leaks from emission reductions deGEI.

The project has determined this mechanism through areas of Leakage Potential, based on a spatial diagnosis, analysis of deforestation factors, mobility and areas of special ecosystem importance surrounding the project, which determines its spatial distribution. This area aims to relate the current reality in terms of territory and the possible dynamics that may arise after prioritizing conservation and restoration activities of the ecosystems involved. The Potential Leak Area is created with the objective of concentrating the activities mobilized by the implementation of the

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initiative, and generate an alternative for the execution of daily actions that are modified due to the commitment of community councils to the conservation, preservation and improvement of forests.

3) Have a mechanism to manage the risk of non-permanence of the reductions of GHG emissions and removals.

The proposed reference level for forest emissions from deforestation covers the estimation of the error, understanding the uncertainty that any group of projected data has. In the case of the current project, quantification methodologies and reference parameters with a low tendency to error were used, such as cartographic sources with academic and research recognition, SIAC, Ministry of Environment; likewise,
The projections of avoided GHG emissions into the atmosphere are based on data from the coverage present in the project limits, and adjusted in accordance with the methodological reconstruction indicated in this proposal.
In turn, the reference level uses the logistic function to propose the parameter of net emissions per natural region with the lowest uncertainty, which is complemented by the quantitative analysis of the mean square error and average percentage of absolute error.
Additionally, in order to reduce the effect of events outside the project limits and the possible manifestation thereof, affecting the reduction of GHG emissions and reduction of projected emissions, the project developer under the characteristics of the certification program establishes a percentage deduction on the total avoided GHG emissions quantified for the project, complying with the non-permanence risk management requirement and corresponding with the conservatism required.

4) Have a mechanism for managing uncertainty in line quantification mitigation basis and results

The determination of the baseline was based on the use of information sources with academic and research recognition such as high-resolution global maps of forest cover change, accurately guaranteeing the phenomena of deforestation and land cover change, to in order to size an adequate forest area reduction rate, which is used to project the future dynamics of change in land use due to deforestation and/or forest degradation. Additionally, when applying the methodological reconstruction of the most updated reference level (NREF), the reduction of the intrinsic error obtained for these parameters is involved through field sampling and data quality verification, determining growth models appropriate to the conditions. of the forest, this being an accepted means for managing uncertainty within the design of the NREF proposal.

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Likewise, for the definition of mitigation results, the methodological reconstruction is based on the data proposed in the NREF, so that it is adjusted and verified with the management of uncertainty proposed by IDEAM and the Ministry of the Environment.
Finally, the program under which the REDD+ initiative is proposed has a categorization of information according to the origin of its information, where greater uncertainty generates greater deductions on the avoided GHG emissions, calculated within the project limits. .

Article **40.** involves Maximum mitigation potential GHG for REDD+ projects, It is all initiatives that have generated results between January 2016 and December 2019, and whose baseline has been validated prior to the issuance of resolution 1447 of 2018, otherwise the mitigation projects with subsequent validation As of January 2020, they will use the most updated reference level; In accordance with the previous statement, the project includes the period that involves the use of the most updated reference level, which in this case was based on the methodological reconstruction proposed in the Reference Level Proposal issued by the national government (IDEAM and Ministry Environment) and with which the pertinent methodological reconstruction is developed to establish the projections of emissions avoided in the defined reference period.

Article **41** referring to defines that the owner of the REDD+ project will establish its baseline from the establishment of baselines for REDD+ projects NREF plus
updated that has been formally submitted by Colombia and evaluated by the UNFCCC, this condition is met through the projection of the deforestation dynamics in the project area and its corresponding reference region, based on the methodological reconstruction of the level proposal reference established for Colombia, which takes into account its consistency with the information provided by the SMByC, the definition of forest, emission factors by type of forest and methods of estimating emissions and projection over time (). This analysis is developed more broadly in 2.13.4.2 Determination of the baseline scenario. See 2.12 Project Eligibility

In accordance with **Article 42.** Establishment of mitigation of project goals REDD+, The GHG emissions reduction projections were based on the aforementioned methodological reconstruction. The project makes a projection of its mitigation goals through an ex ante scenario, starting its projection in 2015, and assuming adequate behavior of the actors involved in reducing deforestation and degradation dynamics. The avoided GHG emissions are raised in accordance with the Comprehensive Deforestation Control and Forest Control Strategy, which in turn contributes to the fulfillment of the goals set out in the NDC, in turn, are expected to influence

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in the biotic and abiotic factors related to the forest ecosystems under conservation and their respective ecosystem services.

Article **43** allows us to establish the differentiating factors of additionality criteria REDD+ projects in the PAZcífico REDD+ project the appropriate alternative for the net reduction of GHG emissions emitted into the atmosphere, and which could not be obtained if it were not implemented. This analysis is presented in more detail in

Criteria of additionality. 2.13.4.2 Determination from the stage of base line

Article **41** of resolution 1447 of 2018 on where the project establishing baselines for REDD+ projects , owner must establish its baseline from the most updated NREF that has been formally submitted by Colombia and evaluated by the UNFCCC, and that includes the geographic area of the project, as well as REDD+ activities, periods and carbon deposits in which the initiative is intended to be implemented. Is
corresponding to the proposal for the national reference level submitted to the UNFCCC for approval, identifying that all the country's biomes are involved and the necessary technical elements are provided to generate a methodological reconstruction that allows projecting the reduction of greenhouse gas emissions with low uncertainty. carbon carried out within the limits of initiatives distributed at the national level, in the same way information verified and tested by different entities is used, in order to find results appropriate to the reality of natural coverage and its associated dynamics (

See 2.12 Project Eligibility).

The determination of the baseline with adequate parameters and variables according to what is required in the second paragraph of **Article 41,** can be verified in the reference scenario proposed for the REDD+ PAZcífico project, observing the use of data as an area of community councils, stable forest under cartographic and spatial analysis,
reference region, Potential Leak Area and carbon contents approved by the NREF, which were taken into account and corroborated through information gathering in the field, carrying out a methodological reconstruction based on the guidelines of IDEAM and the Ministry of the Environment.

Regarding Paragraph 2 of this article "The owner of the beach REDD+ Project that validated your baseline previously from issues a Resolution, must adjust the resolution to more and its a validate baseline NREF updated ". The adjustment of the baseline effectively consists of the methodological reconstruction of the most updated Reference Level (NREF) developed by the environmental entities in charge at the national level and applicable to the project, while covering the geographic area where the project is developed.
This NREF was built and proposed by the Ministry of Environment and Sustainable Development and IDEAM in December 2019 and has been applied in accordance with its technical parameters

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and methodological to this initiative, in order to align with current regulatory requirements.

2.13.4.3 Additionality criteria

The project complies with the current regulations of the National Registry of Reduction of Emissions Resolution 1447 of 2018 in relation to Article 43 "REDD+ Project **to REDD+ Projects:** the The holder of **Criteria** must demonstrate **additionality** of reduced GHG emissions removals and mitigation the result that in absence of the initiative would have occurred" not . Therefore, The project shows the following scenarios:

"I don't know "Those GHG removals due to carbon dioxide are considered additional in to capture the natural forest that remains in", accounting natural forest, for and in which they are eligible for national consequence not

The project demonstrates compliance with this section through the result obtained in the eligibility analysis, especially in Table 33, which demonstrates the reduction of areas lost due to deforestation compared to the baseline scenario, indicating the existence of sectors with a land use different from natural forest and whose actions to reduce deforestation covered by community councils have generated its decrease.

" No emissions removals reductions in GEI product of compensation activities of the biotic component derived from the impacts caused by environmental projects, works for single use, activities that of licenses or in framework of the soil, the request for and decisions, requests for permits of the forest resources change and concessions, use ."

Within the limits of the project, no activities framed in compensation of the biotic component have been developed. As evidence of this, the compensations registered by the National Environmental License Agency (ANLA) in the Colombian Environmental Information System (SIAC) are verified. which are presented in geographic layers composed of three (3) shapefiles with polygonal geometry, which are represented in Figure 2 in conjunction with the project limits; As can be seen, there is no overlap in any activity related to biodiversity compensation, 1% compensation or other compensations.

"I don't know emissions reductions removals are considered additional o Gei ecosystem activities and strategic preservation of forest areas provision of services and payments

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established in the 2015 Book. "in accordance with the GHG capture he Chapter of Title of 8 9 Part 2 2 Decree 1076

Compliance with this condition is evidenced through the analysis carried out in the Decrees and Laws section, mainly of **Decree 1076 of 2015.** Single Regulatory Decree of the Environment and Sustainable Development, where the absence of environmental restriction areas within the project limits; Figure 18 shows that there are no areas such as Zones registered in the RUNAP and/or Forest Reserves established by Law 2 of 1959 with its exclusions as of 2018, within the limits of the project.

Given the criteria for determining the baseline scenario according to the methodological document, the REDD+ PAZcífico project is based on compliance with criterion C.

C. Changes in carbon stocks, at the project limits, identifying the most probable land use, at the beginning of the project.

The demonstration of this was carried out according to the analysis of the most common land uses. probable problems identified through spatial analysis, field diagnoses and information regarding socioeconomic dynamics of the different community councils.
In order to demonstrate the additionality of the REDD+ PAZcífico project taking into account the guidelines of the methodological document, the following sequence is followed:

Start date of the REDD+ project The
date on which activities to reduce emissions from deforestation and degradation begin within the project limits is evident, for which evidence of mangrove restoration and monitoring activities in the community council of Guapi Abajo since 2015, subsequently with the support of the IIAP and other institutions external to the community councils, actions for the conservation, protection and maintenance of natural coverage are promoted.

The start date is described in 2.1.2.2 Start date and is documented in the folder *Identification of land use* 7_Start date

alternatives The most probable land use scenarios are
identified according to the territorial dynamics of the community councils involved in the PEACE REDD+ Project.
As a result of the community diagnosis, analysis of deforestation factors and verification of satellite information (See Project Eligibility) and secondary information related to environmental and socioeconomic factors of the population (See Social aspects,

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economic cultural of the community), probable land uses are determined in the Table 35.

Table 35 Analysis of possible land use scenarios in the territory

Land use	Manifestation	Trend	Viability
Mining	It is constituted as the main activity for subsistence of advice, expressing in an illegal artisanal way.	Being the basic subsistence economic activity of the councils, and the most relevant factor of deforestation, if this occurs on a large scale within the project area due to its illegal artisanal development, it does not constitute an environmentally sustainable process, nor a development factor. economic on a large scale, due to the finite nature of the mineral resource (gold), the lack of technological development and transportation, in addition to an illegal commercial structure.	It is not feasible given that the factors of economic development are illegal, development without and environmentally sustainable, in the same way geographical and logistical difficulties make technological development impossible.
Agriculture	It constitutes a community subsistence activity, it is presented in the form of family agricultural units, determined between 1 and 6 hectares per family unit.	By presenting itself as one of the relevant activities of deforestation as and degradation agent, if the trend occurs within of the territory, improves the availability of food for the community, but is not considered a factor of economic development, associated with little technological and road development.	It is not viable given that the economic development factors are low given the geographical and communicative difficulties and logistics, additionally the GHG reduction occurs at a low level associated with its low capture capacity
Illicit crops	It is developed as an activity outside the community, promoted and administered by external actors on behalf of armed groups.	Through national government initiatives, managing strategies for the reconversion, substitution and eradication of illicit crops, focusing on a	It is not viable because it is an illegal activity and requires eradication actions a at the national level. Additionally, it is not a recurring activity

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Use of floor	Manifestation	Trend	Viability
		massive reduction of this activity. Additionally, it with constitutes an illegal activity and therefore is not accepted as an economic activity in the national territory.	and endorsed by the community.
Production forestry	It is presented as an auxiliary activity for the development and well-being of the community, based on the use of resources in primary infrastructure matters. for and local development.	An increase in extraction Wood contributes to an increase in GHG emissions due to deforestation and/or degradation, in turn, it has not been explored as a market or development opportunity, which is why it lacks logistics, technological development and medium to large market niches. scale.	It does not generate a net benefit to the atmosphere by reducing emissions of GHG, increases the rate of deforestation and therefore its associated emissions. It does not have a logistical development and adequate industrial, reducing product availability to external markets of the
Sustainable forest management and conservation (REDD+)	The territory has a wide forest cover that makes up the tropical humid and very humid forest. Additionally, the community understands the goods and services that are derived from there, promoting its protection and conservation.	The design of strategies for the improvement, increase and conservation of carbon pools will reduce the effects on biodiversity, natural resources and livelihoods. of communities. Additionally, it establishes in communities new financial mechanisms that pay results for improvement of linked to the well-being, coexistence and community development.	The Conservation, increase and improvement of carbon stocks, together with other activities to reduce deforestation and degradation, generate a net benefit to the community. atmosphere by favoring carbon capture rates and conserving emissions already integrated within the sinks of these community councils. in

Source: CO2CERO SAS, 2021.

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Consistency of land use alternatives

Once the probable land uses have been determined within the project limits, their consistency with regulatory and legislative factors is determined; additionally, their correlation with the environmental, social, technological and economic contexts is verified, in accordance with the dynamics identified in the field, which were socialized and reflected by the community during the execution of the workshop to analyze deforestation factors (See). A quantification analysis of the feasibility which 11_Appendices\Social cartography of land use defined in these contexts is used, determining alternative is appropriate and additional within the territory, in addition to generating the greatest net benefit to the atmosphere in terms of emissions reduction.

Table 36 Viability rating of land uses

Use of floor	Political - Legal	Environmental	Social	Technological	Economic	Result
Mining	2	1	2	2	3	10
Agriculture	3	2	3	1	1	10
Illicit crops	1	1	1	2	3	8
Production forestry	3	2	3	1	1	10
REDD+	2	3	3	3	3	14

Source: CO2CERO SAS, 2021.

The quantification of the impact occurs according to the viability of land use with respect to the political, environmental, social, technological and economic context, where values are assigned, as follows:

(1) It is a context that does not show viability for this land use
(2) It is a context that provides basic elements for land use to manifest itself
(3) It is an aspect that provides all the necessary elements for the use to be carried out. ground

The results of the analysis are seen in Table 36, showing that the most land use attractive is the development of a REDD+ project complying with the additionality parameters of resolution 1447 of 2018, defining it as an initiative that demonstrates reductions in GHG emissions or removals derived from its implementation, generating a net benefit to the atmosphere. Likewise, it is observed that all alternative land uses outside the REDD+ project present logistical limitations due to navigable conditions, in economic terms due to the lack of identification and development of market infrastructure and, in the legal case, illicit crops. The legal aspect is unfavorable as it is an activity promoted by groups outside the law.

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Additionality

Once the relevance, correspondence and traceability factors have been identified in relation to the regulatory framework, criteria and land uses necessary to demonstrate the additionality of the project, they are justified through the parameters proposed by the Cercarbono tool for the demonstration of the additionality of climate change mitigation initiatives, how it is complied with.

Additionality seeks to comprehensively guarantee the environmental and financial balance of climate change mitigation initiatives, for which it must be demonstrated that the initiative would not have occurred in the absence of the carbon market or is part of climate change mitigation. The REDD+ PAZcífico project is part of the activity Avoidance of GHG emissions through conservation, restoration and improvement activities of the existing carbon reservoirs within the community councils that constitute it, corresponding to the natural forests of their property. The emissions avoided by REDD+ activities framed and developed within the project horizon have been calculated and presented in the 3_Carbon folder, in which the ex ante and ex post analysis corresponding to the behavior of GHG emissions within the area is presented.

The PAZcífico REDD+ project has been registered and determined to be used in specific subnational contexts, mainly for the Non-Causation of the Carbon Tax determined in decree 926 of 2017 (See 1_Agreements\01_Contract Technical associate\01_Contrato_CO2CERO_AGROIMPULSO.pdf\Paragraph Clause six\Average of payment).. in accordance with Colombian regulations, which in turn are linked with resolution 1447 of 2018, determining the net benefit to the atmosphere made by the implementation of the initiative.

y Estudios Ambientales Instituto de Hidrología, Meteorología	PY REDD+	REDD+ PAZcífico	Formulación

Illustration 15 Registration status of the PAZcífico REDD+ Project on the RENARE platform. Source: CO2CERO SAS (2021)

By verifying the demonstration of additionality for alternatives other than the final use of carbon credits, it can be determined that the project's income comes solely from the commercialization of avoided GHG emissions from deforestation and degradation, which is determined at the contractual level in 1_Agreements\01_Technical Associate Contract\01_Contract_CO2CERO_AGROIMPULSO.pdf\Paragraph Sixth Clause\Medium of paid, is confirmed in the cash flow analysis (See) and 11_Annexes\Annex Cost Projection 2_Co REDD+ activities.xlsx is demonstrated in the document benefits\Distribution of benefits_V2.pdf , explaining how these benefits are distributed among the actors involved in the initiative. Likewise, the initiative to reduce emissions from deforestation and degradation, as well as its project limits, are not part of the

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compliance with mandatory regulations or regulations, nor be part of an environmental compensation scheme (See 4_SIG\MAPS\BioticEnvironmentCompensationMap).

2.14 Analysis of deforestation and degradation factors

The following chapter presents the analysis of deforestation and degradation factors, carried out within the limits of the REDD+ PAZcífico project, involving the members of the community councils that comprise it.

The analysis of the factors of deforestation and degradation was carried out in person in the community councils, through participatory diagnosis, in which underlying causes, central factors of deforestation and degradation, actors and mobilization of deforestation and degradation activities were identified. territorial level (See Folder 11_Annexes\Social Catography and 11_Annexes\Assistances); Additionally, deforestation and degradation events are spatially identified through social mapping.

relevant to the community. With these results, activities are guided to reduce deforestation, understanding whether action is taken on the agent, the underlying causes or the effects, depending on the state of progress of the factor. Additionally, the affected coverage was verified within the limits of the project.

