

COCOMACIA COMMUNITY REDD+ PROGRAM, CHOCO/ANTIOQUIA COLOMBIA



Project title	COCOMACIA Community REDD+ Program, Choco/Antioquia Colombia
Project ID	2071
Crediting period	01 February 2021 – 31 January 2061, 40 years renewable through the end of the Project Lifetime
Project lifetime	01 February 2021 – 31 January 2120; 100-year total period
(CCB) GHG accounting period	01 February 2021 – 31 January 2061
Original date of issue	Pipeline listing, 12-June-2019
Most recent date of issue	27 November 2025
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VCS Standard version	VCS 4.7
CCB Standards version	CCB 3.1
Project location	Colombia, Departments of Choco and limited portion of Antioquia (approximately 3%)
Project proponent(s)	Consejo Comunitario Mayor de la Asociación Campesina Integral del Atrato (COCOMACIA) Pedro Julio Rivas Mena, Representante Legal del Consejo Comunitario info@cocomacia.org.co +57 3113111476 Choco Conservation, LLC Leslie Durschinger, Founder, CEO admin@terraglobalcapital.com +1 4152155941
Validation/verification body	SCS Global Services CPollet-Young@scsglobalservices.com +1510.993.0124
History of CCB status	There are no issuance date(s) of earlier validation statements or dates of previous attempts at verification available, not applicable
Gold Level criteria	Gold Level for Climate Change Adaptation, Community and Biodiversity Benefits
Expected verification schedule	April 2026
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1 SUMMARY OF PROJECT BENEFITS

1.1 Unique Project Benefits

Outcome or impact estimated by the end of project lifetime	Section reference
1) Climate adaptation in face of climate change	3.4
2) Increased agriculture income and knowledge to enhance livelihoods	4.2
3) Increased abundance of trigger species in the Program Area	5.4

1.2 Standardized Benefit Metrics

Category	Metric	Estimated by the end of project lifetime	Section reference
GHG emission reductions or carbon dioxide removals	Net estimated removals in the project area, measured against the without-project scenario	Not applicable	N/A
	Net estimated reductions in the project area, measured against the without-project scenario	Net estimated reductions from AUDef are 55,579,722 tons of CO ₂ e	3.2
		Net estimated reductions from AUDeg are 56,461,677 tons of CO ₂ e	
	Total Net estimated reductions for the crediting period are 112,041,399 tons of CO ₂ e		
Forest ¹ cover	For REDD ² projects: Estimated number of hectares of reduced forest loss in the project area measured against the without-project scenario	194,929 hectares would have been deforested in the baseline but will be protected by the program.	3.1.3

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

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

Category	Metric	Estimated by the end of project lifetime	Section reference
		261,403 hectares would have been degraded in the baseline but will be protected by the program.	
	For ARR ³ projects: Estimated number of hectares of forest cover increased in the project area measured against the without-project scenario	Not applicable because this is not a ARR Project	N/A
Improved land management	Number of hectares of existing production forest land in which IFM ⁴ practices are expected to occur as a result of project activities, measured against the without-project scenario	Not applicable because this project does not look for achievements in this category	N/A
	Number of hectares of non-forest land in which improved land management practices are expected to occur as a result of project activities, measured against the without-project scenario	N/A - all areas in the Project will be forest	N/A
Training	Total number of community members who are expected to have improved skills and/or knowledge resulting from training provided as part of project activities	31,781 community members are expected to have improved skills and/or knowledge resulting from training	2.3.17
	Number of female community members who are expected to have improved skills and/or knowledge resulting from training as part of project activities	13,030 women (41% of trained community members) are expected to have improved skills and/or knowledge resulting from training	2.3.17
Employment	Total number of people expected to be employed in project activities ⁵ , expressed as number of full-time employees ⁶	40 people expected to be employed in project activities, expressed as number of full-time employees	0

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

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

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

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

Category	Metric	Estimated by the end of project lifetime	Section reference
	Number of women expected to be employed as a result of project activities, expressed as number of full-time employees	12 women expected to be employed as a result of project activities, expressed as number of full-time employees	0
Livelihoods	Total number of people expected to have improved livelihoods ⁷ or income generated as a result of project activities	24,736 people expected to have improved livelihoods or income generated as a result of project activities	2.3.17
	Number of women expected to have improved livelihoods or income generated as a result of project activities	10,142 women expected to have improved livelihoods or income generated as a result of project activities	2.3.17
Health	Total number of people for whom health services are expected to improve as a result of project activities, measured against the without-project scenario	Not applicable because this project does not look for achievements in this category	N/A
	Number of women for whom health services are expected to improve as a result of project activities, measured against the without-project scenario	Not applicable because this project does not look for achievements in this category	N/A
Education	Total number of people for whom access to, or quality of, education is expected to improve as result of project activities, measured against the without-project scenario	Not applicable because this project does not look for achievements in this category	N/A
	Number of women and girls for whom access to, or quality of, education is expected to improve as result of project activities, measured against the without-project scenario	Not applicable because this project does not look for achievements in this category	N/A
Water	Total number of people who are expected to experience increased water quality and/or improved access to drinking water as a result of project activities, measured against the without-project scenario	Not applicable because this project does not look for achievements in this category	N/A

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

Category	Metric	Estimated by the end of project lifetime	Section reference
	Number of women who are expected to experience increased water quality and/or improved access to drinking water as a result of project activities, measured against the without-project scenario	Not applicable because this project does not look for achievements in this category	N/A
Well-being	Total number of community members whose well-being ⁸ is expected to improve as a result of project activities	45,000 of community members (the total population of COCOMACIA) are expected to improve their well-being as a result of project activities	3
	Number of women whose well-being is expected to improve as a result of project activities	23,259 women whose well being is expected to improve as a result of project activities	3
Biodiversity conservation	Expected change in the number of hectares managed significantly better by the project for biodiversity conservation ⁹ measured against the without-project scenario	639,315 ha are expected to be better managed by the project for biodiversity conservation	2.1.16.2
	Expected number of globally Critically Endangered or Endangered species ¹⁰ benefiting from reduced threats as a result of project activities ¹¹ , measured against the without-project scenario	7 species IUCN listed as Critically Endangered (CR) or Endangered Species (EN) 6 Endangered <ul style="list-style-type: none"> • <i>Penelope orton</i> • <i>Rhinella acrolopha</i> • <i>Colostethus imbricolus</i> • <i>Oophaga andresi</i> • <i>Strabomantis bufoniformis</i> • <i>Ateles fusciceps</i> 1 Critically Endangered <ul style="list-style-type: none"> • <i>Oophaga lehmani</i> 	5.4

⁸ Well-being is people's experience of the quality of their lives. Well-being benefits may include benefits reported in other metrics of this table (e.g. Training, Employment, Livelihoods, Health, Education and Water), and may also include other benefits such as strengthened legal rights to resources, increased food security, conservation of access to areas of cultural significance, etc.

⁹ Managed for biodiversity conservation in this context means areas where specific management measures are being implemented as a part of project activities with an objective of enhancing biodiversity conservation, e.g. enhancing the status of endangered species

¹⁰ Per IUCN's Red List of Threatened Species

¹¹ In the absence of direct population or occupancy measures, measurement of reduced threats may be used as evidence of benefit

2 PROJECT DETAILS

2.1 Project Goals, Design and Long-Term Viability

2.1.1 Summary Description of the Project (VCS, 3.2, 3.6, 3.10, 3.11, 3.13, 3.14; CCB, G1.2)

This is an Agriculture, Forestry and Other Land Use (AFOLU) project, a REDD+ avoided unplanned deforestation and degradation grouped project type, nested into the Choco Department JNR FREL. The First Project Activity Instance (also referred to as the “COCOMACIA REDD+ Program” or “Program”) encompasses the forest area of the territory of the *Consejo Comunitario Mayor de la Asociación Campesina Integral del Atrato* (COCOMACIA), a legally recognized Black community territory (Consejo), with tenure in over 704,921 hectares¹² which 74.9% is in Chocó Department and 25.1% in the Antioquia Department.

As of 1991, the Colombian Constitution has recognized the ancestral presence and possession of lands by the Black communities, collectively referred as “Black people”. This amends to acknowledge the Black people made Colombia a recognizable multi-ethnic country. According to the law 70 of 1993, one of the most significant achievements of the Afro-Colombian people in terms of recognition of property rights to collective territory and enforceability of their ethnic rights, was to recognize communities the right to self-administration, which includes the right to manage and use the natural resources within their territories. In 1997, as a direct result of the law, COCOMACIA, an ethnic organization which had been advocating for the autonomy and other rights of Black communities along the Atrato River for 15 years, received collective title to the land that makes up its territory. COCOMACIA, founded in 1982, is organized into 124 community councils in nine zones and has directed its focus on the maintenance of natural resources and forest area conservation to guarantee a lifetime of nature.

Historically, the COCOMACIA territory has faced increasing environmental degradation due to multiple unsustainable land-use practices. Illegal logging has made high-value timber species scarce throughout much of the territory, while mechanized gold mining expanded rapidly, severely affecting soils, waterways, and forest ecosystems. Unplanned fires, grazing and shifting subsistence agriculture on secondary forests contributed to progressive soil depletion, last illicit crop cultivation, particularly coca, drove deforestation in primary forests. These pressures collectively resulted in biodiversity loss, reduced forest carbon stocks, and weakened community governance over natural resources.

¹² The total area of the project polygon is 704,921 hectares, as calculated from the official shapefile provided by the Agencia Nacional de Tierras (ANT). This shapefile represents the officially recognized boundary of the collective territory established under Resolution INCORA 04566-1997 and serves as the authoritative spatial reference for all project analyses. However, Resolution INCORA 04566-1997 specifies that the legally titled area covers 687,840 hectares. The difference of approximately 17,081 hectares (~2.5%) results from methodological differences between the legal documentation and the geospatial dataset. The area derived from the ANT shapefile was computed using modern GIS tools under the MAGNA Colombia Oeste projected coordinate system (EPSG:3115). This system provides higher spatial accuracy and uses planar measurements (square meters/hectares) appropriate for contemporary spatial analysis in Colombia. To ensure reproducibility and consistency, all spatial analyses for the project including baseline delineation, land-cover change detection, and monitoring are conducted using the official ANT shapefile. Nevertheless, to maintain transparency and alignment with legal documentation, both values are reported: Mapped area (Provided by ANT EPSG:3115): 704,921 ha Legal area (as per Resolution INCORA 04566-1997): 687,840 ha

The activities to be implemented within the Project Activity Instance are designed to reduce deforestation and degradation through improved governance and enforcement of threatened forest areas and implementation of livelihood activities to address the main drivers, agents and underlying causes of deforestation and degradation. The Project Goals are four-fold: 1) Mitigation of climate change by reducing carbon dioxide emissions from land-use activities that result in deforestation and degradation, 2) Improve community livelihoods, especially for women and vulnerable groups, by strengthening community land-use rights and promoting alternative livelihood activities, 3) contribute to the conservation of biodiversity by enhancing the extent and connectivity of intact natural forest cover, protecting and bolstering populations of threatened native species and 4) verify emission reductions generated to provide carbon revenue to support these Project Goals.

The Program seeks to produce the following outcomes:

- 1) *Robust administrative and fiscal management of the REDD+ Program led by COCOMACIA*
- 2) *The Program area has clear boundaries and land tenure secured with internal management plans and use rights recognized and applied by local communities*
- 3) *Strengthened governance, planning and zoning capacity for conservation of the Program Area*
- 4) *Artisanal and traditional mining areas are carried out in accordance with agreements, zoning and protocols established by the Local Community Councils*
- 5) *Diversified agricultural production (legal crops) to facilitate communities' access to food*
- 6) *Reduction of the expansion of illicit crops in the program area*
- 7) *Increased income of participants from Program communities (crops and NTFPs)*
- 8) *Continuous monitoring of the Program Activities and Outcomes*
- 9) *Climate Finance repaid and program revenue generated through monetization of emission reductions*
- 10) *Validation of emission reductions and social and biodiversity benefits*
- 11) *Verification of emissions reductions and social and biodiversity benefits*
- 12) *Financing and monetization of emission reductions*
- 13) *Additional environmental and livelihood programs*

These outcomes supported by the Program activities and outputs are intended to address the key drivers of deforestation and forest degradation and they are expected to benefit approximately 45,000 people living in the Program Area.

The Program will generate an estimated 2,801,035 tCO₂e average annual emission reductions for a total of 112,041,399 tCO₂e emission reductions over the first 40-year crediting period.

This Project Activity Instance is located a jurisdiction covered by the Choco Department, Colombia Nested JNR FREL (VCS ID 5079) a JNR FREL currently applying Scenario 1.

2.1.2 Audit History (VCS, 4.1)

Audit type	Period	Program	Validation/verification body name	Number of years
Validation	April 2026 (expected)	VSC+CCB	SCS Global Services	40 years
Verification	01 February 2021 – 31 January 2024	VSC+CCB	SCS Global Services	3 years

2.1.3 Sectoral Scope and Project Type (VCS, 3.2)

Sectoral scope	Sectoral Scope 14: Agriculture, Forestry and Other Land Use (AFOLU)
AFOLU project category ¹³	Reducing Emissions from Deforestation and Degradation (REDD)
Project activity type	Avoided Unplanned Deforestation & Degradation (AUDD)

2.1.4 Project Eligibility (VCS, 3.1, 3.6, 3.8, 3.18, 4.1; CCB Program Rules, 4.2.4, 4.6.4)

2.1.4.1 Project Scope and Type Eligibility

The COCOMACIA REDD+ Program is eligible under the VCS and CCB programs and as outlined in the VCS 4.7 Standard and CCB 3.1 Standard as follows:

Sectoral Scope and Project type: The Program falls under Sectoral Scope 14 of the VCS, which covers Agriculture, Forestry, and Other Land Use (AFOLU) projects. It specifically aligns with the AFOLU project category of avoided unplanned deforestation and degradation REDD+, as the Project is implemented in a large, collectively owned forest landscape where historical deforestation and degradation are primarily driven by unsanctioned and unplanned human activities such as illegal logging, gold mining, shifting agriculture, unplanned fires, grazing and illicit crop expansion. These activities occur in the absence of formal planning or land-use zoning, ongoing patrolling and developing alternative livelihoods making them consistent with the definition of unplanned deforestation and forest degradation under the VCS Standard.

2.1.4.2 Public Comment Period and Validation Report Submission

The Program is currently listed as “under development”. Once the status is changed to “under validation”, it will undergo a public comment period before engaging with the validation/verification body, ensuring stakeholder engagement and transparency.

2.1.4.3 Deadlines

The Program was listed on 6 December 2019, which is within three years from the project start of date 1 February 2021, required by the VCS (Standard 3.8.2).

¹³ See Appendix 1 of the VCS Standard

The targeted validation is April 2026, which will be beyond the five years from the start date required under the VCS (3.8.4), however an exemption letter has been provided to Verra.

2.1.4.4 Methodology

To issue VCUs, the COCOMACIA REDD+ Program apply two different methodologies:

- VM0048 *Reducing Emissions from Deforestation and Forest Degradation, v1.0*
- VM0006 *Methodology for Carbon Accounting for Mosaic and Landscape-scale REDD Projects, v2.2*

Both methodologies were developed under the VCS Rules and apply to avoided unplanned deforestation and degradation typology.

2.1.5 Transfer Project Eligibility (VCS, 3.23, Appendix 2)

This is not a transfer project or a Component Project Activity (CPA) seeking registration.

2.1.6 Project Design (VCS, 3.6)

Indicate if the project has been designed as:

- Single location or installation
- Multiple locations or project activity instances (but not a grouped project)
- Grouped project

2.1.6.1 Eligibility Criteria for Grouped Projects (VCS, 3.6; CCB, G1.14)

To be eligible as a new Instance under the Program the following criteria must be met:

- *Be located within the JNR baseline area as defined in the Chocó Colombia JNR Forest Reference Emission Level Baseline Description*
- *The area must be deforested or degraded in absence of the REDD project activity and the deforestation and degradation must be unplanned and mosaic in nature as described in the VCS AFOLU Requirements.*
- *If deforestation from a specific driver is occurring because of planned forest conversion activities, the area(s) subject to such driver must be excluded from analysis.*
- *Meet the applicability conditions set out in the two methodologies applied in this Program Description*
- *Are subject to the same community and biodiversity without-project scenarios as determined for the project*
- *Are subject to the baseline scenario determined in the Project Description for the specified Project Activity and Instance*
- *The area does not include peatland soil.*
- *The project start date must be within the number of years as specified by the VCS Standard of the start of the jurisdictional JNR FREL validity period.*

- *Project activities are designed to reduce unplanned deforestation and degradation.*
- *Project applies Verra approved methodologies, modules, tools, and other guidance to quantify ex-post leakage from geographically constrained activity shifting leakage, non-geographically constrained activity shifting leakage and market leakage (if relevant).*
- *For mangroves, projects cannot claim VCUs from SOC, as this FREL does not include the SOC pool for the initial validity period. Mangrove SOC pool could be included in future baseline reassessments once sufficient information is available.*

2.1.7 Project Proponent (VCS, 3.7; CCB, G1.1)

There are two project proponents that together with others, each of which is also a project proponent, has overall control or responsibility of the COCOMACIA Program and Choco Conservation, LLC.

COCOMACIA holds the land tenure and is responsible for on-the-ground implementation of Program activities, supporting the collection of field data, and engagement of the communities that are part of COCOMACIA. Choco Conservation, LLC is a dedicated Program entity responsible for the financing of the program and under a separate agreement, which it requires, exerts requirements on the control and operation of specific aspects of the Program.

Organization name	Consejo Comunitario Mayor de la Asociación Campesina Integral del Atrato (COCOMACIA)
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2.1.8 Other Entities Involved in the Project

Terra Global is responsible for the technical development of the JNR FREL, Project Description, and Monitoring Reports that support the listing and validation (as defined in the Verra Standard). This includes the procedures and training for field development, providing CODECHOCO with the training and support to manage the spatial allocation of the FREL to the Project Areas, and managing the validation and verification process. Terra Global is also providing a to CODECHOCO FREL allocation software tool to calculate emissions for the Project Areas and across the JNR Area.

Organization name	Terra Global Capital, LLC
Role in the project	Carbon Developer, Registry Manager
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Title	Founder, CEO, CIO
Address	6114 La Salle Suite 441 , Oakland, CA 94611 USA
Telephone	+1 415-215-5941
Email	admin@terraglobalcapital.com

CODECHOCO, a legally authorized government agency to oversee natural resources in the Department of Choco, provides all oversight for the activities related to natural resources, will administer the FREL allocation of other projects seeking nesting under the JNR FREL and supports stakeholders within the department under the FREL. It has and will continue to accompany and facilitate meetings to disseminate information on the jurisdictional baseline in the Choco Department.

Organization name	Corporación Autónoma Regional para el Desarrollo Sostenible del Chocó (CODECHOCO)
Role in the project	JNR FREL Proponent
Contact person	Arnold Alexander Rincón López,
Title	General Director and Legal Representative
Address	Carrera 1 # 22 - 96 - Quibdó - Chocó - Colombia
Telephone	+57 (604) 6711510
Email	contacto@codechoco.gov.co

Terra Global Investment Management, LLC (TGIM) secured the private sector climate finance that was provided initially in 2021 and has provided bridge funding to issuance. In addition, TGIM is the exclusive marketing agent for the VCUs of the Program.

Organization name	Terra Global Investment Management, LLC
Role in the project	Investment Manager and Investor
Contact person	Leslie Durschinger
Title	Founder, CEO, CIO
Address	6114 La Salle Suite 441 , Oakland, CA 94611 USA
Telephone	+1 415-215-5941
Email	admin@terraglobalcapital.com

2.1.9 Project Ownership (VCS, 3.2, 3.7, 3.10; CCB, G5.8)

One of the Program Proponents is the communities of the Atrato River, registered under the “*Consejo Comunitario Mayor de la Asociación Campesina Integral del Atrato*” (“COCOMACIA”) have the legal right to control and operate the project activities as defined in this Project Description. By law the communities elect local leaders that make up the governance structure of COCOMACIA including the board of directors (Junta), disciplinary committee, interethnic community, and legal representation.

Property rights and natural resources use rights have been allocated to the members of the Afro-Colombian communities in COCOMACIA under the 1991 Colombian Constitution, Law 70 of 1993, and Decree 1745 of 1995 (Section 2.5.7). This law specified for Afro Colombians “To receive the allotted lands as collective property, each community shall form a Community Council as a form of internal administration, the

requirements of which shall be determined by regulations issued by the National Government. In addition to those established in the regulations, the functions of the Community Councils are: to delimit and assign areas within the allotted lands; to ensure the conservation and protection of collective property rights, the preservation of cultural identity, and the use and conservation of natural resources; to select the legal representative of the respective community as a legal entity; and to act as amicable mediators in internal conflicts that can be resolved.” Thus, giving COCOMACIA powers to implement Program activities.

2.1.10 Project Start Date (VCS, 3.8)

Project start date	01-February-2021
Justification	Justify how the project start date conforms with the VCS Program requirements The start date is based on the date that the REDD+ Agreement between COCOMACIA and Terra Global Capital, LLC was signed in February 2021, which led to the implementation of Program activities to start the generation of emissions reductions. Which were then scaled with the private sector financing deployed from Choco Conservation, LLC in May 2021.

2.1.11 Benefits Assessment and Project Crediting Period (VCS, 3.9; CCB, G1.9)

Crediting period	State the selected crediting period and justify how it conforms with the VCS Program requirements The Program’s initial crediting period is 40 years with the intention of being renewed for a maximum of 100 years. The crediting period complies with VCS Program requirements outlined in Section 3.9 of the VCS Standard V 4.6. This period aligns with AFOLU project guidelines, allowing for initial crediting periods ranging from 20 to 100 years, renewable up to four times. As the Program falls under AFOLU and aims for carbon dioxide removals, the selected timeframe adheres to project regulations. Additionally, the Program has a robust management plan as per VCS requirements.
Start date of first or fixed crediting period	01 February 2021 – 31 January 2061
CCB benefits assessment period	Indicate the time period over which changes in climate change adaptive capacity and resilience, biodiversity, and community well-being resulting from project activities are monitored. 01 February 2021 – 31 January 2061, and as renewed with the crediting period.

2.1.12 Differences in Assessment/Project Crediting Periods (CCB, G1.9)

There is no difference between the Program GHG emissions accounting, climate adaptive capacity and resilience, community, and biodiversity assessment and periods.

2.1.13 Project Scale and Estimated Reductions or Removals (VCS, 3.10)

- < 300,000 tCO₂e/year (project)
- ≥ 300,000 tCO₂e/year (large project)

Calendar year of crediting period	Estimated reductions or removals (tCO ₂ e)
01 February 2021 to 31 December 2021	217,371
01 January 2022 to 31 December 2022	416,386
01 January 2023 to 31 December 2023	728,317
01 January 2024 to 31 December 2024	746,262
01 January 2025 to 31 December 2025	1,152,009
01 January 2026 to 31 December 2026	1,173,916
01 January 2027 to 31 December 2027	1,431,741
01 January 2028 to 31 December 2028	1,744,827
01 January 2029 to 31 December 2029	2,047,622
01 January 2030 to 31 December 2030	2,307,709
01 January 2031 to 31 December 2031	2,439,033
01 January 2032 to 31 December 2032	2,581,522
01 January 2033 to 31 December 2033	2,687,803
01 January 2034 to 31 December 2034	2,788,478
01 January 2035 to 31 December 2035	2,879,877
01 January 2036 to 31 December 2036	2,973,152
01 January 2037 to 31 December 2037	3,061,750
01 January 2038 to 31 December 2038	3,144,394
01 January 2039 to 31 December 2039	3,221,696
01 January 2040 to 31 December 2040	3,295,159
01 January 2041 to 31 December 2041	3,352,557
01 January 2042 to 31 December 2042	3,378,868
01 January 2043 to 31 December 2043	3,412,628
01 January 2044 to 31 December 2044	3,445,188
01 January 2045 to 31 December 2045	3,470,974
01 January 2046 to 31 December 2046	3,495,600
01 January 2047 to 31 December 2047	3,515,809
01 January 2048 to 31 December 2048	3,637,028
01 January 2049 to 31 December 2049	3,653,489
01 January 2050 to 31 December 2050	3,666,044
01 January 2051 to 31 December 2051	3,655,383
01 January 2052 to 31 December 2052	3,643,830
01 January 2053 to 31 December 2053	3,631,638
01 January 2054 to 31 December 2054	3,618,973
01 January 2055 to 31 December 2055	3,605,838
01 January 2056 to 31 December 2056	3,592,231
01 January 2057 to 31 December 2057	3,578,152
01 January 2058 to 31 December 2058	3,560,719
01 January 2059 to 31 December 2059	3,542,814
01 January 2060 to 31 December 2060	3,524,439
01 January 2061 to 31 January 2061	20,175
Total estimated ERRs during the first or fixed crediting period	112,041,399
Total number of years	40
Average annual ERRs	2,801,035

2.1.14 Physical Parameters (CCB, G1.3)

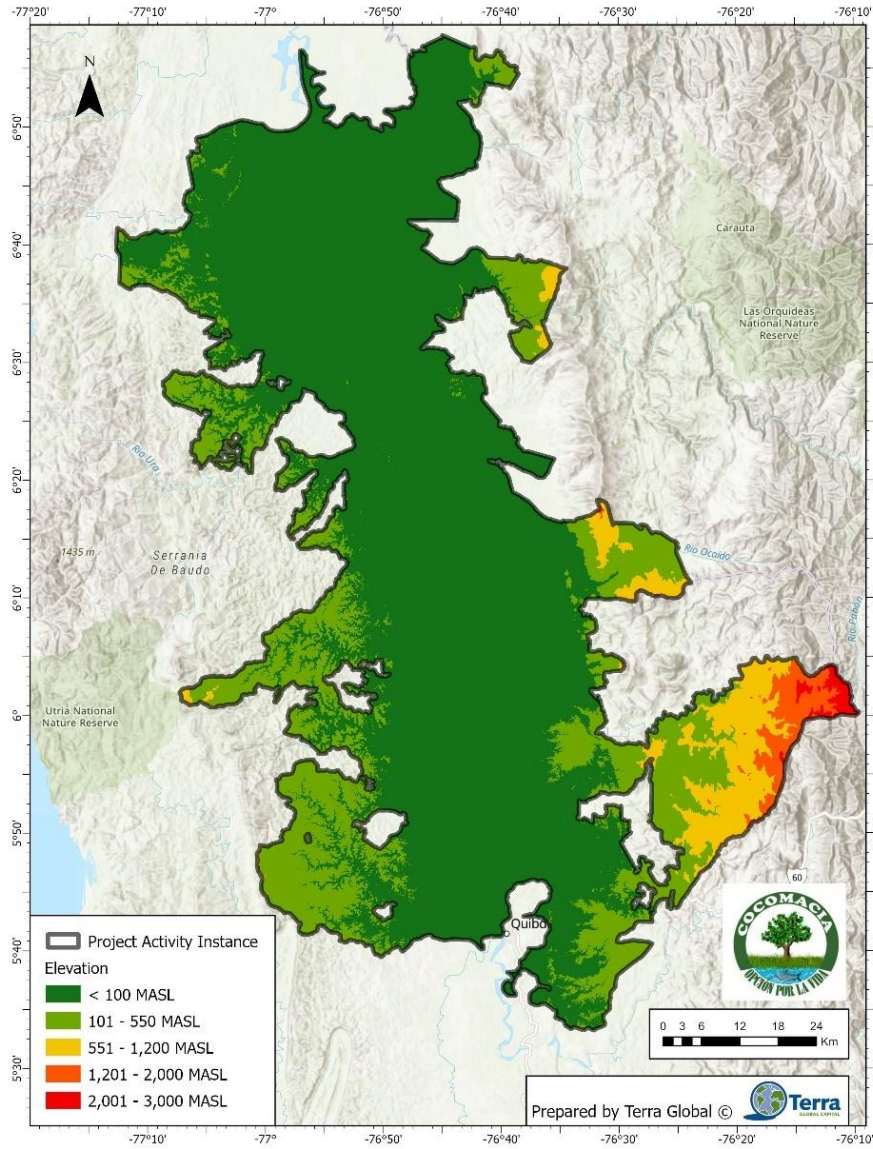
The COCOMACIA REDD+ Program is located within the jurisdictional area of the Department of Chocó, extending partially into the Department of Antioquia. The Program is nested within the CHOCÓ DEPARTMENT, COLOMBIA NESTED JNR FREL, ensuring consistency with the jurisdictional baseline and

methodological framework established under the JNR system. For further details on the Program's geographic location and spatial extent, please refer to Section 2.1.16.