The processes of socialization and outreach to the community allow for the acquisition of precise information, effectively approaching the reality of the territory, providing tools applicable to the recognition, diagnosis, planning, execution and evaluation of natural resources; In the case of REDD+ projects, participatory diagnoses make it possible to identify solutions to specific problems within the community based on their perception of the current state, while guiding their objectives, so that they are favorably acquired by the community and lead to good execution of the projects. the commitments that are acquired within it.

2.14.1 Methodology

The activities to analyze the factors and causes of deforestation and degradation were carried out in two moments, which are described below:

2.14.1.1 Previous review of factors of deforestation and degradation

The acquisition of regional information allows for a first approximation to the state of deforestation and degradation factors, and their manifestation in the territory. This information will later be refined and filtered to adjust to local conditions, through interviews with regional actors. and local, and identification of factors and causes of deforestation and degradation, according to the criteria of the community in a field workshop and its subsequent verification.

Secondary information related to deforestation and degradation was consulted within the project limits or surrounding sectors, allowing the establishment of

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an approach to the existence of deforestation and degradation factors or their historical existence. To search for information, bibliographic resources available from official environmental entities or reports of activities within the region are used; This search allows us to approximate the causes and agents involved in deforestation and degradation processes, which are subsequently ratified with primary information from regional and local experts. Among the resources consulted are university studies, articles from environmental magazines and sections of the websites of mayors and governors. Some of the search patterns used are -
deforestation/degradation Nariño/Cauca-, [Community councils] deforestation/degradation characterization [community councils]-, -Conservation of Nariño/Cauca forests-.

2.14.1.2 Workshop analysis of deforestation degradation factors

The analysis of deforestation and degradation factors at the local level was carried out under the methodology of participatory diagnosis1 and Participatory Action Research, taking into account that the population has the most accurate knowledge about their territory and the situations that they have expressed about it, it is carried out an orientation on the factors of deforestation and degradation, the importance of their analysis and the representativeness of the results generated. Additionally, the community's interaction with the project ratifies transparency and full participation, relevant axes within compliance with the social and environmental safeguards of the REDD+ project. Among the important phases of its development is the formation of the work team, presentation of the dynamics to the attendees, execution of recognition and diagnosis activities, and finally the socialization of results.

2.14.2 Identification of deforestation and degradation factors

According to the analysis of events and factors of deforestation and degradation, obtained by consulting secondary information, below are some results that allow us to approximate the causes, drivers and actors of deforestation and degradation.
within the territory.

In general terms, IDEAM has determined as the main causes of deforestation and degradation at the national level the expansion of the agricultural frontier, illicit extraction of minerals, expansion of infrastructure, timber extraction and forest fires, while from underlying causes it is possible to determine technological and

[1] Participatory diagnosis is the process and methodology through which conscious participation of the community is obtained, which leads to self-knowledge of its reality and the organization of its inhabitants in representative and stable social structures for the undertaking of transformative actions and within the reach of a sustainable development (Martinez, 1995).

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Proyecto REDD+ PAZCÍFICO

economic such as illegal markets and economies, state incentives, and costs of production and consumption; Also included are political and institutional factors such as sectoral and territorial policies, institutional presence, property rights over land and armed conflict (UN REDD, 2018).

At the Pacific level, the growth of crops for illicit use, extraction of wood in volumes greater than authorized, illegal exploitation of minerals, agricultural activities and the promotion of forest fires have been determined as fundamental causes of deforestation and degradation. In the context of the REDD+ PAZcífico project, it is determined that the main causes of deforestation and degradation are illegal mining, illegal logging, coca monoculture and subsistence agriculture.

> "productive activities, ancestral knowledge, relationships of food autonomy, kinship, and as an expression of the solidarity of the black people"
>
> (Suarez, 2018)

2.14.2.1 Extractive sector

The threats and displacement of social leaders is a difficult situation that the Guapi Abajo council suffers from, mainly promoted by hitmen related to illegal mining activity (Semana, 2013). In the evaluation of the results of industrial activities, it is evident that mining activity without titles is the most representative activity in Guapi, Santa Bárbara and Magüi, in some areas of the municipality of Guapi there is titled mining (DANE, 2014).

In the territory of Guapi Abajo, 99.9% of mining is carried out without title, the communities of El Carmen and Penitente practice artisanal mining. Guapi below presents five (5) requests for direct mining concession over the collective territory, the communities recognize their concern about the environmental damage caused by illegal mining practices within the area, reducing agricultural and fishing activities.
In the Iscuande River basin sector, large-scale open-pit mining projects are being developed, driven by the ideologies of the current neoliberal, export-oriented economic model, driven by the FTAs (Ministry of the Interior, 2017).
The mining of precious metals (gold) is focused as the activity with the greatest presence within the community council of Prodefensa of the Tapaje River, making mining usufruct in an artisanal way, both legally and illegally, with some technological applications such as dredgers and motor pumps and in some areas with machinery such as backhoes, arms and dragons; but to a greater extent with practices such as Mazamorreo, Barequeo and Palero (Organizations and Community Councils of the South of the Pacific, MinMinas & IIAP, 2015).

Within the municipality of Santa Barbara de Iscuandé, with the influence of the Unicosta community council, the economic activity, with greater representation, is associated with the mining sector.

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of gold, made in the upper part of the municipality, this product is sold to intermediaries, which generates a decrease in the benefit perceived by the community (Hernández, 2014).

Within the narratives evidenced by some actors involved in the analysis of deforestation factors in the Pacific, they can be compiled in Table 37.

Table 37 Narrative on deforestation and degradation factors in the Pacific.

Deforestation and degradation factor	direct cause	Description
Illegal and criminal mining	Mechanized illicit of mineral extraction	"It is developed with heavy open-air machinery and the use of chemicals such as mercury, which currently presents high levels of bioaccumulation of this toxic substance in species and humans."
Illegal logging	Illegal extraction of wood for sale	"For commercial purposes, which is often carried out without a forestry exploitation permit issued by the environmental authority or falsified permits are used"
Leaf monoculture coca	Agricultural frontier expansion: agricultural production of coca	"Associated with glyphosate fumigation, this type of practice requires large areas of cleared land to be developed and the use of agrochemicals to obtain good harvests, this "Combined with the spraying of glyphosate to control this type of crops, it impacts the ecosystems, biodiversity and quality of life of the communities."
Subsistence agriculture of	Establishment of crops for family self-sufficiency	"Small areas of agricultural production are carried out for self-consumption, in some cases surpluses may arise for commercialization"

Source: CO2CERO SAS (2021) adapted from (UN REDD, 2018).

2.14.2.2 Agricultural sector

According to the 2014 National Agricultural Census, a good part of the agricultural and non-agricultural production units are involved in activities of transformation of agricultural products, allowing us to determine that agricultural activity has a high relevance at the rural level, however, the high existence of areas in transformation, indicates that the gross product is not fully competitive, leading to a continuous expansion of its borders within the territory (DANE, 2014). In the Iscuande River basin it is evident that agricultural activity is carried out by crops of Coconut, Sugar Cane, Yuca, Chontaduro,

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Borojó and Plantain; However, these activities present difficulties for the transportation of raw materials.
The Guapi sector below has agriculture, fishing and mining as relevant activities; Within agricultural activities, products such as coconut, corn, chontaduro, rice and Chinese potatoes are grown. In the livestock sector, the raising of poultry and pigs stands out, with fishing standing out as the main activity of the community council's economy given the variety of species of fish, crustaceans and mollusks; finally, gold and platinum mining activities in areas surrounding rivers as a traditional activity among the communities (Alcaldía Municipal de Guapi, 2019).
The analysis carried out by the community council allows us to establish that it maintains crops of bread, through manual planting or with artisanal tools. Among its main products, rice, banana, banana, goat and African palm are defined, the latter being given by a INCORA project; The community of plots owes its name to the family organization that the families with African palm plots had (Ministry of the Interior, 2017). According to the MIRE (2020), the population of Charco meets their economic needs through pancoger crops, the fishing, wood exploitation and informal jobs generated by small businesses. According to the analysis carried out by (UN REDD, 2018), the African Palm has its beginnings in the Colombian Pacific in the department of Nariño in the year 2000.

It is important to identify that some activities are drivers to generate effects on other resources such as water and air, which leads to the reduction of some species of flora and fauna used for self-consumption and commercialization, which leads to migration of activities that involve deforestation and forest degradation.

2.14.2.3 Conflict violence and

The community council of Guapi Abajo expresses the loss of cultural traditions due to the presence of armed groups, generating restrictions on activities such as fishing, hunting of wild animals, meetings between community members and planting (Ministry of the Interior, 2017), which leads to a displacement and modification of economic activities, within which the extraction of wood and the establishment of crops constitute an adequate alternative.

Some fumigation events have led to a reduction in crop productivity mainly due to environmental damage, this added to the absence of state support, effects due to armed conflict; which has led to crop loss, damage to products and low probability of cultivation due to fear of displacement or assaults in fields.
(Ministry of the Interior, 2017). Illicit crops began in the Colombian Pacific in 1995 and expanded during this period throughout the department of Nariño (ONU REDD, 2018).

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2.14.2.4 Forestry use

The Territorial Development Plan 2016 – 2019 indicates that the economic dynamics of the municipality gives relevance to the selective extraction of wood by the cutters of Guapi, mainly in the communities of Temuey, Codicia and La Pampa, generating the use for carpentry activities (Mayor's Office Municipal of Guapi, 2019).

In the Guapi and Santa Barbara de Iscuande sector, extensive activity is evident in forest product transformation processes, which may be related to the extensive use of wood within the natural forests of the area. When evaluating economic activities based on services, it is observed that support for agricultural activities is the most relevant activity for the municipalities with jurisdiction in the project, being associated with a broad dynamic of agricultural production.



Illustration 16 Forest product transformation activities.
Source: Agroimpulso Foundation (2021).

In the Iscuande River Basin sector, it is defined that logging activities focus mainly on the use of natural forest, and primary wood transformation processes. In the Prodefensa community council of the Tapaje River, logging exploitation is strongly associated with the presence of mangroves and coastal ecosystems of water confluence between saline water and fresh water, in addition to pigeon peas under primary transformation systems (MIRE, 2020).

In the flat areas of the Prodefensa community council of the Tapaje River, the main natural resource is forestry, through the exploitation of wood resources, constituting the main source of income and local labor, the primary transformation of wood Through local sawmills, it constitutes the raw material for export in the area, the species with the greatest use are Sajo, Cuangare, Cedro, Mangle, Peinemono, Tangare, among others (Ministry of the Interior, 2017).

The Pacific sector showed worrying figures of deforestation in 2019, with figures of 7,454 to 14,120 hectares, double what was reported between 2018 and 2019.
concentrating 9% of the national total; The alerts occurred mainly in the Municipality

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of Rio Sucio, Río Atrato (Department of Chocó) and the limits between the departments of Nariño and Cauca, in the southwest of the country (Lizcano, 2020). When carrying out the deforestation analysis for the Pacific region between the years 2019 to 2020, a reduction is evident Like the Orinoquia region, with 12,261 hectares deforested, however, it continues to contribute 7.1% of the total deforestation for that year.

At the departmental level, the department of Nariño showed an increase in deforestation, reaching 4,911 hectares by 2020, Cauca also shows an increase in its deforestation figure with 3,048 hectares; IDEAM's analysis determines that the main causes of deforestation for the year 2020 correspond to prairie development for land grabbing, bad practices in extensive livestock farming, unplanned transportation infrastructure, crops for illicit use, illegal extraction of minerals, illegal logging and expansion of agricultural frontier. 0.3% of deforestation at the national level was concentrated in the South Pacific and 1.8% in the North Pacific (IDEAM, 2021).

2.14.2.5 Underlying causes

The approach carried out by UN REDD (2018) allowed us to establish the underlying causes and indirect effects of deforestation in the Pacific region, these are consolidated in Table 38.

Table 38 Description of underlying factors identified by Pacific community councils.

underlying cause	Description
Interinstitutional disarticulation	There is no correspondence between the regulations generated by the different ministries, finding opposition between promotion policies of the Ministry of the Environment, the Ministry of Agriculture and the Ministry of Mines.
Weakness of territorial entities and environmental authorities	There is no appropriation of responsibility in terms of conservation by environmental authorities; in many cases factors such as corruption and conflict of interest oppose this.
Ineffectiveness of environmental control organizations	Ineffective interventions are carried out, with insufficient and poorly trained personnel; additionally, there is no rapprochement with the communities targeted by the intervention.
Limitation to production models	Large-scale activities are carried out without the consent of the related actors, in some cases damage is generated to other people's natural resources, harming the economic development of the community. In addition, conflicts and disturbances of public order also reduce the mobilization of actors. and their economic activities.
Extractivist economy	Harmful models are used in environmental and social terms, attacking the existence of natural resources and their conservation, as well as

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underlying cause	Description
	on governance and territorial protection structures, evading prior consultation and community approval, in addition to intervening in cultural practices.
Non-inclusive education	Cultural and social aspects are not taken into account under which students develop, the models and contexts taught are far from local reality, leading to a loss of sense of belonging and territorial projection.
State absence	There is no support from the state in the evaluation of favorable commercial alternatives in accordance with the needs of the community councils, which leads to stagnation in the economic development of the population.
Presence of armed groups	There is imposition of ideals and political approaches unrelated to the internal regulation of black people; displacements, deaths and weakening of community organizations are also generated. The establishment of illicit crops, illegal mining and extortion is encouraged.
National and international market dynamics	The increase in prices of products such as gold has led to its large-scale proliferation, without determining the impacts and effects generated on natural resources. Additionally, the state does not create barriers that regulate the actions of national and international companies, which carry out this activity illegally.
Violation of ancestral rights	The social, cultural and political construction on which black communities exist, based on identity, territory, development and unity, is not taken into account. Government structures and external economic activities surpass these values and act without respect for community value.
Lack of profitable productive alternatives	Economic activities within the region are scarce, added to the concentration of the population in their performance leads to an oversupply in market terms, an overexploitation in terms of resources and an undervaluation of the effort printed in each production.

Source: CO2CERO SAS (2021) adapted from (UN REDD, 2018).

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2.14.3 Analysis of deforestation and degradation factors at community level

Once the approach to the deforestation factors at the territorial level has been made with secondary information, this information is ratified with primary sources, for which field workshops are carried out, as mentioned in the methodology. The workshops to identify the factors of deforestation and degradation were distributed in different areas of the community councils, in order to cover the context of deforestation and degradation, from different spatial and social perspectives. Table 39 shows the dates and places in which the deforestation factor analysis workshops were carried out under the supervision and support of the Agroimpulso Foundation. The consolidated results by community council are found in

8_Field information\Factors deforestation.xlsx.

Table 39 Deforestation workshops carried out in the community councils of the PAZcífico REDD+ Project.

Community Council	Place	Date
Iscuande River Basin	Vereda El Hormiguero	January 20, 2020
Iscuande River Basin	Vereda Magdalena	January 21, 2020
Iscuande River Basin	Vereda San José	January 22, 2020
Iscuande River Basin	Vereda La Loma	February 2, 2020
Prodefense of the Tapaje River	Mouths of Chanzará	February 3, 2020
Guapi Down	Guapi Abajo	February 5, 2020

Source: Agroimpulso Foundation (2021).

According to the information obtained in the deforestation and degradation analysis workshops, the community expresses its perception of deforestation and degradation events, either because they are generators of them (actors of deforestation) or because they indirectly benefit or are harmed. due to deforestation events
and/or degradation (Underlying causes). Additionally, they determine a series of indirect factors that favor the manifestation of drivers, agents and causes of degradation and deforestation. The social cartography obtained in the exercise is found in
11_Attachments\Social catalog.

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Illustration 17 Workshops for analysis of deforestation and degradation factors carried out in the different community councils of the REDD+ PAZcífico Project.
Source: Agroimpulso Foundation (2021).

The consolidation of the results related to deforestation and degradation identified by the community councils in the spaces for socialization of knowledge and related experiences is consolidated in Table 40.

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Table 40 Results of workshop analysis of deforestation and degradation factors in the community councils of the REDD+ PAZcífico Project.

Deforestation and degradation event	Intervention areas	Actors	Year of manifestation	state
Subsistence agriculture of	PRT, ISC, UN, GAB.	General community	1970	Asset
Mining	ISC, GAB.	General community	1975	Asset
Illicit crops	PRT, ISC, UN, GAB.	General community	2000	Asset
Use of wood for subsistence	PRT, ISC, UN, GAB	Sawmills	1970	Asset
Commercial wood harvesting	PRT, ISC,	Sawmills General community Pacific Crust Company Mangrove Industry	1970	Asset

PRT: Prodefense of the Tapaje River; UN: Unicosta, ISC: Iscuande River Basin and GAB: Guapi below. Source: CO2ZERO SAS (2021)

2.14.3.1 Illegal logging

Factor associated with deforestation in areas where its extraction is massive and associated with multiple species, evidencing deforestation fronts at the plant population level. It also manifests itself as selective logging, being applied only to some species within the evaluated area, generating degradation processes. Within the deforestation and degradation factors, determined for the community councils present in the REDD+ PAZcífico project, it is defined that deforestation and degradation due to the use of illegal commercial wood occurs on specific species, as follows:

- Prodefense of the Tapaje River: Mangle, Nato, Cedar, Tangare, Cuangare, Sajo and True.
- Iscuande River Basin: Cedar, Tangare, Cuangare, Sajo, Sande and Machare.
- Unicosta: Mangle, Nato, Cedro, Tangare, Cuangare, Sajo, Sande and Machare.
- Guapi below: Mangle, Nato, Cedro, Tangare, Cuangare, Sajo, Sande and Machare.

Some of these species are used for marketing and export to Ecuador, while others are transported along the river to be received at border ports in neighboring countries.

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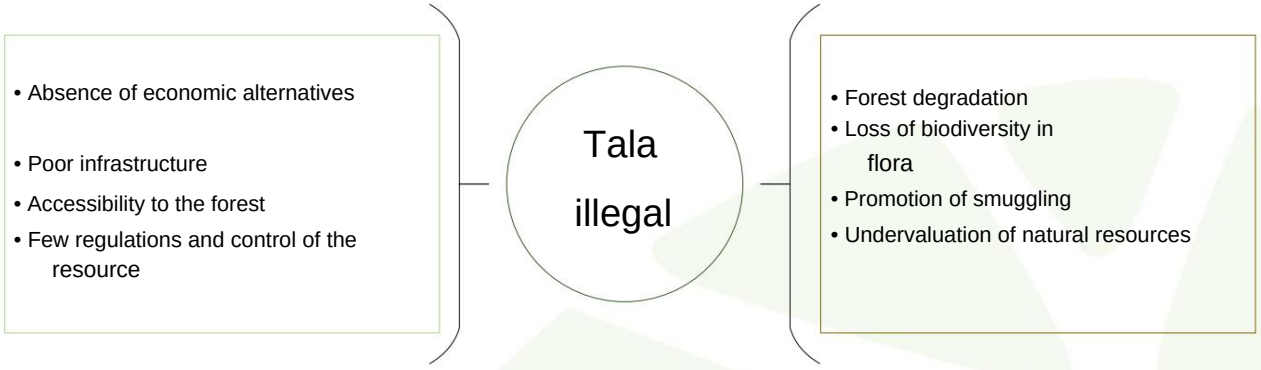


Figure 19 Cause-effect diagram for the deforestation and degradation factor illegal logging.
Source: CO2CERO SAS (2021)



Illustration 18 Deforestation and mangrove degradation by actors external to the community council.
Source: Agroimpulso Foundation (2021).

2.14.3.2 Subsistence agriculture

It is a generator of deforestation processes when it shows representative areas, mainly in banana, rice and coconut crops, also, its activity as a forest degrader is evident when they are smaller areas that constitute family agricultural units in which tight spaces are created within the forest. to the crops of each home. The identification of this deforestation factor was given by the acceptance of

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traditional practices carried out by the community, where fertile lands are used under natural areas or forests, improving the productivity of these crops.

Regarding the use of land for subsistence agriculture activities, this occurs in the production of banana, annatto, coconut, rice, corn, naidí and vanilla at the family level, mainly linking the adults of each family, occasionally there is youth intervention. Also, the use of forest species for subsistence and improvement of infrastructure within the community council has been presented. Within this activity, the selective use of valuable timber species has been observed which, added to the use for the industry, generates an impact important in the flora populations within the territory.

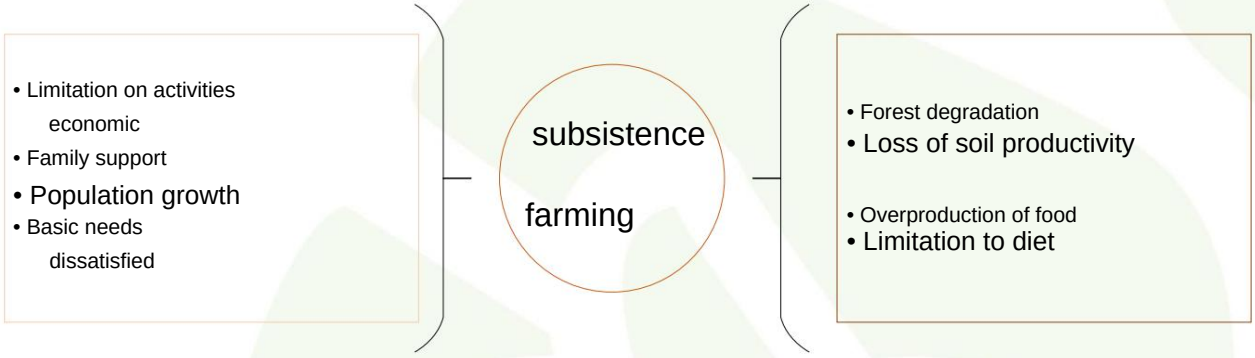


Figure 20 Cause-effect diagram for the deforestation factor subsistence agriculture.

Source: CO2CERO SAS (2021)

In the case where agriculture constitutes a relevant factor in terms of food security and family sovereignty, an absence of optimization and adequate management practices in the agricultural area is identified, which will involve the implementation of good agricultural practices and improvement of production chains, reducing expansion in forest areas and natural covers other than forest. Likewise, the link between producers from different places is proposed to complement the demand in areas with lower productivity of a particular food, generating food associativity, reducing the effects on natural forests and on geographically isolated marketing chains.

2.14.3.3 Illicit crops

This factor is associated with deforestation within the project limits. The establishment of coca crops is one of the most impactful factors at a socioeconomic level, given the level of conflict involved in its entry into the territory. Additionally, it generates important effects in the area of its establishment, given the need for areas devoid of vegetation. , synthetic inputs for the soil, in addition to the effects generated by the spraying of glyphosate for its eradication as a government initiative; Residual factors are evident in all natural resources, where the soil has loss

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Proyecto REDD+ PAZCÍFICO

of properties and productivity, water reduces its availability and quality, and there are no fauna associations due to its monoculture nature.

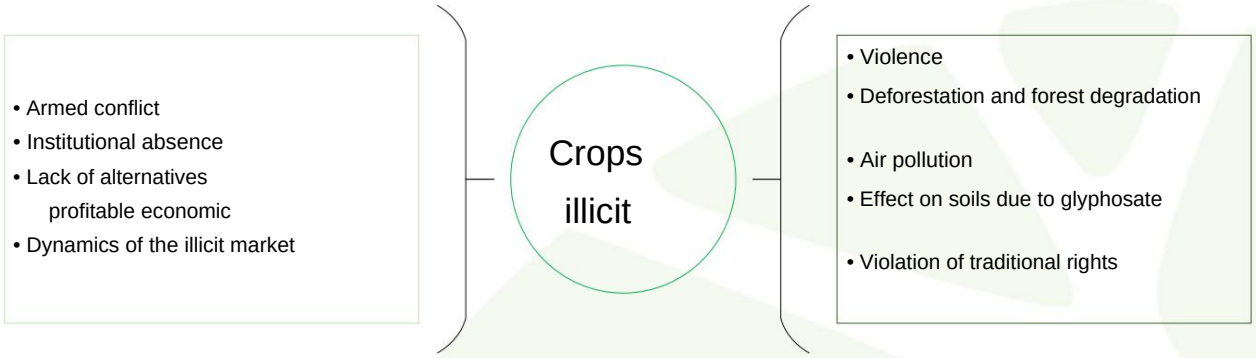


Figure 21 Cause-effect diagram for the deforestation factor and illicit crops.
Source: CO2CERO SAS (2021)



Illustration 19 Deforestation and degradation of natural covers due to coca cultivation.
Source: Agroimpulso Foundation (2021).

2.14.3.4 Illegal mining

This deforestation factor involves processes of deforestation and degradation, which are associated with the area involved for the execution of the activity. In some cases, alleys and edges are generated for the mobility of material, while other times only paths are generated for the transit of personnel. , which influences the impact on coverage

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wooded Mining activity influences the community councils of Prodefensa of the Tapaje River, Iscuande River Basin and Guapi below, among the factors highlighted by the community are the effects on health due to loss of water quality, use of reagents harmful to the life and reduction of the populations of some animals suitable for the subsistence of the community, in environmental terms, the soils lose their quality for cultivation, vapor emissions contaminate the air and there is a loss of ecosystem connectivity, affecting the development of faunal populations. .

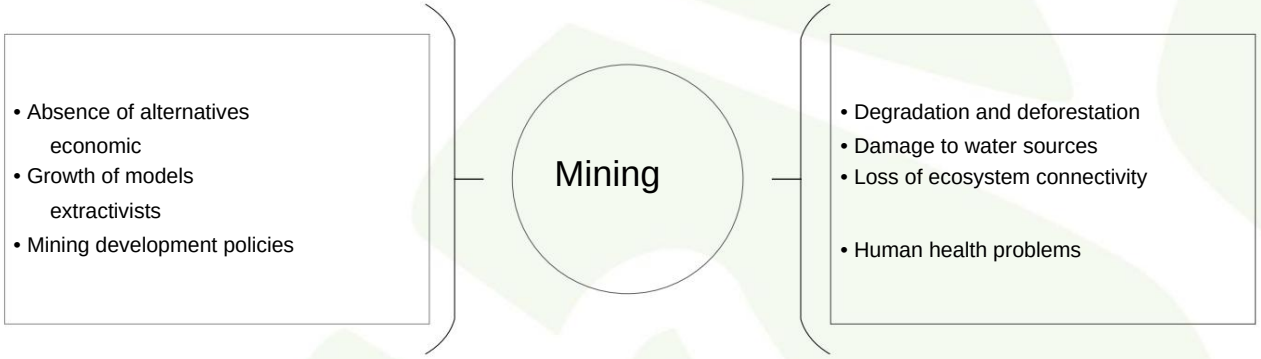


Figure 22 Cause-effect diagram for the mining deforestation factor.
Source: CO2CERO SAS (2021)



Illustration 20 Mining activity in rivers of community councils.
Source: Agroimpulso Foundation (2021).

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3.ESTIMATIONS AND QUANTIFICATION

The following chapter presents the Ex Ante estimates of the REDD+ PAZcífico project.
and the methodological development of quantified Ex Post emissions.

3.1 Application of the methodology

The subchapter describes the methodology applied to estimate Ex Ante emissions reductions in accordance with the parameters defined by the certification program.

3.1.1 Title and reference of the methodology

The project is based on the application of the M/UT-REDD+01 Methodology for the execution of REDD+ projects consistent with the reference levels presented by Colombia to the UNFCCC. CERCARBON V 1.

3.1.2 Applicability of the methodology

The project meets the conditions of applicability of the methodologies as follows:

i) The project complies since it is part of the reduction of GHG emissions through the development of REDD+ activities

ii) The project is carried out in areas that meet the national definition of forest, which are:

a. Minimum area of 1 hectare
b. Minimum height of 5 meters
c. 30% canopy cover

iii) Forest and non-forest areas are identified by analyzing deforestation and degradation activity data.

iv) The mandatory deposits and emission sources to be considered within the project are evaluated in accordance with the provisions of the methodology.

Finally, the project meets the location conditions (physiography, hydrology, soils, etc.) and the threat of deforestation and degradation characterized by a historical trend of the last decade and patterns in terms of agents, drivers and underlying causes of deforestation and degradation. .

3.1.3 Project area

The project will monitor changes in the carbon stocks of the above-ground and underground biomass of stable forest within the political limits of the four community councils, in two time periods that include ten years before the start of the project, and at the start of the project until the validity period of the initiative. I also know

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will carry out monitoring of the Potential Leakage Area to determine the incidence of displacement of deforestation and degradation actors. Table 41 presents the time limits and chronological plan related to the REDD+ PAZcífico project.

Table 41 Temporal limits of the REDD+ Project

Chronological Plan	
Project start date	January 1, 2015
Historical period	January 1, 2005 to December 31, 2014
Projection period	January 1, 2015 – December 31, 2034
Results period	January 1, 2015 – September 15, 2021
Project duration	20 years
Verification times	Triennial verifications (3 years) are proposed with a maximum of 5 years.

Source: CO2CERO SAS (2021)

3.1.4 Reference scenario

The reference scenario or reference region allows identifying the estimates of deforestation and degradation that could occur in the project area, in the absence of the GHG mitigation initiative. Presenting a similarity with the project area in access, deforestation agents, forest type, land tenure and post-deforestation land uses.

The determination of the reference region was carried out taking into account the guidelines proposed by the “M/UT-REDD+01 methodology for the execution of REDD+ projects consistent with the reference levels presented by Colombia to the UNFCCC” with the presence of the actors. and drivers of deforestation and degradation that can access the project area and it is of interest to do so, together with the land tenure figures are similar to those of the project area and the exclusion of areas with restricted access of the actors of deforestation and degradation.

3.1.4.1 Delimitation of the reference region

The delimitation of the reference region was carried out by combining different geospatial data that generate the similarity of conditions present in the project area, using information on slopes, precipitation, microbasins and temperature generating similarity with the climatic and geographical conditions.

Along with this, it was considered that the reference region will include part of the project area, that the agents and drivers of deforestation and degradation identified and analyzed in the reference region can access the project area and be of interest through information from interviews and socializations in the field, presence of roads and bodies of water.

Each exposed characteristic was compared between the project area and the reference region, finding that the reference region meets the necessary similarities, thus obtaining a total area of 1,764,410.55 hectares, as shown in Figure 23 .

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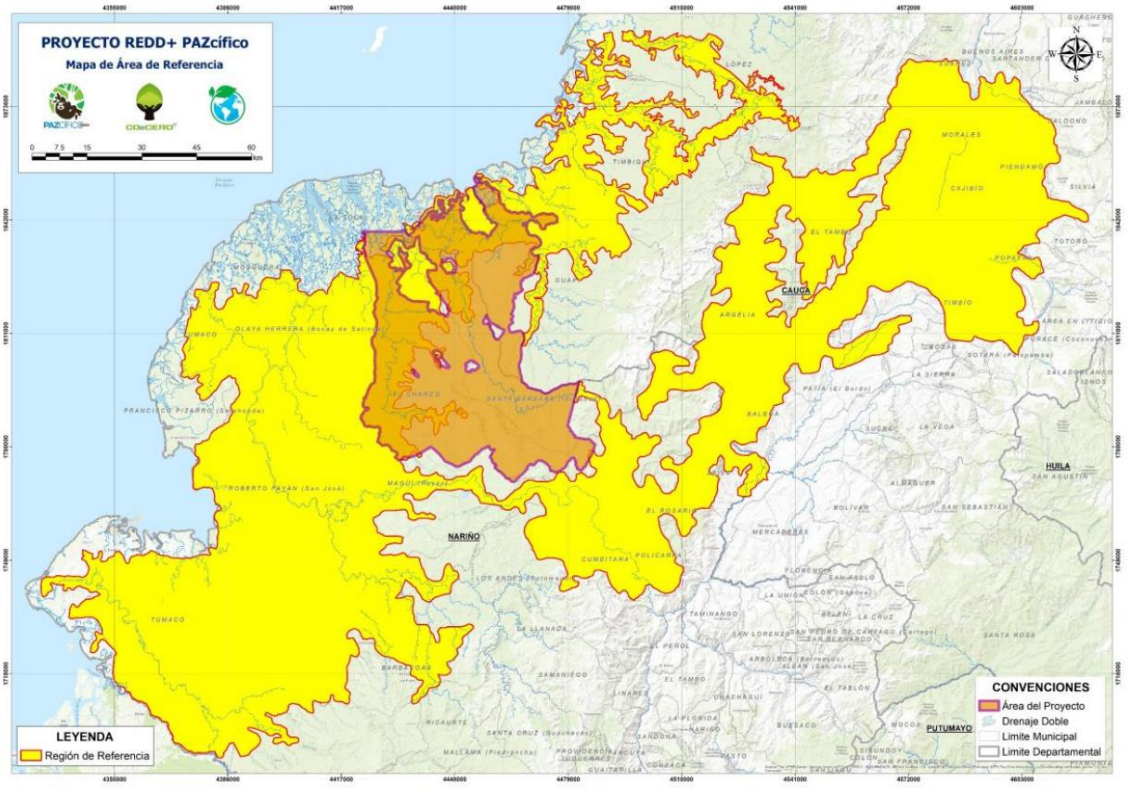


Figure 23 Map of the Reference Region
Source: CO2CERO SAS (2021).

3.1.5 Potential Leakage Area

The leakage belt or leakage area is the area adjacent to the project limits in which displacement of deforestation and degradation activities found before the project is generated within the project limits. Delimited in forest areas close to mobility ranges of deforestation and degradation actors defined in section 2.14.

To identify the leak area of the project, the mobility analysis method was established, associating the access points to the forest given the proximity to navigable rivers, this is because in the territory there are no roads through which to travel, but rather they are the rivers the vectors of mobility, urban centers and the edge of the forest which is more susceptible to being deforested or degraded. From the mobility analysis, it is identified that the potential deforestation and degradation activities that allow defining the leakage area are highly linked to the proximity of navigable rivers and urban centers.

The key factors for determining the areas susceptible to deforestation and degradation due to the mobility of agents were based on a multi-criteria analysis of the proximity to drainages.

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doubles in the form of navigable rivers, urban centers, non-forest boundary and project boundary outside the project area.

The sum of the relative weights of each key factor generates a range of 16 probable values of agent mobility, in this way it is determined that the areas with the 5

Higher values and bordering the project area present high susceptibility to the displacement of deforestation activities and associated ecosystem equivalence of the project area, adjacent microwatersheds and stable forest areas are defined as the Potential Leakage Area, as presented in the Figure 25.