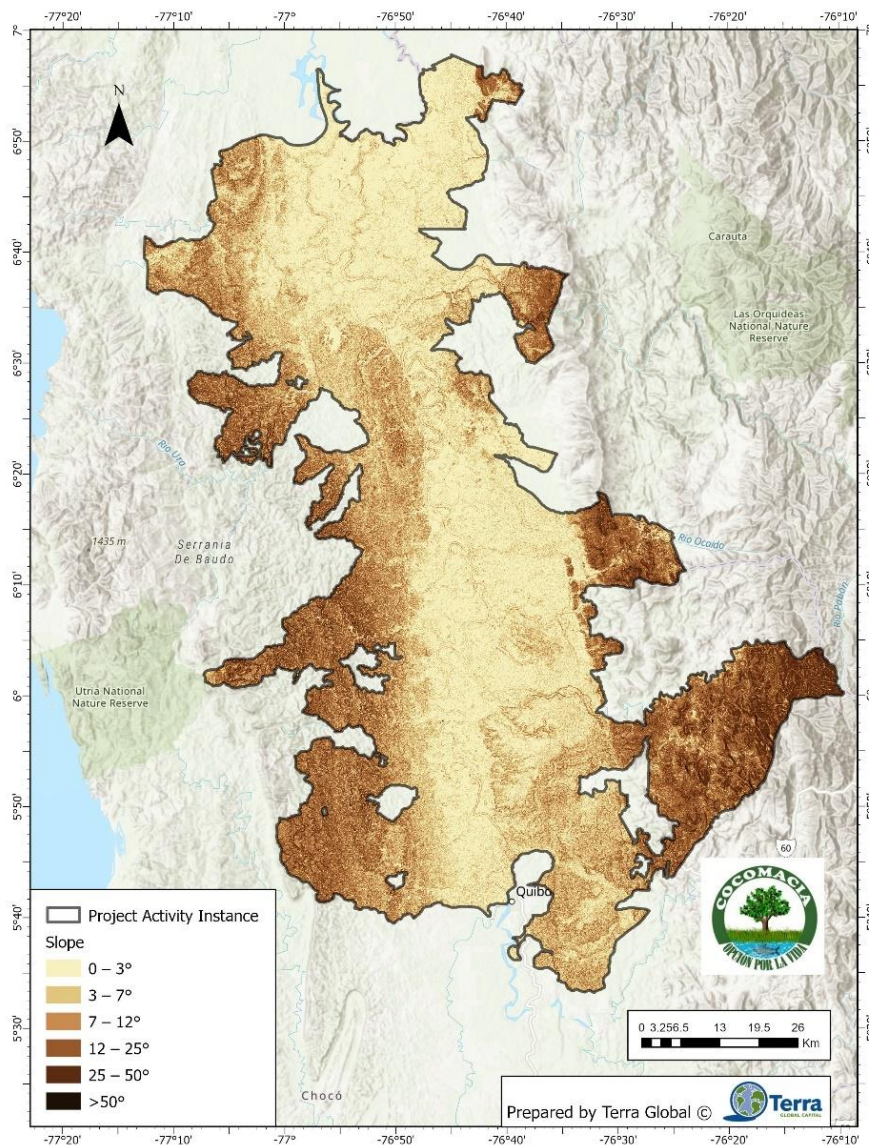
2.1.14.1 Topography

Surfaces of the Baudo Mountain Range: The Baudo Mountain range is known for its homoclinal and anticline spine terrain that are primarily composed of limestones/siltstones and calcareous/conglomeratic sandstones. It covers a significant portion of the renowned mountain range and is known for its most prominent topographical features. These are characterized by successive ridges formed by layers of limestone, calcareous siltstones, and conglomeratic sandstones dating back to the lower Tertiary period (IIAP, 2014).

Surfaces of Feldespatica Sandstone Hills and Hills: These surfaces refer to an area characterized by gentle hills and slopes ranging from 5 to 30 meters in height. These landforms are formed from layers of feldspathic sandstones, claystones, siltstones, and conglomerates, which are visibly exposed due to erosion. This geographical feature is found exclusively along the banks of the Atrato River, specifically in the middle and lower stretches, extending from the Quito River sources to its confluence with the Perancho and Tamboral rivers. It predominantly occurs on the left bank, spanning approximately 12 kilometers wide in various sections. On the right bank, these hills and slopes are sporadically present, particularly from the Murrí River southward, and they display discontinuous patterns, likely influenced by the Quibdó fault (IIAP, 2014). The gentler feldspathic sandstone hills near the Atrato River are more accessible, which has facilitated small-scale agriculture, logging, and mining, making them areas of higher deforestation pressure.



Map 1. Elevation map



Map 2. Slope map

The data for the elevation map is provided by ALOS DSM. It shows that 70% of the project activity instance is under 100 meters above sea level with dominant slopes below 7° (Map 1 and Map 2).

2.1.14.2 Soil

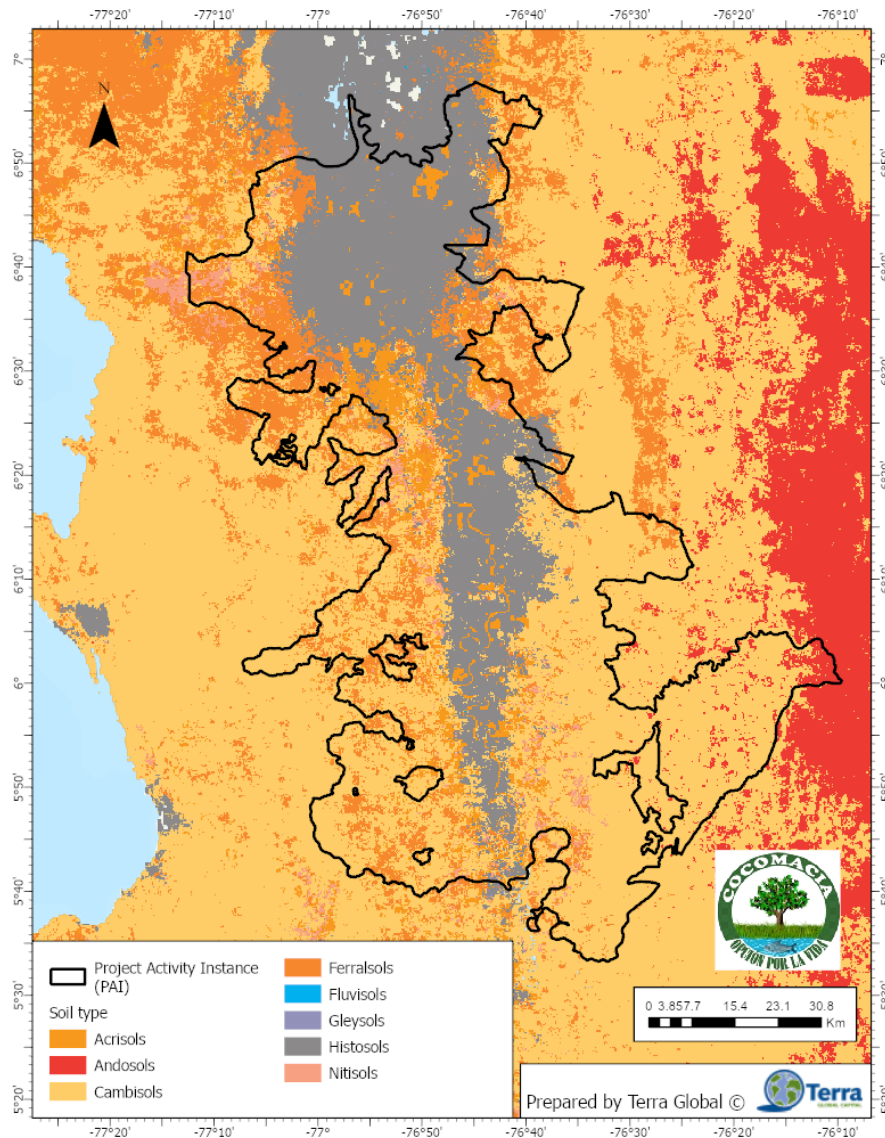
The soils in the Project Activity Instance consist of poorly drained alluvial sediments (i.e. tropaquents, tropaquepts, and fluvaquents).

In the mountainous coastal perimeter linked to river valleys and low-lying coastal regions, the terrain is mainly flat with abundant vegetation. These plains consist of diverse deposits consisting of gravel and sand. The gravel is comprised of volcanic rock, chert, and quartz pebbles, or alternatively, silt and clay.

In the fluvio-marine and alluvial plains, Quaternary sediments predominate and in the hills the soils have evolved from sandstone to other Tertiary materials. The soils of the region are forestry oriented. The soils

in the middle Atrato region stand out for its low phosphorus content, low fertility, very little nitrogen and potassium content, high level of acidity and aluminum content (Rangel, 2004).

The predominance of highly weathered, acidic, and nutrient-poor soils in the region limits the viability of permanent or intensive agricultural systems. These edaphic conditions discourage long-term cultivation and often drive land users to clear new forest patches after short cropping cycles, thereby perpetuating deforestation. The rapid nutrient depletion following forest clearing makes monoculture systems particularly unsustainable. In contrast, traditional agroforestry systems—integrating cocoa, plantain, fruit, and timber species—are widespread throughout the territory and represent ecologically adaptive land-use practices. By maintaining canopy cover, enhancing litter inputs, and promoting organic matter accumulation, these systems sustain nutrient cycling, reduce leaching, and preserve soil structure and moisture. As a result, they allow for stable productivity over time without reliance on synthetic fertilizers. (Rodríguez, 2021).



Map 3. Soil types in the Project Activity Instance (Poggio, et al., 2021)

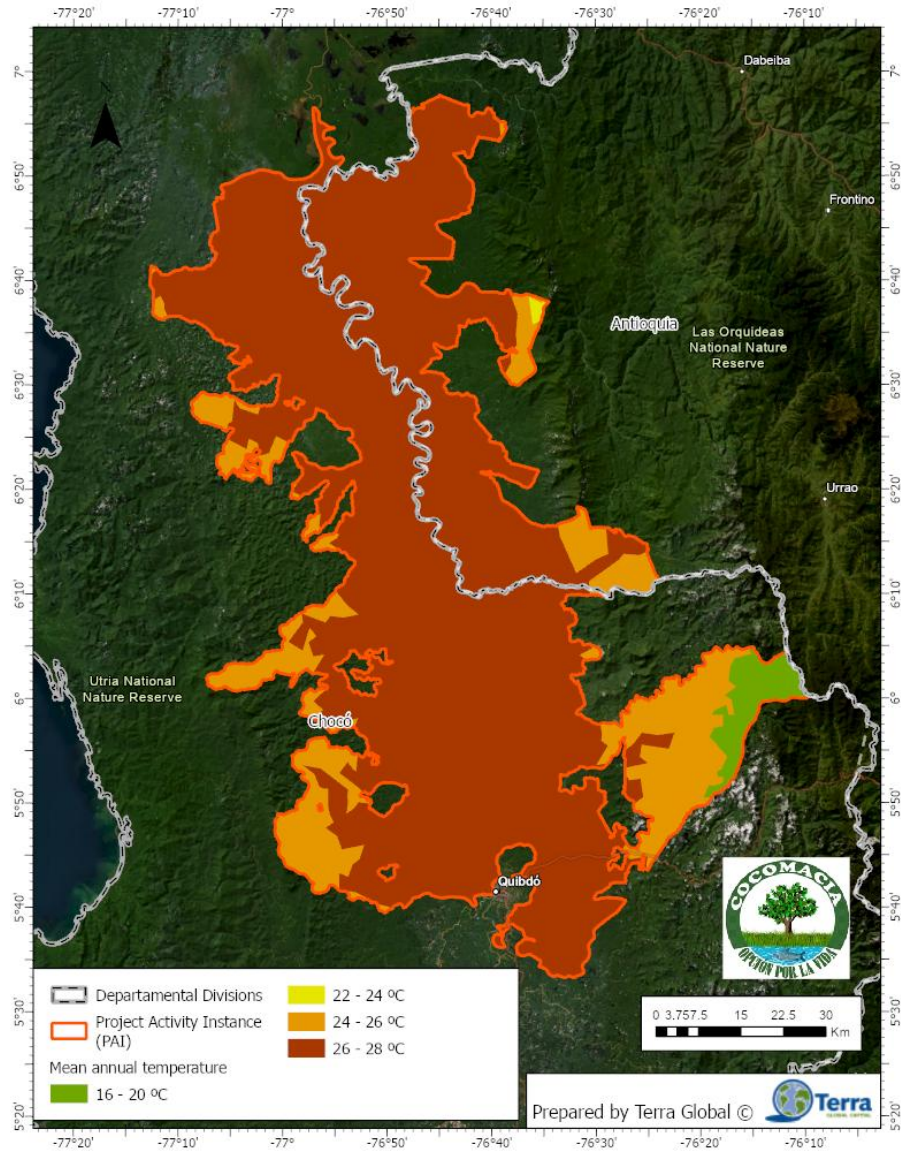
Map 3 is provided by the International Soil Reference and Information Centre (ISRIC). The data shows that the main soil types in the project activity instance are cambisols, 46%, histosols, 29%, and ferrasols, 13%.

2.1.14.3 Climate

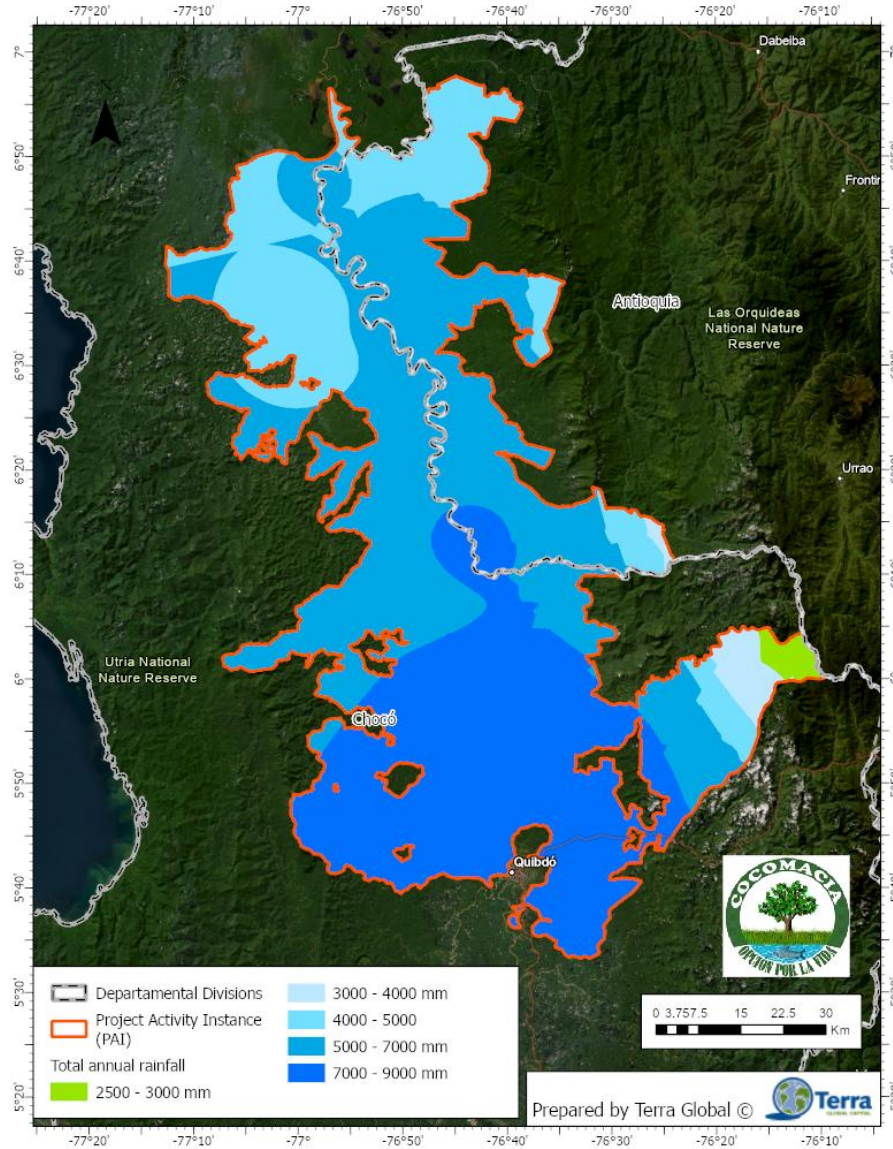
Most of the territory of the municipality of Medio Atrato is within the action area of the Intertropical Confluence Zone (ITCZ). The climate is warm and very humid, tropical rainy (Af) according to the Köppen classification. The average temperature oscillates around 26.5 °C in an annual cycle whose amplitude does not exceed 0.8 °C, with a relatively warm period between February and June. Between 1200 to 1400 hours of sunshine are recorded per year with an average relative humidity of 90%. Map 4 shows that 80% of the Project Activity Instance lies in an area with a mean annual temperature varying from 26 to 28 °C, in a superhumid warm climate.

The annual rainfall accumulations reach 8,000 mm in the lower part, sector of the Atrato River valley, up to 12,000 mm in the foothills sector of the Western Mountain range (although an annual accumulation of 15,455 mm has been reported for 1981 (Liliana L. Lemos-Támara¹, 2012). The area surrounding Quibdó that is part of the Project Activity Instance, rainfall exceeds 9,000 mm however most of the region falls within the range of 3,000 to 9,000 mm of annual precipitation (Map 5). Nevertheless, there are two noteworthy exceptions: the area surrounding Quibdó, where precipitation exceeds 9,000 mm, and a smaller region in Sipí, specifically along the coastal area of San Juan (Docordó), where annual precipitation measures below 2,000 mm.

The temporal variation of climatographic elements follows a bimodal distribution, characterized by two periods of relative maximum values and two of relative minimums, influenced by the movement of the Intertropical Confluence zone (Mena Rentería, 2008).



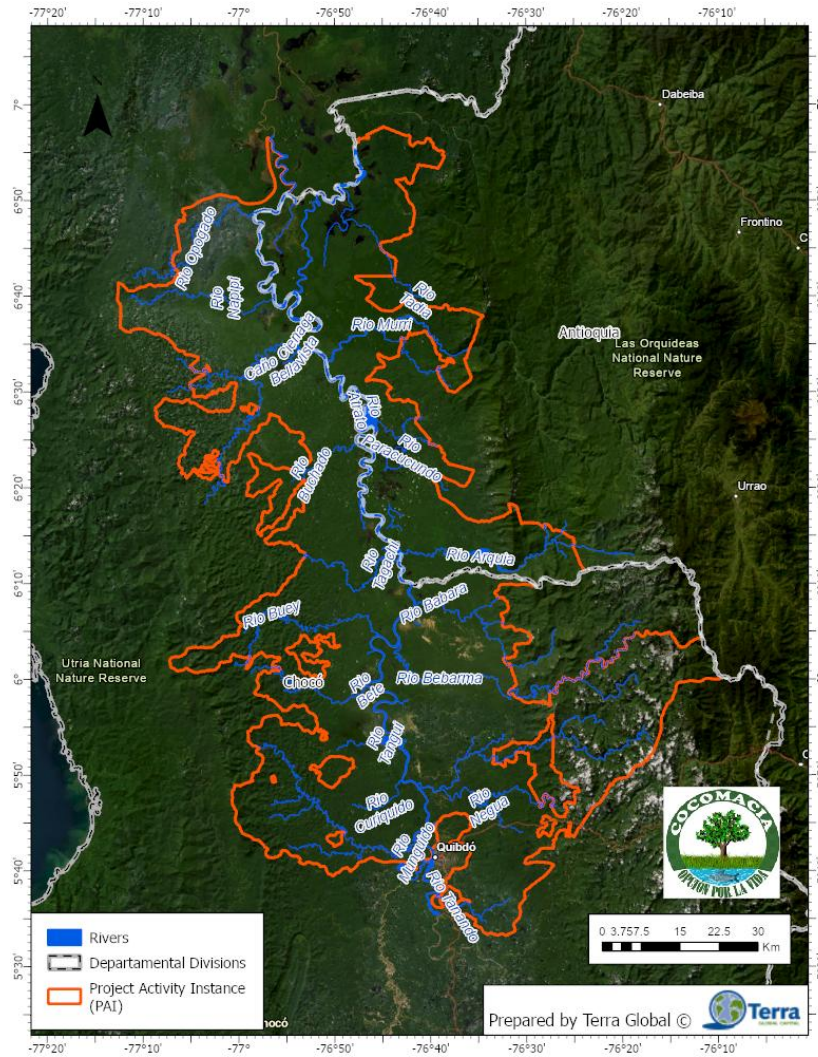
Map 4. Mean annual temperature 1981-2010 (Geoservicios institucionales, 2024)



Map 5. Total annual rainfall 1981-2010 (Geoservicios institucionales, 2024)

2.1.14.4 Hydrology

The complex plain of the Atrato is complemented by the extensive flood plains of its tributaries on both banks, the Sucio, Jiguamiandó, Truandó, Salaquí and other smaller rivers, in addition to the León River, which show a special sedimentation pattern (IIAP, 2014). These extensive floodplains, while supporting high biodiversity and fertile alluvial soils, are also the main corridors of human settlement and transportation. Deforestation tends to concentrate along these riverbanks due to easier access, riverine agriculture, and alluvial gold mining, which further alter sedimentation patterns and water quality, see Map 6.



Map 6. Hydrology map (Datos Abiertos Cartografía y Geografía, 2024)

2.1.14.5 Types of Vegetation

The region features several distinct ecosystems, including:

- Lacustrine River Environment:** Characterized by grasslands of *Thalia geniculata* and *Paspalum repens*, commonly found along the banks of rivers and swamps like Truandó, Cacarica, Atrato, Murindó, and Domingodó. This ecosystem comprises 86 vegetation types identified by Rangel (2004b), forming the basis for delineating 20 ecosystems in the Chocó biogeographic region. Among the notable species are *Thalia geniculata*, *Polygonum acuminatum*, *Calathea lutea*, *Scleria melaleuca*, *Paspalum repens*, *Hymenachne amplexicaulis*, *Ludwigia helminthorrhiza*, and *Enydra fluctuans* (IIAP, 2014).
- Raphia taedigera* Palm Grove Ecosystem (Panganales):** This ecosystem consists mainly of palm groves dominated by *Raphia taedigera*, with associated species such as *Prioria copaifera*, *Pachira aquatica*, *Heliconia marginata*, *Palicourea fastigiata*, *Calathea lutea*, *Scleria melaleuca*, *Ficus*

dendrocida, and *Montrichardia arborescens*. It thrives in sandy areas along riverbanks and adjacent hills, exhibiting relatively low floristic diversity (IIAP, 2014).

- *Alluvial Plain (>10-50 m)*: This ecosystem, known as "arracachal," features vegetation with an upper layer reaching up to 3 meters high, dominated by species like *Montrichardia arborescens*, *Blechnum serrulatum*, *Acrostichum aureum*, *Scleria secans*, and *Scleria melaleuca*. Floristically, it comprises 157 species from 126 genus and 56 families (IIAP, 2014).
- *Prioria copaifera (Cativales) Forest Ecosystem*: Characterized by jungle-type vegetation with two tree strata, dominated by species like *Prioria copaifera*, *Pterocarpus officinalis*, *Tabebuia rosea*, *Pentaclethra macroleba*, and others. This ecosystem hosts 354 species from 57 genus and 89 families (IIAP, 2014).
- *Cedrela odorata and Carapa guianensis Forest Ecosystem*: Found in the alluvial plain, this ecosystem features tall vegetation dominated by *Cedrela odorata*, *Carapa guianensis*, *Swietenia macrophylla*, and other species such as *Cedrella fissilis*, *Humirastrum procerum*, and *Cryptocarya sp.* (IIAP, 2014).
- *Central Rainforest*: This ecosystem encompasses the tropical humid forests of the central rainforest, characterized by high tree diversity, large diameter, and height, forming a dense canopy that regulates the growth of understory plants (IIAP, 2014).
- *Wetland Complexes*: These include the Eastern Alluvial Plain of the Lower Atrato (Tumarandó – Curvaradó) and the Western Alluvial Plain of the Lower Atrato (Perancho- Domingodó) (Rangel, 2004).

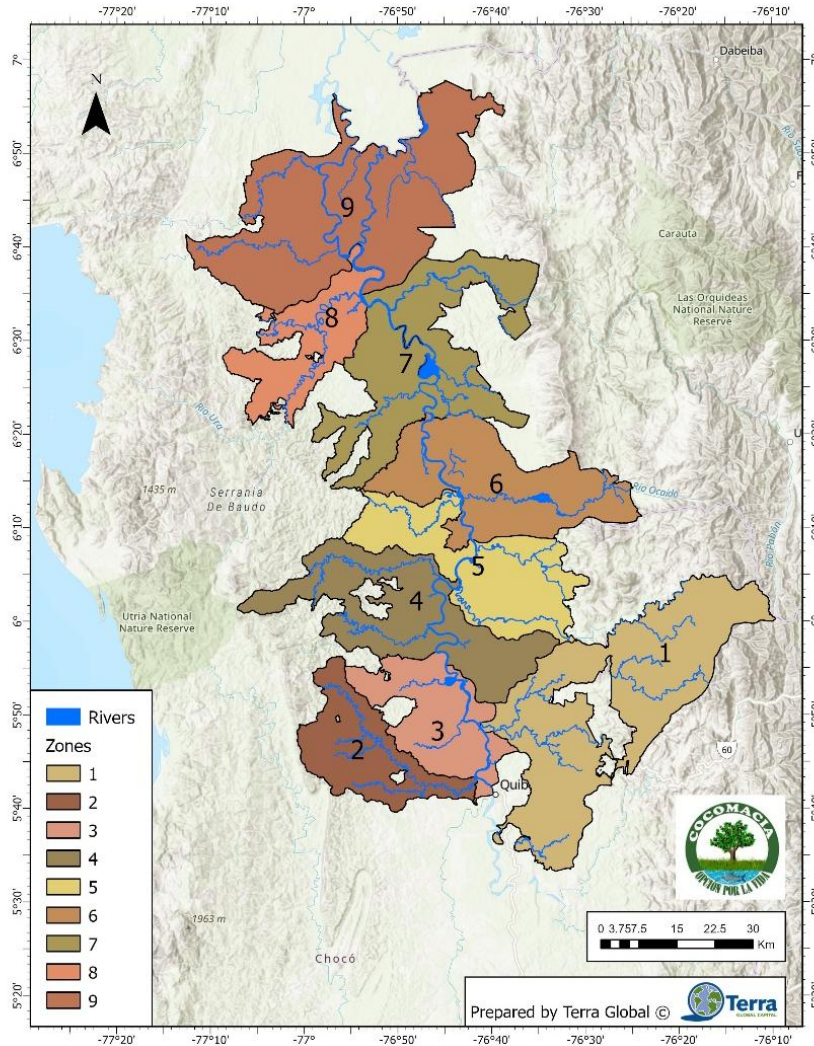
The entire Project Crediting Area lies within the collective territory of COCOMACIA; therefore, only one management type applies to the project. Estimates of the area of land under different management types is described in Section 3.2.1.2.5.