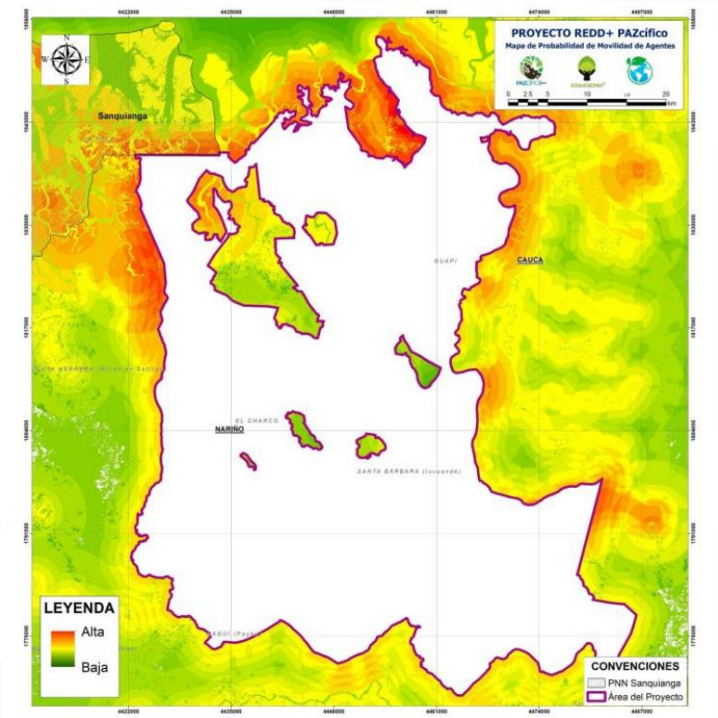


Figure 24 Agent mobility probability map
Source: CO2CERO SAS (2021).

Within the Potential Leakage Area, it occurs in six (6) different polygons bordering the project area and within the reference region, which have a total area of 20,012.92 hectares susceptible to degradation and deforestation activities. Within the area considered with a high potential probability of mobility to the northwest, they will not be considered, due to the presence of PNN Sanquianga jurisprudence outside the community councils.

The leak management area consists of 97.86 hectares located near the area with mangrove presence, with the essential characteristic of the presence of forest cover, with high importance of protection given its own cover conditions, associated with the REDD+ mangrove restoration, governance and governability activities implemented by the inhabitants of the Unicosta community council.

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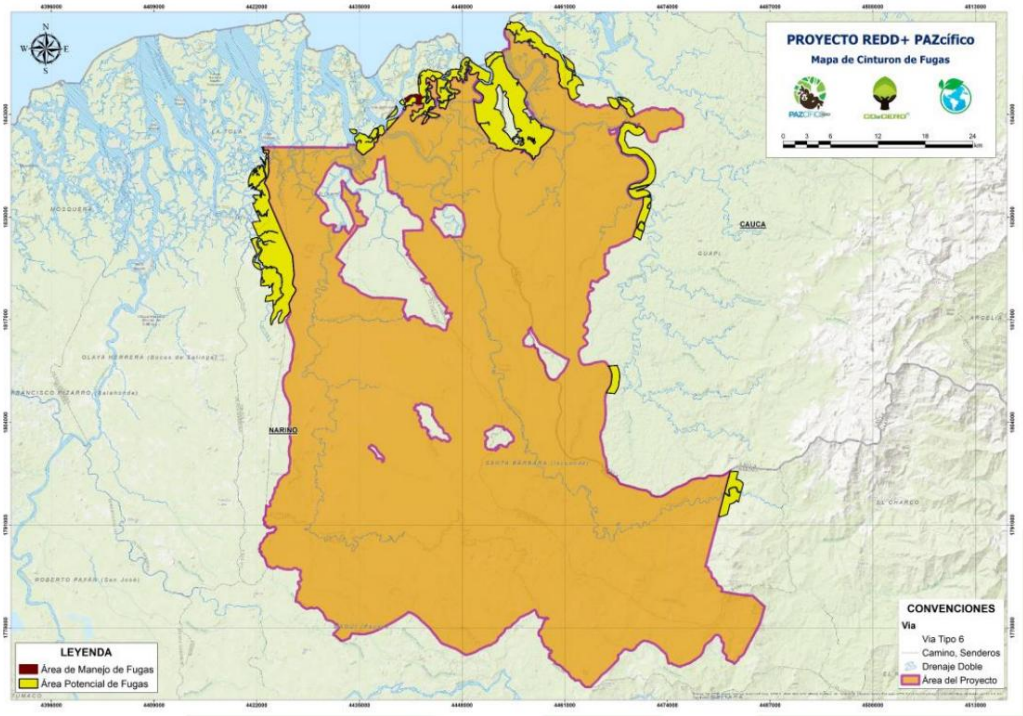


Figure 25 Project Leak Management and Potential Area Map
Source: CO2CERO SAS (2021).

3.1.6 Methodological deviations

A methodological deviation from the NREF was made in order to estimate the emission factor for the project, achieving a value consistent with the IPCC principles.

3.1.6.1 Emission Factor

In order to determine the current state of the forest cover associated with the project that allows determining the emission factor for the baseline and the performance of the implementation of REDD+ activities, a field sample is developed that allows compiling data on the structure and composition of the forest.

3.1.6.1.1 Selection number representative plots

It is evident that, based on the plots inventoried within the limits of the project, the required sampling error is met, obtaining a value for sampling of 9.13% as evidenced in AUDITORIA_VV_2021\3_Carbono\FE REDD PAZcifico_04022022.xlsx \“Sampling error” tab.

3.1.6.1.2. Field sampling methodology

40 sampling points (plots) were carried out on the project area (including surrounding areas) to measure the different stages present in the delimited forest area (saplings, latizals and trunks); Each plot covers an area of 0.1 hectares, arranged in a rectangular shape of 100 x 10 meters. The location of the plots was given at random in the

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ArcGIS ® software from the creation of random points, prioritizing proximity to
water bodies that favor movement and data collection in areas that are difficult to access due to public order factors, verifying that the plots are within the forest area and guaranteeing that at least one plot is presented within the most representative forest coverage (See Figure 26), corresponding to what was carried out in the NREF under a simple random sampling scheme.

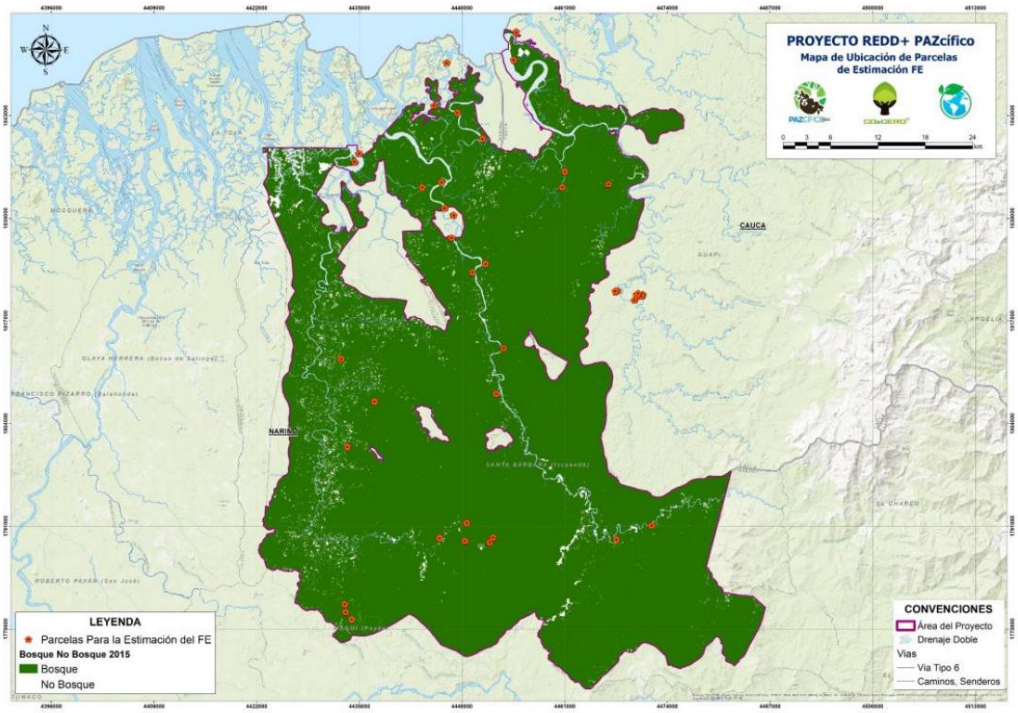


Figure 26 Location Map of Sampling Plots
Source: CO2CERO SAS (2021).

In these, all the species belonging to each forest cover were identified.
based on their respective scientific name and family. Subsequently, measurements were made corresponding to the variables diameter at chest height (DAP) and total height. The form and type of sampling selection can be identified in the REDD inventory document folder.
Report methodology the
AUDITORIA_VV_2021\12_Monitoring report.

3.1.6.1.3. Treatment of the data

Based on the data collected, each of the procedures developed by the National NREF was consistently used, as follows:

1. Calculation of missing heights from regression models developed for each group of data (linear, exponential, GAM, GAMM, among others See *AUDITORIA_VV_2021\3_Carbono\Height Regressions\Height Regressions.xlsx).*

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2. Use of the Global Wood Density Database to provide each identified species with a value corresponding to this attribute.

3. Application of the formulas determined by NREF for the calculation of Air Biomass (AGB), Underground Biomass (BRG), Soil Organic Carbon for 20 years (COS20years-i) and finally the corresponding Emission Factor.

3.1.6.1.3. Determination of the emission factor

The adjustment to the emission factors was consulted and approved by the RENARE Administration, Subdirectorate of Environmental Studies and Institute of Hydrology, Meteorology and Environmental Studies – IDEAM (See. From the 5_Metodologias\NREF\Adjustment results FE_RENARE.msg) evident.

Table 42. Results obtained for the Emission Factor

Variable	Unit	Value
Emission Factor	(tCO2e/ha)	530,07

Source: CO2CERO SAS (2021).

The above is presented in the file AUDITORIA_VV_2021\3_Carbono\FE REDD PAZcifico_04022022.xlsx, It is considered necessary to point out that the above values correspond to stem and latizal individuals, which meet the DBH characteristics indicated in the NREF.

3.2 Quantification of GHG emissions reductions

Below is the quantification of the GHG emissions reductions present within the REDD+ PAZcífico project. It should be noted that the risk value of non-permanence (buffer) corresponds to 15% of the emissions reductions, in accordance with what is described in resolution 1447 of 2018. Additionally, this uncertainty is determined in requirement (f) regarding risks, 15% of the total credits obtained by the project, and its relevance is evaluated with an uncertainty evaluation matrix (See 8.13 Risks, uncertainty and its analysis 11_Annexes\Annex 2_ of Uncertainty.xlsx).

3.2.1 Reference emissions

The quantification of the emissions generated in the project area, in the absence of this, are considered as those generated in the baseline scenario, in this way the quantification of the emissions generated by deforestation and degradation activities is established.

3.2.1.1 Deforestation

From the emission factor (see 3.1.6.1 Emission Factor) the baseline was calculated, thus obtaining a total of 10,521,749 tCO2e for all the years within the project area (see Table 43).

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Table 43 Estimated emissions from deforestation in the baseline within the Project Area

Year	Emission factor (tCO2e/ha)	ECO2defLBt,f (tCO2e)	
		Yearly	Accumulated
2015	530,07	533.154	533.154
2016	530,07	531.066	1.064.220
2017	530,07	528.986	1.593.206
2018	530,07	631.194	2.224.400
2019	530,07	661.215	2.885.615
2020	530,07	687.188	3.572.803
2021	530,07	708.309	4.281.112
2022	530,07	724.066	5.005.178
2023	530,07	469.703	5.474.881
2024	530,07	467.863	5.942.744
2025	530,07	466.030	6.408.774
2026	530,07	464.205	6.872.979
2027	530,07	462.386	7.335.365
2028	530,07	460.575	7.795.940
2029	530,07	458.771	8.254.711
2030	530,07	456.974	8.711.685
2031	530,07	455.184	9.166.869
2032	530,07	453.401	9.620.270
2033	530,07	451.624	10.071.894
2034	530,07	449.855	10.521.749
TOTAL		**10.521.749**	

Source: CO2CERO SAS (2021)

Where: ECO2defLBt,f (tCO2e) are the CO2e emissions due to deforestation in the baseline scenario.

3.2.1.2 Degradation

Based on the emission factor (see 3.1.6.1 Emission Factor), the baseline was calculated for the primary and secondary degradation areas according to the fragmentation analysis (Ramírez, 2018), taking into account the loss values for each class. of degradation proposed by Ramírez (2018) and Armenteras (2016), in order not to overestimate the carbon contents of the areas corresponding to the degradation class; (see Table 44); In this way, the value corresponding to the emission factor is obtained that will be considered in the entire quantification of emissions reductions due to degradation (See

3_Carbono\Carbono_Degradacion_REDDPAZcifico_V2)

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Table 44 Equivalent carbon content by type of degradation

Degradation type	Average difference		Emission factor (tCO2e/ha)
	Biomass area (t/ha)	Biomass underground (t/ha)	
Primary	228,79 40,58 170,21 32,60		422,53
Secondary			318,88

Source: CO2CERO SAS (2021)

The estimation of the areas belonging to primary and secondary degradation was carried out doing a fragmentation analysis according to Ramirez, the. yea (2018).

Table 45 Fragmentation analysis degradation data for baseline

Area type	Period 2005 to 2015		Annual degradation area (ha)
	Degradation type	Area (ha)	
Reference region	Primary	871.25	87,13
	Secondary	2,114.10	211,41
Potential Leakage Area	Primary	4.48	0,45
	Secondary	0.75	0,07

Source: CO2CERO SAS (2021)

In this way, a total of 2,084,520 tCO2e is obtained for all the years of the project in the baseline scenario (see Table 46).

Table 46 Carbon stocks due to degradation in the baseline

Year	ECO2degLB,t,dp ECO2degLB,t,ds		ECO2degLB	
	Yearly	Yearly	Yearly	Accumulated
2015	36.813	67.414	104.226	104.226
2016	36.813	67.414	104.226	208.452
2017	36.813	67.414	104.226	312.678
2018	36.813	67.414	104.226	416.904
2019	36.813	67.414	104.226	521.130
2020	36.813	67.414	104.226	625.356
2021	36.813	67.414	104.226	729.582
2022	36.813	67.414	104.226	833.808
2023	36.813	67.414	104.226	938.034
2024	36.813	67.414	104.226	1.042.260
2025	36.813	67.414	104.226	1.146.486
2026	36.813	67.414	104.226	1.250.712
2027	36.813	67.414	104.226	1.354.938
2028	36.813	67.414	104.226	1.459.164
2029	36.813	67.414	104.226	1.563.390
2030	36.813	67.414	104.226	1.667.616
2031	36.813	67.414	104.226	1.771.842
2032	36.813	67.414	104.226	1.876.068
2033	36.813	67.414	104.226	1.980.294

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Year	ECO2degLB,t,dp ECO2degLB,t,ds		ECO2degLB	
	Yearly	Yearly	Yearly	Accumulated
2034	36.813	67.414	104.226	2.084.520
TOTAL	**736.254**	**1.348.271**	**2.084.520**	**2.084.520**

Source: CO2CERO SAS (2021)

Where:

- ECO2degLB,t,dp : CO2e emissions due to primary degradation in the baseline
- ECO2degLB,t,ds : CO2e emissions due to secondary degradation in the baseline
- ECO2degLB : Total CO2e emissions due to degradation in the line scenario base.

3.2.2 Ex-Ante emissions avoided

The reduction of emissions generated by the project in the Ex-Ante scenario is quantified, estimated that would occur due to the implementation of the project, due to the deforestation and degradation mitigation actions.

3.2.2.1 Deforestation

To estimate Ex-ante emissions reductions in the project area, a projection was carried out in which a value of 35% reduction in GHG emissions was implemented during the project implementation period. This value was obtained from monitoring forest cover during the initial seven (7) years of the project. The estimated Ex-ante emissions for the project area are presented in Table 47.

Table 47 Ex-ante emissions reduction of the project due to deforestation

Year	ECO2PtX		EfdefM		MEAdef		Buffer		REDD+	
	Yearly	Now	Yearly	Now	Yearly	Now	Yearly	Now	Yearly	Now
2015	169.113	169.113	33.990	33.990	364.041	364.041	54.606	54.606	309.435	309.435
2016	168.882	337.995	33.857	67.847	362.184	726.225	54.327	108.933	307.857	617.292
2017	168.651	506.646	33.724	101.571	360.335	1.086.560	54.050	162.983	306.285	923.577
2018	168.421	675.067	33.592	135.163	462.773	1.549.333	69.415	232.398	393.358	1.316.935
2019	168.190	843.257	33.461	168.624	493.025	2.042.358	73.953	306.351	419.072	1.736.007
2020	167.961	1.011.218	33.330	201.954	519.227	2.561.585	77.884	384.235	441.343	2.177.350
2021	167.731	1.178.949	33.199	235.153	540.578	3.102.163	81.086	465.321	459.492	2.636.842
2022	167.502	1.346.451	33.069	268.222	556.564	3.658.727	83.484	548.805	473.080	3.109.922
2023	167.273	1.513.724	32.939	301.161	302.430	3.961.157	45.364	594.169	257.066	3.366.988
2024	167.044	1.680.768	32.810	333.971	300.819	4.261.976	45.122	639.291	255.697	3.622.685
2025	166.816	1.847.584	32.682	366.653	299.214	4.561.190	44.882	684.173	254.332	3.877.017
2026	166.588	2.014.172	32.554	399.207	297.617	4.858.807	44.642	728.815	252.975	4.129.992
2027	166.360	2.180.532	32.426	431.633	296.026	5.154.833	44.403	773.218	251.623	4.381.615
2028	166.133	2.346.665	32.299	463.932	294.442	5.449.275	44.166	817.384	250.276	4.631.891

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Year	ECO2PtX		EfdefM		MEAdef		Buffer		REDD+	
	Yearly	Now	Yearly	Now	Yearly	Now	Yearly	Now	Yearly	Now
2029	165.906	2.512.571	32.173	496.105	292.865	5.742.140	43.929	861.313	248.936	4.880.827
2030	165.679	2.678.250	32.047	528.152	291.295	6.033.435	43.694	905.007	247.601	5.128.428
2031	165.453	2.843.703	31.921	560.073	289.731	6.323.166	43.459	948.466	246.272	5.374.700
2032	165.226	3.008.929	31.796	591.869	288.175	6.611.341	43.226	991.692	244.949	5.619.649
2033	165.001	3.173.930	31.672	623.541	286.623	6.897.964	42.993	1.034.685	243.630	5.863.279
2034	164.775	3.338.705	31.548	655.089	285.080	7.183.044	42.762	1.077.447	242.318	6.105.597
TOTAL	**3.338.705**		**655.089**		**7.183.044**		**1.077.447**		**6.105.597**	

Source: CO2CERO SAS (2021)

Where:

- ECO2Ptx: CO2e emissions from deforestation within the project limit for the ex ante scenario.
- EfdefM: CO2e emissions from deforestation in the leak belt
- MEAdef: Reduction of total CO2e emissions due to deforestation in the scenario from before.
- Buffer: Reserve for risk of non-permanence for the ex ante deforestation emissions reduction scenario.
- REDD+: Reduction of net CO2e emissions due to deforestation in the scenario from before.