2.1.15 Social Parameters (VCS, 3.18; CCB, G1.3)

2.1.15.1 Main Settlements

According to the population census carried out in 2008 by the COCOMACIA, 28,741 people in 7,933 families lived in the territory administered by the council. However, based on other sources including COCOMACIA (2016), Universidad de los Andes (2016), and actors operating in the region such as MercyCorps, USAID, Amnesty International, and SweFOR, it is reported that COCOMACIA currently represents approximately 45,000 Afro-Colombians being the largest Afro-Colombian community council in the country.

The COCOMACIA territory is divided into 9 zones and 124 Local Community Councils (LCCs) (COCOMACIA, 2020), as shown in Map 7.



Map 7. The COCOMACIA territory and its 9 administrative zones

The LCCs are spread across the collective territory in settlements along the Atrato River and its tributaries, each with a clearly defined territorial jurisdiction. The sum of the LCCs forms the Greater Community Council COCOMACIA, which is a non-profit ethnic-territorial organization under private law. COCOMACIA has an organizational structure composed of administrative bodies operating at different spatial scales and involved in different decision-making processes. Three jurisdictional levels exist within COCOMACIA: the entire territory, administrative zones (which group LCCs by proximity), and the LCCs individually (COCOMACIA, 2016).

2.1.15.2 Land Use

Within the collective territory of COCOMACIA, there are approximately 639,315 hectares of forest area, which includes closed, open and production forests. This represents 6.4% of the forest area of the Colombian Pacific. Logging, hunting, and mining are practiced in the forest areas. The extracted wood is used for construction, household items, boats and trade. Although hunting is limited, wildlife populations

have decreased due to deforestation, extractive activities, and the conversion of lands for agriculture and pastures.

The forests most affected in Chocó by commercial and domestic timber extraction have been the guandales and the cativales, located in the middle and lower part of the Atrato River. The Panezo (in La Boba), Chicaravia, La Redonda (in El Tigre) and Bellavista wetlands are also degraded. The degradation of the Balsa, Salaquí, Cacarica and Curbaradó wetlands is a direct consequence of forest exploitation (RDS, 2015). The high deforestation and land degradation are a consequence of the absence of environmental policies, their political application and the lack of plans for the occupation and use of land (RDS, 2015; Betancur, 2019) Unplanned deforestation and forest degradation are primarily driven by illegal and informal activities carried out without prior land-use planning or authorization. These include illegal mining, logging, and the conversion of forestland for small-scale cattle grazing or shifting agriculture, as well as the expansion of illicit crops in remote areas. Logging activities, though sometimes selective, occur at extraction rates too high for natural regeneration, leading to progressive forest degradation. The lack of enforcement, poor market regulation, and limited livelihood alternatives for local families intensify these unplanned processes, making them a major challenge for sustainable land management in COCOMACIA's territory.

Mining, both legal and illegal, represents one of the most significant drivers of deforestation in the region, often operating without environmental controls and leaving behind extensive degraded areas. Both sanctioned and unsanctioned gold mining in the Atrato River has negatively impacted fishery resources. Although artisanal mining has existed since colonial times, mechanized mining began in the late 1990s and expanded rapidly, mostly illegally. This type of mining introduces large amounts of mercury into the water, causing pollution, fish kills, and serious health problems in local communities (Image 1). In addition, it has increased sedimentation in the river, which kills fish by clogging their gills and reduces their natural habitat. (Ocampo-Diaz, 2022).

Communities in COCOMACIA face a difficult choice as encroaching gold mining threatens their lands, ecosystems, and human health, while also representing an important source of livelihood for many families. Although illegal mining is commonly initiated with their consent, they are often compelled to accept it because it represents one of the few opportunities for immediate income in the region. With the lack of state support, illegal mining has become a crucial source of income for families with land on active riverbeds and betas, providing access to basic services such as electricity, drinking water and internet. This has changed the perception of mining amongst the local population, often serving to justify continued exploitation in their territories (Ocampo-Diaz, 2022). The main affected areas include municipalities such as Lloró, Bagadó, Quibdó and Condoto (RDS, 2015).

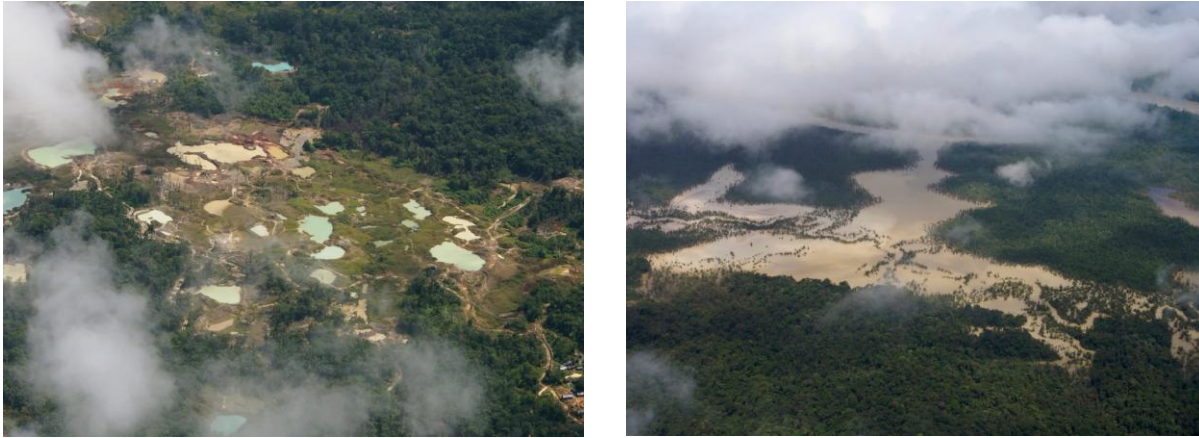


Image 1. Current environmental situation in the Atrato River basin due to the mining activity

Additional details related to the social parameters of COCOMACIA (including socio-cultural information) is detailed in Section 4.1.1.

2.1.15.3 Economic Activities

The COCOMACIA territory encompasses a broad mosaic of landscapes, ranging from lowland floodplains to foothill areas, whose environmental conditions and access to markets have shaped diverse but interrelated local economies. Although each zone presents distinct productive characteristics, together they form a complementary regional system of subsistence and small-scale market activities closely tied to the availability of forest, soil, mining and river resources. Across the territory, agriculture, fishing, forestry, and mining are the dominant land-use activities.

The economy in COCOMACIA's community council revolves around the use of natural resources through food and local cash crop production. The products obtained from the exploitation of natural resources, including the use of the forests through logging and mining at different scales, are generally sold in the main communities or in the capital Quibdó; some of these resources are sold illegally because they do not have permits for this or for their exploitation. Agriculture is widespread and primarily oriented toward self-consumption and local trade, with staple crops such as plantain, rice, cassava, maize, yam, and fruit trees including borojó, chontaduro, pineapple, and citrus. In some zones, agriculture combines with small-scale livestock and agroforestry practices, reflecting adaptation to flood regimes and soil fertility variations. See Section 4.1.1.3 for description of economic activities per zone.

Extractive activities generate conflicts within the communities as they witness the degradation and deforestation of their territory, which is why they look for alternatives in projects like this one, which promote activities to mitigate these impacts and enhance socio environmental well-being (COCOMACIA, 2016).

Forestry activities, mainly selective timber extraction, are conducted at different intensities, traditionally supplying local construction needs and regional markets. Fishing plays a central role in household food security and cash income, particularly in communities along the Atrato River and its tributaries. In contrast, artisanal mining, focused on gold and platinum extraction, remains an important but environmentally challenging source of livelihood in certain sectors, often alternating seasonally with agricultural production.

Overall, the COCOMACIA economy is characterized by multi-activity livelihoods that combine subsistence and small commercial production within a framework of collective land ownership. These economies are interdependent and complementary: zones with more fertile agricultural soils provide food to areas reliant on fishing or mining, while forest-rich zones supply timber and non-timber resources that sustain the broader territorial economy. This interconnected structure highlights both the diversity and resilience of COCOMACIA’s land-use systems, as well as their dependence on the conservation of the region’s forest and aquatic ecosystems (COCOMACIA, 2016).



Image 2. Guayacanes located along the riverbanks

2.1.15.4 Relevant Historic Conditions

The history of black communities in Chocó and Antioquia is marked by slavery between the 16th and 19th centuries. Their settlement in the region occurred in two stages: first, the forced arrival of African slaves to work in mines and farms, and then, their fight for freedom and autonomy (Oyola, 2017). Forests have been essential to their survival, not only as economic resources, but as part of their cultural identity. For 400 years, these communities have defended their collective territory, where they have maintained their culture (COCOMACIA, 2022). COCOMACIA has fought for the recognition of the black ethnic group and its culture. The granting of collective property rights in the 1990s was an important victory, providing greater security over the land so they would seek to reduce deforestation.

However, historical marginalization and structural inequalities continue to affect these communities, with low incomes, high infant mortality, and limited public services (Ocampo-Diaz, 2022). And some parts of the region have also been devastated by armed conflicts, where guerrillas, paramilitaries and the Colombian army fight for territorial control. Some black communities have lost control over parts of their land. Paramilitaries have imposed their rule through violence and terror, forcing many families to abandon their homes, on the Curvaradó, Jiguamiandó and Cararica rivers, causing a mass exodus of the black population. The systematic killing of civilians, constant displacement and weak institutional response have generated a new perception of the conflict since the 1990s. Military actions are considered not only for military reasons, but to achieve economic ends, such as consolidating the agro-industrial and extractive model in the region (Oyola, 2017).

2.1.15.5 Socio-cultural Information

These communities have land tenure of the territory as collective title that were awarded by Resolution No. 04566 issued by INCORA on December 29, 1997, therefore, its administration is governed by a system of its own law (Internal Regulations) (COCOMACIA, 2022).

The communities that inhabit the project activity instance are mostly black and have developed complex cultural systems as a result of different historical moments of occupation of the region and the particular relationships they have developed with nature and the diversity of ecosystems that link them. For the populations that have inhabited the region for centuries, the Atrato River is their ancestral territory and the basic support of their material, social and symbolic life, which has been recognized by the State with collective rights for the indigenous reserves and territories of black communities. The notion of territory for indigenous and black populations includes languages, customs, rivers, swamps, forests, animals, sacred places, lands for farming and living, spirits and traditional authorities (González X. , 2024).

The role of women and the unrepresented population in the project is fundamental, for this reason the gender committee was created in 2000 and continues to operate to date. It has achieved important advances in the incorporation of a gender perspective within the organization, in the empowerment of women and the unrepresented population with respect to the recognition of their rights and in their participation in strategic decision-making spaces within the organization and in the territories (COCOMACIA, 2022).

With a deficient health infrastructure, some rural communities resort to ancestral practices of using medicinal plants and midwife-assisted births. There are 43 health posts, of which only 4 are reported to be in good condition, as well as 21 health promoters. In total, only 15 medical visits were reported across the 124 communities in 2015—less than one visit per community per year for a population of over 40,000 people. This has led to the proliferation (especially in rural areas) of endemic diseases such as malaria, leishmaniasis and hepatitis B, among others (COCOMACIA, 2016).

Quality of life In terms of access to basic services, of the 124 local community councils for which information is available, only 7 (5.3%) have water supply, none have sewerage, and 33 (27.7%) have some type of electricity, most of which are power plants that depend on high-cost fuel.

In terms of education, Chocó has been characterized as one of the most deficient in the country, especially in rural areas. the country, especially in rural areas. Illiteracy in the communities is over 79% and functional illiteracy is over 88%. Functional illiteracy of over 88%. Curricular programs are inadequate for the culture and region. culture and region; an example of this is a dropout rate that reaches 60%. Teachers are poorly paid and unmotivated. Teachers are poorly paid and unmotivated; for them, working in the field is a job demotion (COCOMACIA, 2016).

2.1.16 Project Zone Map and Project Location (VCS, 3.11, 3.18; CCB, G1.4-7, G1.13, CM1.2, B1.2)

2.1.16.1 Area Definitions Uses in Document

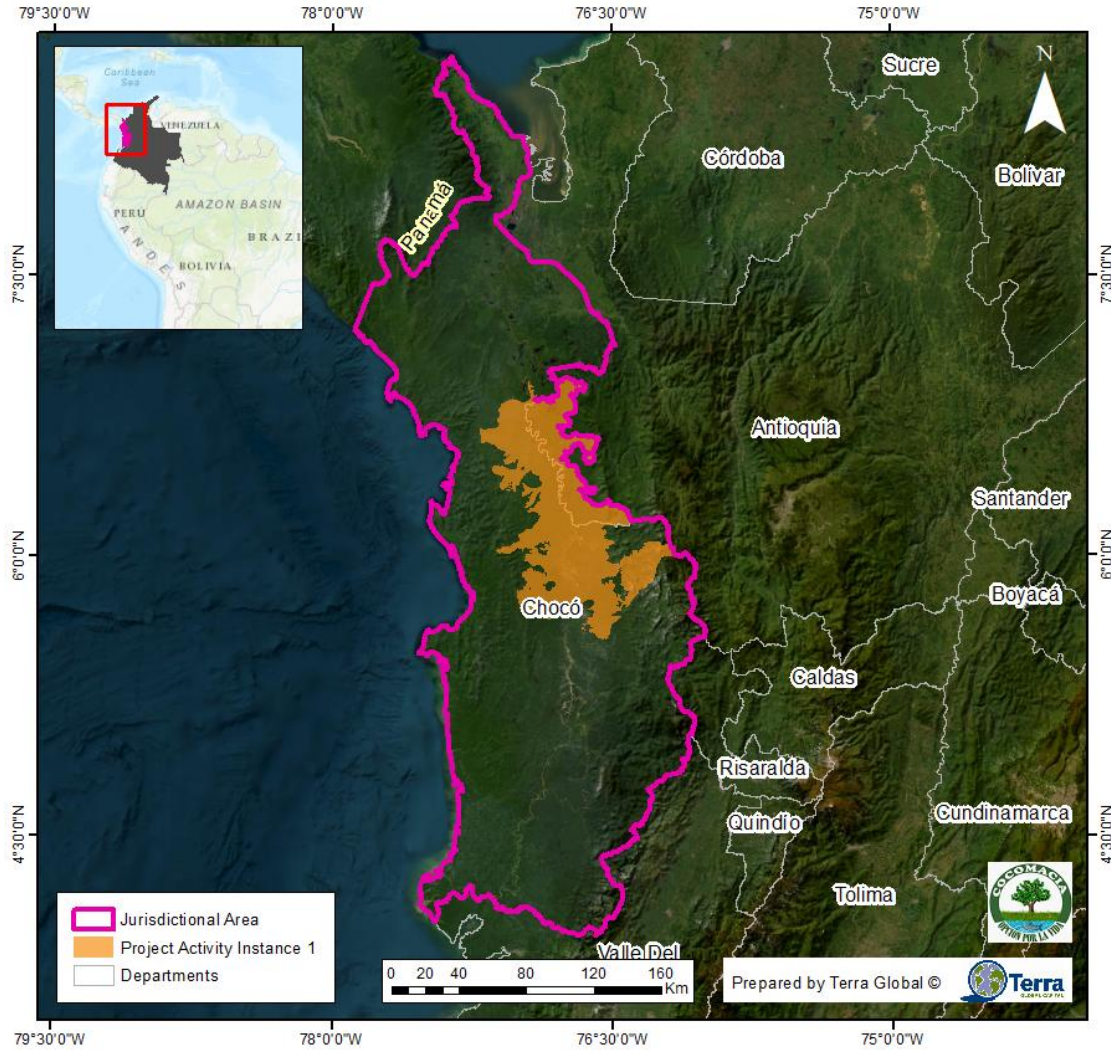
Table 1 provides area specific definitions used through this document.

Table 1. Definition of Geographic Areas

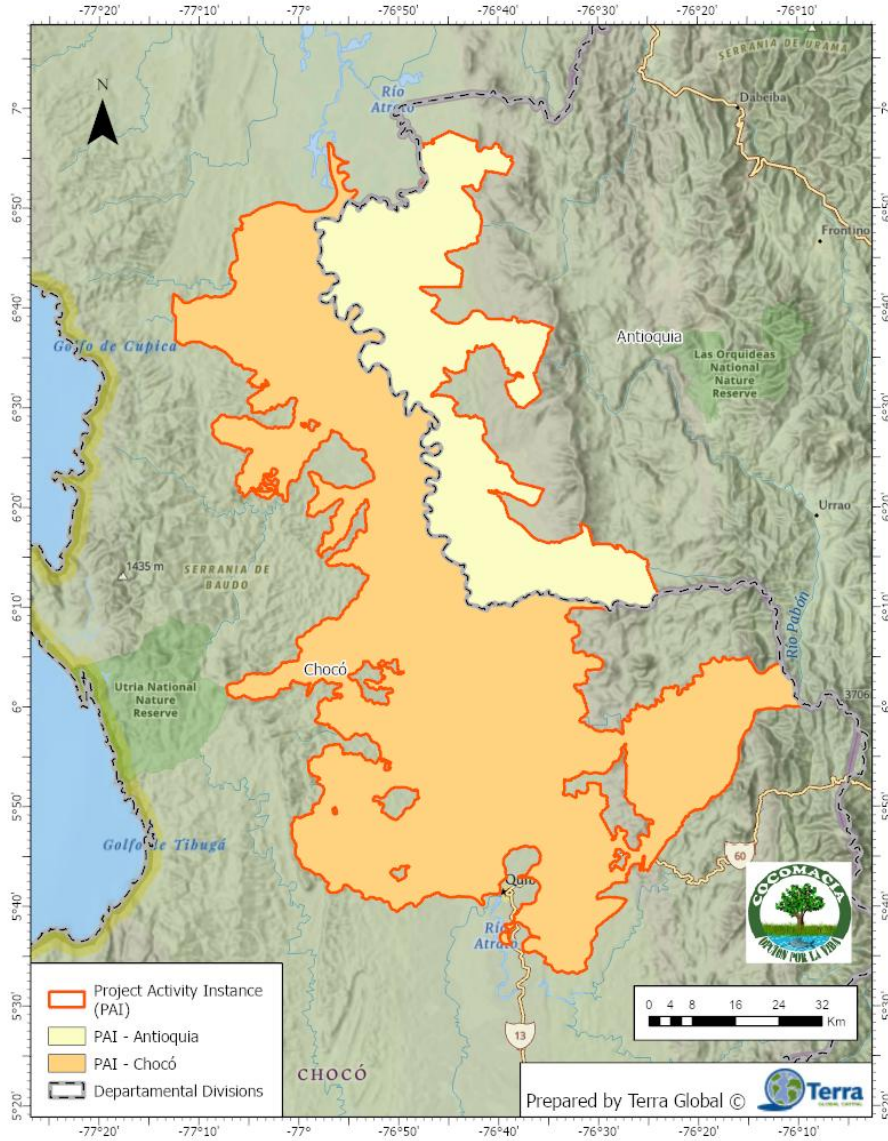
Area	Definition
Jurisdictional FREL Area	Administrative boundaries of the Chocó Department and a portion of the COCOMACIA Area in the Antioquia Department.
Project Zone	All areas within the Jurisdictional FREL Area where Program activities implemented or which could be impacted by implementation, defined in accordance with the CCB as the area encompassing the Program Area in which program activities that directly affect land, resources, and livelihoods.
Reference Region	This term is the same as Jurisdictional FREL Area which is used to quantify the baseline for all Project Activity Instances, as defined in VM0006. And according to the JNR Baseline Description section 3.11, the Reference Region is the same Jurisdictional FREL Area.
Project Area	The full extent of the areas within the Jurisdictional FREL Area which could be added as Project Activity Instances. At any point in time the sum of all Project Activity Instances equals the Project Area. The maximum size of the Project Area is the forest area in Jurisdiction FREL Area.
Project Activity Instance	A forest area in which activities are implemented that generate GHG emission reductions or removals, which has met the applicability criteria for grouped projects and is being monitored and verified to generate VCUs.
Project Zone Instance	The area around a Project Activity Instance which is impacted by implementation of Project Activity Instance and is defined in accordance with CCB. The Project Zone Instance includes the Project Activity Instance and the Offsite Impact Areas.
Project Leakage Belt	The area around the Project Activity Instance in which geographically constrained activity shifting leakage is monitored ex-post in accordance with VM0055 and the VCS AFOLU Requirements.

2.1.16.2 Location and Geographic Boundaries

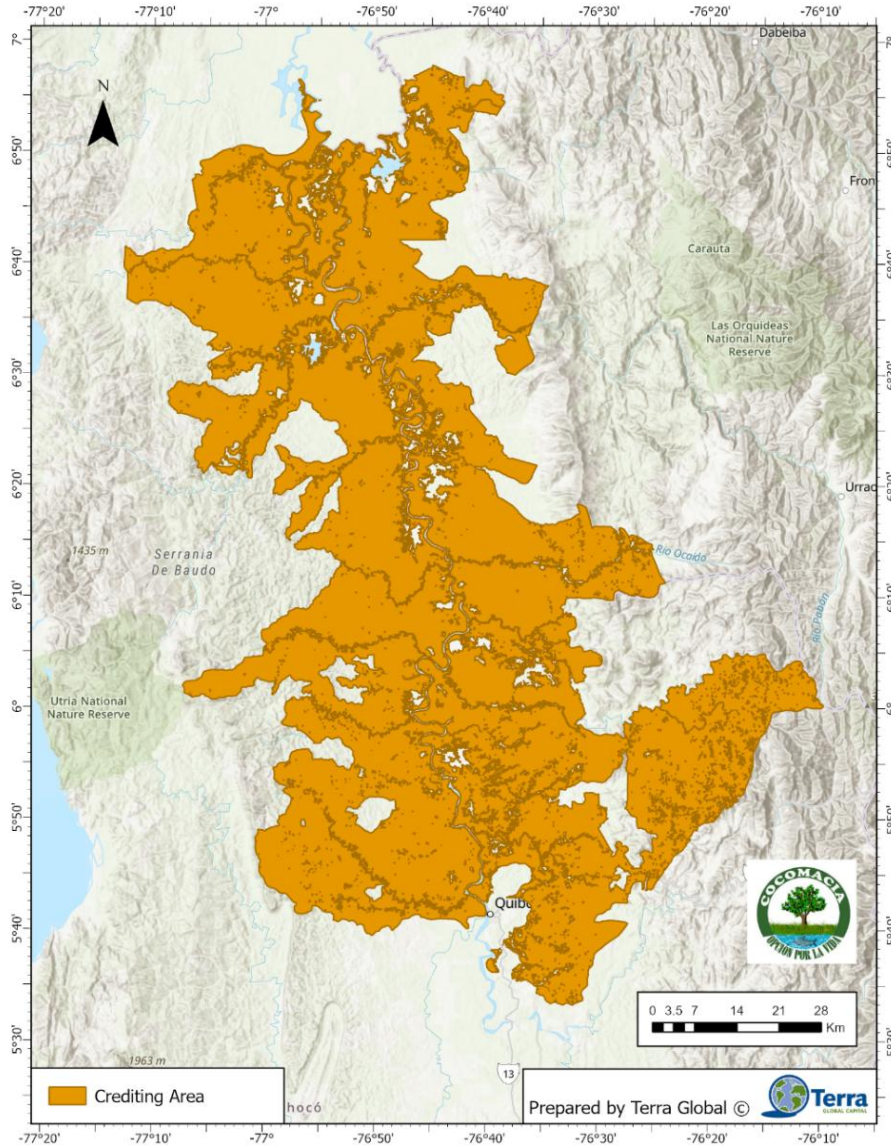
The COCOMACIA REDD+ Program is located in the departments of Chocó and a small portion of Antioquia, Colombia, within the Colombian Pacific region, also known as the Chocó Biogeographic Zone (Map 8 and Map 9). The First Project Activity Instance covers the forested territory of the Community Council of COCOMACIA, situated approximately at coordinates 6° 13'41.8" N, 76° 44'50.7" W. This area comprises 639,315 hectares of forest that are eligible for carbon credit generation (see Map 10).



Map 8. COCOMACIA REDD+ Program the First Project Activity Instance



Map 9. First Project Activity Instance by Departments Division



Map 10. Crediting Area of the Project Activity Instance at Project Start

2.1.16.3 Project Zone

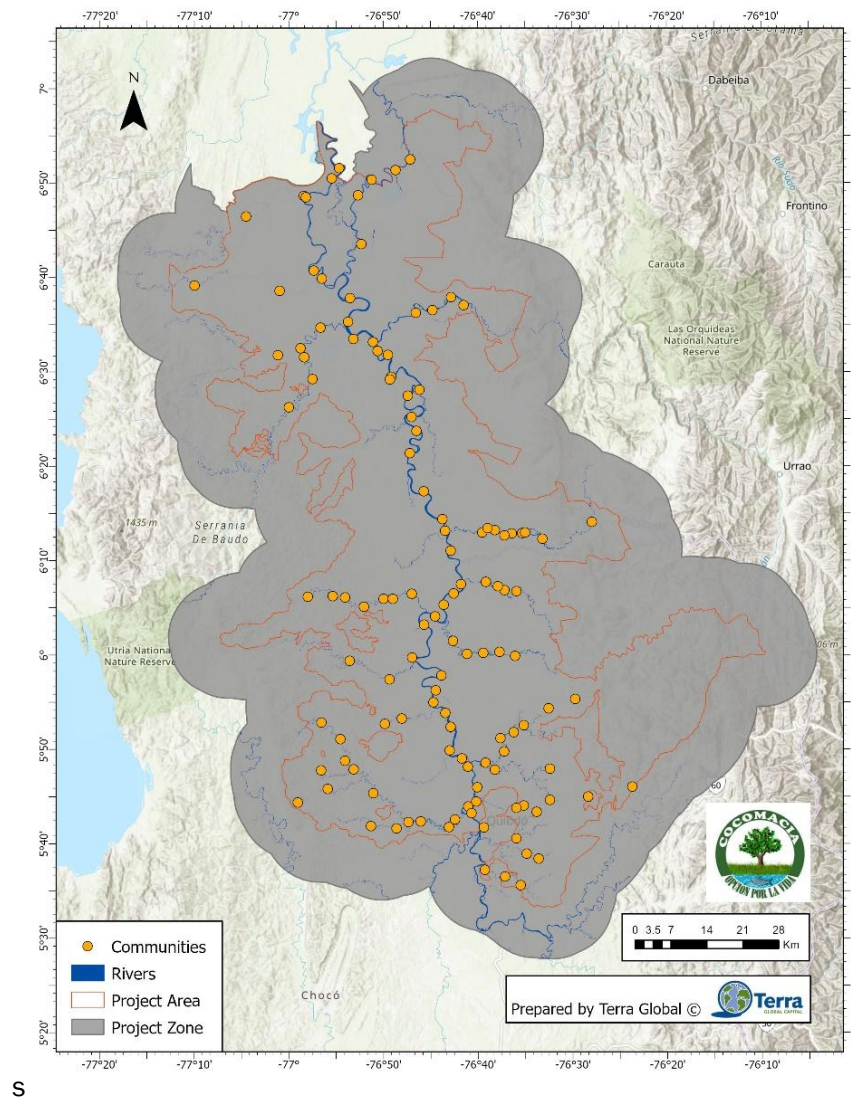
The Project Zone Instance, as defined by the Climate, Community, and Biodiversity (CCB) Standards, encompasses the First Project Activity Instance, where Program activities are currently being implemented. All activities take place within the boundaries of this Project Activity Instance.

As additional Project Activity Instances are incorporated in future verification periods, new Project Zone Instances will be delineated to represent the areas of influence and impact associated with those new activities. The forest-dependent communities located within these future Project Zone Instances are expected to exhibit conditions comparable to those in the First Project Activity Instance. These communities will also rely on forest resources and maintain a direct influence on the implementation of their corresponding Project Activity Instances.

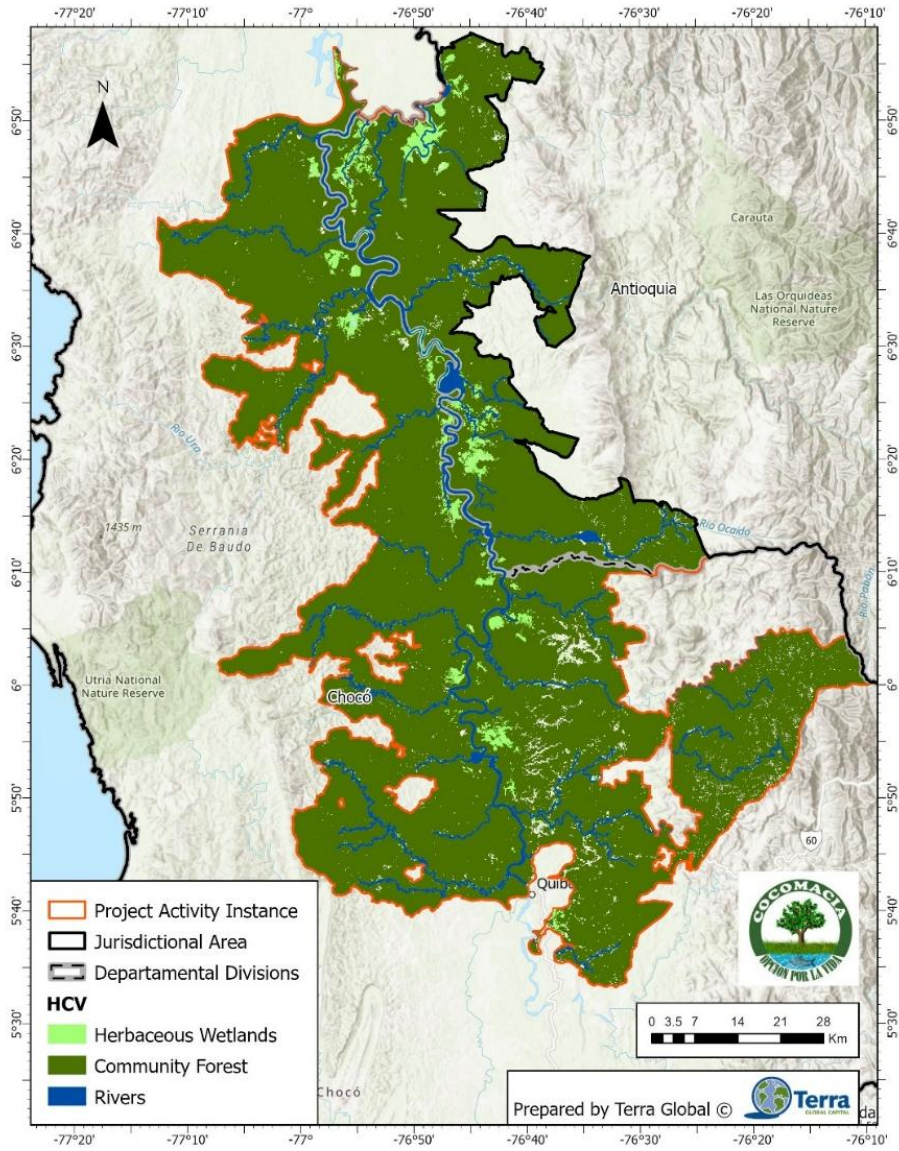
The Project Zone Instance includes the following components (see Map 11):

- *The First Project Activity Instance*
- *Offsite Impact Areas*
- *Areas where offsite climate impacts are anticipated*
- *Areas where other stakeholders may be affected (see Section 4.3)*
- *Areas where offsite biodiversity impacts are predicted (see Section 5.3)*
- *Locations of communities associated with the project (see Section 2.3.2)*

Within the Project Zone Instance, there are numerous biophysical and cultural High Conservation Value (HCV) areas that play a vital role in sustaining local ecosystems and community well-being. These include rivers, herbaceous wetlands (*ciénagas*), and community forest areas, which were recognized by local communities for their exceptional natural and cultural significance (see Map 12) through Participatory Rural Appraisals. The conservation and sustainable management of these HCV areas form an integral part of the project’s strategy to ensure positive climate, community, and biodiversity outcomes.



Map 11. Project Zone



Map 12. HCV areas

2.1.17 Project Activities and Theory of Change (VCS, 3.6; CCB, G1.8)

2.1.17.1 Theory of Change (TOC)

This is a community-led program, which is fundamental to achieving long-term goals to reduce the pressure on forests and improve livelihoods. Through a collaborative process a Theory of Change was developed and the resulting long-term implementation plan.

¹⁴For examples, see: Richards, M. and Panfil, S.N. 2011, Social and Biodiversity Impact Assessment (SBIA) Manual for REDD+ Projects: Part 1 – Core Guidance for Project Proponents. Climate, Community & Biodiversity Alliance, Forest Trends, Fauna & Flora International and Rainforest Alliance. Washington, DC, 34 – 42.

The Program's Goals are the following:

- 1) *Mitigation of climate change by reducing carbon dioxide emissions from land-use activities that result in deforestation and degradation.*
- 2) *Improve community livelihoods, especially for women and vulnerable groups, by strengthening community land-use rights and promoting alternative livelihood activities.*
- 3) *Contribute to the conservation of biodiversity by enhancing the extent and connectivity of intact natural forest cover, protecting and bolstering populations of threatened native species.*
- 4) *Generate emission reductions to provide carbon revenue to achieve these Goals.*

By engaging communities in forest protection and the expansion of sustainable income streams, rural communities will decrease deforestation and forest degradation and by building their capacity to establish enhanced monitoring systems to reduce forest violations. Once communities adopt sustainable practices for using forest resources and adopt sustainable agricultural systems, they will achieve sustainable livelihoods. The forest areas would then become resilient, enhancing carbon and ecosystem services for biodiversity and community well-being.

The Program seeks to provide support for territory management, forest conservation, and sustainable agricultural management practices, alternative income opportunities and community empowerment within the COCOMACIA territory.

Some of the main assumptions made for the Program are the following:

- 1) *The Great Council of COCOMACIA willingly engages in Program Activities and retains control over its entire territory.*
- 2) *Government entities strengthen forest conservation policies and provide support for the enforcement of regulations.*
- 3) *Communities actively participate in Program Activities and remain committed to forest protection and conservation.*

A result chain framework was developed explaining how the outputs (short term) are expected to lead to intermediate outcomes and how this will achieve the long-term outcomes to lead to the Program's impact goals. The ToC is shown in Figure 1. It is important to note that the items in lighter tones are Outcomes, Intermediate Outcome and Outputs that are contingent to carbon revenue.

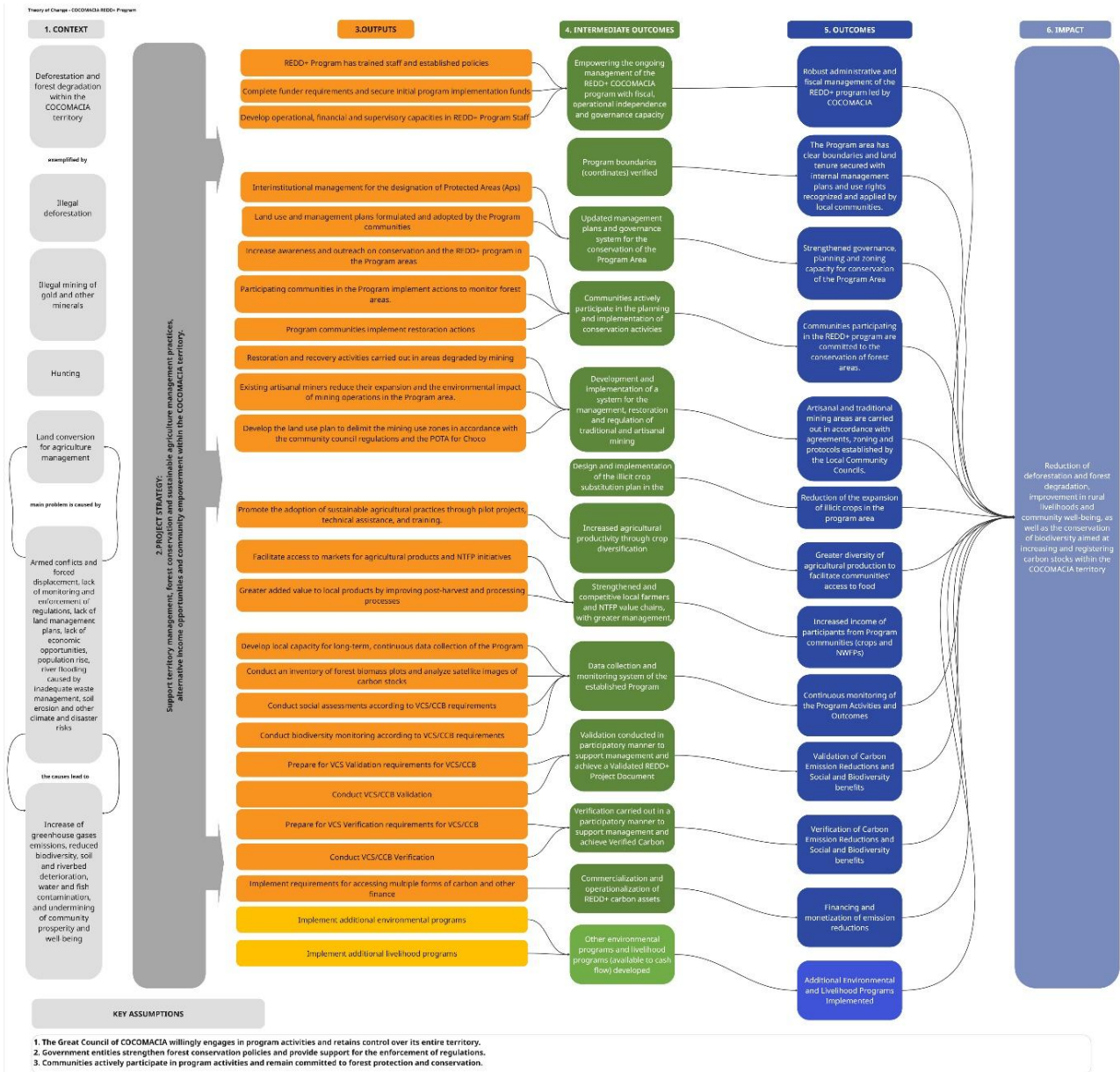


Figure 1. Theory of Change (ToC) for the COCOMACIA REDD+ Program

2.1.17.2 Long-Term Implementation Plan

The following paragraphs describe the rationale of how the activities listed in the long-term implementation plan correlate and contribute to achieve the climate, social and biodiversity impact goals.

The COCOMACIA REDD+ Program hires and trains local staff to ensure effective implementation and management of Program Activities. Staff members will receive a steady long-term income from their salaries by working for the Program. Participating communities will be empowered through increased skills and knowledge on productive activities increasing their income streams. In the case of farmers, they will receive technical training (theoretical and practical) to improve their skills and knowledge about sustainable

agricultural production. In addition, the Program will support the development of value-added processing of certain agricultural products and will identify and facilitate market opportunities.



The Program will also promote responsible mining and anti-logging measures to reduce environmental impact and ensure the governance of community councils in their territories. Current mining and logging practices contribute to deforestation, land degradation, biodiversity loss, soil and riverbed deterioration, and water and fish contamination (posing major public health problems). Therefore, the Program awareness and incidence activities will aim to prevent the spread and/or increase of these activities that would affect the biodiversity and local communities in the long term.

Establishing clear community zoning and management rules for the use of forests and other natural resources will help reduce the territory degradation and deforestation. Through organized and well-informed committees, greater forest protection can be enforced. By preventing deforestation, the biomass and biodiversity in the Program Activity Instance will also be conserved.


2.1.18 Sustainable Development Contributions (VCS, 3.17)

In terms of the Sustainable Development Goals (SDGs), Colombia has committed to the fulfillment of the 2030 Agenda. The SDGs that the will contribute through the implementation of activities are the following, details of the specific indicators can be reviewed in Table 2.

Table 2. Sustainable Development Goals achieved through the COCOMACIA REDD+ Program

Sustainable Development Goal	How the Program Activities Contributes
	<p>The COCOMACIA REDD+ Program aims to reduce poverty by linking forest conservation with sustainable livelihoods. Its activities strengthen local economies through income-generating initiatives, including the development of non-timber forest product (NTFP) value chains. Communities that depend on small-scale agriculture and natural resources receive support to diversify crops and adopt improved techniques. By building skills and expanding market access, the Program helps families increase their income while maintaining the forest cover that sustains their long-term wellbeing.</p>
	<p>The Program focuses on promoting crop diversification, the adoption of improved crop varieties and supporting animal husbandry to support food security. In addition, improved agriculture technology transfer will help communities be more productive to grow more food on less land.</p> <p>Most communities in the Project Activity Instance rely on annual crops such as rice and maize, have low income, and often face food scarcity. All inputs in the Program support these small-scale farmers in crop diversification, and improved crop varieties. The Program supports conservation agriculture, which helps with soil and water conservation as well as reduced fertilizer inputs. Practices such as, crop residue management, manure management, and agroforestry, as well as the use of improved varieties help crops become more resilient to a changing climate.</p>

Sustainable Development Goal	How the Program Activities Contributes
 <p>5 GENDER EQUALITY</p>	<p>Within the internal regulations of the local Community Councils that are part of COCOMACIA, and in the Board of Directors, it is determined that there must be 30% representation of women in decision-making.</p> <p>A gender action plan will be designed for Program activities to properly engage and promote women’s participation.</p>
 <p>8 DECENT WORK AND ECONOMIC GROWTH</p>	<p>The COCOMACIA REDD+ Program will provide job opportunities working in the community forest as patrollers and zonal conservation committees.</p> <p>The salaries paid to the local REDD+ team are based on a livable fair wage and have provided steady job opportunities for individuals in the region. Community forest workers for the COCOMACIA REDD+ Program follow Standard Operating Procedures for worker safety in the field. Safety procedures help reduce the risk of forest workers. The Program is based on equal employment rights for all employees, including women, migrants, and underserved minorities. The Program generates stable and fair employment for community members through roles such as forest patrollers, zonal conservation committee members, and REDD+ field staff. All workers receive fair wages and operate under clear safety and equality standards, ensuring inclusion of women, migrants, and other marginalized groups.</p>
 <p>13 CLIMATE ACTION</p>	<p>The COCOMACIA REDD+ Program is an integrated strategy that strengthens both government and community capacities to adapt to the adverse impacts of climate change, foster climate resilience, and promote healthy, sustainable communities.</p> <p>Through education and training, the Program helps community members understand climate change and their role in addressing it. It promotes both systemic and individual actions for adaptation and mitigation, including the strengthening of governance and collective action capacities, as well as the promotion of local, resilient, and culturally appropriate livelihoods—such as cacao-based agroforestry systems—enhanced with modern techniques.</p> <p>As one of the largest REDD+ initiatives in Colombia, the COCOMACIA REDD+ Program also serves as a platform for capacity building on operational and technical aspects relevant to the country’s national REDD+ framework.</p> <p>The Program mobilizes climate finance by monetizing verified emission reductions, channeling these resources into the ongoing implementation of community-driven activities. Revenues are reinvested in local livelihoods, forest protection, and sustainable land-use practices.</p>
 <p>15 LIFE ON LAND</p>	<p>The COCOMACIA REDD+ Program safeguards forests, biodiversity, and the communities that depend on them through sustainable forest management and the reduction of deforestation and degradation in the Chocó bioregion, one of the most biodiverse areas in the world. By addressing local drivers of deforestation and promoting sustainable livelihoods, the Program strengthens both ecosystem integrity and community well-being.</p> <p>Its benefit-sharing system ensures that revenues from carbon credit sales are reinvested in conservation and local development, directly improving livelihoods and</p>

Sustainable Development Goal	How the Program Activities Contributes
	creating new opportunities for community members. Activities such as forest patrolling to deter poaching and small-scale livestock production to meet protein needs further support forest protection and reduce pressure on wildlife.
	<p>The COCOMACIA REDD+ Program fosters strong partnerships among community councils, government entities, NGOs, and the private sector. Through its implementation, local and international partners collaborate to share experiences, mobilize resources, and advance sustainable development.</p> <p>Community Council legal representatives actively participate in national dialogues, sharing lessons learned from REDD+ implementation and informing public policy. The Program also develops business plans to attract private sector investment that directly supports project activities.</p> <p>Several international companies contribute through their carbon neutrality commitments, purchasing verified emission reductions that finance the Program's actions. This collaborative framework strengthens governance, aligns local and global sustainability goals, and ensures the Program's long-term viability.</p>

2.1.19 Implementation Schedule (CCB, G1.9)

Table 3 presents the key milestones to be achieved in the long term by the program.

Table 3. COCOMACIA REDD+ Program main milestones and dates of completion

Date	Milestone(s) in the project's development and implementation
Project Preparation	
Nov-2018	Collaboration Agreement signed between COCOMACIA and TGC to develop the Carbon Eligibility Assessment (CEA) for the program
2019	Presentation of the project to the COCOMACIA General Assembly
2019	Meetings with Board to review the REDD+ Agreement
29 Jan-2021	Signed the Agreement for Carbon Development with Respect to Emission Reductions for the COCOMACIA REDD+ Program between COCOMACIA Board and TGC
Project Start	01 Feb 2021
28 May 2021	Full climate finance funding secured when Payment-in-Kind Loan was signed with COCOMACIA and Choco Conservation, LLC
Jun-21	Establishment of the REDD+ program office, hiring and training of the Local Team
July -Nov-2021	Community Meetings-Zonal Meetings: Socialization of the REDD+ program, update on the status of the program, next stages in the development of the activities
August-2021	Community Meetings-Trizonal Meetings: Socialization of the REDD+ program, update on the status of the program, next stages in the development of the activities
Jun-October-2022	Community Meetings -Zonal Meetings (zone 1,2,3,4,5,6,7,8,9): Socialization of the REDD+ program, update on the status of the program, next stages in the development of the activities

Date	Milestone(s) in the project's development and implementation
July -2022	Equipment distribution for patrollers-start of forest patrolling activities
July -Sept- 2022	Social field data collection (HH surveys and PRAs) and identification of Cultural HCVs
July -Sept-2022	Biodiversity field data collection and identification of Biodiversity HCVs
April-2023	Amendment of the COCOMACIA REDD+ program Agreement between COCOMACIA and TGC
October-November - 2023	Biomass field data collection
End of First Monitoring Period	31-Dec-23
Jan-2024 – Nov 2025	Develop VCS/CCB PD, risk report, and CCB monitoring plan
Jan-2024	Collaborative Forest Reference Emissions Level Agreement between COCOMACIA and Corporación Autónoma Regional Para el Desarrollo Sostenible del Chocó –(CODECHOCO) and Terra Global Capital, LLC signed
Oct-2025	Develop 1 st VCS/CCB monitoring report 1
June-June-September 2025	Community Meetings: Dissemination of PD and MR1 (See Section 2.3.2)
Nov - Feb 2025	Conduct VVB audit
Nov 2025	Conduct VVB Site
April 2025	Target VCUs issuance
On-going (annually)	Target Dates
Jan-2026	Start process of developing monitoring report 2
March-2026	Gather field data for impact Monitoring (MR2)
	Community meetings and engagement: Project Activities Implementation
December-2026	Finalize 2nd. monitoring period
January-2027	Community Meetings: Dissemination MR2 with Community Councils
Feb-March-2027	Conduct VVB audit for second monitoring report
June-2027	VCU issuance and conservation payments delivery
On-going (annually)	Hold technical meetings with COCOMACIA Board, REDD+ team, TGC and CC leaders
On-going (annually)	Community meetings and engagement: Program Activities Implementation

2.1.20 Risks to the Project (CCB, G1.10)

The Program’s main risks are related to climate change, climatic variation and extreme weather events, such as major flood events, as well as the risk of increased deforestation. Thus, the Program main activities are focused into supporting the communities’ transition towards alternative sustainable sources of income that reduces this pressure on the forest and increases their adaptation capabilities. In addition, the Project will do continuous forest patrolling, to monitor incidents of illegal logging or mining, and to address these in a timely manner. Table 4 lists and describes the most relevant risks for the Project and mitigation actions.

Table 4. Identified risks and mitigation actions

Identified Risk	Potential impact of risk on climate, community and/or biodiversity benefits	Actions designed to mitigate the risk
<p>Potential physical effects of climate change, including increased frequency or severity of natural hazards</p>	<p>Floods in the Project Zone, driven by annual precipitation cycles and events like ENSO, are the most likely natural hazard. They are categorized as slow or fast—slow floods develop over time due to ground saturation, while fast floods occur suddenly from heavy rains. Both types have caused significant disasters, damaging crops, affecting soils, causing erosion and leading to material damage and temporary displacement of families. Despite their ecological role, these floods pose serious risks to the communities within COCOMACIA.</p>	<p>Program risk mitigation action: early Warning reports issued by IDEAM will be relayed through Program communication channels to reach communities and farmers.</p> <p>Existing Cultural ways of risk mitigation: Local populations also rely on traditional adaptation strategies, such as building elevated homes and maintaining informal solidarity networks, to cope with floods. Households in the Project Zone commonly manage multiple productive plots located at different elevation levels and distances from the river sides, which helps reduce the impact of floodings on their livelihoods.</p>
<p>Persistent or increasing deforestation and degradation rates due to the high opportunity costs of alternative land uses.</p>	<p>Persistent or increasing deforestation and degradation rates could undermine the financial sustainability of the program, leaving communities with fewer resources to manage their forests. This, in turn, would threaten the ecosystems and biodiversity that communities depend on, and pose a significant risk to already vulnerable species.</p>	<p>Training and incentives will be provided to loggers to transition from logging as a productive activity to cultivation of high-value local crops.</p> <p>Economically viable local livelihoods that contribute to maintaining ecosystem services and forest integrity, such as agroforestry systems and the extraction of non-timber forest products (NTFPs), will be supported by the project.</p> <p>Logging, mining, and other land uses will be regulated and planned by COCOMACIA with support from the project.</p> <p>COCOMACIA’s capacity to manage its natural resources and enforce regulations will be strengthened. This includes community monitoring, which enables the verification and tracking of incidents such as illegal logging or mining, allowing for prompt action to address these issues.</p>

2.1.21 Benefit Permanence (CCB, G1.11)

To maintain climate, community and biodiversity benefits over the long-term beyond the project lifetime the following measures are undertaken:

- *Strengthening and diversifying livelihoods to reduce dependence on extractive and unsustainable activities by building the economic and social viability of the territory*
- *Enhancing local governance and community monitoring capacity, ensuring continued social engagement in conservation beyond the project lifetime*
- *Continued enforcement and protection activities within the Program Activity Instance to prevent deforestation and wildlife poaching.*
- *The communities through their ongoing activities implemented and supported under the governance structure of the COCOMACIA will maintain the commitment and to reduce deforestation and improve livelihoods.*
- *As part of the benefits allocation plan, fund a long-term community conservation trust that provides on-going funding from interest to conduct key Program activities beyond the final crediting period through the end of the project lifetime.*

The workplan designed for the Program includes activities that will enhance the climate, community, and biodiversity benefits to be implemented for the next 40 years (1st crediting period). Other activities to maintain the Program benefits will be conducted outside of the crediting period but before the end of 100 years.

2.1.22 Financial Sustainability (CCB, G1.12)

Prior to Program start a robust process for the community engagement, program design, building of bankability and investment readiness was financed by Terra Global. Upon signing the long-term program implementation agreement in February 2021, the negotiations and contracts were completed in May 2021 for a \$3.4 million private sector climate investment to financial support the Program until the carbon revenue covered on-going costs. The financial viability of the Program, covering Program activities, uses the revenue from the generation and sale of VCUs. Financial sustainability is demonstrated in the cash flow analysis summary in Table 5Table 5.

Table 5. Program's Cashflow Summary Table

Budget Start Date		1-Nov-25	1-Nov-26	1-Nov-27	1-Nov-28	1-Nov-29	1-Nov-30	1-Nov-31	1-Nov-32	
Budget Period #										
Budget Year Start	yr	1 yr	6 yr	11 yr	16 yr	21 yr	26 yr	31 yr	36 yr	Total 40 years
Budget Year End		5 yr	10 yr	15 yr	20 yr	25 yr	30 yr	35 yr	40 yr	
<i>VERRs and Revenue</i>										
VERRs per Vintage Verified - Typology 1 Total VERRs		5,311,996	6,128,133	7,586,491	8,585,423	9,272,443	9,651,223	9,292,821	1,805,708	57,634,237
1. Forecast Market Price Curve - Typology 1 (price on first verification in period)		\$7,27	\$9,53	\$12,49	\$16,36	\$21,44	\$28,09	\$36,80	\$48,22	
Total VERRs Delivered to Upfront Investors and Developer		4,023,787	2,618,166	3,105,104	3,427,066	3,605,501	3,693,834	3,625,337	714,598	24,813,393
POD Tons for Sale (tCO2e) - to Fund Project (POD sales)		9,041,241	10,421,483	12,420,418	13,708,264	14,422,005	14,775,337	14,501,347	2,858,392	92,148,487
Total Non-Carbon Revenue		\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Net Revenue for Project (after repayment of climate finance)		\$70,466,411	\$111,530,675	\$173,797,872	\$250,880,267	\$345,981,044	\$463,578,089	\$596,091,552	\$137,844,851	\$2,150,170,761
Total Revenue		\$70,466,411	\$111,530,675	\$173,797,872	\$250,880,267	\$345,981,044	\$463,578,089	\$596,091,552	\$137,844,851	\$2,150,170,761
Investment Funds (balance)	\$1,182,000									
<i>Costs</i>										
2. Program Impl & Mgt		(\$10,402,218)	(\$10,548,869)	(\$11,941,795)	(\$15,305,638)	(\$19,642,623)	(\$25,208,531)	(\$32,351,587)	(\$3,701,456)	(\$129,102,716)
3. FREL,VCS,CCB MRV + Issue		(\$4,667,927)	(\$6,145,369)	(\$7,829,956)	(\$8,353,239)	(\$7,703,419)	(\$11,721,642)	(\$15,080,718)	(\$2,852,033)	(\$64,354,304)
Total Costs		(\$15,070,144)	(\$16,694,237)	(\$19,771,751)	(\$23,658,877)	(\$27,346,043)	(\$36,930,173)	(\$47,432,305)	(\$6,553,489)	(\$193,457,020)
<i>Cashflow (Profits)</i>										
Cashflow (per period)	\$1,182,000	\$55,396,266	\$94,836,437	\$154,026,121	\$227,221,390	\$318,635,001	\$426,647,916	\$548,659,247	\$131,291,362	\$1,957,895,741
Cashflow (cumulative)	\$1,182,000	\$56,578,266	\$151,414,703	\$305,440,824	\$532,662,215	\$851,297,216	\$1,277,945,132	\$1,826,604,379	\$1,957,895,741	

The cumulative cash flow is then allocated to communities in accordance with the Benefit Allocations Plan Communities, which is being finalized. Benefits allocation is dependent on available free cashflow to ensure financial sustainability of the Program.

2.2 Without-project Land Use Scenario and Additionality

2.2.1 Conditions Prior to Project Initiation and Land Use Scenarios without the Project (VCS, 3.13; CCB, G2.1)

2.2.1.1 Baseline Scenario

The conditions in the COCOMACIA territory prior to project start include increasing environmental degradation due to multiple unsustainable land-use practices. Illegal logging has made high-value timber species scarce throughout much of the territory, while mechanized gold mining expanded rapidly, severely affecting soils, waterways, and forest ecosystems. Shifting subsistence agriculture on secondary forests contributed to progressive soil depletion, and illicit crop cultivation, particularly coca, drove deforestation in primary forests. These pressures collectively resulted in biodiversity loss, reduced forest carbon stocks, and weakened community governance over natural resources. These are long-term complex and systemic issues causing emissions, which in no way are, or could be purposely generated for the purpose of later reducing them through Program activities.