3.2.2.2. Degradation

To estimate the reduction of Ex-Ante emissions due to degradation, a projection of the decrease was made due to the activities given by the project, in accordance with the determination of the area for each type of degradation from 2015 to 2021, both for the area of the project and for the potential leak area, as shown in Table 48

(To see 3_Carbono\Carbono_Degradacion_REDDPAZcifico_V2)

Table 48 Fragmentation analysis degradation data for the Ex-Ante scenario

Area type	Period 2015 to 2021		Annual degradation area (ha)
	Degradation type	Area (ha)	
Project area	Primary	8.96	0,89
	Secondary	45.93	4,59
Potential Leakage Area	Primary	0.19	0,02
	Secondary	1.66	0,17

Source: CO2CERO SAS (2021)

In this way, the Ex-ante emissions reduction of the project due to the degradation activities was obtained, taking into account the net emissions generated by the project estimated by the implementation of the project as shown in Table 49.

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Table 49 Ex-ante emissions reduction of the project due to degradation

Year	ECO2PtX		EfdegM		MEAdeg		Buffer		REDD+
	Annually	Now	Annually	Now	Annually	Now	Yearly	Now	Yearly
2015	3.072	3.072	213	213	100.941	100.941	15.141	15.141	85.800 85.800
2016	3.072	6.144	213	426	100.941	201.882	15.141	30.282	85.800 171.600
2017	3.072	9.216	213	639	100.941	302.823	15.141	45.423	85.800 257.400
2018	3.072	12.288	213	852	100.941	403.764	15.141	60.564	85.800 343.200
2019	3.072	15.360	213	1.065	100.941	504.705	15.141	75.705	85.800 429.000
2020	3.072	18.432	213	1.278	100.941	605.646	15.141	90.846	85.800 514.800
2021	3.072	21.504	213	1.491	100.941	706.587	15.141	105.987	85.800 600.600
2022	3.072	24.576	213	1.704	100.941	807.528	15.141	121.128	85.800 686.400
2023	3.072	27.648	213	1.917	100.941	908.469	15.141	136.269	85.800 772.200
2024	3.072	30.720	213	2.130	100.941	1.009.410	15.141	151.410	85.800 858.000
2025	3.072	33.792	213	2.343	100.941	1.110.351	15.141	166.551	85.800 943.800
2026	3.072	36.864	213	2.556	100.941	1.211.292	15.141	181.692	85.800 1.029.600
2027	3.072	39.936	213	2.769	100.941	1.312.233	15.141	196.833	85.800 1.115.400
2028	3.072	43.008	213	2.982	100.941	1.413.174	15.141	211.974	85.800 1.201.200
2029	3.072	46.080	213	3.195	100.941	1.514.115	15.141	227.115	85.800 1.287.000
2030	3.072	49.152	213	3.408	100.941	1.615.056	15.141	242.256	85.800 1.372.800
2031	3.072	52.224	213	3.621	100.941	1.715.997	15.141	257.397	85.800 1.458.600
2032	3.072	55.296	213	3.834	100.941	1.816.938	15.141	272.538	85.800 1.544.400
2033	3.072	58.368	213	4.047	100.941	1.917.879	15.141	287.679	85.800 1.630.200
2034	3.072	61.440	213	4.260	100.941	2.018.820	15.141	302.820	85.800 1.716.000
TOTAL	**61.440**		**4.260**		**2.018.820**		**302.820**		**1.716.000**

Source: CO2CERO SAS (2021)

Where:

- ECO2PtX: CO2e emissions due to degradation within the project limit for the ex ante scenario.
- EfdegM: CO2e emissions due to degradation in the leak belt
- MEAdeg: Reduction of total CO2e emissions due to degradation in the scenario from before.
- Buffer: Reserve for risk of non-permanence for the scenario of emissions reduction due to ex ante degradation.
- REDD+: Reduction of net CO2e emissions due to degradation in the scenario from before.

3.2.2.3. Total Ex-Ante emissions reduction

Taking into account the deposits selected in the project (Deforestation and Degradation), which were explained previously, a total

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of 7,821,597 tCO2e for all the years within the project area (see Table 50) (See 3_Carbono\Carbono_Total_REDDPAZcifico_V2)

Table 50. Ex-ante emissions reduction of the project

Year	ECO2PtX		EfdefM + EfdegM		MEAdef + MEAdeg		Buffer		REDD+	
	Annual	Now	Annual	Now	Annual	Now	Annual	Now	Annual	Now
2015	172.185	172.185	34.203	34.203	464.982	464.982	69.747	69.747	395.235	395.235
2016	171.954	344.139	34.070	68.273	463.125	928.107	69.468	139.215	393.657	788.892
2017	171.723	515.862	33.937	102.210	461.276	1.389.383	69.191	208.406	392.085	1.180.977
2018	171.493	687.355	33.805	136.015	563.714	1.953.097	84.556	292.962	479.158	1.660.135
2019	171.262	858.617	33.674	169.689	593.966	2.547.063	89.094	382.056	504.872	2.165.007
2020	171.033	1.029.650	33.543	203.232	620.168	3.167.231	93.025	475.081	527.143	2.692.150
2021	170.803	1.200.453	33.412	236.644	641.519	3.808.750	96.227	571.308	545.292	3.237.442
2022	170.574	1.371.027	33.282	269.926	657.505	4.466.255	98.625	669.933	558.880	3.796.322
2023	170.345	1.541.372	33.152	303.078	403.371	4.869.626	60.505	730.438	342.866	4.139.188
2024	170.116	1.711.488	33.023	336.101	401.760	5.271.386	60.263	790.701	341.497	4.480.685
2025	169.888	1.881.376	32.895	368.996	400.155	5.671.541	60.023	850.724	340.132	4.820.817
2026	169.660	2.051.036	32.767	401.763	398.558	6.070.099	59.783	910.507	338.775	5.159.592
2027	169.432	2.220.468	32.639	434.402	396.967	6.467.066	59.544	970.051	337.423	5.497.015
2028	169.205	2.389.673	32.512	466.914	395.383	6.862.449	59.307	1.029.358	336.076	5.833.091
2029	168.978	2.558.651	32.386	499.300	393.806	7.256.255	59.070	1.088.428	334.736	6.167.827
2030	168.751	2.727.402	32.260	531.560	392.236	7.648.491	58.835	1.147.263	333.401	6.501.228
2031	168.525	2.895.927	32.134	563.694	390.672	8.039.163	58.600	1.205.863	332.072	6.833.300
2032	168.298	3.064.225	32.009	595.703	389.116	8.428.279	58.367	1.264.230	330.749	7.164.049
2033	168.073	3.232.298	31.885	627.588	387.564	8.815.843	58.134	1.322.364	329.430	7.493.479
2034	167.847	3.400.145	31.761	659.349	386.021	9.201.864	57.903	1.380.267	328.118	7.821.597
TOTAL	**3.400.145**		**659.349**		**9.201.864**		**1.380.267**		**7.821.597**	

Source: CO2CERO SAS (2021).

Where:

- ECO2PtX: CO2e emissions from deforestation and degradation for the ex ante project scenario.
- EfdegM + EfdegM: CO2e emissions due to deforestation and degradation in the leak belt.
- MEAdef + MEAdeg: Reduction of total CO2e emissions due to deforestation and degradation in the ex ante scenario.
- Buffer: Reserve for risk of non-permanence for the scenario of reducing emissions due to deforestation and ex ante degradation.
- REDD+: Reduction of net CO2e emissions from deforestation and degradation in the ex ante scenario.

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3.2.3 Avoided GHG emissions in the monitoring period

The reduction of emissions generated by the project in the monitoring period was quantified annually during the years of project implementation to date.

3.2.3.1 Deforestation

From the data monitored year by year and the quantification of Forest changes in the project area, it is obtained for the years of project activity by calculating the emissions avoided by deforestation, which can be seen in section 5.3.1 of the
Monitoring Report (See 12_Monitoring report\Report REDD+ monitoring PEACE_V5)

3.2.3.1.1 Deforestation of mangrove ecosystem

Mangrove ecosystems have high carbon capture rates due to the large proportion of roots and underground biomass reported in these covers.
Additionally, these ecosystems have a higher degree of vulnerability to impacts due to the interaction they have with the terrestrial and aquatic environment (Silveira & Hernández, 2017). Likewise, there is a great difference between the carbon stocks that occur in purely terrestrial soils because the soils of coastal systems have chemical properties that increase their carbon capture and that

Contradictorily, if not managed properly, they could become a source of significant GHG emissions. Taking into account the above, and assuming that in the project area there are 4,241 hectares covered by mangroves for the year 2021, corresponding to 1.53% of the total area evaluated, which present vulnerability due to multiple
impacts (see 2.14 Analysis of deforestation and degradation factors), which is why it is essential to evaluate the project's capacity to reduce said emissions identified in the baseline.

To quantify the existing soil biomass in mangrove ecosystems, the value reported by the IPPC2 was taken as a reference. where a value of 471 tC/ha is established for organic soils covered with mangroves, widely supported by primary information sources such as Adame et al., (2012); Breithaupt et al., (2012); Chmura (2003); Donato, (2011); Kauffman (2011); Osborne And al., (2011); Vegas-Vilarrúbia (2010) and adopted by the Intergovernmental Panel on Climate Change (IPCC), for the use of this value on soil organic carbon in mangrove ecosystems.

From the values presented above and those obtained in the reference area for the baseline, the expected loss in mangrove cover was estimated during the years of verification within the project area. The actual losses of said cover were monitored from the implementation of the project and emissions were quantified

[2] https://www.ipcc-nggip.iges.or.jp/public/wetlands/pdf/Wetlands_separate_files/WS_Chp4_Coastal_Wetlands.pdf

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reduced deforestation in the mangrove ecosystem in the project, which can be seen in section 5.3.2 of the Monitoring Report (See 12_Monitoring Report\Report REDD+ Monitoring PAZcífico_V5) In the project area for the year 2021, there are 4,241 hectares of mangrove, which cover 1.53% of the total and on the other hand, the forest occupies 272,786 hectares corresponding to 98.47% of the total area, as shown in the Table 51 and Figure 27.

Table 51. Proportion of Forest vs Mangrove in the Project Area

Roof	Area 2021 (ha)	Area (%)
Forest	272.786	98,47%
Missing	4.241	1,53%
Total	**277.027**	**100%**

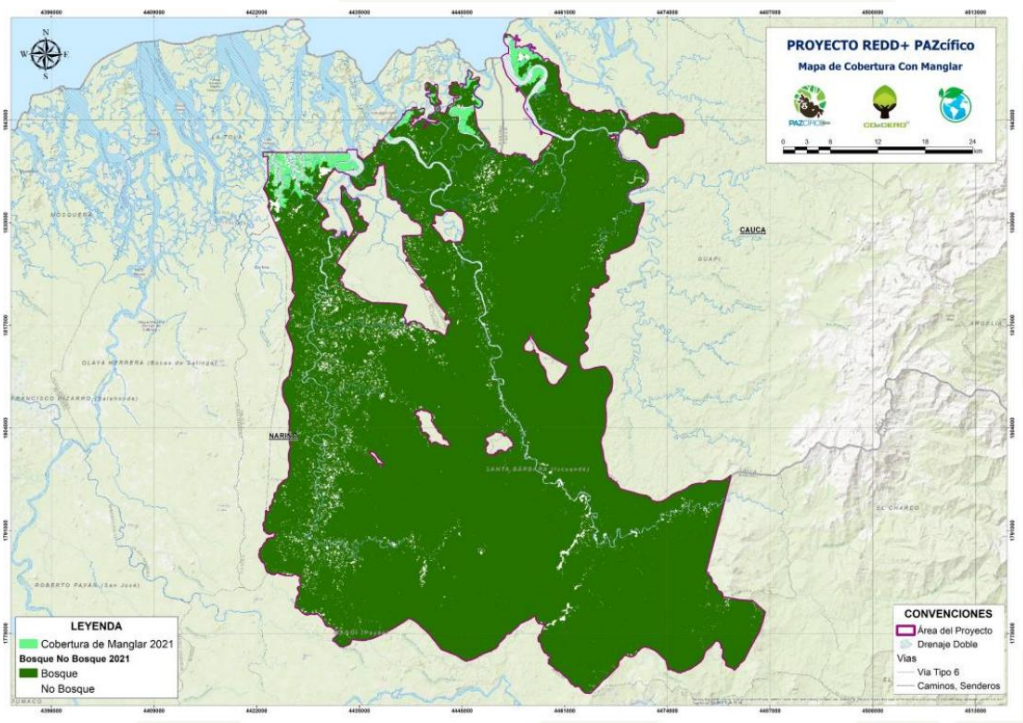


Figure 27. Map of Forest vs Mangrove in the project area

3.2.3.2 Degradation

To estimate the reduction of Ex-Post emissions due to degradation, the determination of the annual decrease for the given activities of the project was carried out, in accordance with the determination of the transition area for each type of degradation, with annual periods that include the years of the initiative, evaluated for both the project area and the Potential Leakage Area. The emission reduction given in the Potential Leakage Area occurred when the degraded area was greater than that given without the project, understanding that, if

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gives a real positive increase since the beginning of the initiative, for those that were of lower value, which can be seen in section 5.3.3 of the Monitoring Report (See 12_Report PAZcífico_V5)monitoring\Report monitoring

In this way, the reduction of Ex-post emissions of the project due to degradation was obtained taking into account the annual net emissions generated by the project due to the implementation of the project. Which can be seen in section 5.3.3 of the Monitoring Report (See **3.2.3.3 Reduction of** 12_Monitoring report\Report REDD+ Monitoring PAZcífico_V5)

total emissions

Taking into account the deposits selected in the project (Deforestation, Deforestation in mangrove ecosystems Degradation), which were explained previously, the total emissions avoided during the project implementation period are obtained, with the reduction due to the risk of non-permanence (buffer).

Which can be seen in section 5.3.4 of the Monitoring Report (See). 12_Report monitoring\Report REDD+ monitoring PAZcífico_V5

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4. SAFEGUARDS AND COBENEFITS

The following chapter describes the Cancún safeguards in accordance with the decisions of the UNFCCC, in addition, the co-benefits expressed as positive results generated by the PAZcífico REDD+ Project on the social, environmental, economic and political context of the community councils present are described.

4.1 SAFEGUARDS Compliance

with safeguards is based on community participation and consent processes, under the guidance of the Cancún safeguards determined in decision 1 of COP 16.

4.1.1 Effective participation

The participation of communities in the processes and activities that involve decision-making at the territorial level is essential to guarantee transparency, legitimacy and a sense of belonging in the development of the PAZcífico REDD+ Project. Below, the spaces for participation, structures of administration and traceability of the same during the structuring of the project.

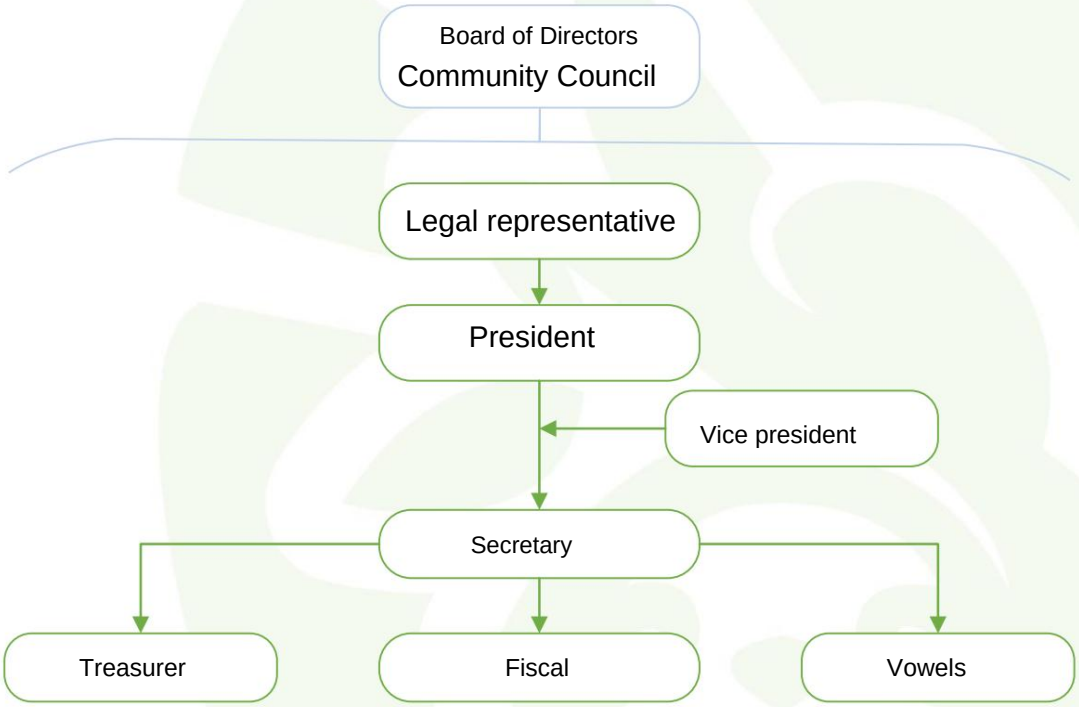


Illustration 21 Administrative structure of community councils.