The baseline conditions are the same as the conditions that exist prior to project initiation. Refer to Section 2.1.

2.2.1.2 Ecosystem and Environmental Conditions

2.2.1.2.1 Ecosystem Type

The territory of COCOMACIA encompasses a highly diverse mosaic of ecosystems within the Chocó biogeographic region, including lacustrine and riverine environments dominated by grasses such as *Thalia geniculata* and *Paspalum repens*; palm groves of *Raphia taedigera* along sandy riverbanks; and alluvial plains featuring vegetation up to three meters high with species like *Montrichardia arborescens* and *Acrostichum aureum*. The area also contains rich forest ecosystems, including *Prioria copaifera* (cativales) forests with complex tree strata, and tall alluvial forests dominated by *Cedrela odorata* and *Carapa guianensis*. Central humid tropical rainforests form dense, high-canopy systems with exceptional species diversity, while extensive wetland complexes—such as those of the lower Atrato River—include floodplains, freshwater swamps, and mangrove areas (*Rhizophora mangle*, *Avicennia germinans*), highlighting the region's remarkable ecological heterogeneity and biodiversity. See Section 2.1.14.5 for more information.

2.2.1.2.2 Current and Historical Land-use

The COCOMACIA territory in Chocó has historically been managed by Afro-Colombian and Indigenous communities through small-scale agriculture, fishing, and agroforestry closely connected to forest and river ecosystems. Over time, population growth, as well pressures from logging, both legal and illegal monocultures, and mining have led to deforestation and forest degradation, particularly in more accessible lowland areas, while the remaining territory has remained predominantly forested (Section 2.2.1.2) (Fagua, 2019).

2.2.1.2.3 Present and Prior Environmental Conditions of the Project Area

The project area, located within the middle and lower Atrato basin of the Chocó region, is characterized by highly diverse topography, soils, and climatic conditions typical of Colombia's Pacific biogeographic zone. The topography includes the rugged surfaces of the Baudó Mountain Range, composed mainly of limestone, siltstone, and sandstone formations from the Tertiary period, as well as feldspathic sandstone hills (5–30 m high) along the Atrato River, which are more accessible and therefore subject to agriculture, logging, and mining pressures. About 70% of the project area lies below 100 m above sea level.

The soils are predominantly poorly drained alluvial sediments (tropaquents, tropaquepts, fluvaquents), with quaternary deposits in floodplains and tertiary sandstone-derived soils in the hills. They are generally acidic, nutrient-poor, and low in phosphorus, nitrogen, and potassium, limiting intensive agriculture. The main soil types include cambisols (46%), histosols (29%), and ferrasols (13%). Traditional agroforestry systems combining cocoa, plantain, fruit, and timber species are ecologically sustainable, maintaining soil fertility and structure in contrast to unsustainable short-cycle agriculture.

The climate is classified as tropical rainy (Af) under Köppen, with average temperatures around 26–28 °C, relative humidity near 90%, and annual rainfall ranging from 3,000 mm to over 12,000 mm, among the highest in the world. Precipitation and temperature follow a bimodal pattern, influenced by the Intertropical Convergence Zone.

The hydrology is dominated by the Atrato River and its tributaries – Sucio, Jiguamiandó, Truandó, Salaquí, and León – which form vast floodplains with complex sedimentation dynamics. These riverine systems sustain high biodiversity and fertile alluvial soils but also face deforestation, agricultural expansion, and gold mining pressures along their banks.

In summary, the area's lowland tropical rainforest setting, abundant rainfall, acidic alluvial soils, and dense hydrological network define a highly productive yet ecologically fragile landscape, central to both biodiversity conservation and sustainable community-based land management efforts. For more information related to the environmental conditions in the Project Area, refer to Section 2.1.14

2.2.1.3 Land use Scenarios and the Associated Drivers of Deforestation and Degradation in Choco and Antioquia

This section presents a summary of Potential Land Use Scenarios and Drivers in the Project Zone Without the Project:

- **Illegal Logging of Timber:** *Traditional sustainable logging practices have shifted to unsustainable methods with the introduction of chainsaws, targeting high-value timber species like Comino, Cedar, and Oak. This has led to forest degradation, reduced biodiversity, and environmental changes, such as increased droughts, clogged waterways, and erosion due to lack of reforestation.*
- **Illegal Mining:** *Gold mining, traditionally a subsistence activity, has escalated to medium-scale operations involving heavy machinery like backhoes, causing severe environmental degradation. The influx of external operators has amplified non-compliance with mining regulations and disrupted local governance systems, particularly in areas like Medio Atrato.*

- **Shifting Agriculture:** *Subsistence agriculture relies on small-scale clearing of secondary forests, with plots abandoned after 5-20 years for natural regeneration. However, low productivity, migration, and globalization have left some areas degraded, limiting recovery.*
- **Illicit Crops:** *The establishment of coca, marijuana, and poppy crops involves large-scale deforestation, particularly in primary forests.*

Without intervention, these drivers will likely continue to degrade forest ecosystems, threaten biodiversity, and undermine environmental integrity in the project zone.

2.2.1.4 Scenario in the Absence of the Project

In the event that the Program is not developed, the main activities generating negative impacts on forests and local communities are expected to persist and potentially intensify. These include the expansion of illicit crops, increased logging in community forests, the spread of medium/large scale mining into new areas of the territory. Additionally, the lack of appropriate solid waste management will, continue to cause flooding of cropland and increasing health problems.

All of the above contributes to population displacement, as communities are affected by these increasing pressures, along with cultural deterioration and the breakdown of social structures. In the absence of the REDD+ Project, the current land-use dynamics in the collective territory of COCOMACIA would persist and likely intensify, driven primarily by economic necessity and the lack of technical and financial support for sustainable practices. The extraction of natural resources, whether through logging, mining, or agricultural expansion, remains the principal means of income generation for most households and is generally carried out without long-term management planning. As a result, these activities will continue to place increasing pressure on forests, soil fertility, and water resources.

Agricultural production in the region is largely based on traditional polyculture systems that combine subsistence and small-scale commercial crops. Commonly cultivated species include bananas, plantains, rice, sugarcane, maize, cassava, potatoes, pineapples, mangoes, coconuts, guavas, citrus fruits, and other local varieties. While these systems provide food security and limited cash income, they are constrained by poor soil fertility, excessive rainfall, and limited access to technical assistance. In the absence of improved practices, low productivity and soil degradation lead to the abandonment of plots and the clearing of new forest areas, perpetuating the cycle of shifting agriculture (COCOMACIA, 2016).

Overall, without the implementation of the REDD+ Project, the combined pressures of unsustainable natural resource use, weak institutional presence, and limited livelihood alternatives would continue to degrade the forest landscape. Deforestation and land degradation would likely accelerate, biodiversity would decline, and local communities would face increasing vulnerability to economic and environmental shocks.

2.2.2 Most-Likely Scenario Justification (CCB, G2.1)

The most likely without-project land use scenario in the COCOMACIA territory is characterized by unsustainable practices that would lead to environmental degradation and exacerbate the poverty within some of the local communities. The region faces numerous socio-economic and environmental challenges. The communities largely rely on subsistence agriculture, artisanal mining, and small-scale livestock, while

lacking essential services and economic alternatives. Without the project, the lack of sustainable livelihoods and support from the State would force local inhabitants to continue unsustainable forest exploitation to meet their immediate needs, contributing to the decline of both their living conditions and natural resources.

Environmentally, COCOMACIA as part of the Chocó biogeographic region, one of the most biodiverse areas on the planet, is under constant threat from deforestation, mining, and other human activities. Without intervention, deforestation and illegal activities would destroy crucial habitats, threatening the extinction of several species and disrupting ecosystems. The loss of natural corridors and increased habitat fragmentation would further weaken the region's ecological integrity.

In addition to these local pressures, broader external forces such as population growth, infrastructure development, and market expansion for forest products will intensify. These drivers of land-use change will result in persistent pressure on the forest, accelerating deforestation and land degradation. Without the project, these forces combined would likely result in significant biodiversity loss, ecosystem deterioration, and worsened socio-economic conditions for the communities.

The loss of forest in the COCOMACIA territory would not only have ecological and economic consequences but would also profoundly affect the spiritual connection the inhabitants have with their land. For these communities, the forest is more than a source of livelihood; it is deeply intertwined with their cultural identity, spirituality, and sense of purpose. Their traditional practices, from subsistence agriculture to the use of local plants for medicine, are closely linked to the natural resources and ecosystems around them. Deforestation would erode this cultural and spiritual heritage, weakening the bond between the people and their ancestral lands. The diminishing forest would represent not only the loss of biodiversity but also a loss of cultural continuity, personal identity, and a sense of belonging, leaving communities more vulnerable to social disintegration and loss of purpose.

2.2.3 Community and Biodiversity Additionality (CCB, G2.2)

In the absence of the COCOMACIA REDD+ Project, the environmental, social, and biodiversity benefits currently being achieved would not have occurred. While Colombia's legal framework recognizes the collective ownership and autonomy of Afro-descendant territories under Law 70 of 1993 and the Constitution of 1991, it provides no direct public funding for the management of these territories—unlike Indigenous resguardos. Consequently, COCOMACIA holds legal responsibility for the ecological stewardship of over 700,000 hectares without receiving adequate financial or institutional support from the State to fulfill this mandate.

Governance within COCOMACIA's vast and remote territory is fragile and uneven, limited by difficult access to many communities and the intrusion of "boom economies" such as illegal gold mining and coca cultivation, often promoted or facilitated by external actors. These dynamics have weakened traditional governance and undermined local conservation practices. Although the Colombian government has established environmental and forestry regulations, it lacks the command-and-control capacity to enforce them effectively in remote areas where armed groups maintain a presence and State institutions are largely absent. As a result, illegal resource extraction and land-use change persist with little deterrence.

International cooperation has provided intermittent and small-scale support to COCOMACIA, but such funding is limited in scope, duration, and geographic reach (Table 22), and has been further reduced in 2025 following the withdrawal of funds from the United States government. These temporary resources have been insufficient to finance sustained conservation or community development efforts across such a large and complex territory.

In the absence of the Program, the local communities would face continuous depletion of the vital environmental services. Without Program activities the ecosystem services that will continue to deteriorate include controlled flooding, the mitigation of soil erosion and runoff, enhanced water quality and quantity that contribute to a thriving fishing habitat and the potential for ecotourism. Given the significant reliance on fisheries and agriculture, the preservation of healthy water resources stands as a crucial factor in maintaining both community well-being and economic stability. Moreover, the loss would extend to other provisioning ecosystem services, including the availability of construction materials, medicinal plants, and essential food resources. Notably, the COCOMACIA forest area serves as a protective buffer, mitigating the impacts of climate-related perils and disasters like floods, storms, and landslides.¹⁵ Without the Program's intervention, the communities would face heightened exposure to the risks linked with these adversities.

Communities within COCOMACIA who will participate in the Program will receive financial and technical support for alternative livelihood programs, are employed for community-based patrolling, and have a dedicated management unit to support and oversee all Program activities. Only through the carbon finance generated can the long-term forest protection and financial viability be ensured for the over time.

The project area lies within one of the most biodiverse regions of Colombia and the world, characterized by exceptionally high levels of endemism due to the natural isolation created by the Andes Mountains. In the absence of the Program, deforestation, forest degradation, unsustainable hunting, and illegal wildlife trafficking would continue to erode ecosystem connectivity and threaten endemic species. These pressures are intensified by weak governance, limited biodiversity awareness, and local dependence on forest resources. By providing financial resources and capacity building through carbon finance, the Program introduces the means and incentives to reduce these pressures, thereby ensuring the long-term conservation of biodiversity that would not occur otherwise.

2.2.4 Benefits to be used as Offsets (CCB, G2.2)

The Program will be validated and verified under the VCS and CCB, to generate VCU "tagged" with CCB to reflect the community, biodiversity, and climate adaptation benefits in addition to climate mitigation benefits. Currently, the market standard to unitize community, gender and/or biodiversity benefits into credits that would be used as offsets is not fully developed and thus there is no plan to use these uniquely to offset. That said, the Program retains the right and flexibility to uniquely use the biodiversity credits and community benefit credits in the future the following emerging standard. If this occurs, the Program will provide the rationale at the next verification of the additionality for using unique community, gender and/or biodiversity benefits as offsets beyond the VCU "tagged" with CCB.

2.3 Safeguards and Stakeholder Engagement

2.3.1 Stakeholder Identification (VCS, 3.18, 3.19; CCB G1.5)

The process of identifying stakeholders and their relevance began in July 2018 with the first meeting held with COCOMACIA, in which several community leaders participated. During this first meeting they provided a clear explanation of the governance structure of the community council, the legal resolution that grants them ownership of their territory as issued by the national government and their autonomy to manage it.

In subsequent meetings with greater participation of community leaders, the board of directors and its legal representative identified, based on their local knowledge, the stakeholders and direct beneficiaries of the Program and those who are directly impacted by the Program activities are the 124 communities that make up the community council of COCOMACIA.

In addition to the communities that make up the COCOMACIA community council, through COCOMACIA and publicly available geospatial data neighboring community groups were identified. Meeting with the *Corporacion Autónoma Regional - CODECHOCO* and the government of Choco, other stakeholders were identified. In the context of the stakeholder meetings that were held for the JNR FREL stakeholder engagement, other stakeholders were identified which is detailed in the JNR Baseline Description.

Given the large size of COCOMACIA area, the main stakeholders who are directly impacted by Project are those active inside the territory both formally part of the communities and others who will be engaged in Program activities.

2.3.2 Stakeholder Descriptions (VCS, 3.18, 3.19; CCB, G1.6, G1.13)

The list and description of all the stakeholders and their relevance to the Project Activities can be seen in Table 6. Stakeholders have been classified into two main groups: 1) direct stakeholders, which are also direct beneficiaries, those who are directly affected) by the Project, Project decisions or actions; 2) other stakeholders, those who may be indirectly affected by the Project, decisions or actions.

Table 6. Description of Stakeholders

Organization	Level	Identification Method	Description and Relevance
1) COCOMACIA, made up of 124 local community councils	Direct	Local knowledge	The territory is located in the Atrato basin, in the municipalities of Atrato, Quibdó, Medio Atrato and Bojayá, in the department of Chocó and the municipalities of Murindó, Urrao and Vigía del Fuerte in the department of Antioquia.
			The main decision-making body is the General Assembly and then the Board of Directors. The members of the latter are elected every 3 years at the General Assembly.
			COCOMACIA shares the experience of black communities in environmental governance and conservation, since its territory covers part of the Colombian Pacific rainforest.
			All the communities that make up the territory of COCOMACIA have great interest and will benefit from the activities of the REDD+ Project.
			The members of the community will actively participate in the Project, assuming roles as Patrollers, forming zonal conservation committees and the REDD+ Team that guides the activities in the field, in coordination with the Board of Directors and its Legal Representative, which include informing, advocating and participating in various activities. Through their active participation, community members will help shape the Project's outcomes and ensure its success by sharing their knowledge, experiences, and expertise.
2) Farmers' Associations (Asprodema)	Other	Local knowledge and interviews	Will implement key Project Activities related to agricultural production and food security.
3) Neighboring Communities to the COCOMACIA territory. Indigenous Reservations	Other	Local knowledge and secondary data research	The indigenous reservations located on the borders of the COCOMACIA territory share some of the productive activities, in addition to having a socioeconomic relationship, their uses and customs are different, and the communities understand and respect their cultural differences.
Río Icho y la quebrada Daratudo, Río Negua, Río Bebara, Río Bebarama, La Cristalina, La Fiera, Río La Playa, Elveinte, Playalta Y El Noventa, La Lomita, Miasa De Partado, Caimanero De Jampapa, Ríos Jurubida-Chori Y Alto Baudo, Alto Del Río Munguidó, Paso Del Río Salado, Quebrada Chicue Río Tangui, Paina, Río Amé, Bete-Aurobete Y Auro Del Buey, Alto Río Buey, Alto Río Tagachi, Gegenadó,			

Organization	Level	Identification Method	Description and Relevance
Tungina Y Apartado, Buchadó Amparradó, Ríos Uva Y Pogue-Quebrada Taparal., Pichicora, Chicue, Puerto Alegre, Napipí, Opogadó – Doguadó, Río Chajeradó, Río Jarapetó, Jengado Apartadó, El Salado, Guaguandó, Andabú, Paina,			
4) Artisanal gold miner association (ASOBAMINARMEA – Asociación de Barequeros de Minería Artesanal del Medio Atrato)	Other	Local knowledge, interviews, and secondary data research	Small scale mining activities with high environmental, economic, and public health impacts. Activities occur in different parts of the territory generating forest degradation.
5) Regional Autonomous Corporations (Corporación Autónoma Regional, CAR) such as CODECHOCÓ (Corporación Autónoma Regional para el Desarrollo Sostenible del Chocó - Chocó Regional Autonomous Authority for Sustainable Development) and CORPOURABA (Corporación para el Desarrollo Sostenible del Urabá)	Other	Local knowledge and secondary data research	CODECHOCÓ is the environmental authority in the Choco region. It oversees the development and execution of plans, programs, and projects within its jurisdiction, which aim to manage the environment and natural resources in a sustainable manner and to improve livelihoods taking into account community participation and collaboration with local authorities.
			Advises municipalities in the process of environmental planning and regulation of land use and in the issuance of the necessary regulations for the control, conservation and defense of the ecological and cultural heritage of territorial entities.
			Promotes the integration of the indigenous and Black communities that have traditionally inhabited the region, to the process of conservation, protection and sustainable use of resources and encourages cooperation and help from the international community to compensate the efforts of the local community in defense of that unique ecosystem (Art.39 of Law 99 of 1993).
6) Instituto de Investigaciones Ambientales del Pacífico (IIAP), Universidad Tecnológica del Chocó (UTCH).	Other	Local knowledge and secondary data research	Entities in charge of knowledge generation, preservation, and dissemination as well as innovation. They are fundamental to support the development of local enterprises.
			They are important actors because the type of impact of the COCOMACIA REDD+ Project will serve as a reference for similar initiatives in the area and the information collected from these institutions will be used for data analysis and decision making.

2.3.3 Stakeholder Access to Project Documents (VCS, 3.18, 3.19; CCB, G3.1)

The complete PD and the summary were translated into Spanish and provided to The COCOMACIA Project Management team and the members of the COCOMACIA Board of Directors for review. They were given the responsibility of keeping the complete printed document at the REDD+ Project office located at COCOMACIA headquarters in Quidbo. Other relevant documentation includes quarterly reports and contracts from the REDD+ Team, equipment inventory purchased by the project, the Project's policies and procedures and other project evidence.

The COCOMACIA REDD+ Team has created WhatsApp groups with the Zonal Conservation Committees and another for the patrollers, as WhatsApp has proven to be an efficient communication channel, especially for sharing Project updates with those who do not have access to email.

Besides the public posting on the Verra website, COCOMACIA will be provided and maintain copies of the project documentation in their office which has regular working hours where any stakeholder may request to see the documents.

2.3.4 Dissemination of Summary Project Documents (VCS, 3.18, 3.19; CCB, G3.1)

The summarized project description of the Project was made available in print in Spanish at the Project office in COCOMACIA, in addition, this was provided to the members of the COCOMACIA Board of Directors who, in turn, are the leaders representing each of the 9 zones that group to the 124 communities of the Project. In addition, a digital presentation was shared with various community leaders who had Internet access through smartphones through a WhatsApp group.

Furthermore, the dissemination process of the COCOMACIA REDD+ Program, including a presentation of a summary of the project document, was successfully carried out across the 124 Local Community Councils (LCCs) over a three-month period between June and September . These sessions enabled community members to attend the presentation of the Project Description (PD), Baseline Description (BD), and first Monitoring Report (MR1) by the local REDD+ team, clarify questions, provide feedback, and further reinforce their understanding of their responsibilities in implementation.

2.3.5 Informational Meetings with Stakeholders (VCS, 3.18, 3.19; CCB, G3.1)

The briefings were structured as face-to-face introductory sessions and participatory conservation action planning workshops for community members. Previous meetings/sessions resulted in the Project implementation plan, the selection and training of community members to implement project activities. Table 7 with all meetings is presented below.

Table 7. Informational Meetings with Stakeholders

Stage in Consultation Process	Participating Stakeholders	Channels Used	Information Provided or generated	Date and location
Overview of Terra's Work Model	COCOMACIA Territory and Autonomy Area	In-Person Meeting	Terra's work model, scope of REDD+ Project, benefits, roles, Collaboration Agreement Draft.	July 11, 2018, COCOMACIA's HQ-Quibdó
Overview of Terra's Work Model	Board of Directors, Legal Representative	In-Person Meeting	Terra's work model, scope of REDD+ Project, benefits, roles, Collaboration Agreement Draft.	Oct 17 - 21, 2018,

Stage in Consultation Process	Participating Stakeholders	Channels Used	Information Provided or generated	Date and location
	and COCOMACIA Community Leaders			COCOMACIA's HQ-Quibdó
Initial community consultation	COCOMACIA-General Assembly	COCOMACIA'S General Assembly	Terra's work model, scope of REDD+ Project, benefits, roles, Collaboration Agreement Draft	November 29, 2018. Tangui - Choco
Involvement of Rice Producers within COCOMACIA REDD+ Project	COCOMACIA and ASPRODEMA (rice producers Association)	Field meetings and site visits to production areas	<ul style="list-style-type: none"> Field diagnostic on rice production Signing of Collaboration Agreement 	April 22-25, 2019 – Puerto conto, Rio Murry, San Antonio de Padua, Tangui, Choco
Definition of REDD+ ROADMAP and training	COCOMACIA'S leaders	Workshop	Participatory construction of REDD+ Roadmap	October 15-17, 2019, Quibdó.
Reporting Results	COCOMACIA-General Assembly	COCOMACIA'S General Assembly	<ul style="list-style-type: none"> Terra's work model, scope of a REDD+ Project, benefits, roles, Collaboration Agreement Draft Revision of REDD+ Roadmap Revision of REDD+ Roadmap Socialization of Project Listing Presentation of Letter of Intent to Invest Revision of Initial Budget 	December 11-15, 2019, Bebarama - Choco
Presentation of the COCOMACIA REDD+ Project to CORPOURABÁ (Regional Environmental Authority)	CORPOURABÁ officials	In-Person Meeting at CORPOURABÁ HQ.	Terra's work model, scope of a REDD+ Project, benefits, roles	March 9 - 13, 2020, Apartadó - Antioquia
Presentation of the COCOMACIA REDD+ Project to CODECHOCO (Regional Environmental Authority)	CODECHOCO officials	In-Person Meeting at CODECHOCO HQ.	Terra's work model, scope of a REDD+ Project, benefits, roles.	March 9, 2020, Quibdó.
Investment Readiness phase	COCOMACIA	Virtual meetings	Investment Readiness Documents reviewed and jointly adjusted.	March 10 – 13, 2020
Induction of the REDD+ team to the project and its operational procedures	REDD+ local team	Capacity Building Workshop	Project Operational Procedures	July 12-16 ,2021, Quibdó
Presentation of the Trust contract and COCOMACIA's participation	Board of Directors, Legal Representative	In-Person Meeting	The Contract to establish the Trust was explained and signed, in addition to the formation of the Technical Committee as part of the Trust.	Oct 26-28 ,2021, Quibdó
Reporting on results	COCOMACIA in full assembly	COCOMACIA'S General Assembly	REDD+ Project progress to date and the planning for the year 2022.	December 9-13, 2021, Beté, Chocó.
Reporting on results	COCOMACIA in full assembly	COCOMACIA'S General Assembly	REDD+ Project progress to date and the planning for the year 2023.	December 7-11, 2022, Buchadó, Chocó.
Overview of Terra's Work Model with new COCOMACIA's Directive Board.	COCOMACIA's Directive Board	In-Person Meeting at COCOMACIA's HQ.	Terra's work model, scope of a REDD+ Project, benefits, roles, Collaboration Agreement Draft.	January 30-31, 2023 Quibdó.

Stage in Consultation Process	Participating Stakeholders	Channels Used	Information Provided or generated	Date and location
Review of the REDD+ Agreement with the new Board of Directors	COCOMACIA'S Board of Directors	In-Person Meeting	Dissemination of Project Document and Project Document Summary	Jan 20-30 and March 22-24, 2023 at COCOMACIA's HQ-Quibdo
Jurisdictional Approach for the Project	COCOMACIA'S Directors, Director of CODECHOCO	In-Person Meeting	Explanation of the Forest Reference Emission Level Collaboration Agreement	August 29, 2023 at Codechoco's HQ.
PD Consultation	COCOMACIA'S Board of Directors	In Person meetings, Email and WhatsApp	Dissemination of Project Document and Project Document Summary	June - to October, 2024 - 124 communities - Choco
Coordination and Technical Dialogue	Ministry of Environment (MinAmbiente), IDEAM (planned), COCOMACIA, Terra Global	Formal meeting and written communication	Project background, RENARE status, NREF 2023-2027, degradation treatment, MMP guidance, recognition of ethnic areas	July 23, 2025 – Bogotá, Colombia

2.3.6 Risks from the Project and No Net Harm (VCS, 3.18, 3.19)

Table 8 summarizes key risks and the corresponding mitigation measures, which include strengthened forest governance, promotion of sustainable agroforestry, targeted inclusion and gender actions, and clear labor, anti-discrimination, and grievance procedures.

Table 8. Risks from the Project

Identified risk	Potential impact of risk	Mitigation or preventative measure(s)
Increased deforestation and degradation due to agricultural expansion for agricultural activities that promoted by the Project	<ul style="list-style-type: none"> Further loss of forests Loss of biodiversity Loss of ecosystem services 	<ul style="list-style-type: none"> Strengthening of livelihoods will be accompanied by efforts to improve forest governance, including management Plans and zoning exercises. Investments at farm level promoted by the Project will aim at achieving sustainable diversified systems within the same agricultural areas, mainly through the agroforestry systems and avoiding monocultures. Priority is given to communities who participate in conservation agreements or other forms of commitment for forest protection.
Increased soil erosion or degradation due to more intensive agricultural practices driven by rising household incomes.	<ul style="list-style-type: none"> Weakened livelihoods through reduced agricultural productivity. 	<ul style="list-style-type: none"> The Project will support community zoning of productive areas and forest areas. The project will promote agroforestry systems, enhanced with relevant technical knowledge. Systems promoted avoid the use of heavy machinery, minimize soil disruption, and facilitate the accumulation of organic matter on the topsoil
Underrepresented or vulnerable groups face barriers to participating in the project	<ul style="list-style-type: none"> Increased economic inequality and social isolation of vulnerable groups Underrepresentation of vulnerable groups in the project 	<ul style="list-style-type: none"> During the design phase, vulnerable groups have been identified through participatory assessments conducted in different community councils. Facilitate participatory assessments (PRAs) to ensure all voices and opinions are heard and considered during the design and implementation of the project. As part of these assessments, separate exercises with women and/or minorities will happen to create safe spaces for discussion.

Identified risk	Potential impact of risk	Mitigation or preventative measure(s)
Workplace or sexual harassment and discrimination	<ul style="list-style-type: none"> Negative impact on the physical and mental health and wellbeing of staff, and participants Loss of legitimacy and reputation by the Project 	<ul style="list-style-type: none"> A gender action plan has been developed with COCOMACIA, which is linked to the workplan and includes monitoring indicators The COCOMACIA Community Council follows national labor and anti-discrimination laws and applies the COCOMACIA REDD+ Hiring Policy, The Operations Manual for the project used by the COCOMACIA REDD+ Team, promotes equal employment opportunities without discrimination based on various factors, such as race, gender, or disability. Cases of discrimination or harassment are handled through the established grievance and complaint mechanism.

2.3.7 Community Costs, Risks, and Benefits (CCB, G3.2)

The Program’s costs, as well as the associated benefits and risks have been clearly communicated to COCOMACIA and community representatives through the informative and participatory planning meetings as described in Section 2.3.5 These many discussions provided the foundation for jointly adjusting the Program’s agreements, including the COCOMACIA REDD+ Benefit Allocation Plan.

The work planning process which defines the activities that could give rise to risk and costs was undertaken in a participatory manner between COCOMACIA and Terra Global. This resulted in the first collaboratively developed Long-term Implementation Plan that is part of the REDD+ Agreement between COCOMACIA and Terra Global. This process was conducted over more than 2 years so that communities had time to understand and contribute to the process. The Long-term Implementation Plan is reviewed every 2 years between COCOMACIA and Terra Global, where adjustments are made to reflect learning and incorporate community input. Prior to signing the first definitive REDD+ Agreement in February 2021, the Program was presented at the 2018 General Assembly, and later approved at the 2019 General Assembly. allowing sufficient time and ensuring a transparent process.

The COCOMACIA REDD+ Benefit Allocation Plan establishes the mechanisms, principles, and procedures for distributing benefits derived from carbon revenues within COCOMACIA’s collective territory. Its overarching goal is to ensure fair and transparent benefit sharing that strengthens community governance, promotes sustainable land use, and incentivizes actions that reduce deforestation and forest degradation. The plan was initially approved alongside the REDD+ Agreement in 2021 but has since been updated to better reflect the operational dynamics observed during project implementation and to align benefit distribution with actual community participation and performance.

2.3.8 Information to Stakeholders on Validation and Verification Process (VCS, 3.18.6, 3.19; CCB, G3.3)

Communities and other interested groups are informed about the VCS and CCB validation and verification process primarily through the Terra Global with notification to COCOMACIA Board of Directors and the COCOMACIA REDD+ Management Team. Other . Information regarding the validation and verification process was shared mainly through the on-the-ground dissemination process carried out in June-September

of 2025, as described on Section 2.3.4, but also through Project Presentations in COCOMACIA General Assemblies (Section 2.3.5) , as well as personal communication or including reminders via text messages, phone calls, and WhatsApp groups (Section 2.3.3). A schematic design in Spanish that simplifies the validation and verification process will be provided/disseminated to all interested groups through face-to-face meetings or workshops in each community.

2.3.9 Site Visit Information and Opportunities to Communicate with Auditor (VCS, 3.18.6; CCB, G3.3)

Communities and other interested groups will be informed of the visit to the auditor's site, by Terra Global through the Board of Directors and the COCOMACIA REDD+ Team who will notify the Community Conservation Committees, environmental managers and other community leaders, through personal communication or text messages, phone calls, WhatsApp groups and the local station.

During the group discussions for the Project Document Dissemination Process, the communities were informed that a VVB will visit the communities in late 2025. The communities were informed that the VVB is a neutral party and that they should feel free to communicate openly about their experience with the COCOMACIA REDD+. They were invited to contact the VVB directly and were informed that a translator would be present.

Auditors will speak Spanish or have a translator to facilitate direct and independent communication with communities. The Program will provide the venue and transportation as needed for the VVB meetings with the communities the VVB selects to meet. Meetings will be scheduled weeks in advance and respecting any commitments related to work, culture or religion (for example, meetings will not be scheduled during the time of local festivals or holidays).

2.3.10 Stakeholder Consultations (VCS, 3.18; CCB, G3.4)

The Project Work Plan was developed and has been subsequently adjusted on several occasions with the guidance of COCOMACIA's Board of Directors and the REDD+ Project team, which is largely composed of community members. This process has ensured that decisions regarding project activities and strategies remain aligned with local priorities and with the leadership and governance structure of the Black communities in the territory.

The Workplan has also been presented and discussed during zonal meetings and COCOMACIA's General Assembly, where feedback from community members has been received regarding progress and proposed adjustments for its implementation.

Evidence of the implementation of the stakeholder consultation was made available to the VVB.

Table 9. Presentation of the Project to the General Assembly (2018 & 2019)

Date of Stakeholder Consultation	
29-Septiembre-2018	(at Tanguí LCC)
11-Diciembre-2018	(at Llano de Bebaramá LLC)

Stakeholder Engagement Process	<p>Describe the process to engage stakeholders in a culturally appropriate manner (e.g., dates of announcements or meetings, language and gender sensitivity). Describe the process or methods used to document the outcomes.</p> <p>The stakeholder engagement process was conducted in a culturally appropriate manner, following COCOMACIA's Internal Regulations and governance structure. Information about the REDD+ Program was shared through existing community channels and leadership structures, using clear language and ensuring the participation of women, youth, elders, and other community representatives. Formal presentations of the Program were made during two consecutive General Assemblies – in December 2018 at the Local Community Council of Tanguí and in December 2019 at the Local Community Council of Llano de Bebaramá, both of which are recognized decision-making spaces within COCOMACIA's traditional governance system.</p> <p>During these assemblies, project objectives, activities, and safeguards were discussed in open sessions that allowed for dialogue and clarification of concerns. Approval to sign the agreements and initiate project implementation was granted through a majority vote of the General Assembly of 2019.</p>
Consultation Outcome	<p>Summarize the discussion around consent to project design and implementation, risks, costs and benefits of the project.</p> <p>The stakeholder engagement process was conducted in a culturally appropriate manner, following COCOMACIA's Internal Regulations and governance structure. Information about the REDD+ Program was shared through existing community channels and leadership structures, using clear language and ensuring the participation of women, youth, elders, and other community representatives. Formal presentations of the Program were made during two consecutive General Assemblies – in December 2018 at the Local Community Council of Tanguí and in December 2019 at the Local Community Council of Llano de Bebaramá, both of which are recognized decision-making spaces within COCOMACIA's traditional governance system.</p> <p>During these assemblies, project objectives, activities, and safeguards were discussed in open sessions that allowed for dialogue and clarification of concerns. Approval to sign the agreements and initiate project implementation was granted through a majority vote of the General Assembly of 2019.</p>
Stakeholder Input	<p>Describe how due account was taken of all input received during the consultation. Include details on any updates to the project design or justify why updates were not necessary or appropriate.</p> <p>The outcomes of the discussions during the Assemblies, including community consent and recommendations, were documented through meeting minutes and signed agreements</p>

Table 10. Working sessions with the local REDD+ team to design and adjust the Program Workplan and Budget

Date of stakeholder consultation	<p>Multiple session (details below)</p>
Stakeholder engagement process	<p>Describe the process to engage stakeholders in a culturally appropriate manner (e.g., dates of announcements or meetings, language and gender sensitivity). Describe the process or methods used to document the outcomes.</p> <p>The development of the first Long-Term Implementation Work Plan and Budget began during the field visit held from October 15 to 17, 2019, where an initial draft was prepared with the participation of COCOMACIA community leaders. In the months that followed, Terra's investment team incorporated the corresponding budget, frequently consulting COCOMACIA to ensure that local dynamics and price conditions were accurately reflected in cost estimates. The Long-Term Implementation Work Plan and Budget were developed using Terra Global's standard template, drawing primarily on inputs from COCOMACIA's board and Community Leaders, as well as COCOMACIA's Territorial and Agricultural Land-Use Plan (POTA).</p>

	<p>Subsequent versions of the document were refined through a series of remote coordination meetings between Terra and the COCOMACIA REDD+ team.</p> <p>During the July 12–16, 2021 field visit, the Work Plan, then in version 1-53, was reviewed in detail by the team, resulting in adjustments and the completion of missing information. In the January 29 – February 2, 2024 field visit, version 1-66 of the Work Plan was revised with members of the Board after multiple iterations supported by the REDD+ team.</p> <p>From April 1 to 4, 2025, the draft Benefit Distribution Plan was presented to the Board of Directors, who provided several comments that were incorporated into the following revision. In February 2025, the Board formally reviewed and accepted the Work Plan.</p> <p>Later, during September 25, 29, and 30, 2025, the COCOMACIA REDD+ team and Terra Global jointly reviewed the entire Work Plan. Terra had previously introduced updates to better align the document with the theory of change and to address specific drivers of deforestation in accordance with standard requirements. Over several five-hour sessions, both teams examined each component and made final adjustments based on COCOMACIA’s feedback. The Long-Term and Short-Term Work Plans and Budgets are scheduled to be presented again to the Board of Directors in November 2025 for final validation.</p>
<p>Consultation outcome</p>	<p>The process to obtain community consent for the project’s design and implementation was conducted transparently and in alignment with COCOMACIA’s internal governance structure. Information about the REDD+ Program was shared through community meetings, assemblies, and local councils, using clear and accessible language and favoring broad participation from women, youth, elders, and other community representatives. Discussions focused on the project’s objectives, expected benefits, potential risks, and the commitments required for implementation.</p> <p>Community members and leaders examined how the project could strengthen forest governance, support sustainable land-use practices, and generate economic and social benefits, while recognizing possible administrative and operational challenges. The dialogue emphasized the need for transparency, equitable benefit distribution, and continuous communication between implementing partners and the communities.</p> <p>The process culminated in the General Assemblies of 2018 and 2019, where the project was formally presented, discussed, and approved through a majority vote. The decision and related commitments were documented in official minutes and agreements, ensuring that the project proceeded with informed community consent.</p>
<p>Stakeholder input</p>	<p>Describe how due account was taken of all input received during the consultation. Include details on any updates to the project design or justify why updates were not necessary or appropriate.</p> <p>All inputs received during the consultation process were carefully reviewed and discussed by COCOMACIA’s governance bodies and the REDD+ technical team. Some of the feedback from community members, leaders, and representatives was documented during meetings and assemblies and subsequently considered in the formulation and adjustment of the Project Work Plan and related documents.</p> <p>Several of the comments received resulted in concrete modifications to the project design. For example, following a direct request from COCOMACIA, a communications strategy was incorporated into the Work Plan in September of 2025 to as a means to help COCOMACIA position itself in the territories as ethnic authority, and to strengthen the flow of information between the implementing partners, community councils, and local leaders.. Likewise, recommendations highlighting the need to reinforce institutional capacities led to the inclusion of specific allocations within the Benefit Allocation Plan (Draft version) aimed at strengthening COCOMACIA’s governance structures and management capabilities.</p> <p>Other inputs from the consultation process focused on clarifying roles, ensuring a degree of budget flexibility, and emphasizing transparency in benefit distribution. These were reflected in the inclusion of a contingency budget line and in clearer definitions of institutional and community responsibilities. However, most inputs were related to writing style, for COCOMACIA has always made sure that activities and obligations are unambiguous, and clearly understandable to them.</p>

Where updates were not deemed necessary, it was because the proposals were already addressed through ongoing implementation mechanisms or would be evaluated during future monitoring and adaptive management cycles.

Table 11. Zonal Meetings in the Territory of COCOMACIA

Date of stakeholder consultation	The zonal meetings are held annually, typically over a one- to two-month period between July and September. The COCOMACIA REDD+ team has accompanied the 2021-2025 Zonal meetings.
Stakeholder engagement process	Describe the process to engage stakeholders in a culturally appropriate manner (e.g., dates of announcements or meetings, language and gender sensitivity). Describe the process or methods used to document the outcomes. One of the means by which community engagement is carried out by the COCOMACIA REDD+ team is by accompanying COCOMACIA’s annual zonal and trizonal meetings, which are part of the organization’s traditional governance and decision-making structure. During these annual gatherings, specific sessions were scheduled to inform participants about the REDD+ project, its objectives, activities, and the long-term benefits for the communities. Meetings were announced in advance through customary channels, ensuring the participation of both men and women, and were conducted using clear and inclusive language appropriate to the local cultural context., which form part of the organization’s traditional governance and decision-making structure. During these gatherings, specific sessions were scheduled to inform participants about the REDD+ project, its objectives, activities, and the long-term benefits for the communities. Meetings were announced in advance through customary channels, ensuring the participation of both men and women, and were conducted using clear and inclusive language appropriate to the local cultural context.
Consultation outcome	Summarize the discussion around consent to project design and implementation, risks, costs and benefits of the project. The project was very well received by the communities, who see it as a source of income in the long term and as an opportunity to manage their community forests with a focus on conservation. There was general concern about the ownership of their territory, about the inability to continue with their customary livelihoods and the negative impact on their culture.
Stakeholder input	Describe how due account was taken of all input received during the consultation. Include details on any updates to the project design or justify why updates were not necessary or appropriate. The concerns raised during the meetings were addressed and considered in the development of the workplan containing all the activities to be implemented. Community dynamics, communication methods and the time required for decision-making were also considered. Language adjustments were made to ensure clear understanding.

Table 12. Institutional meetings

Date of stakeholder consultation	9-March-2020 to 13-March-2020
Stakeholder engagement process	Describe the process to engage stakeholders in a culturally appropriate manner (e.g., dates of announcements or meetings, language and gender sensitivity). Describe the process or methods used to document the outcomes. For government institutions, the engagement process was conducted through a series of formal meetings with entities such as regional environmental authorities and the Ministry of the Environment. These meetings focused on presenting the project’s objectives, scope, and potential impacts on the communities within the project area. Discussions emphasized coordination with existing environmental and territorial management

	instruments to ensure institutional alignment. The process was conducted in a transparent and participatory manner, respecting each institution's mandate and decision-making procedures.
Consultation outcome	Summarize the discussion around consent to project design and implementation, risks, costs and benefits of the project. The institutions carefully analyzed the project's legal, environmental, and social impacts, and expressed their willingness to collaborate for improving livelihoods and conservation activities
Stakeholder input	Describe how due account was taken of all input received during the consultation. Include details on any updates to the project design or justify why updates were not necessary or appropriate. The concerns raised during the meetings were addressed and considered in the development of the project activities to be implemented. Language adjustments were made to ensure clear understanding.

Table 13. Comments received by the Program

Summary of comment received	When comment was received	Actions taken
Provide a summary of each comment received (1 per row) Concern that territory will be expropriated	10-October-2021	Provide a summary of actions taken and any project design updates. If no actions were taken, justify the insignificance or irrelevance of the comment. In the meetings, it was explained to the community members that their territorial ownership is not at risk, as it is protected by Colombian Law 70 of 1993. Furthermore, this type of project does not aim to affect their land rights.
If the program would prevent communities from using natural resources in the program area	10-October-2021	It was explained that the project does not restrict the use of natural resources, it proposes to reduce deforestation and respects their ancestral practices. Activities that degrade the forest should be gradually reduced to achieve the project's goals
How will the benefits from the program be distributed?	30-March-2022	At the general assembly, it was explained that the benefits will be distributed based on the activity performance on each zone in the territory and will be agreed upon with the council board. It was also clarified that the less the forest is deforested and degraded, the greater the share of benefits will be.
Who will manage the program resources?	16-October-2021	Communities were informed that a trust will be established to ensure transparency in the project's resource management, as funds cannot be used without the authorization of all parties.
Will the money be distributed to each person in the community?	18-August-2021	In meetings held in the project areas, it was explained that the resources from the sale of VCU's will be invested in collectively agreed activities aimed at improving the overall communities' livelihoods.
What employment opportunities would the program bring?	4-November-2021	The REDD+ team, composed of community members involved in the project, was introduced, along with the environmental managers responsible for monitoring activities in the territories. It was also explained that the project will create additional employment opportunities by advancing community strengthening initiatives

2.3.11 Continued Consultation and Adaptive Management (VCS, 3.18; CCB, G3.4)

Continuous communication between COCOMACIA and Terra Global will be guaranteed in two main ways: through the community leaders that are part of the Board, the COCOMACIA REDD+ Team made up of

community members, in addition to the Conservation Zone Committees that have permanent contact with the communities. These leaders will participate in the conservation action planning process each year. During the conservation action planning review, the results of the monitoring plan and stakeholder feedback will be incorporated to adapt the work plan to achieve further results.

An adaptive management plan has been developed for the project which sets the context of the program, defines the proposed design, identifies the risks (internal, external and natural), details the implementation and monitoring plans, and defines how reviews will be conducted every verification period and how the results, learnings and emerging issues will be identified to come out with intervention strategies .

In addition, within the agreements signed between COCOMACIA and Terra Global, that every two years based on learning and monitored data to adjust the long-term implementation plan and the project implementation budget.

2.3.12 Stakeholder Consultation Channels (CCB, G3.5)

The channels used to make inquiries and ensure community participation, in accordance with COCOMACIA's governance structure, being with the local COCOMACIA REDD+ Team designing the activities to be implemented within the framework of the Program. These are then submitted to the board of directors and its legal representative for review. Once evaluated, they are presented to the communities to gather their feedback and comments.

The channels used to make inquiries and ensure community participation, in accordance with COCOMACIA's governance structure, begin with the local COCOMACIA REDD+ Team designing the activities to be implemented to meet Program Goals. These are then submitted to the Board of Directors and its legal representative for review. Once evaluated, they are presented to the communities to gather feedback and comments.

The channels used for this process are: face-to-face informative meetings, monitoring, planning and document review, in addition to the General Assembly, where the purpose is to report on the progress of the project and the stages to follow. Virtual training meetings and project monitoring have also been held every week since the beginning of implementation. WhatsApp channels are used to disseminate information to the communities through their leaders, patrollers and zonal conservation committees.

2.3.13 Stakeholder Participation in Decision-Making and Implementation (VCS, 3.18, 3.19; CCB, G3.6)

The Project information and outreach meetings with communities and local stakeholders were announced via WhatsApp, the local radio station, phone calls and text messages. COCOMACIA Board members and the COCOMACIA REDD+ Project team are responsible for informing community leaders of each of the 9 zones as well as community representatives to attend the information and outreach meetings. The information meetings were structured as face-to-face introductory sessions and participatory conservation action planning workshops for community representatives. COCOMACIA, as described in Sections 2.3.5 and 2.3.10, led to effective participation in decision-making and implementation of the Project strategies. Communities were allowed to participate in the planning of activities, respecting and following their governance structure, the official channels of communication in each community, which include the local community councils.

Meetings and workshops were also organized in the evenings and weekends to ensure the participation of as many people as possible. Initial outreach sessions were organized as open community meetings where each community initially called for 20-30 people to attend and left open the option of receiving more participants. All participatory conservation action planning sessions were held in person and transportation; food and lodging were provided for all community participants. Participation of women and youth was encouraged, respecting the communities' decision on who would represent them.

As part of the on-going governance and fiscal management of the Program a patrimonio autónomo (Trust) was established and is overseen by an independent trustee. As terms of the patrimonio autónomo a Technical Committee oversee at a high level program activities and finances through reports is receives from the Trustee and from Terra Global. The Technical Committee has five members, with 2 members of COCOMACIA and 2 from Terra, and one independent member, who review expenditures made each 6 months and make final approvals of the LTIP and budget once developed by the COCOMACIA REDD+ Team with input from communities, and support from Terra Global. At this high level community leaders to engage and actively participate in the decision process and management of the financial mechanisms that promotes transparency in the management of the Program's resources.

2.3.14 Anti-Discrimination Assurance (VCS 3.19; CCB, G3.7)

The COCOMACIA Community Council adheres to national labor and anti-discrimination laws, as well as to the Project's Operations Manual. Any instance of discrimination or harassment, whether sexual or work-related, should be reported and addressed through the designated grievance and complaint mechanism, which has been specifically set up for this purpose.

The Program activities provide opportunities for all genders to participate and a gender action plan with defined indicators has been developed for the Program. Thus far, we see participation in Program activities, including those typically supported by men like biomass sampling, by women in the communities.

2.3.15 Feedback and Grievance Redress Procedure (VCS, 3.18.4; CCB, G3.8)

<p>Development process</p>	<p>Describe the process used to develop the grievance redress procedure including processes for receiving, hearing, responding, and attempting to resolve grievances within a reasonable time period, taking into account culturally appropriate conflict resolution methods.</p> <p>COCOMACIA, as the ethnic authority that makes up the Project Activity Instance, previously developed a Community Grievance Redress Mechanism based on the submission of an official form and mediation by COCOMACIA's traditional institutions. Since this procedure is primarily designed to resolve conflicts between community members and other territorial stakeholders, the COCOMACIA REDD+ Team considered it important to complement it with a simpler and more accessible grievance process that was targeted to support grievances within COCOMACIA. They established a Community Concerns, Suggestions, and Complaints Mailbox. This new channel would allow community members, including those with reading and writing difficulties, to share suggestions, opinions, concerns, and other comments. This mechanism was designed through a small workshop conducted by the REDD+ Project Team, composed of community members.</p>
<p>Grievance redress procedure</p>	<p>Describe the grievance redress procedures developed with stakeholders. Demonstrate that the procedure includes:</p> <p>A process for receiving, hearing, responding to and attempting to resolve grievances within a reasonable time period, which takes into account traditional conflict resolution methods.</p> <p>Three stages, each with reasonable time limits: attempt at resolution, mediation and arbitration or courts.</p> <p>Any community, group, or individual who believes they have been or may be negatively affected by the Project, or by any contractor or subcontractor's failure to comply with project safeguards during design or implementation, may file a formal complaint or grievance through the Project's Grievance and Complaints Redressal Procedure. Those filing a complaint on behalf of a group or community must clearly demonstrate their authority to do so.</p> <p>The complaint can be submitted to the Local Community Council Board through the designated grievance and resolution mechanism (which involves a formal request) or, alternatively, to the REDD+ team through the Community Petitions, Complaints, Grievances, and Suggestions mailbox.</p> <ul style="list-style-type: none"> • Community Grievance and Complaints Redress Mechanism: This mechanism is based on the community governance structure and follows procedures focused on fact-finding, compliance assessment, and the granting of remedies or compensation. It has the authority to require corrective measures, such as fair compensation, suspension of funding until rights violations are addressed, mediation of project-level disputes, and formal adjudication processes. It also offers mediation or arbitration services, the option to appeal, and the ability to reverse initial outcomes. • Community Concerns, Suggestions, and Complaints Box: Provides an easily accessible platform for community engagement. Through this channel, anyone can share their opinions, concerns, and comments about the REDD+ Project, either anonymously or through an identified contact. An informal complaint filed through the Community Comments and Suggestions Box or the WhatsApp line should simply state the complainant's concerns in their own words. The REDD+ team will escalate the complaint and forward it to the appropriate recipient.

The review process begins when the REDD+ team receives the complaint (via email or postal mail) from the Complaints and Resolution Mechanism, the Community Feedback and Suggestion Box, or the WhatsApp line. The complaint is recorded in the Project's Complaint Resolution Mechanism Tracker and categorized according to the type of response it requires. If the issue can be resolved through adjustments to Project implementation, the REDD+ team will take the necessary measures, follow up on the resolution, and inform the complainant. However, if the complaint or grievance requires mediation to reach an agreement or remedy, the REDD+ team will appoint a neutral third party from among the following options to mediate between the parties and achieve a satisfactory solution or redress:

- Local Community Council Boards
- COCOMACIA Board of Directors
- COCOMACIA General Assembly

Once an agreement is reached, the resolution is recorded in the suggestion and grievance tracking system and all disputing parties are notified. Lessons learned are applied internally as appropriate (for example, by updating policies or processes). If an agreement is not reached, the parties may choose to take the case to an arbitration body or the local justice system.

2.3.16 Accessibility of the Feedback and Grievance Redress Procedure (VCS, 3.19; CCB, G3.8)

By offering various platforms the channel fosters inclusion and encourages active participation, strengthening trust and collaboration between the community and project leaders. The main ways to access the Feedback and Grievance Redress Procedure are as follows:

- *Dedicated WhatsApp Number, managed by a member of the REDD+ team.*
- *COCOMACIA'S office locked feedback inbox that allows community members to drop off written feedback, either identified or anonymous.*
- *Mobile Feedback Inbox: Bring the physical inbox to all Project meeting spaces, including workshops and trainings community members. This ensures everyone has access, even those with limited digital access.*
- *Local Community Councils through the completion of the Grievance and Redress Form*

Furthermore, the Feedback and Grievance Redress Procedure will be widely publicized during workshops or community gatherings. Participants will be encouraged to submit their feedback, as well as complaints through any of the established channels

2.3.17 Worker Training (VCS, 3.19; CCB, G3.9)

In COCOMACIA, the REDD+ Team, made up of community leaders and other local people, is supervised and guided by the COCOMACIA Board of Directors and by Terra through the Managers. The latter are responsible for both their orientation and the identification of training needs. Ongoing staff training is an important part of REDD+ Project Activities. In addition, the REDD+ team participates in the identification of training needs in their weekly meetings.

Key training areas for both REDD+ Team staff and communities includes environmental patrolling using the SMART app, conducting community patrols and documenting illegal mining, illegal logging of the community forests, and strengthening of local sustainable livelihoods.

Additionally, communities will receive training to manage the landscape sustainably. The training and outreach process for the community has already been initiated through the transition and conservation action planning process.

The following number of training courses are projected over a 40-year period:

REDD+ Team: The team consists of 11 members at all times, with a 20% turnover every 3 years, coinciding with each Board rotation. Over 40 years, approximately 40 individuals will have received training.

Environmental Patrollers: Each of the 124 communities has 3 designated patrollers, with an expected annual replacement rate of 30%. Over a 40-year period, this would result in approximately 4,836 patrollers being trained.

Zonal Conservation Committees: There are 9 Zonal Conservation Committees, each comprising 3 members. With a 10% turnover rate, an estimated 135 individuals will have received training as part of these committees over the course of 40 years.

Other training: In the first year, 20 people will receive training in biodiversity baselines, 80 in the application of social surveys, and 176 in biomass measurements. With 15% of the trainees being replaced annually, a total of 1,891 people will be trained for these tasks by the end of 40 years.

Agricultural training sessions: Three-hundred people have been trained and given agricultural inputs in order to increase their production in year 1, It is expected that this number will grow by 10% for the first 10 years, then stabilizing for 10 years, and then decreasing by 1% for the remaining period. At the end of the period, approximately 24,736 people will have strengthened livelihoods. The program estimates that 30% of participants will be women; unlike other rural communities, afro-Colombian women are active participants in productive, social and political life within collective territories of Colombia's Pacific coast

Total community members expected to have improved skills and/or knowledge resulting from training:
31,781

Board training sessions: The 11 board members will receive REDD+ Program training every three years. Over the course of 40 years, approximately 143 individuals will have been trained.

2.3.18 Community Employment Opportunities (VCS, 3.19.13; CCB, G3.10)

All jobs required for the COCOMACIA REDD+ Program are hired based on established job descriptions, desired skills and experience, and qualifications which are then advertised on the local radio station, posted on the billboard at the COCOMACIA Administrative Headquarters, and on largely through social networks: LinkedIn and Facebook. The preference is to hire local communities' members that are part of COCOMACIA, if applicants from these areas have the desired skills, experience and profile. However, in specific cases such as LIDAR/biomass, where the local members don't have the skills or equipment to complete the task, external national and international contractors will be hired, but they will be required to train identified local community members as much as possible to build local capacity overtime.

At any given time, approximately 11 people—mostly from the COCOMACIA region—are expected to be employed full-time in project activities. With an anticipated turnover of 20% every three years (following each Board rotation and accounting for other causes), this is expected to result in a total of about 40 individuals trained and employed full-time over the 40-year crediting period. Of these, around 30% (reflecting the current level of women's participation), or approximately 12, are expected to be women.

2.3.19 Occupational Safety Assessment (VCS, 3.19; CCB, G3.12)

Both COCOMACIA REDD+ Team staff and communities participate in daily field activities where they are exposed to various risks. Some of these risks include boat accidents due to travel to Project sites, risks associated with field activities such as forest patrols, biomass measurements and forest management. Field personnel may also be at risk of exposure to dangerous wildlife, or difficult forest conditions, etc.

To mitigate these risks, the project has implemented and disseminated a COCOMACIA REDD+ Operations Manual which outlines best practices for staff, contractors, and community leaders involved in project activities. Furthermore, the Project includes safety training, especially around wildlife and encountering poachers. Generally, the Project will encourage patrolling in the forest to be carried out with at least two people; and that anyone who goes to the forest carries a machete and a telephone for communication /emergency purposes. Additionally, community members participating in forest patrol, will receive first aid and safety training.

2.4 Management Capacity

2.4.1 Project Governance Structures (CCB, G4.1)

2.4.1.1 COCOMACIA Governance Structure

According to Colombian Law, “Consejos Comunitarios” own the land collectively and have the right to self-administration through the “Consejo” ethnic entity, including rights of use of the natural resources present in their territories under the legal dispositions of the Colombian law.