Source: Taken from (Moreno & Arboleda, 2016)

In territorial terms, the administrative structure of the community councils is established at hierarchical levels, where decisions are approved at each of the levels. At its head is the legal representative as the eldest

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authority for the final decision on the processes consulted, followed by the president and his respective vice-presidency, where the decisions are studied and refined by the secretary and the perceptions of the treasurer, prosecutor and members. Each of the roles present in the administrative structure have been selected in a democratic manner and guaranteeing the participation of the majority of inhabitants, from their different roles within the community.

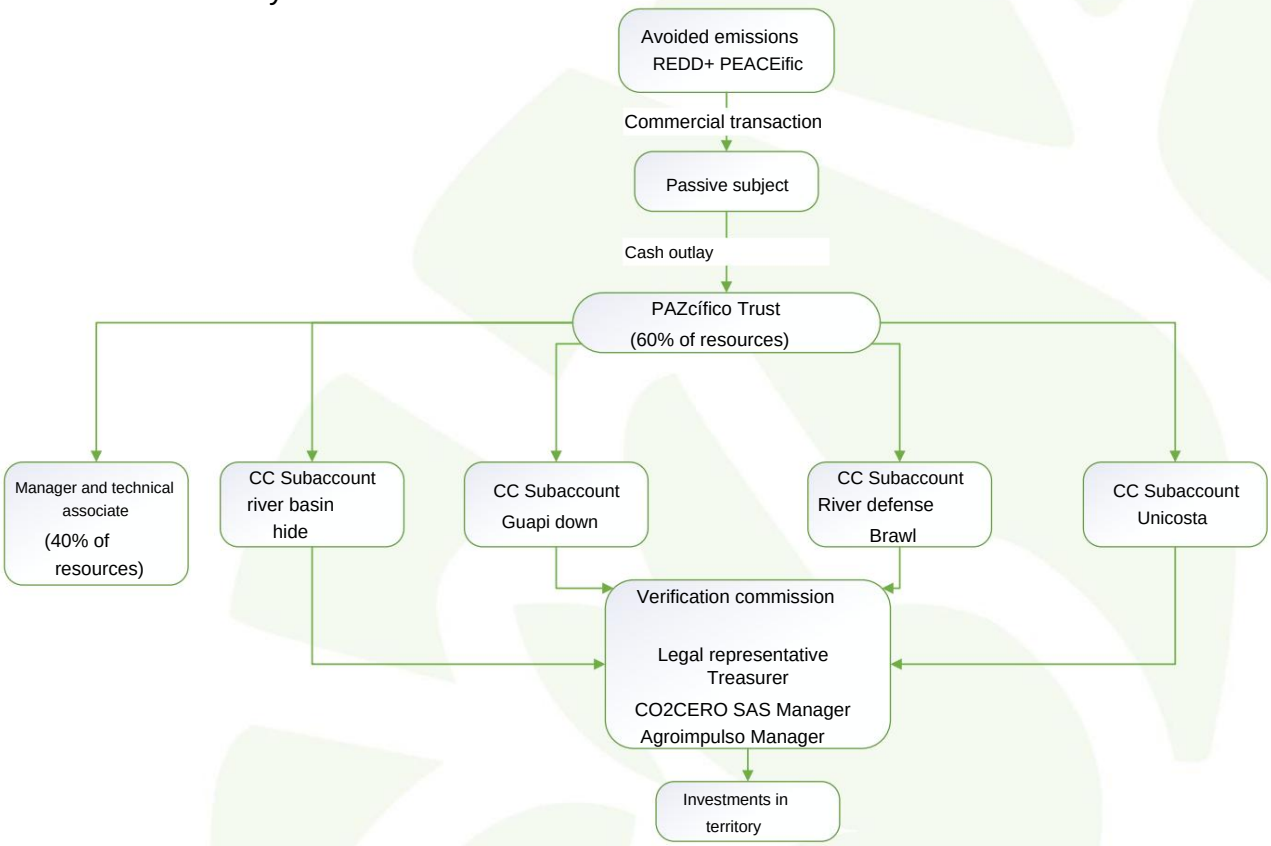


Illustration 22 Management of monetary resources in the REDD+ PAZcífico project.

Source: CO2CERO SAS (2021)

At the project level, the management of monetary resources involves a mixed structure, where there are internal and external actors to the different community councils, who are involved with the transactions carried out on the resources resulting from the sale.

of emissions avoided within the community council, while the verification commission applies processes of validation and approval of the investments to be made by the community. The decisions regarding the REDD+ initiative were made in person and guaranteeing the greatest participation, support for assistance to these spaces, They're in 11_Annexes\Assists . evidencing traceability to the processes of consensus made.

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The Agroimpulso Foundation has acquired the commitment to be the effective means of communication between parties external to the community council involved in the development of the initiative and its inhabitants; Within these communications and ratifying the ownership of the initiative by the community councils, they have the possibility of requesting at any time and according to their needs, spaces for explanation and accountability, the latter being mandatory. minimum once a year.

The elements required in the process of effective participation in the certification program are described in 2_Co benefits\REDD+ benefit distribution PAZcific.docx . Likewise, the consents and agreements signed by the community councils within their unanimous decision on participation in projects REDD+, is located in 1_Agreements\02_Community contract and 11_Annexes\REDD Consent.

4.1.2 AFOLU-Specific Safeguards

Table 52 presents the Cancun safeguards determined for the PEACE REDD+ project, in accordance with decision 1 of COP 16.

Table 52 PEACEFUL REDD+ Safeguards.

Dimension	Cancun Safeguards	Elements of safeguards	Applicability
	A. In accordance with the programs national forest agreements international and	1. Correspondence with legislation National	• Sustainable development goals (SDGs) • Comprehensive deforestation control strategy • National Plan for Adaptation to Change Climate • Biological Diversity Convention • National Forestry Development Plan • National Restoration Plan • Cancun Agreement • Paris Agreement • Resolution 1447 of 2018 • Law 70 of 1993
	B. Transparency and effectiveness of governance structures forestry	2. Transparency and Access to Information	The Agroimpulso Foundation as Managing Associate will provide all the information obtained during the structuring and execution of the initiative, which was a commitment raised during socialization and agreement with the community councils. Likewise, CO2CERO SAS is authorized to share documents related to the project document, co-benefits, estimation of avoided emissions, among others; Finally, the transactions applied on the avoided GHG emissions will be documented and socialized in subsequent phases of accountability, the

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Proyecto REDD+ PAZCÍFICO

Dimension	Cancun Safeguards	Elements of safeguards	Applicability
			which may be requested by the owners of the initiative according to their needs.
		3. Accountability	Transactions on avoided GHG emissions calculated within the jurisdiction limits of the community councils involved will be socialized by the verification commission, led by Fundación Agroimpulso, with which support and related billing are evidenced. Additionally, the community councils will demonstrate, through their legal representatives and treasurers, the investments made in their territory in accordance with the project document and the investment lines determined for the initiative. This information is open to all members of the community councils, respecting their role as proponents of the initiative.
		4. Recognition of Structures Forest Governance	The community councils have developed spaces for consultation related to the management of natural resources, understanding that these favor the development of some economic activities. At the same time, spatial and state diagnoses of forest covers have been carried out in order to consolidate action plans that reduce the adverse effects manifested at their limits and favor territorial forest performance.
		5. Capacity building	Community councils have spaces to strengthen capacities on topics such as conservation, development of mitigation initiatives and design of productive chains; Also, within the project design, coverage monitoring, governance and sustainable resource management activities are defined, which are determined in the investment lines of the distribution of benefits. Regarding forest management, community councils have been instructed in collecting dendrometric information, collaborating in the execution of monitoring activities suggested with the REDD+ project.
	C. Respect for knowledge traditional and rights of communities	6. Free Consent, It is Informed Prior (FPIC)	REDD+ projects have activities that involve the community in their different phases, such as initial approaches, socio-environmental diagnoses, raising awareness about REDD+ activities, consensus on the execution of the REDD+ project, validation and verification of the initiative, and

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Dimension	Cancun Safeguards	Elements of safeguards	Applicability
			socialization of results; In each activity, the greatest number of the population must be involved, or the power of legal representatives to give a concept or make decisions on behalf of everyone must be evidenced. The assistance supports are found in the different spaces applied to the community in relation to the REDD+ project. Additionally, it is possible to identify the commitments made with the community councils and the roles derived from the initiative such as technical associate and manager.
			The REDD+ activities have been designed based on the traditional economic practices of the community councils, understanding the cultural value that these have given over time, among the species most related to their activities, are Achiote, Naidi, Rice and Coconut. . Also, 7. Respect for Knowledge has involved the knowledge of Traditional communities in vegetation monitoring activities, providing field support, species identification and spatial orientation. Additionally, the structuring of the project is based on cultural identity and its application to the management of strategic ecosystems.
		8. Distribution of benefits	The REDD+ PAZcífico project has established the distribution of benefits based on the agreements defined with the community councils, in which the investment lines, approximate percentages of allocation and approval by the community are defined. This tool seeks to guarantee transparency in the transfer of resources from the administrator to the communities, evidencing the effective entry of resources into the territory, the optimal territorial investment and its correspondence with the cultural and environmental values of the community. This document is put up for evaluation by an audit team that can validate that it effectively meets the necessary requirements to be applied at the territorial level. The REDD+ PAZcífico project agrees to grant 60% of the net emissions avoided within the project to community councils, which are determined in 11_Attachments\1_Agreements\Agreements community benefits\Distribution of REDD+ benefits 2_Co

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Proyecto REDD+ PAZCÍFICO

Dimension	Cancun Safeguards	Elements of safeguards	Applicability
			PAZcific.docx. and in 11_Annexes\Consent REDD.
		9. Territorial Rights	The design of the project took into account the internal regulations of each community council, aligning with their rights, commitments and responsibilities. Additionally, the communities were socialized and consulted about the agreements derived from the design and implementation of the initiative, allowing spaces for consultation, emphasizing the characteristics of the territory that will be influenced by it and that constitute strategic axes within the development. territorial.
	D. Full and effective participation	10. Participation	All community councils were an integral part of the profiling, design and structuring phases of the initiative. During these processes, we seek to guarantee that all social roles are active in making information and subsequent decisions, groups such as young people, older adults and women. Likewise, the REDD+ activities of the project were designed at a holistic level, so that all social roles could shape them. The assistance supports are found in the different spaces applied to the community in relation to the REDD+ project. 11_Attachments
!	E. Conservation and benefits	11. Forest Conservation and its biodiversity	The project design involves a social, environmental and economic diagnosis, through which the benefits derived from ecosystem management and the rational use of resources are identified. The identification of a dependency between the forest and territorial performance in its different contexts allows project activities to be oriented towards the conservation and increase of existing carbon reservoirs through the implementation of direct and indirect actions such as community forest management and sustainable agricultural production. Likewise, during the vegetation monitoring phases, identification of the species present is carried out, according to the knowledge of the communities and the use commonly applied to them at the territorial level, in order to identify the richness within the masses. Pacific forests.

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Dimension	Cancun Safeguards	Elements of safeguards	Applicability
		12. Provision of Goods and Environmental services	The diagnostic activities and the continuous implementation of community development actions show that there is a dependency between the councils and the natural resources within their jurisdiction, while identifying negative impacts generated by the misuse of these over time both by internal and external actors, which leads to considering actions for conservation, management and regulation of the use of natural resources, which is reflected in the optimal performance of supply, regulation and support services. Also, some communities have found an opportunity for development in ecosystem services, which is the basis for the design of REDD+ activities related to water resource management, sustainable fruit production and improvement of fauna habitats through the conservation of masses of forest.
	F. Prevent from Reversal risks	13. Territorial and Environmental Planning	The REDD+ PAZcífico project involves spatial analysis, both at a remote level and on site, in order to identify potential areas for the development of sustainable productive activities, vulnerable areas that require interventions such as restoration and reforestation, and suitable areas that can be covered with conservation, surveillance and control. Additionally, the analysis of deforestation dynamics allows us to identify points that are generating negative effects on the territory, which produces social conflicts and underlying environmental problems. Finally, the initiative ratifies the territorial limits in order to generate recognition and appropriation of these, and the responsibility involved in possessing natural resources within its jurisdiction, giving way to the design of surveillance, control and defense strategies for them.
		14. Sectoral Planning	An analysis of the regulatory, administrative and socioeconomic context allows for the creation within the project of activities aligned with the needs of different frames of reference, understanding the perspective proposed by different planning tools on the territory, in order to frame a common goal and transversal objectives, which involve compliance with

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Dimension	Cancun Safeguards	Elements of safeguards	Applicability
			impact at various scales such as local, regional and national. Furthermore, the project aims to propose internal governance schemes that strengthen the sense of community belonging and the defense of territorial rights in different political and administrative settings.
	G. Avoid displacement of emissions	conflict resolution, awareness about the impacts of	The spatial analysis of the REDD+ PAZcífico project has identified project limits, areas of leakage and regions of mobility of deforestation factors, which allows planning routes for management, control and surveillance of deforestation actions, as well as monitoring behavior of economic activities that impact the ecosystems and strategic areas of the territory. In turn, the community councils 15. Control and have identified the actors that generate emissions from deforestation and degradation within their Forest Surveillance territory, which has generated spaces to avoid defense processes Territorial displacement and generated by this type of actions. Finally, REDD+ activities aim to reorient emissions execution of some activities that have triggered processes of deforestation and degradation but that integrate the culture of the communities and that cannot be omitted, for this, alternatives of greater productivity, concentration of agricultural areas for better care and generation of options for market that do not impact current activities and lead to their migration.

Source: CO2CERO SAS (2021).

4.2 COBENEFITS

According to the certification program, co-benefits are the results derived from the implementation of activities related to the REDD+ PAZcífico project, which positively influence the social, environmental, economic or political contexts. The co-benefits have been presented in accordance with the REDD+ activities at PAZcífico, developing the expected co-benefits, their indicator and the frequency of measurement. Co-benefits can additionally be according to in he project REDD+ presented in 2_Co benefits\Monitoring_Cobenefits_PAZcífico.xlsx, the specific co-benefits in PAZcífico are developed. Next, a description of the groups of co-benefits identified is made; it is important to highlight

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that REDD+ activities seek to encompass multiple co-benefits so that the community and additional beneficiaries identify the value of the actions carried out at the territorial level.

Line of investment - Co-benefits	Sustainable production chains	Capacity building	Ecosystem conservation	Improvement of ecosystem services	Equity and inclusion	Governance and governability
Reforestation and restoration	x	x	x	x		
Vegetation diagnosis		x	x	x		x
Sustainable production	x	x	x	x	x	
Productive strengthening	x	x			x	x
Strengthening environmental capacities		x	x	x	x	x
Governance		x			x	x
Transparency and citizen participation		x			x	x

Illustration 23 Influence of the investment lines of the REDD+ PAZcífico project on the identified co-benefit groups. Source: CO2CERO SAS (2021).

4.2.1 Sustainable production chains

Food security constitutes a fundamental axis within the healthy development of rural communities, the continuous provision of food and consumer goods is a fundamental part of their well-being and survival. The maximization of productive benefits can be achieved if the effects of degradation and deforestation on family production areas are reduced; To achieve effective restoration, it is important to combine community, technical and financial efforts, which ensure the viability of the activity and guarantee positive results in the future (Durrel, 2018).

One of the alternatives identified by the community to reduce the degradation of forest cover, without affecting the balance of its economic activities, has been the design and improvement of the productive chains carried out within the territory with common products in its market as the intervention of new ones. products based on coconut, naidí, rice and vanilla. The community councils have worked on the management of actions and resources necessary to design sustainable production chains appropriate to internal needs, identifying potential opportunities for marketing, export, and improving product quality.

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Illustration 24 Sustainable production chains developed within the REDD+ PAZcífico project.
Source: Agroimpulso Foundation (2021).

4.2.2 Capacity strengthening

This co-benefit seeks to improve technical capacity and strengthen participation mechanisms at the territorial level, in order to guide its objectives to achieve conservation, preservation and restoration activities of natural ecosystems owned by community councils. ; which favors the implementation of activities to reduce deforestation and forest degradation

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(REDD). With this, the aim is to generate the technical information necessary for the implementation of conservation and REDD+ activities, to demonstrate the importance of strengthening internal government structures and empower the actors involved in the administration of natural resources, to coordinate spaces for consultation on activities. community environmental development and improve decision-making around the construction of sustainable development strategies within the territory (UNDP, 2021).

The REDD+ PAZcífico project has proposed spaces for strengthening capacities in three strategic axes: information collection on forest cover monitoring, leadership and good governance practices, and environmental conservation. These contents are taught globally for the community, taking into account the importance of including women, young people and older adults, in the transfer of information linked to REDD+ initiatives and sustainable development, due to the experience and perspective that different people have. roles within the community in this regard, as well as the impact generated by their active participation in its execution.



Illustration 25 Scenarios for strengthening capacities in the community councils of the REDD+ PAZcífico project. Source: Agroimpulso Foundation (2021).

4.2.3 Ecosystem conservation

In the region of the REDD+ PAZcífico project, ecological characteristics of both the biogeographic Choco strip and the coastal foothills of the Pacific, the Andes and

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upper foothills of the Amazon; This strategic location generates a high cultural and biological richness in the different ecosystems it houses (Montenegro, Delgado, Pantoja, Calderon, & Noguera, 2019).