COCOMACIA’s governance structure is made up of the general assembly which consists of representatives from each community and is responsible of designing and implementing the internal regulations. The board is made up of members selected by the general assembly, and the legal representative is elected to represent the community members. All decisions and elections made by the council affects the social, economic, political, cultural aspects of the people of COCOMACIA (Guerrero Pino, 2017). Figure 2 shows the different levels of the structure and their main roles.

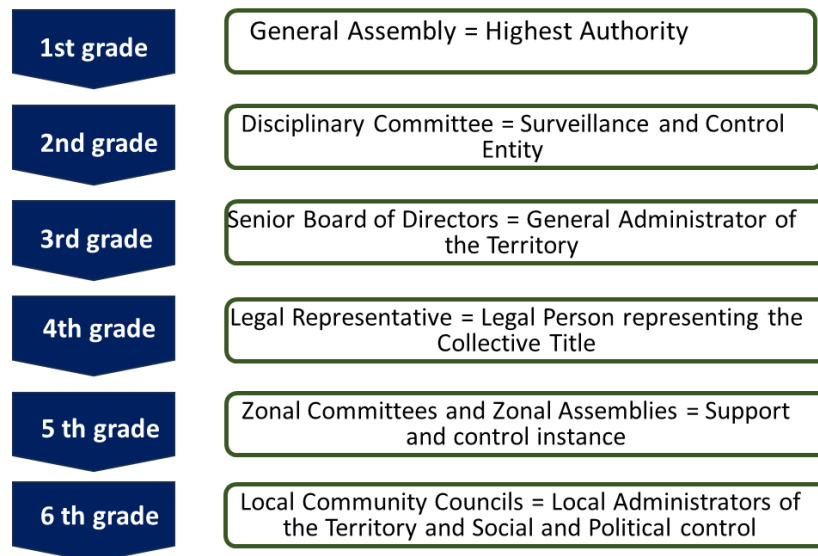


Figure 2. COCOMACIA Governance Structure

In the context of the REDD+ Program, COCOMACIA’s Board of Directors plays a central role in reviewing and approving annual workplans and budgets presented jointly by the local REDD+ Team and Terra Global. The Project’s local REDD+ Team is composed primarily of members from the participating communities and works in close coordination with Terra Global’s management and technical staff to plan and implement activities on the ground.

2.4.1.2 Terra Global

Terra Global’s role in project management and governance are defined in agreement signed between the parties.

2.4.1.2.1 Project Management

In summary, Terra Global has the following roles in management:

2.4.1.2.2 Governance

A summary of Terra Global's role in governance of the Project is as follows:

1. *Acts as the fiscal manager for all the climate finance and carbon revenue*
2. *Has two seats on the Technical Committee of the Patrimonio Autonomo*
3. *Is the expense manager under the Patrimonio Autonomo handling all payments made from the PA to COCOMACIA and other project payees*
4. *Overseas Administers the Benefits Allocation*

2.4.1.3 Patrimonio Autónomo

A trust contract has been established for the irrevocable trust of administration of payments between Fiduciaria Bancolombia S.A. Fiduciary Society, Terra Global Investment Management, LIC and The Consejo Comunitario Mayor De La Asociacion Campesina Integral Del Atrato – COCOMACIA. Where COCOMACIA is the beneficiary, Bancolombia is the trustee and Terra Global is the Expense Manager and has two members on the Technical Committee.

Trust Assets: They will correspond to the rights, privileges and benefits of an economic nature that are generated in favor of the Beneficiaries, derived from the loan proceeds received under the Loan Agreement, revenue through the commercialization cycle of the Project's Carbon Certificates and other Resources secured by the Project will be managed through the Trust. The Expense Manager undertakes to channel through the Trust all the Trust Assets so that they may be administered by the Trust to make the Payments in favor of the Preferred Payment Recipient in accordance with the Loan Agreement, make Payments to Terra Global Capital, LLC and COCOMACIA in accordance with the REDD+ Agreement and to the Beneficiaries in accordance with the instructions provided by the Expense Manager

Technical Committee: it will be the governance body of the Trust who is obligated to oversee the TRUST'S operation in accordance with the object and purpose of the Trust, according to the tenth clause of this trust contract and the Related Agreements.

2.4.2 Required Technical Skills (VCS, 3.19; CCB, G4.2)

Key technical skills are required to implement the Project successfully including experience in developing and implementing carbon development projects that have a positive impact on the biodiversity and social elements of critical forest ecosystems.

COCOMACIA, in the exercise of its governance and territorial authority, has been advancing the implementation of the Environmental Land Management Plan - POTA, 2016-2027 with the purpose of articulating actions with the competent institutions for territorial and environmental development. In this sense, COCOMACIA has prioritized initiatives for sustainable development and conservation of its ecosystems in its environmental management plan. In support of these efforts, and through collaboration between Terra Global and COCOMACIA, a dedicated REDD+ Team has been established. The following positions are part of the REDD+ Team: Program Director, Environmental Legal Coordinator, Socio-Organizational Coordinator, Interinstitutional Relations Liaison, Agronomist Technician, Agroforestry

Technician, Monitoring Officer, Communication and Outreach Officer, Accounting Assistant. his Project team is responsible for making key decisions related to the implementation of REDD+ activities. Its deep understanding of the territory’s dynamics, local land uses, customs, and community life—along with the ability to communicate clearly and effectively in appropriate local language—enables better risk management, increases the likelihood of success, and minimizes uncertainty. Their responsibilities include 1) executing the Project Activities in the expected time, 2) adhering to the Project planning, 3) Complying with the processes and procedures, 4) Having full knowledge of the tools that will be used in the development of the Project and continuously train to stay informed, 5) Execute corrective actions when any of the activities is not carried out properly.

Terra Global Capital contributes key technical skills in greenhouse gas quantification, carbon measurement and monitoring that support projects implementation and evaluation. Terra Global Capital and COCOMACIA work together to achieve and secure climate finance for conservation.

Table 14. Technical Skills Delivered by Project Implementers and Partners

Core Program Component	COCOMACIA	Terra Global
Authorization, design oversight and financing, Program authorization, design oversight and financing	√√	
Desing and planning Program design and planning	√√	√
Overall Program implementation management and partner coordination	√√	√
Community forest management	√√	
Community engagement and support for implementation of community Program	√√	
Field data collection and on-going monitoring	√√	√
VCS/CCB Program development and GHG quantification	√	√√
Design and oversight of Program’s institutional arrangements (fiscal, legal and contractual)	√	√√
Coordination with National REDD+ efforts and other government agencies	√√	√
On-going management and REDD+ activities	√√	√

√√ = Technical Lead

√ = Technical Support

2.4.3 Management Team Experience (VCS, 3.19; CCB, G4.2)

2.4.3.1 COCOMACIA

COCOMACIA has had the opportunity to develop, implement and execute projects in its collective territory that have been aimed at strengthening its governance structure, the use and usufruct of natural resources, have strengthened the dynamics around the victims of the armed conflict. Among other topics, they have given priority to the role of women and youth, in their different scenarios. These projects have been financed by the national government, by different national and international NGOs and various educational institutions (USAID, ONF ANDINA, ART- *Agencia de Restauración de tierras*, DAPR – *Departamento Administrativo de la Presidencia de la Republica*, MISEREOR, ICBF. *Instituto Colombiano de Bienestar Familiar*, PMA- *Programa Mundial de Alimentos*, *Secretariado Nacional de Pastoral Social*, DIAKONIA, FAO, UNODC, TICCA, OIM, PNUD, WWF, *Fondo Acción*, CORDAID, MERCYCORPS, ACDIVOCA). All of the above through different projects and interventions have built COCOMACIA's administrative and organizational capacity and strengthen their management capacities.

2.4.3.1.1 Willinton Murillo Quinto

A Teleinformatics Engineer, with over sixteen years of experience, Mr. Murillo currently serves as the Director of the COCOMACIA REDD+ Program. He has specialized in the design and implementation of participatory and community-based environmental planning processes within collective territories of ethnic communities. His work has focused on integrating environmental policies, regulations, and legal frameworks to ensure the effective participation of institutions, local and regional governments, civil society organizations, and ethnic-territorial authorities. This experience has allowed him to build strong and lasting relationships within Afro-descendant and Indigenous governance structures across Chocó and Colombia's Pacific region.

Mr. Murillo has extensive experience working in transdisciplinary teams and incorporating ethnic, gender, and generational perspectives into territorial and environmental planning. His approach combines legal and regulatory instruments with strategies for climate change adaptation and mitigation. He has collaborated with local organizations, national and international NGOs, universities, and research institutes. He is proficient in office software, social media communication, and the use of GIS and remote sensing tools to support decision-making. In addition, he has experience applying security measures in conflict-affected areas and possesses excellent communication skills for engaging with diverse audiences and institutional settings.

2.4.3.1.2 Darío José Córdoba Moreno

Mr Moreno is an agricultural technician and professional in agronomy with over 19 years of experience in community-based rural development, sustainable production, and institutional strengthening processes in the Chocó region. He currently serves as Agricultural specialist for the COCOMACIA REDD+ Program. Mr Moreno has worked extensively with local governments, community councils, and national and international cooperation agencies to promote sustainable agricultural practices, environmental restoration, and local governance.

He has served in key technical and coordination roles with institutions such as COCOMACIA, the Municipality of Atrato (UMATA), the Fundación para el Desarrollo Integral del Pacífico (FUNDEPA), the Ministry of Agriculture of Colombia, and Fondo Acción, among others. His work includes leading productive restoration initiatives, strengthening producer associations, and supporting agroecological value chains in partnership with organizations such as WWF, FPD, and COLCIENCIAS. Darío is recognized for his ability to integrate technical expertise with participatory approaches, empowering local communities and advancing sustainable land-use management in Afro-Colombian collective territories.

2.4.3.1.3 Roque Rentería Cuesta

Mr. Rentería is a Colombian lawyer with over 22 years of professional experience in the public and private sectors, particularly in legal advisory roles related to environmental management, territorial governance, and community rights. He holds a Law degree, a Diploma in Labor Law, and a Specialization in Environmental Law, providing him with a strong academic foundation that bridges legal, environmental, and social dimensions. He currently serves as Legal Advisor for COCOMACIA and for the COCOMACIA Community REDD+ Program, where he provides guidance on matters related to environmental regulation, land tenure, and collective rights. His experience includes serving as Mayor of the Municipality of Medio Atrato, Legal Advisor to the Government of Chocó, and as Legal and Environmental Advisor to COCOMACIA, contributing to institutional strengthening and the defense of Afro-Colombian collective territories. Throughout his career, he has been recognized for his commitment to the protection of ethnic and environmental rights, his expertise in navigating complex legal frameworks, and his continued support for community-based governance and sustainable territorial management in Colombia's Pacific region.

2.4.3.2 Terra Global Capital

Terra Global is the global leader in forest and land-use carbon advisory and finance. Terra was founded in 2006 to provide governments, NGOs and private companies with support for market and payment-for performance-based approaches that benefit rural communities. As proven innovators, Terra provides both technical advisory in the measurement and commercialization of emissions reductions and carbon finance through our dedicated Terra Bella Nature Based Solution Carbon Pool and separately managed investment vehicles. Terra has established itself as a valued partner to a global client base by supporting the sustainable management of natural resources and through the development of rural livelihoods.

2.4.3.2.1 Leslie L. Durschinger, Founder, CEO

Leveraging 20 years of experience and a proven track record in the financial services industry, Ms. Durschinger founded Terra Global Capital in 2006 to attract private sector capital to nature-based solutions. Ms. Durschinger is recognized as a pioneer and innovator in alignment of development values and financially viable approaches to sustainable landscape management. Terra is a global leader in nature-based solutions program development, greenhouse gas quantification and community-based business model development, by providing technical expertise and investment capital to a global client base of governments, NGOs, and private companies in a collaborative and participatory manner. Under Durschinger's leadership, Terra has financed numerous commercially viable sustainable landscape management programs, launched an investment fund that provides climate finance to the nature-based solutions sector in the global south. Prior to Terra, Ms. Durschinger held senior management positions in

the areas of derivatives trading, investment management, algorithmic trading, risk management, and securities lending. She is a member of the IETA Council and the Verra VCS Program Advisory Group. Ms. Durschinger and her family make small production olive oil on their farm in Mendocino County. Among her previous employers are JP Morgan, Merrill Lynch, Barclays Global Investors, and Charles Schwab.

2.4.3.2.2 Erica Meta Smith, M.F., RPF, Managing Director

Ms. Smith, M.F., RPF. Forest Carbon Field Development Specialist, Joined Terra Global Capital in 2009. Ms. Smith provides technical forestry knowledge, on-ground carbon quantification expertise, and specializes in forest mensuration programs. She has firsthand knowledge of a forestry-based income the experience of depending on natural resources as a livelihood. Before working with Terra Global Capital Ms. Smith worked in forest policy and on forestry technical operations. She received her undergraduate degree in forestry and Master of Forestry from University of California-Berkeley in 2005 and 2007. Her master's work reviewed California Climate Action Registry's Forestry Protocols and implications of carbon markets in California. Ms. Smith is a Certified Ecologist through the Ecological Society of America and a Registered Professional Forester in the State of California. Ms. Smith has worked extensively in the REDD+ sector training communities and working with in-country experts for excellence in MRV across Africa and Asia.

2.4.3.2.3 Juan David Dueñas, Principal, Investment Program Manager

Mr. Dueñas brings 14 years of expertise in community capacity building, market strengthening, and livelihood diversification to Terra Bella, specializing in community development using an ethnic and Nature-Based Solutions approach. At Terra Global, Juan David plays a strategic role in the COCOMACIA REDD+ Project, helping to bridge financial modeling, project design, community engagement, activity implementation, fiscal management and technical documentation, while ensuring that the project aligns with Verra's VCS and CCB standards as well as Colombian regulatory frameworks. Juan David also supports the development process of numerous community-based investments in Colombia and Latin America. Juan David holds an undergraduate degree in Government and International Relations from the Universidad Externado de Colombia and a master's degree in environmental management from the Universidad de los Andes in Colombia.

2.4.3.2.4 David Montoya González, Director, RS/GIS, Team Lead

Mr. Montoya has a wide experience in remote sensing and GIS. He holds a bachelor's degree in Forest Engineer from the National University of Colombia (UNAL) and a master's degree in remote sensing from Federal University of Rio Grande do Sul (UFRGS) – Brazil. Mr. Montoya has worked with multiple Colombian government entities, such as the national department of statistics (DANE), supporting the 3rd National Agricultural Census, the National University of Colombia in research projects in the Andean Region, and with indigenous communities analyzing the land cover changes and natural resources sustainability. In addition, Mr. Montoya has also professional experience closely related with Nature Based Solutions by managing REDD+ projects and developing GHG and LULC assessments in Colombia, Belize, Malawi, Myanmar, among other countries, under the international standard VSC and CCB.

2.4.3.2.5 Carolina Oleas, Managing Director, Agronomy, Natural Resource Management, Team Lead

Mrs. Oleas provides technical agricultural knowledge, community development expertise, and specializes in participatory project management. She has firsthand field experience working with farmers in different countries of Latin America (Guatemala, Ecuador, Costa Rica, Bolivia, Haiti, El Salvador, others) building capacity with rural communities in sustainable development and climate-smart agricultural practices. Before joining Terra, Mrs. Oleas worked on designing, managing, monitoring, and evaluating projects and programs to promote sustainable production and the application of agricultural adaptation and mitigation practices at the field level with farmers' organizations. She received her undergraduate degree in agricultural engineering from EARTH University in Costa Rica, and later received a Master's in International Agricultural Development from Texas A&M University.

2.4.3.2.6 Holver Arango, Director, GHG Quantification, Team Lead and Technical Program Manager

Mr. Arango has more than 10 years' experience as a forestry engineer and is skilled in project formulation and management. At Terra Global, Holver is focused on GHG quantification for conservation and sustainable forest management projects. He has experience working with rural communities and environmental and agrarian institutions. Holver also has experience in multiple Colombian government entities (research institutes, environmental institutes, municipalities), international cooperation projects, and private companies in Colombia. He is knowledgeable in forest community management, land use planning, environmental and agrarian law, and official institutions. His work has focused on projects that aim to improve rural people's life, especially those that focus on human rights and sustainability as the anchor of forest conservation and restoration initiatives. Holver has a Bachelor of Science in Forest Engineering from the National University of Colombia.

2.4.4 Project Management Partnerships and Team Development (VCS, 3.19; CCB, G4.2)

The Program has all the partnerships needed to implement activities. When new activities require new technical expertise or partners, the Program will source them.

2.4.5 Financial Health of Implementing Organization(s) (CCB, G4.3)

The implementing organization, COCOMACIA does not itself have the financial resources to support the Program. But in 2021, they secured a private investment, under an investment agreement signed in 2021 for to implement the Program for the period 2021-2024 which was expected to cover costs until first issuance where the carbon revenue could cover the on-going funding needs. Given the delay in verification, an additional investment of USD \$495,000 agreed in 2024 was made to reach expected verification by April 2026. Additional funds will be provided in the month of verification to cover the issuance costs. The Program is expected to be commercially viable through the sale of carbon credits.

The income from the sale of emission reductions is projected to be sufficient to cover the costs of implementing the REDD+ Program in the long term.

2.4.6 Avoidance of Corruption and Other Unethical Behavior (VCS, 3.19; CCB, G4.3)

2.4.6.1 COCOMACIA

The *Code of Ethics* of COCOMACIA establishes the ethical foundations and behavioral guidelines for its 124 Local Community Councils, the General Board, the Disciplinary Committee, and the technical team implementing the COCOMACIA Community REDD+ Program. It promotes integrity, responsibility, respect, teamwork, and transparency in all community and institutional relations. The Code emphasizes values such as good faith, equality, impartiality, efficiency, and accountability, ensuring that all actions within the organization and project are guided by honesty, diligence, and respect for the community's collective principles.

The *Policy on Conflict of Interest and Anti-Corruption* provides clear guidance to all members of COCOMACIA and the technical team of the REDD+ Program to prevent, identify, and address situations that could compromise organizational integrity. It strictly prohibits bribery, extortion, and any form of corruption, mandating transparency in financial records and the obligation to report any irregularities. The policy defines real, potential, and apparent conflicts of interest, requiring all staff to act with independence and impartiality and to disclose any personal or professional interest that might interfere with their duties. Oversight of the policy lies with the Disciplinary Committee, the General Board, and the Project Director

2.4.6.2 Terra Global

Terra Global Capital, LLC, and its subsidiaries are committed to upholding the highest legal and ethical standards in their business operations. To ensure compliance with the Foreign Corrupt Practices Act (FCPA), the company has implemented a comprehensive FCPA Policy. As a Green Climate Fund accredited entity, Terra Global's policies including anti-corruption, anti-trafficking, and ethics, have undergone comprehensive reviews and met the highest standards.

This anti-corruption policy applies to all personnel, including directors, officers, employees, contractors, and third-party representatives. The FCPA is the key legislation governing interactions between U.S. businesses and foreign officials. It prohibits bribery of foreign officials and mandates accurate financial record-keeping and internal accounting controls. The company's policy emphasizes compliance with the FCPA, and any failure to adhere to it may result in severe consequences, including civil and criminal liabilities. The policy outlines anti-bribery provisions, defining what constitutes illegal practices, including payments to third parties that are intended for corrupt purposes. The definition of "foreign official" is broad, encompassing employees, agents, or instrumentalities of foreign governments, political parties, and international organizations. Specific guidelines are provided regarding meals, entertainment, and gifts, emphasizing that any such offerings to foreign officials must be of nominal value, lawful, and in line with local customs. Advance authorization from the Founder and Managing Director is required for such expenditures, with exceptions based on monetary thresholds. The full policy can be consulted in Terra Global Anticorruption Policy Appendix 4: Commercially Sensitive Information.

Terra Global's anti-corruption policy and specifically the requirements under FCPA extend to COCOMACIA through the REDD+ Agreement and the follow-on Project Investment Agreement.

2.4.7 Commercially Sensitive Information (VCS, 3.5.2 – 3.5.4; CCB Rules, 3.5.13 – 3.5.14)

The commercially sensitive information, which has been prepared and provided to the VVB, is listed in Appendix 4: Commercially Sensitive Information.

The commercial sensitive items included in Annex 4 are:

- *The Patrimonio Autonomo trust contract*
- *REDD+ Agreement*
- *Investment Agreement – Payment in Kind Loan Agreement (first investor)*
- *Project Investment Agreement (from TB-NBS Pool, follow-on investment)*
- *Terra Global Anti-corruption, Anti-trafficking, and Ethics Policies.*

2.5 Legal Status and Property Rights

2.5.1 National and Local Laws (VCS, 3.1, 3.6, 3.7, 3.14, 3.18, 3.19; CCB, G5.6)

The Project proponents are committed to complying with all applicable laws, statutes, property rights and other regulatory frameworks. Listed below are laws and sections of laws that are applicable to the Project Activity Instance and are recognized by the national and regional government that pertain to the land

management, territory rights and security of the members of the Black communities as well as those that of the Department of Chocó and Antioquia Colombia.

2.5.1.1 Afro-Colombia Legal and Tenure Rights

The Colombia laws covering Afro-Colombians, define COCOMACIA's legal rights to land, their prescribed governance structure and the authorization to operate the Project Activities. Below is a summary of those laws.

2.5.1.1.1 Summary of Laws Impacting Afro-Colombians

Law 21 of 1992. Colombia constitutionally recognized the Black communities and was recognized as a multi-ethnic and pluricultural country.

The following summarizes the rights under the Colombian constitution (Ng'weno, 2000):

Law 21 of 1991 "Through which Convention No. 169 on indigenous and tribal peoples in independent countries, adopted by the 76th, is approved. meeting of the General Conference of the O.I.T., Geneva 1989".

Decree Law 4635 of 2011 "By which measures of assistance, care, comprehensive reparation and land restitution are issued to victims belonging to Black, Afro-Colombian, Raizales and Palenqueras Communities".

Decree 1320 of 1998 "By which prior consultation with indigenous and Black communities is regulated for the exploitation of natural resources within their territory".

Decree 1745 of 1995 "By which Chapter III of Law 70 of 1993 is regulated, the procedure for the recognition of the right to collective property of the" Lands of the Black Communities "is adopted and other provisions are issued".

Decree 3770 of 2008 "by which the High-Level Consultative Commission of Black, Afro-Colombian, Raizales and Palenqueras Communities is regulated; the requirements for the Registration of Community Councils and Organizations of these communities are established and other provisions are issued".

Articles 63 and 330 of the Colombian Constitution recognize the "*Consejos Comunitarios*," the "Recognition of the Right of Black Colombians to Collectively Own and Occupy their Ancestral Lands" and addressed land ownership, specifically communal lands of ethnic groups.

2.5.1.1.2 Black Communities Tenure, Natural Resource Use and Governance

Law 2 of 1959 - "Whereby norms are dictated regarding the nation's forest economy and the conservation of renewable natural resources" (Por el cual se dictan normas sobre economía forestal de la Nación y conservación de recursos naturales renovables) establishes a classification and management regime for the lands that fall under its purview including public lands, *Resguardos* and Black communities' lands; this is separate from the National Parks system and does not represent property rights of the state (Gómez, 2019).

Law 99 of 1993 - "General Environmental Law of Colombia" (Ley General Ambiental), Article 76 states that the exploitation of natural resources should be done without detriment to the cultural, social, and

economic characteristics of Indigenous or Afro-Colombian communities referred to Law 70 of 1993 and Article 330 of the National Constitution and the decisions of the matter shall be made after consultation with representatives of such communities.

Law 70 1993, “Law of Black Communities” (Ley de Comunidades Negras) of the In Recognition of the Right of Black Colombians to Collectively Own and Occupy their Ancestral Lands (1993), Article 5, introduces the *Consejos Comunitarios de las Comunidades Negras*, gives the right to lands to the Afro-Colombian communities, the internal management of property lands collective agreement, ensures conservation and protection of the rights of collective property, as well as the use and conservation of natural resources. Article 7, states that in each community, the part of the lands of the Black communities destined collective use is inalienable, unpredictable, and unattached; only those areas that are assigned to a family group may be alienated due to the exercise of the preferential right of occupation or acquisition may only fall on other members of the community and on its defect in another member of the ethnic group, with the purpose of preserving the integrity of the lands of the Black communities and the cultural identity. Article 15 states that occupations that are carried out by people not belonging to the Black ethnic group on the lands adjudicated in collective property to the Black communities that thus law deals with, will not entitle the interested party to obtain the title or recognition of improvements and for all legal purposes will be considered as possessors of bad faith.

Decree 1745 of 1994 acknowledges the rights to the Black communities in Colombia, and their rights to titled lands, and sets procedures and guidance for setting Community Councils.

Regulatory Decree 1745 of 1995. Article 3 acquires for there to be high authority of internal administration within the lands of Black communities; Afro-Colombians were exempt from the property tax payment but there has been no rule that has compensated for municipalities.

In order to receive the titled lands, the communities in proposed areas need to form ‘*Consejos Comunitarios*’, or Community Councils, in accordance with the regulations of the National Government. The Community Council is made up of the general assembly, the community council board, and the participation of one legal representative of the communities. All members of the council must be a part of the Afro-Colombian community and a native to the specified land areas. Members are selected through a direct, democratic election every three years, having their terms end on the 31st of December in the third year. Collectively, the council has an annual meeting. The general assembly consists of representatives from each village and is responsible for drafting and approving internal regulation. The board is made up of members selected by the general assembly, and the legal representatives are there to represent the community members. (Guerrero Pino, 2017).

Compliance with these laws may be evidenced by the following:

- *COCOMACIA’s election and assembly records, which document the democratic renewal of its leadership in accordance with Law 70 of 1993 and Decree 1745 of 1995.*
- *The Collective Land Title Resolution issued by the Instituto Colombiano de la Reforma Agraria (INCORA) through Resolution No. 04566 of December 29, 1997, recognizing COCOMACIA’s collective ownership.*

- *The registration of its Community Council and Legal Representative before the Ministry of the Interior and the High-Level Consultative Commission of Black, Afro-Colombian, Raizal and Palenquero Communities.*

2.5.1.2 Colombian Carbon Laws

2.5.1.2.1 Law 1819 of December 29, 2016

PART IX. Article 221 and Article 222 Carbon Tax imposes a national tax that is levied on the carbon content of all fossil fuels, including all petroleum derivatives and all types of fossil gas that are used for energy purposes, as long as they are used for combustion.

2.5.1.2.2 Decree 926 of June 1, 2017, Title 5

This decree defines the ability for a taxed entity to be “carbon neutral” as neutralizing or mitigating the GHG emissions associated with the use of fuel under the national carbon fuel tax (Law 1819 of December 29, 2016). Eligible mitigation activities include programs, projects, actions, or activities carried out at a national, regional or local level aimed at reducing, avoiding, removing or capturing GHGs. This is achieved through the voluntary retirement of qualifying verified emission reductions/removals (VERs) in the name of the taxable entity. Parties that are most interested in offsetting the carbon tax are fuel wholesalers, airlines and cargo and passenger transport companies. The GHG standards accepted for mitigation under the law are broadly defined and require that their GHG Validation and Verification Bodies (OVV) must meet one of the following criteria: be accredited by the National Accreditation Agency of Colombia (ONAC), be a signatory to the International Accreditation Forum (IAF), and/or the program must be accredited under the requirements of ISO 14065 or the UNFCCC.

2.5.1.2.3 Resolution 1447, 2018

Resolution 1447 of May 2018 covers the process for registrations and approvals under the Minister of the Environment and Sustainable Development for people and entities seeking results-based payments or similar compensation.