By having these ecosystem characteristics, it is important to generate actions that contribute to the conservation and preservation of important species in terms of flora and fauna, while increasing the area of natural coverage, favoring the connectivity and mobilization of biological resources; Among the initiatives proposed by the REDD+ PAZcífico project is the conservation and increase of carbon reservoirs present within its area of influence, with actions such as restoration and reforestation of degraded and deforested areas in both forest and mangrove systems. Also, the establishment of a forest nursery has been proposed with management of native species appropriate to local conditions and spatial diagnosis of areas subject to reforestation and restoration, in order to guarantee the implementation of effective actions on the ground with additional results at a social level. , economic and environmental.

4.2.4 Improvement of ecosystem services

The implementation of restoration and reforestation activities constitutes an efficient alternative for the improvement of goods, services and ecological processes offered by forests. Ecosystem services are classified as provision, support, regulation and cultural, which are widely applied in the rural context, where their natural resources offer variability, according to the dynamics that the territory has executed on them. Forest resources are one of the main examples of this, providing resources such as wood and fruits for self-consumption and marketing, support for derived ecosystem processes, landscaping and regulation of other resources such as water and air (Durrel, 2018).

In order to prolong the relationship between community and natural resources, appropriate alternatives are designed to promote the economic and ecological performance of the community, such as sustainable production of products for commercialization, training on conservation and management of natural resources, increase of carbon reservoirs. and protection of strategic ecosystems. The community councils recognize the dependence they have on natural resources and how their economic and cultural dynamics are based on obtaining different materials and services from them, water resources, water flows, the availability of fruits and the preservation of habitat for species such as Piangua of high commercial value, among others, are some of the benefits that materialize with proper management.

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Illustration 26 Activities to improve ecosystem services. Source: Agroimpulso Foundation (2021).

4.2.5 Equity and inclusion

The effects on natural ecosystems come from multiple main and underlying causes that require the recognition of ethnic differences, inadequate practices at the territorial level, the level of development of other economic alternatives, surface area under conservation, population growth and forms of social organization (Ayala, Gutierrez, & Zapata, 2016), this information is only obtained if all perspectives within the territory are perceived through the inclusion of minorities and non-focal groups present.

Both the processes of deforestation and forest degradation, as well as those corresponding to conservation and sustainable management, have involved minorities such as women, youth and older adults, in the execution of REDD+ initiatives, where the diagnosis requires the experience of all roles. that manifest themselves in the community, it is essential to receive the participation of these minorities. The REDD+ PAZcífico project has involved the entire community in its socialization, consultation and monitoring structures of both REDD+ activities and benefits.

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Illustration 27 Focus groups involved in the implementation of the REDD+ project. Source: Agroimpulso Foundation (2021).

The perspective of each of the social roles allows us to consolidate objectives in accordance with all territorial needs, acting on transversal lines of action that recognize everyone equally, in the same way, the commitment of all parties within the execution of activities. To reduce deforestation and degradation, it can only be achieved if the entire community is willing, avoiding spaces of discrimination and inequality, which leads to scenarios of detriment and suspicion against the initiative.

4.2.6 Governance and governability

Governance and governability are framed in the definition for REDD+ projects as political approaches and positive incentives for issues related to reducing emissions from deforestation and degradation (Petkova, Larson, & Pacheco, 2011), as there is interference from multiple actors. In the generation of these scenarios, it is necessary to strengthen those groups in charge of leading the management and administration of natural resources that allow it. The design of conservation and protection strategies for natural resources is framed in the need to isolate the

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territory of land uses harmful to the community good, such as livestock, mining, extensive agriculture and large-scale infrastructure; However, to intervene in these protection spaces, an adequate political and government position is required, which establishes tools such as dialogue, autonomy and deliberation, the necessary arguments to launch actions on site, recognizing the importance of maintaining the territory intact and be oblivious to the entry of minority interest groups.



Illustration 28 Spaces for consultation and local governance. Source: Agroimpulso Foundation (2021).

Community councils are willing to establish figures of authority and government within their territories in order to validate their traditions and institutions, before external agents of a public and private nature that can intervene positively or negatively in the territory. To this end, processes have been established to strengthen leadership capacities and good governance practices at the territorial level, in order to generate awareness and consistency with the territorial rights conferred on community councils.

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4.2.7. Sustainable Development Goals (SDGs)

The sustainable development goals constitute the global goals for the eradication of poverty, protection of the planet and ensuring the well-being of humanity, within a maximum period of 10 years to demonstrate tangible results in 2030. Sustainability constitutes a fundamental axis in the implementation of actions that are transversal to the three pillars of these objectives, within which equity is proposed in social, environmental and economic terms, based on the identification of community needs. As an alternative appropriate to the national context, the needs of rural communities and the fulfillment of some of the SDGs, the REDD+ PAZcífico initiative is proposed, highlighting conservation, community development and a sense of territorial belonging as fundamental axes of its achievement. .

The activities designed for the PAZcífico REDD+ Project contribute to the achievement of some sustainable development objectives, guaranteeing the quality and permanence of the local and national population, which are complementary to the social, environmental and economic co-benefits created (See and folder) .

4.2 COBENEFITS 2_With the benefits

In accordance with the Land Use Sector of the project, contributions are generated that contribute to the fulfillment of 6 of the 15 objectives agreed upon by the UN. The identified objectives are associated with the REDD+ activities established for the REDD+ PAZcífico project, linked to conservation and preservation actions of the project's forest present in sections 4.2.1 to 4.2.7 of this document, generating social, economic and environmental benefits. with greater community impact, as well as sustainable production chains and the aforementioned capacity building.

In 2_Co benefits| Tool_CERCARBONO_Reporte_ODS_PAZcifico.xls with presents he sustainable development objective, the SDG indicator, the indicator goal, the type of Activity, the contribution of the PMCC, the evidence and the causal relationship.

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5.MONITORING

The following chapter presents the elements and parameters monitored in the REDD+ PAZcífico project. More information can be found at 12_Report monitoreo ReporteMonitoreo-REDDPAZcifico_CERCARBONO.xlsx

5.1 Data and parameters available in validation

Within the subchapter, the variables related to the validation process of the initiative are presented, taking into account that its execution horizon is 20 years. These are presented as general, that is, parameters that evaluate the generality of the project, related to deforestation, those that measure the actions under this effect and degradation, those corresponding to the partial effects on forest cover; All these parameters will be compiled in the audit folders according to the certifications given, thus obtaining information management and data conservation.

5.1.1 General

Data / Parameter	Forest Map – Non-Forest of the reference region and leakage area 2005 - 2015
Unit of measurement	Hectares
Description	Location map of the forest at the beginning of the reference period in the reference area and leakage area
Origin of information	IDEAM from Landsat images from official databases.
Justification of the choice of information or description of the procedures applied	Geoprocessing carried out on the country's official information published by IDEAM
Purpose of information	Determine the forest cover within the reference area and potential leakage area of the project
Monitoring frequency	Every time the project is verified (triennial), maximum every 5 years.
Comments	

Data / Parameter	Forest Map – Non-Forest of the project area and potential and leakage management area 2015 - 2021
Unit of measurement	Hectares
Description	Location map of the forest at the beginning of the monitoring period in the project area and Potential Leakage Area

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Origin of information	IDEAM from Landsat images coming from initial sources.
Justification of the choice of information or description of the procedures applied	Geoprocessing carried out on the country's official information published by IDEAM
Monitoring frequency	Every time the project is verified (triennial), maximum every 5 years.
Purpose of information	Determine the forest cover within the reference area and the potential leakage area of the project
Comments	

Data / Parameter	Carbon Fraction
Unit of measurement	%
Description	Default value for carbon fraction in biomass
Origin of information	Valores de literatura (IPCC 2003. Good practice guidance for land use, land-use change and forestry)
Value applied	0.47
Justification of the choice of information or description of the procedures applied	Globally Accepted Literature Defaults
Monitoring frequency	Permanent, revalidated every time the project is verified (triennial), maximum every 5 years
Purpose of information	Constant used to calculate the carbon equivalent (tCO2e)
Comments	If more recent information appropriate to the project becomes available in the future, it will be applied in a subsequent baseline period.

Data / Parameter	C/CO2 molecular ratio
Unit of measurement	dimensionless
Description	Default value for carbon fraction in biomass
Origin of information	Valores de literatura (IPCC 2006. Guidelines for National Greenhouse Gas Inventories Volume 4 FOOLS)
Value applied	44/12

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Justification of the choice of information or description of the procedures applied	Default values from globally accepted literature
Monitoring frequency	Permanent, revalidated every time the project is verified (triennial), maximum every 5 years
Purpose of information	Constant used to calculate the carbon equivalent (tCO2e)
Comments	IPCC standard value

Data / Parameter	
Unit of measurement	tC/ha
Description	Dead wood and detritus in degradation and deforestation scenario, for the baseline and monitoring scenario
Origin of information	Valor de literatura (IPCC 2006. Guidelines for National Greenhouse Gas Inventories Volume 4 FOOLS)
Value applied	2%
Justification of the choice of information or description of the procedures applied	Values from globally accepted literature for the life zone.
Monitoring frequency	Every time the project is verified (triennial), maximum every 5 years.
Purpose of information	Quantify the carbon stored in each reservoir to determine the emissions avoided by the project.
Comments	IPCC standard value

Data / Parameter	
Unit of measurement	dimensionless
Description	Soil organic carbon in degradation and deforestation scenario, for the baseline and monitoring scenario
Origin of information	Literature values (IDEAM & MINAMBIENTE, 2019. Reference Proposal of emissions from deforestation in Colombia for payment for REDD+ results under the UNFCCC)
Value applied	92 tC/ha

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Justification of the choice of information or description of the procedures applied	Values coming from literature nationally accepted, coming from field inventories
Monitoring frequency	Every time the project is verified (triennial), maximum every 5 years.
Purpose of information	Quantify the carbon stored in each reservoir to determine the emissions avoided by the project.
Comments	Value for the Pacific biome

5.1.2 Deforestation

Data / Parameter	$= \left(\frac{1}{2} \times \frac{2}{1}\right) \times 100$
Unit of measurement	Hectares
Description	Puyravad formula (2003) for calculating the deforestation rate in the baseline
Origin of information	Result of the application of the formula with the historical deforestation data of the project
Justification of the choice of information or description of the procedures applied	Results of the analysis of section 7.10.1 of the M/UT-REDD+01 CERCARBONO methodology
Monitoring frequency	Every time the project is verified (triennial), maximum every 5 years.
Purpose of information	Determine the deforestation rate in the project's baseline scenario
Comments	

Data / Parameter	,y
Unit of measurement	Hectares
Description	Annual deforested area in the baseline scenario for the project area and the potential and leakage management area
Origin of information	Geoprocessing based on cartographic and spatial models.
Justification of the choice of information or description of the procedures applied	Results of the analysis of section 7.10.1 of the M/UT-REDD+01 CERCARBONO methodology
Monitoring frequency	Every time the project is verified (triennial), maximum every 5 years.
Purpose of information	Determine the baseline scenario of the project
Comments	

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Data / Parameter	
Unit of measurement	tCO2e
Description	Underground biomass emission factor
Origin of information	Plots established in the project area with information processing in accordance with MINAMBIENTE & IDEAM, 2019
Justification of the choice of information or description of the procedures applied	Determination of section 7.10.1 of the M/UT-REDD+01 CERCARBONO methodology.
Monitoring frequency	Permanent, revalidated every time the project is verified (triennial), maximum every 5 years
Purpose of information	Determine emissions in the scenario baseline and during the monitored period
Comments	

Data / Parameter	
Unit of measurement	tCO2e
Description	Organic carbon emission factor for the project area
Origin of information	Literature values (MINAMBIENTE & IDEAM, 2019. Reference Proposal of emissions from deforestation in Colombia for payment for REDD+ results under the UNFCCC)
Justification of the choice of information or description of the procedures applied	Values from nationally accepted literature, which come from field inventories
Monitoring frequency	Permanent, revalidated every time the project is verified (triennial), maximum every 5 years
Purpose of information	Constant used to calculate the carbon equivalent (tCO2e)
Comments	Value for the Pacific biome

Data / Parameter	2
Unit of measurement	tCO2e
Description	Annual emission due to deforestation in the scenario without project in the baseline
Origin of information	Processing of spatial information and emission factor.

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Justification of the choice of information or description of the procedures applied	Results of the analysis of section 7.10.1. of the M/UT-REDD+01 CERCARBONO methodology
Monitoring frequency	Every time the project is verified (triennial), maximum every 5 years.
Purpose of information	Determine the project baseline
Comments	

Data / Parameter	2
Unit of measurement	tCO2e
Description	Annual emissions from avoided deforestation in the scenario with project (Ex-Ante)
Origin of information	Processing of spatial information and emission factor.
Justification of the choice of information or description of the procedures applied	Results of the analysis of section 8.9.1 of the M/UT-REDD+01 CERCARBONO methodology
Monitoring frequency	Every time the project is verified (triennial), maximum every 5 years.
Purpose of information	Determine the project baseline
Comments	

Data / Parameter	2
Unit of measurement	tCO2e
Description	Annual emission from deforestation in the baseline scenario in the Potential Leakage Area area
Origin of information	Processing of spatial information and emission factor.
Justification of the choice of information or description of the procedures applied	Results of the analysis of section 8.10 of the M/UT-REDD+01 CERCARBONO methodology
Monitoring frequency	Every time the project is verified (triennial), maximum every 5 years.
Purpose of information	Determine the project baseline
Comments	

Data / Parameter	
Unit of measurement	tCO2e

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Description	Emissions from deforestation avoided due to the implementation of the project
Origin of information	Processing of spatial information and the emission factor.
Justification of the choice of information or description of the procedures applied	Results of the analysis of section 7.10.1., 8.9.1. and 8.10 of the M/UT-REDD+01 CERCARBONO methodology
Monitoring frequency	Every time the project is verified (triennial), maximum every 5 years.
Purpose of information	Identify emissions reduced by avoided deforestation in the project area
Comments	

5.1.3 Degradation

Data / Parameter	
Unit of measurement	Hectares
Description	Annual area degraded in a primary and secondary manner in the baseline scenario, for the reference region and potential and leak management area
Origin of information	Geoprocessing of spatial information.
Justification of the choice of information or description of the procedures applied	Results of the analysis of section 7.10.2 of the M/UT-REDD+01 CERCARBONO methodology
Monitoring frequency	Every time the project is verified (triennial), maximum every 5 years.
Purpose of information	Determine the project baseline
Comments	

Data / Parameter	
Unit of measurement	tCO2e
Description	Emission factor of aboveground biomass and dead wood for the primary and secondary degradation area
Origin of information	Plots established in the project area with information processing according to Armenteras (2016).

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Justification of the choice of information or description of the procedures applied	Result of the interpretation of biomass reduction ranges in degradation states and the analysis of section 7.10.2 of the M/UT-REDD+01 CERCARBONO methodology.
Monitoring frequency	Permanent, revalidated every time the project is verified (triennial), maximum every 5 years
Purpose of information	Determine emissions in the baseline scenario and monitored period
Comments	

Data / Parameter	
Unit of measurement	tCO2e
Description	Emission factor of underground biomass for the primary and secondary degradation area
Origin of information	Plots established in the project area with information processing according to Ramírez (2018) & (2016). And al. Armenteras the. yad
Justification of the choice of information or description of the procedures applied	Result of the interpretation of biomass reduction ranges in degradation states and the analysis of section 7.10.2 of the M/UT-REDD+01 CERCARBONO methodology.
Monitoring frequency	Permanent, revalidated every time the project is verified (triennial), maximum every 5 years
Purpose of information	Determine emissions in the scenario baseline and in the monitored period
Comments	

Data / Parameter	
Unit of measurement	tCO2e
Description	Organic carbon emission factor for primary and secondary degradation area
Origin of information	Literature values (MINAMBIENTE & IDEAM, 2019. Reference proposal of emissions from deforestation in Colombia for

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	payment for REDD+ results under the CMNUCC)
Justification of the choice of information or description of the procedures applied	Values from nationally accepted literature, which come from field inventories
Monitoring frequency	Permanent, revalidated every time the project is verified (triennial), maximum every 5 years
Purpose of information	Constant used to calculate the carbon equivalent (tCO2e)
Comments	Value for the Pacific biome

Data / Parameter	^{2}
Unit of measurement	tCO2e
Description	Annual emission due to degradation in the scenario without baseline project
Origin of information	Processing of spatial information and emission factor.
Justification of the choice of information or description of the procedures applied	Results of the analysis of section 7.10.2. of the M/UT-REDD+01 CERCARBONO methodology
Monitoring frequency	Every time the project is verified (triennial), maximum every 5 years.
Purpose of information	Determine the project baseline
Comments	

Data / Parameter	^{2}
Unit of measurement	tCO2e
Description	Annual degradation emissions in the scenario with project, ExAnte
Origin of information	Processing of spatial information and emission factor.
Justification of the choice of information or description of the procedures applied	Results of the analysis of section 8.9.2 of the M/ UT-REDD+01 CERCARBONO methodology
Monitoring frequency	Every time the project is verified (triennial), maximum every 5 years.
Purpose of information	Determine the project baseline
Comments	

Data / Parameter	^{2}
Unit of measurement	tCO2e

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Description	Annual emission degradation in the baseline scenario of the Potential Leakage Area
Origin of information	Processing of spatial information and emission factor.
Justification of the choice of information or description of the procedures applied	Results of the analysis of section 8.10 of the M/UT-REDD+01 CERCARBONO methodology
Monitoring frequency	Every time the project is verified (triennial), maximum every 5 years.
Purpose of information	Determine the project baseline
Comments	

Data / Parameter	
Unit of measurement	tCO2e
Description	Emissions due to degradation avoided by the implementation of the project in the scenario ExPost
Origin of information	Processing of spatial information and emission factor.
Justification of the choice of information or description of the procedures applied	Results of the analysis of section 7.10.2., 8.9.2. and 8.10 of the M/UT-REDD+01 CERCARBONO methodology
Monitoring frequency	Every time the project is verified (triennial), maximum every 5 years.
Purpose of information	Identify the actual emissions of the project from the start date
Comments	

5.2 Monitored data and parameters

5.2.1 General

Data / Parameter	Deforested and degraded area period 2015-2021
Unit of measurement	Hectares
Description	Total project area according to the geographic information (GIS) of the formulation.
Origin of information	Review of forest limits in the project area, vehicle routes and coverage control points
Monitoring methods	Global Positioning System (GPS)

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Monitoring frequency	Every time the project is verified (triennial), maximum every 5 years.
Monitoring Frequency	At the beginning of project socialization, during monitoring visits, during validation and each verification
Purpose of information	Monitor project limits

5.2.2 Deforestation

Data / Parameter	Emission Factor
Unit of measurement	tCO2e
Description	Corresponding emission factor for the project area
Origin of information	Established plots in the project area
Monitoring methods	Result of the methodological reconstruction of the National NREF based on local data
Monitoring frequency	Permanent, revalidated every time the project is verified (triennial), maximum every 5 years
Purpose of information	Determine emissions in the baseline scenario and in the monitored period
Comments	

Data / Parameter	
Unit of measurement	Hectares
Description	Annual deforested area in the baseline scenario in the reference region and in the potential and leakage management area respectively
Origin of information	Geoprocessing of spatial information.
Monitoring methods	Results of the analysis of section 10.5.2 of the M/UT-REDD+01 CERCARBONO methodology
Monitoring frequency	Every time the project is verified (triennial), maximum every 5 years.
Purpose of information	Determine the baseline scenario of the project
Comments	

Data / Parameter	
Unit of measurement	tCO2e
Description	Annual emission in the Potential Leak Area during the monitoring period

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Origin of information	Processing of spatial information and emission factor.
Monitoring methods	Results of the analysis of section 10.5.2 of the M/UT-REDD+01 CERCARBONO methodology
Monitoring frequency	Every time the project is verified (triennial), maximum every 5 years.
Purpose of information	Identify the project's actual emissions from deforestation from the start date
Comments	

Data / Parameter	2
Unit of measurement	tCO2e
Description	Annual emission from deforestation in the scenario with project
Origin of information	Processing of spatial information and emission factor.
Monitoring methods	Results of the analysis of section 10.5.2 of the M/UT-REDD+01 CERCARBONO methodology
Monitoring frequency	Every time the project is verified (triennial), maximum every 5 years.
Purpose of information	Identify actual project emissions from the start date in the project area
Comments	

Data / Parameter	
Unit of measurement	tCO2e
Description	Emissions from deforestation avoided due to the implementation of the project Result
Origin of information	of the analysis of section 10.5.2 of the M/UT-REDD+01 CERCARBONO methodology.
Monitoring methods	Results of the analysis of section 10.5.2 of the M/UT-REDD+01 CERCARBONO methodology
Monitoring frequency	Every time the project is verified (triennial), maximum every 5 years.
Purpose of information	Identify effective project mitigations from the start date
Comments	

5.2.3 Degradation

Data / Parameter	

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Unit of measurement	Hectares
Description	Annual primary and secondary degraded area in the scenario with project, for project area and potential and leak management area, ExPost
Origin of information	Geoprocessing of spatial information.
Monitoring methods	Results of the analysis of section 10.5.2 of the M/UT-REDD+01 CERCARBONO methodology
Monitoring frequency	Every time the project is verified (triennial), maximum every 5 years.
Purpose of information	Determine the scenario monitored with the project
Comments	

Data / Parameter	
Unit of measurement	tCO2e
Description	Annual emission in the Potential Leak Area during the monitoring period
Origin of information	Processing of spatial information and emission factor.
Monitoring methods	Results of the analysis of section 10.5.2 of the M/UT-REDD+01 CERCARBONO methodology
Monitoring frequency	Every time the project is verified (triennial), maximum every 5 years.
Purpose of information	Identify the actual emissions of the project from the start date
Comments	

Data / Parameter	2
Unit of measurement	tCO2e
Description	Annual emission due to degradation in the scenario with project, Ex-Post
Origin of information	Processing of spatial information and emission factor.
Monitoring methods	Results of the analysis of section 10.5.2 of the M/UT-REDD+01 CERCARBONO methodology
Monitoring frequency	Every time the project is verified (triennial), maximum every 5 years.

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Purpose of information	Identify the actual emissions of the project from the start date
Comments	

Data / Parameter	
Unit	tCO2e
Description	Emissions from degradation avoided due to the implementation of the project in the scenario Ex-Post
Origin of information	Processing of spatial information and emission factor.
Monitoring methods	Results of the analysis of section 10.5.2 of the M/UT-REDD+01 CERCARBONO methodology
Monitoring frequency	Every time the project is verified (triennial), maximum every 5 years.
Purpose of information	Identify effective project mitigations from the start date
Comments	

6.2.4 Leak Management Area

Data / Parameter	Mangrove restoration areas
Unit	Hectares
Description	Areas with mangrove restoration activities
Origin of information	Local or official information sources from the CAR's with jurisdiction in the area.
Monitoring methods	Geoprocessing according to local or official information
Monitoring frequency	Every time the project is verified (triennial), maximum every 5 years.
Purpose of information	Identify effective leak control activities.
Comments	

Data / Parameter	Monitoring plots in mangrove
Unit	Number
Description	Mangrove plots under permanent monitoring
Origin of information	Local or official information sources from the CAR's with jurisdiction in the area.
Monitoring methods	Geoprocessing according to local or official information and local data collection

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Monitoring frequency	Every time the project is verified (triennial), maximum every 5 years.
Purpose of information	Identify effective leak control activities.
Comments	

5.3 Monitoring plan

The monitoring plan developed for the REDD+ PAZcífico project will allow determining the effectiveness of the actions generated by the project, for the reduction of emissions generated by deforestation and degradation. In a broad way, compliance with the objectives of the REDD+ PAZcífico project will be guaranteed, through the implementation of multiple related activities as variables to monitor in the validation and verification phases. Table 53 presents the indicators of achievement of the objectives set for the PAZcífico REDD+ Project, these are integrated with other variables to be monitored in the different components of the project such as eligibility, co-benefits, contributions to the SDGs and monitoring plan.

Table 53 Indicators of achievement of project objectives.

Aim	Indicators
Evaluate the emissions avoided by community councils through their conservation, restoration and sustainable management actions.	• Update of deforested areas for each check • Use of approved parameters to estimate avoided emissions • Verification of vegetation monitoring units
Identify activities that mitigate and prevent the growth of deforestation and degradation factors at the local level.	• Execution of participatory diagnosis • Implementation of REDD+ activities • Investment control • Creation of activity verification committees implement
Guarantee compliance with the regulatory and socio-environmental framework related to the REDD+ PAZcífico project.	• Compliance with socio-environmental safeguards • Respect for the traditions and culture of the councils community • Respect for the life plan
Generate a transparent and equitable distribution of benefits according to the resources obtained from the commercialization of GHG emissions avoided within the project limits.	• Accountability spaces • Investment control by managing partner and technician • Update of the profit distribution annex • Training on control and oversight

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Strengthen forest governance structures within community councils	• Formation of internal control and oversight committees • Generation of public accounts • Creation of investment reports and accounting activities

Source: CO2CERO SAS (2022).

5.3.1 Purpose

The purpose of the monitoring plan is to obtain the information and resources necessary to make an adequate estimate of the reduction of emissions due to the decrease in deforestation and degradation in the community councils during the credit period 2015 - 2021.

The monitoring activities of this project include two clearly differentiated phases:

- Evaluation of secondary information in the office which includes spatial data (satellite images, official georeferenced information of the country) and non-spatial data (vegetation studies, regulations, reference levels).
- On-site evaluation of project descriptor variables.

The synergy carried out by both sources of information allows the estimates and results of the project to be in accordance with the M/UT-REDD+01 methodology for the execution of CERCARBONO REDD+ projects, consistent with the reference levels presented by Colombia to the UNFCCC V1 .1

The main objective of the plan is to achieve:

- Monitor net carbon and GHG stock changes within the project area • Monitor net carbon and GHG stock changes within the Potential Leakage Area
- Carry out ex-post calculations of the reduction of GHG emissions due to a decrease in deforestation and degradation.
- Verify compliance with the applicability conditions within the project.

5.3.2 Technical description of monitoring tasks

Changes in land use, which favor the transition from forest to non-forest both in the project area and in the Potential Leakage Area through information from remote sensing and GIS applied to Sentinel 2 and Landsat 8 satellite images. Deforestation and degradation will be measured in hectares within the project area and in the Potential Leak Area, this information is corroborated with random verification points in the field.

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The basic requirements of the information will be to comply with the methodology for selecting and determining deforested areas, and will use the same model for determining degradation due to fragmentation, in order to obtain uniformity of the information.

5.3.3 Description of the information collected

Each of the monitored parameters and the indicators that measure the execution of the activities proposed in section 2.1.2.3 REDD+ activities and events developed during the useful life of the project are listed in Table 54.

Table 54. REDD+ PAZcifico project monitoring plan

Parameter	Unit of Measure	Data Origin	Methodology Obtaining	Frequency monitoring	In charge
Forest-No Forest	Hectare	IDEAM, satellite images with reliable model	md-m	Yearly	CO2CERO SAS
Tracks	Hectare	IGAC	m	Yearly	CO2CERO SAS
Forestry use	Hectare	IDEAM, satellite images with reliable model	md-m	Yearly	CO2CERO SAS
Rivers and drainages	Hectare	IGAC	m	Yearly	CO2CERO SAS
Forest degradation	Hectare	IDEAM, Satellite images with reliable model	md-m	Yearly	CO2CERO SAS
mangrove areas	Hectare	IDEAM, Satellite images with reliable model	md-m	Yearly	CO2CERO SAS
Potential and leak management areas	Hectare	IDEAM, Satellite images with reliable model	md-m	Yearly	CO2CERO SAS
Urban helmets	Hectare	IGAC	m	Yearly	CO2CERO SAS
Illicit crops	Hectare	satellite images	c	Yearly	CO2CERO SAS-Communities

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Parameter	Unit of Measure	Data origin	Methodology Obtaining	Frequency monitoring	In charge
					belonging to the project
Land use and occupation	Hectare	satellite images	c	Yearly	CO2CERO SAS-Communities belonging to the project
Population information		Local and official documentation (DANE)	m	Yearly	Agroimpulso-Communities belonging to the project
Socialization workshops	No. Workshops	Field work	m	Yearly	Agroimpulso-Communities belonging to the project
Training during the activities of the project	No. Trainings	Field work	m	Yearly	Agroimpulso-Communities belonging to the project
Subsistence economic activities		Field work	m	Yearly	Agroimpulso-Communities belonging to the project
Areas with mangrove restoration activities	Hectare	Local and official documentation (CARs)	m	Yearly	Agroimpulso-Communities belonging to the project
Mangrove plots under monitoring		Local and official documentation (CARs)	m	Yearly	Agroimpulso-Communities belonging to the project

***Being m: Measured, c: Calculated, md: modeling**

Source: CO2CERO SAS (2021).

The information collected will comply with traceability, by trained personnel in collaboration with the community, Fundación Agroimpulso and CO2CERO SAS, the linking of the community is of great importance to know the territory and the collection of field information. The capture of information in the field is mainly linked to the Agroimpulso foundation as managing partner and means of communication with the territories, while the processing of the information obtained in the field will be transferred to the technical partner to be processed in offices in Bogotá.

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Once the information from field work has been organized and analyzed, as well as that obtained by external entities or organizations, it will be possible to verify compliance with the activities to reduce emissions due to degradation and deforestation within the project area and the Potential Leakage Area. , as well as achieving evidence of socio-environmental safeguards and the achievement of co-benefits by CO2CERO SAS

5.3.3.1 Information management

The information is available in accordance with the internal documentary characterization generated by the developer, in order to generate transparency, traceability and correspondence with the information requirements of the certification program. In 13_Information management\REDD documentary characterization_V2.pdf, the information corresponding to the project is described, involving the necessary technical, contractual and documentary elements.

Likewise, the information generated in the different sections of this project guarantees compliance with quality in accordance with the levels of permissiveness established at the project and certification program level. Additionally, quality reviews are carried out for the final delivery made to external entities involved in the initiative such as validation and verification organizations, certifying entities and the community in general (

To see 13_Management of information).

5.3.4 Leak Management Area Monitoring

The leakage management area is presented in section 3.1.5 Potential leakage area identified by the execution of activities to reduce deforestation and degradation that occurred outside the project area, but within the mobility ranges of the agents.
and the reference area. In this place, mangrove restoration activities are generated,
and monitoring by permanent plots near the Unicosta Community Council (See
2.1.2.3 Activities REDD+ events developed and REDD+ and 2_Monitoring report\Report
Monitoring PAZcífico_V5).
In this area, the same methods for monitoring deforestation and degradation of the project area and leakage area will be established (See 6.1. Data and parameters available in validation), focused on the lost and degraded forest areas. Likewise, the areas with mangrove restoration activities and the number of plots will be monitored.

permanent monitoring on an annual basis or each time verification activities are carried out, the person in charge of collecting information will be Agroimpulso in association with the communities belonging to the project, with local or official information sources from the CARs with jurisdiction in the area. .

These should represent a reduction with respect to the trend in the potential leak area, associated with the activities carried out there.

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5.3.5 Monitoring the impacts of natural disturbances and other catastrophic events

Understanding the context in which the project is developed, the proximity to large bodies of water and the large extensions of forest that occur within its area and its surroundings, the natural disturbances that could affect the development of the project are defined in Table 55.

Table 55. Parameters monitored to quantify the impact of natural disturbances

Disturbance	Data origin	Geoprocessing of	Fountain	Periodicity
Flood	satellite images		Sentinel-1 images	Yearly
Fires	Geoprocessing	Fire Information for Resource Management	Satellite Images System (FIRMS)	Yearly

Source: CO2CERO SAS (2021).

It is important to highlight that the eligible area of the project according to the Environmental Vulnerability map of the Territory 2011-2040 prepared by IDEAM is considered medium to very high, for this reason these disturbances will be monitored annually in order to identify possible impacts that these have within the project. However, this classification takes into account social and economic aspects which influence the zoning presented.

Additionally, taking into account that in the layer developed by IDEAM called Flood Susceptible Zones at a scale of 1:500,000 in 2010, it is determined that the project area is classified as low susceptibility to this natural disturbance. However, periodic monitoring will be carried out to detail the behavior of this phenomenon within the project area during its useful life, taking into account what is described in Table 55; Likewise, reports of disturbances made by the community will be taken into account, as a guarantee of the community's participation in control and monitoring activities of natural resources within its jurisdiction.

6.3.6. Monitoring of project activities and objectives

At the end of the lifetime of the project, the community councils of Unicosta, Prodefensa del Río Tapaje, Guapi Abajo and Cuenca del Río Iscuande will have improved their natural, social and cultural capital through conservation and protection activities of the natural forest in their jurisdiction, promoted by investments made from the co-benefits received by the project through the treasurers and legal representatives of the community councils. Table 56 presents the investment lines, objectives, goals and type of monitoring.

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Table 56. Monitoring plan for project activities and objectives

Investment line	Aim	Meta	Monitoring type	Monitoring frequency
Reforestation and restoration	Implementation of reforestation activities on the areas deforested	Increase carbon stocks	Intervention areas (ha), determined by Agroimpulso	Trienal
		Improves the provision of ecosystem goods and services.		Trienal
	Protection and conservation of fragile ecosystems such as mangroves and wildlife associated	Restoration in degraded mangrove areas		Trienal
		Guarantee the permanence of threatened wildlife, such as the three-toed sloth bear or parakeet		Trienal
Vegetation diagnosis	Recognition of the state of natural forests within the project areas	Instruct the community about the importance of forest persistence through training spaces and technical training in forest measurement. forest covers	Number of training carried out by CO2CERO SAS and Agroimpulso	Trienal
Sustainable production	Design of sustainable alternative production chains.	Promote the economic performance of the community	Number of trainings carried out by Agroimpulso	Trienal
		Reducing exposure to illegality and violence promoted by external actors		Trienal
		Design of the rice production chain in agricultural areas	Production areas (ha), determined by River defense Brawl	Trienal
Strengthening productive	Strengthening in the chains of agricultural production with historical-cultural development	Improve establishment and harvest activities of the Coconut, Vanilla and Annatto	Number of trainings carried out by Agroimpulso	Trienal
		Strengthening the links and marketing		Trienal
		Improving income and employability in community councils		Trienal
Strengthening environmental capacities	Recognition of the protection of natural resources.	Empower communities in activities to raise awareness and respect the importance of	Number of trainings	Trienal

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Investment line	Aim	Meta	Monitoring type	Frequency monitoring
		forest, in their role as owners of the forest	carried out by Agroimpulso	
		Reduce uncertainty about the information managed at the national level for forest covers in the Pacific region		Trienal
Governance	Administration and management of resources both natural and economic	Obtain correct management and investment of resources generated by results, in activities to reduce deforestation	Number of trainings carried out by CO2CERO SAS and Agroimpulso	Trienal
		Supervision that allows, along with restoration and conservation projects, to verify the effectiveness of the actions of each population		Trienal

Source: CO2CERO SAS (2021).

Likewise, the PAZcífico REDD+ project, in accordance with the market in which its reduced emissions are allocated, will contribute to the national goals of reducing greenhouse gases in the atmosphere, the achievement of the Nationally Determined Contribution (NDC) and /or the application of the Comprehensive Strategy for Control of Deforestation and Control of Forests subject to conservation and their respective ecosystem services.

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