2.5.1.2.3.1 Articles 1 and 2 of 1447

ARTICLE 1. OBJECT. The purpose of this resolution is to regulate the Monitoring, Reporting and Verification System of mitigation actions at the national level, in relation to the Accounting System for the Reduction and Removal of Greenhouse Gas Emissions and the National Registry for the Reduction of Greenhouse Gas Emissions (GHG), which includes the National Registry of Action Programs and Projects for the Reduction of Emissions due to Deforestation and Forest Degradation of Colombia (REDD+).ARTICLE 2. AREA OF APPLICATION. This resolution applies to any natural or legal person, public or private, who intends to register their GHG mitigation initiative to qualify for results-based payments or similar compensation as a result of actions that generate emission reductions and removals of Greenhouse Gases, and the one that intends to register its GHG mitigation initiative to demonstrate its mitigation results within the framework of compliance with the national climate change goals established under the UNFCCC, as a consequence of the implementation of said actions.

Resolution 1447 states that any project or program that intends to register a GHG mitigation initiative, and seeks to receive payment for results and emission reduction/removal activities must monitor, report, and verify their actions in accordance with guidelines managed by the IDEAM. It regulates the Monitoring, Reporting and Verification System of mitigation actions at the national level, in relation to the Accounting System for the Reduction and Removal of Greenhouse Gas Emissions and the National Registry for the Reduction of Greenhouse Gases. Greenhouse Gas Emissions (GHG), which includes the National Registry of Programs and Projects of actions for the Reduction of Emissions due to Deforestation and Forest Degradation of Colombia (REDD+).

According to Resolution 1447, all GHG mitigation initiatives are to be registered in RENARE (MADS, 2018). The COCOMACIA Community REDD+ Program was registered in RENARE on September of 2020 under the user GPY201104210124.

2.5.1.2.3.2 Article 20 1447

Resolution 1447 has requirements which define the maximize potential for GHG mitigation in REDD+ projects (Article 20 Law 1447 May 2018). This applies the same for REDD+ Projects and REDD+ Programs (as defined under 1447).

2.5.1.2.4 Article 41 of 1447

A translation of the law states: “The holder of the REDD+ Project must establish its baseline using the most up-to-date FREL that has been formally submitted by Colombia and evaluated by the UNFCCC. This FREL must include the project's geographic area, as well as REDD+ activities, periods, and carbon stocks in which the initiative is to be implemented. Establishing the baseline from the FREL involves the methodological reconstruction of the FREL over the project area, demonstrating consistency with it. This methodological reconstruction involves calculating the expected GHG emissions in the REDD+ Project area, consistently using the variables employed in the FREL. This is done using information provided by the Forest and Carbon Monitoring System (SMBByC), including the definition of forest, global warming potentials, emission factors by forest type, historical deforestation data for the project area, and its method of estimating and projecting emissions over time”.

2.5.1.2.5 Legal Implications for the Maximum VCUs for Nested Project Issuance

As this FREL is initially developed to support REDD+ Projects under Scenario 1, each REDD+ Project seeking to nest under this FREL is required to adhere to the requirements under Law 1447. Projects using the Choco FREL are required by the Resolution 1447 to be register under RENARE and apply a “methodological reconstruction” to determine the maximum mitigation potential (MMP), which limits the number of carbon credits that a project can issue, to ensure transparency, methodological consistency, and preventing double counting with the National Level accounting system. For some vintages, rather than apply methodological reconstruction the nested projects will be subject to a maximum mitigation as determined in accordance with 1447.

Prior to issuance of VCUs each nested project shall demonstrate that it is registered under RENARE and provide in the Monitoring Report, the maximum mitigation potential from the government or demonstration of the application of a methodological reconstruction, which will be checked against the ex-post monitored results before issuance. The total number of VCUs that may be issued during any monitoring period, shall

not exceed the sum of the maximum mitigation potential provided by the government measured the same vintage years as the monitoring period or the result of the methodological reconstruction.

The UNFCCC FREL submitted by the government covering 2018 to 2022, has completed its Technical Review under UNFCCC, projects seeking issuance during this period are required to have a Maximal Mitigation Potential assigned by IDEAM or the Ministry of Environment. Colombia submitted its third National Forest Emission Reference Level (NREF/FREL) to the UNFCCC in January 2024 for the 2023–2027 period; the submission completed UNFCCC technical assessment, and the assessment report was published on August 21, 2025. In line with Resolution 1447 of 2018 projects seeking issuance for vintages within this NREF period will need estimate their maximal mitigation potential with the assessed NREF (i.e., undertake the “reconstrucción metodológica” once the Ministry issues detailed guidance); as of today, that specific guidance has not yet been released.

2.5.1.2.5.1 Application of MMP for First Nested Project

For the first two years of the baseline validity period (2021, 2022), the government has provided the MMP for the COCOMACIA Community REDD+ Program. However, for the other years in the baseline validity period (2023-2026), the regulation is unclear and there was no detailed guidance provided by the Colombian government on how to actually do a “methodological reconstruction” of the FREL to projects. This is particularly unclear given that much of the area inside of the Choco FREL are not included in the Colombia’s UNFCCC FREL as it specifically excludes protected areas, areas under Afrocolombia tenure and Resguardos tenure. Terra Global requested to the national government (Ministry of Environment and Sustainable Development) clarification on this issue and how to perform the methodological reconstruction or whether it is required.

For the first two years of the baseline validity period which correspond with the first two vintages of the COCOMACIA Community REDD+ Program, through meetings, direct emails to government offices and through the process of a “derecho petición” Terra Global has secured responses on this issue as it relates to the first nested project, COCOMACIA Community REDD+ Program to apply this baseline.

For the COCOMACIA REDD+ Program, the first vintage of issuance is 2021 (start of the Choco FREL Baseline Validity Period), and the first monitoring period for the COCOMACIA Project is 2021 to 2023. On November 7, 2024, for the second time, a request was made to Ministry of Environment and Sustainable Development for the maximum mitigation potential for the COCOMACIA Community REDD+ Program. In January 2025, the answer was provided by Ministry of Environment and Sustainable Development, which included an attachment from IDEAM who conducted the technical process to estimate that potential for the Maximum Mitigation Potential for the COCOMACIA REDD+ Area for the period of 2018-2022, of which only 2021 and 2022 are relative for the COCOMACIA Community REDD+ Program.

La **Tabla 3** presenta la estimación del Potencial Máximo de Mitigación (PMM) para el periodo 2018-2022 basada en el NREF y los parámetros específicos del proyecto REDD+.

Año	NREF Nacional (t CO2 eq)	Potencial Máximo de Mitigación (t CO2 eq)
2018	120770431,4	442.107,57
2019	127011963,2	464.956,12
2020	132520275,3	485.120,54
2021	137130393,5	501.996,93
2022	140732334,7	515.182,65

The IDEAM states the following: "La proporción que representa el área del proyecto REDD+ en relación con el Nivel de Referencia de Emisiones Forestales (NREF) nacional es de 0,00366072 lo que equivale a un 0,3661 % del total establecido en el NREF nacional", translated to English: "The proportion that the REDD+ project area represents in relation to the national Forest Reference Emission Level (FREL) is 0.00366072, which is equivalent to 0.3661% of the total established in the national NREF."

As provided in the table above, this maximum mitigation potential (MMP) covers only deforestation as the UNFCCC FREL for this period only includes deforestation, not degradation. Meaning the ex-post verified credits from degradation can be recognized as quantified with any limitation. This MMP for reducing deforestation, covers the monitoring years 2021 and 2022, but not 2023 which is part of the first monitoring period.

At the time that Terra Global requested the MMP for 2023 from the government, it received a response that since the technical review under UNFCCC of the FREL for years 2023 to 2028 had not been completed, that it was not provided. Noting, that this next version of the UNFCCC FREL includes both deforestation and degradation, but still excludes protected areas, areas under Afrocolombia tenure and Resguardos tenure. In January 2025, the responsibility for establishment of the MMP and providing guidance on the methodological reconstruction moved from IDEAM to the Ministry of Environment and Sustainable Development. Terra Global and COCOMACIA met in person with Ministry of Environment and Sustainable Development, to get guidance on how (or whether) to apply the methodological reconstruction of Colombia's UNFCCC FREL for the COCOMACIA Community REDD+ Program for vintages 2023 and beyond to complete the issuance of 2023 vintages. During the meeting, Ministry staff indicated they are preparing detailed guidance stating that projects seeking issuance after 2022 will not receive an MMP allocation. Instead, each project will be required to conduct a methodological reconstruction based on the UNFCCC 2023–2027 FREL, to obtain the maximum credits that Project could claim for AUDef and AUDeg. Despite several formal requests submitted, the Ministry has not yet published the guidance; therefore, the reconstruction cannot be completed at this time. Accordingly, for 2023 the MMP for Avoided Deforestation was calculated by applying the same fraction (0.3661%) of the UNFCCC deforestation FREL, and no MMP was applied to emission reductions from Avoided Degradation.

2.5.1.2.6 Decree 446 of March 2020

Indicates that, until December 31, 2020, OVVs that are accredited by the Executive Board of the Clean Development Mechanism may be verifiers and validators as Designated Operating Entity, after that date they must be accredited by ONAC.

2.5.1.2.7 Law 1844 of 2018

“by which the “Paris Agreement” is approved, adopted on December 12, 2015, in Paris, France. The Government of Colombia welcomed the Reinforced Transparency Framework and committed through its Contribution Nationally Determined (NDC) to reduce 20% of its Greenhouse Gas emissions with respect to the projected emissions of the year 2030 and up to 30% conditional on international support. Likewise, it committed to periodically provide a report on the inventory of emissions and the information necessary to track the progress made in the implementation and compliance of its NDC through the use of common methodologies and metrics, ensuring methodological consistency, including for the baselines, between the communication and the implementation of the NDC, and seeking completeness and exhaustiveness in the monitoring of the NDC.

2.5.1.2.8 Article 175 of Law 1753 of 2015

Creates "the National Registry for the Reduction of Greenhouse Gas Emissions (GHG) is created, of which the National Registry of Programs and Projects of actions for the Reduction of Emissions due to Deforestation and Forest Degradation of Colombia -REDD+. These will be regulated and administered by the Ministry of Environment and Sustainable Development.

2.5.1.2.9 Law 164 of 1994

The Congress of the Republic of Colombia approved the United Nations Framework Convention on Climate Change, whose objective is the stabilization of concentrations of greenhouse gases - GHG in the atmosphere, at a level that prevents dangerous anthropogenic interference in the climate system.

2.5.1.2.10 Law 629 of 2000

Fulfill the quantified obligations to reduce GHG emissions for developed countries and provides flexibility mechanisms that will serve, in a complementary manner, to achieve the established reductions, which allow the exchange of allowable emission quotas of the countries. Kyoto Protocol, approved by the Congress of the Republic of Colombia.

2.5.1.3 International Treaties and Legislation

Colombia has also adopted the following international legislation:

- *Convention for the Protection of the World Cultural and Natural Heritage. Paris, 1972.*
- *Convention of International Trade in Endangered Species: wild fauna and flora. Washington D.C., 1973.*
- *Convention on Biological Diversity. Rio de Janeiro, 1992.*
- *Colombia signed the ratified Paris Agreement on July 12, 2018, and began enforcing the agreement on August 11, 2018, in which Colombia, and all other countries that signed the*

ratification, must strengthen their efforts to regulate their emissions to prevent the global temperature from rising (United Nations Framework Convention on Climate Change, 2019).

2.5.1.4 Other Relevant Laws

Judgment T-622 of 2016. Recognize the Atrato River, its basin and its tributaries as an entity subject to rights. Design a plan to decontaminate the Chocó water sources, starting with the Atrato basin, recover its ecosystems and avoid further damage. Joint action plan to neutralize and permanently eradicate illegal mining activities in the Atrato and other tributaries of Chocó. Comprehensive action plan to recover the traditional forms of subsistence and food, within the framework of the concept of ethno-development, which ensures minimum food security. Toxicological and epidemiological studies of the Atrato and its communities. Process of monitoring and accompanying the fulfillment and execution of orders. Effectively comply with Recommendations of Resolution 064 of 2014 of the *Defensoría*, which declared an environmental and humanitarian crisis in Chocó. Ensure sufficient and timely resources to fulfill orders.

2.5.2 Relevant Laws and Regulations Related to Worker's Rights (VCS, 3.18.2; CCB, G3.11)

COCOMACIA complies with the laws that protect the rights of its employees and contractors. During the onboarding process, new employees receive orientation about their rights as workers and the laws that protect employees from harassment (sexual). As required by law, all employees are enrolled in the social security system, which allows them to have access to health services, disability and retirement.

Table 15 provides a list and brief description of all relevant labor laws in Colombia.

Table 15. Labor Laws, Decrees, Resolutions and Circulars

Laws, Decrees, Resolutions and Circulars	Description
Law 9 de 1979	For which sanitary measures are issued. Title III talks about the provisions of Occupational Health and these are applicable to all places and types of work.
Law 776 de 2012	Rules on the organization, administration and benefits of the General System of Professional Risks.
Law 1010 de 2006	By which measures are adopted to prevent, correct and punish workplace harassment and other harassment in the framework of labor relations, Amended by Law 1622 of 2013, 'through which the youth citizenship statute is issued and dictate other provisions', published in the Official Gazette No. 48,776 of April 29, 2013; Article 74. Modify numeral 3 of article 2 of Law 1010 of 2006, by means of which measures are adopted to prevent, correct and punish workplace harassment and other harassment within the framework of labor relations.
Law 1122 de 2007	Modifications in the general social health security system
Law 1562 de 2012	By which the Occupational Hazards System is modified and other provisions on Occupational Health are issued.

Laws, Decrees, Resolutions and Circulars	Description
Law 1616 de 2013	By means of which the Mental Health Law is issued, and other Provisions are issued.
Decree 614 de 1984	By which the bases for the organization and administration of Occupational Health are determined.
Decree Law 1295 de 1994	By which the organization and administration of the General System of Professional Risks is determined, modified in some articles by Law 1562 of 2012 (by which the system of occupational risks is modified and other provisions are issued in matters of occupational health.
Decree 1607 de 2002	By which the classification table of economic activities is established for the General System of Professional Risks
Decree 2923 de 2011	By which the Quality Assurance System of the General System of Professional Risks is adopted
Decree 0723 DE 2013	By which the affiliation to the General System of Occupational Risks of people linked through a formal contract for the provision of services with public or private entities or institutions and of independent workers who work in high-risk activities and other dictates is regulated. provisions
Decree 1477 de 2014	For which the table of diseases is issued.
Decree 055 de 2015	By which the affiliation of students to the General System of Occupational Hazards is regulated and other provisions are issued
Single regulatory Decree 1072 de 2015	By means of which the single regulatory decree of the labor sector is issued
Resolution 2400 de 1979	By which the Industrial Safety Statute is established.
Resolution 2013 de 1986	By which regulates the organization and operation of the Medicine, Hygiene and Industrial Safety Committees, today JOINT Committee of Occupational Health
Resolution 1016 de 1989	By which the legal obligation and permanent execution of the programs is determined, it regulates the organization, operation and form of the Occupational Health Programs that employers must develop. This regulation contemplates the content of the Occupational Health Programs, which must contain: Preventive and Occupational Medicine Subprogram. Industrial Hygiene Subprogram. Industrial Security Subprogram. Occupational Health Joint Committee.
Resolution 1075 de 1992	By which Occupational Health Activities are regulated, in the Preventive Medicine subprogram. Actions to control drug dependence, alcoholism and smoking are established
Resolution 2346 de 2007	By which the practice of occupational medical evaluations and the management and content of occupational medical records are regulated.

Laws, Decrees, Resolutions and Circulars	Description
Resolution 1401 de 2007	By which the investigation of incidents and accidents at work is regulated.
Resolution 1956 de 2008	By which measures are adopted in relation to the consumption of cigarettes or tobacco.
Resolution 1013 de 2008	By which the Comprehensive Occupational Health Care Guides based on evidence are adopted.
Resolution 2646 de 2008	By which provisions are established and responsibilities are established for the identification, evaluation, prevention, intervention and permanent monitoring of the exposure of the psychosocial risk factor at work and for the determination of the origin of pathologies caused by occupational stress
Resolution 1918 de 2009	By which the practice of occupational medical evaluations and the management and content of occupational medical records is regulated, it modifies article 11 and 17 of resolution 2346 of 2007 and other provisions are issued.
Resolution 1918 de 2009	By which Resolution 2346 of 2007 on the practice of occupational medical evaluations is modified.
Resolution 1409 de 2012	By which the Safety Regulation for protection against falls in work at heights is established and repeals Resolutions numbers 3673 of 2008, 0736 of 2009 and 2291 of 2010, as well as Circular number 0070 of 2009, issued by the Ministry of Social Protection.
Resolution 3368 de 2014	By which it partially modifies Resolution 1409 of 2012
Resolution 0312 de 2019	Minimum standards of the Health and Safety System
Unified circular 2004	Which unifies the instructions for the surveillance, control and administration of the General System of Professional Risks

2.5.3 Human Rights (VCS, 3.19)

The Project demonstrates a commitment to recognizing, respecting, and promoting the protection of the Local Communities (LCs), and customary rights holders in accordance with international human rights law, including the United Nations Declaration on the Rights of Indigenous People's, as well as the ILO's indigenous and Tribal Peoples Convention.

This commitment is evidenced through various aspects of the Project, including:

- 4) **Stakeholder Engagement:** *The Project engages IPs, LCs, and customary rights holders in a participatory manner, ensuring their active involvement in decision-making processes regarding Project design, implementation, and monitoring. The engagement process respects their autonomy, cultural practices, and traditional knowledge.*

- 5) **Free, Prior, and Informed Consent (FPIC):** *The Project follows the principles of FPIC as outlined in international human rights instruments. Before undertaking any activities that may affect LCs, or customary rights holders, the Project seeks their consent and participation in a culturally appropriate manner, ensuring they have access to relevant information and are empowered to make informed decisions.*
- 6) **Respect for Land Tenure Rights:** *The Project respects the land tenure rights of LCs, and customary rights holders, recognizing their rights to own, use, and manage their lands, territories, and resources. It ensures that Project Activities do not infringe upon these rights and, where applicable, seeks to strengthen and support their tenure systems.*
- 7) **Protection of Cultural Heritage:** *The Project acknowledges and respects the cultural heritage of LCs, and customary rights holders, including their languages, traditions, and customary laws. It incorporates measures to safeguard and promote cultural diversity, ensuring that Project Activities do not undermine their cultural identity or integrity.*
- 8) **Conflict Resolution Mechanisms:** *The Project establishes grievance redress mechanisms that are accessible, transparent, and culturally appropriate for LCs, and customary rights holders. These mechanisms enable them to raise concerns, seek remedies for any adverse impacts, and resolve disputes in accordance with their customary practices and legal frameworks.*
- 9) **Alignment with Territorial Laws and Governance:** *It also seeks to build upon existing community institutions through the update and application of community internal regulations that have traditionally allowed LCs to facilitate the sustainable usage of natural resources and ensure social order within their territory.*

By adhering to these principles and incorporating them into its policies, procedures, and practices, the Project demonstrates its commitment to upholding the rights of IPs, LCs, and customary rights holders in alignment with international human rights standards and relevant conventions.

2.5.4 Indigenous Peoples and Cultural Heritage (VCS, 3.18, 3.19)

The Project 's commitment to preserving and protecting cultural heritage is ingrained in its activities; by leveraging the cultural wealth of the communities, the Project not only fosters sustainable development but also ensures the preservation of cultural traditions and knowledge for future generations. To uphold this commitment, the Project implements the following actions:

1. *All work planning to design the Program Activities is led by the COCOMACIA REDD+ Team, which ensures that activities are culturally sensitive and ensures preservation of culture traditions.*
2. *Organizing meetings to engage with communities' members, to understand their cultural values, and integrate them into program planning processes.*
3. *Ensuring cultural inclusivity and respect by fostering an open and inviting environment where all voices are heard through participatory decision-making processes.*
4. *Integrating traditional knowledge and practices into Program Activities to enhance economic opportunities and preserve community knowledge systems. For example, promoting the sustainable use of natural resources that are the basis of some of the local livelihoods, such as*

hunting and wood harvesting, while understanding reasons and patterns for why it is often done in unsustainable ways.

5. *Implementing community-led territorial planning and risk management policies that incorporate local cultural practices and environmental knowledge to ensure effective risk mitigation while preserving cultural heritage. Incorporate clear and inclusive language ensuring that information is accessible to all members of the communities.*
6. *Recognizing the traditional practice of small-scale wood use for housing, as well as the collection of dry wood for cooking.*

2.5.5 Statutory and Customary Property Rights (VCS, 3.18, 3.19; CCB, G5.1)

The legal owners of the Program Area are the Afro-Colombia communities of the Atrato River, registered under *Consejo Comunitario Mayor de la Asociación Campesina Integral del Atrato* (“COCOMACIA”). The entire Project Activity Instance lies within the areas awarded to these communities through Resolution 4566 on December 29, 1997, originally called *Consejo Comunitario Mayor del Medio Atrato* (“ACIA”) but is now named COCOMACIA. The community has elected male and female leaders that make up the governance structure of COCOMACIA and they include the board of directors, disciplinary committee, interethnic committee and legal representation.

Property rights and natural resources use rights have been allocated to the members of the Afro-Colombian communities in COCOMACIA under the 1991 Colombian Constitution, Law 70 of 1993, and Decree 1745 of 1995 (Section 2.5.7).

Within COCOMACIA’s collective territory, property rights are collective and inalienable, meaning that land cannot be sold, divided, or mortgaged, thereby preserving it for future generations. Rights are exercised communally through the Local Community Councils (*Consejos Comunitarios Locales*), which represent each of the 124 communities grouped into nine administrative zones. The territory is administered under COCOMACIA’s Internal Regulations (*Reglamento Interno*), which operate as a form of customary law governing land use, resource access, and social conduct across the territory. The collective title formally recognizes traditional occupation and use, including agriculture, hunting, fishing, timber extraction, and other cultural practices intimately linked to the forest and river systems.

Within this collective framework, each family manages its own parcel or tract of land that has been ancestrally assigned or recognized through community agreements. These parcels are not privately owned in the legal sense (they cannot be sold, divided, or transferred outside the community) but families hold exclusive usufruct rights to use and manage them for activities such as food production, agroforestry, and housing. These rights are typically inherited and respected across generations, reflecting a customary system where individual stewardship coexists with collective responsibility. Through this model, COCOMACIA balances personal autonomy in land use with communal governance and long-term sustainability, ensuring both livelihood security and the preservation of the collective territory.

2.5.6 Recognition of Property Rights (VCS, 3.7, 3.18, 3.19; CCB, G5.1)

The Project Activity Instance is legally recognized according to INCORA resolution 04566 of December 29, 1997, by which COCOMACIA receives the collective title, its extension is 704,921 hectares. The

Project proponent has explicit and undisputed legal ownership of the entire Project Activity Instance including the rights to benefit from income-generating activities, including carbon finance, and to oversee the distribution of benefits available from carbon finance.

Program Activities have not and will not involve the resettlement of any community or household. Areas of agricultural expansion oriented toward consumption have been identified, mainly because the limits of community forests are unknown. Furthermore, the Program objectives involve maintaining and improving the livelihoods of the communities currently living within the Project Activity Instance. Resettlement is not a component of the Project design, nor would it be acceptable to the COCOMACIA community.

2.5.7 Free, Prior and Informed Consent (VCS, 3.18; CCB, G5.2)

Table below describes the outcome of the FPIC process.

Table 16. Consent and FPIC Process

<p>Description of process for obtaining consent</p>	<p>Describe and demonstrate how consent to implement the project activities was obtained from those concerned, including IPs, LCs, and customary rights holders, and a transparent agreement was reached.</p> <p>The Program is being developed in the collective territory of COCOMACIA, which has the Resolution of Territory Allocation issued by the Colombian government.</p> <p>The process to obtain consent for the development of the Project and to implement the Project Activities was carried out in a transparent manner, ensuring the widest possible participation, taking into account its governance structure for decision-making.</p> <p>Stakeholder Identification: In early 2018, one of COCOMACIA's community leaders was contacted in order to find out what communication path or guidelines their community requires. Subsequently, the first meeting was held and the project and the joint work path were presented. Once this first stage was approved, the project was shared with the Board of Directors and the Legal Representative. Once this initial process of dissemination was completed, more face-to-face meetings were scheduled to identify the stakeholders in this project.</p> <p>Information Dissemination: A process of socialization of the project development proposal and the activities to be developed was initiated in several of the local community councils of COCOMACIA. These approaches to the communities were made with the accompaniment of a member of the Board of Directors. Full information on the objectives, scope, potential impacts and benefits surrounding the development of the project was provided through informational dialogues arranged in the local language (Spanish). This information was shared through community meetings and printed materials, which ensured that all stakeholders were well informed.</p> <p>Consultation and Dialogue: Several consultations and disseminations of the project were carried out with previously identified stakeholders. These meetings were held at different points in time, in order to keep the community informed and to receive their comments at different stages of the process. These consultations provided opportunities for stakeholders to express their concerns and ask questions. Concerns were heard and resolved, opting for very simple language that allows for understanding of the technical components of the project and greater ownership of the activities being developed. Through these collaborative dynamics, the integration of communities and stakeholders to the objective of the project is achieved.</p> <p>Consensus Building: During several meetings held throughout the second half of 2018, the communities explained how their decision-making processes function — including the time they require for internal discussion, the use of their own language, and their autonomous spaces for consultation. Through this exchange, the project team was able to better understand the community's internal dynamics and the way information is shared and discussed among members, including those who were not present at the meetings. Having</p>
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	<p>gone through this process, agreements were reached on how to work collaboratively, on the signing of required documents, and on the development of community dynamics that enrich the project and enable its continued progress. The relationship has been guided by mutual respect and a deep understanding of the communities' customs and governance structures. Documentation of Consent: The approval obtained from stakeholders was carried out in accordance with COCOMACIA's Internal Regulations. The body with the highest decision-making power is the General Assembly, and following its governance structure, a presentation of the REDD+ Program was made for 2 consecutive years, in December 2018 at the Local Community Council of Tanguí, and in December 2019 at the Local Community Council of Llano de Bebaramá. Through the majority vote of the Assembly, approval was obtained to sign the Agreements and start the project. The approval decision was documented through the Minutes that record the meeting, in order to guarantee transparency and accountability. A transparent agreement outlining the terms and conditions of the consent, including safeguards against potential risks and impacts, was developed and signed by all parties involved.</p>
<p>Outcome of FPIC process</p>	<p>Describe the outcome of the FPIC process, including the transparent agreement, and the information disclosed prior to establishing a transparent agreement with those concerned, IPs, LCs, and customary rights holders.</p> <p>Provide assurance that:</p> <ul style="list-style-type: none"> The project will not encroach on land, relocate people without consent, and force physical or economic displacement. Appropriate restitution or compensation has been allocated to any parties whose lands have been or will be affected by the project. <p>The Project has been socialized to the COCOMACIA communities, following their governance structure for decision making. In that sense, the General Assembly is responsible for approving whether or not a project is developed within the collective territory of COCOMACIA, the design of the Project Activities, the acceptance of upfront climate finance, and the development of a comprehensive set of investment readiness requirements:</p> <p>The REDD+ Program was socialized through a number of meetings summarized in Section 2.3.10 and for the overall approval this was voted on in two general assemblies:</p> <p>The proposal was adjusted and socialized in the General Assembly of COCOMACIA held in December 2018 in the Local Community Council of Tanguí.</p> <p>The proposal was later ratified at the General Assembly of COCOMACIA in December 2019 in the Llano de Bebaramá Local Community Council.</p> <p>There were no interested parties who opposed the development of the Project.</p> <p>The outcome of the FPIC process was a transparent agreement that reflects the collective consent and commitment of all concerned stakeholders. This agreement encompasses the following key elements:</p> <ul style="list-style-type: none"> Non-Encroachment on Land: The agreement unequivocally states that the Project will not encroach on any land or territories. All Project Activities will respect the territorial rights and land tenure systems of IPs, LCs, No Relocation: It is guaranteed in the agreement that no people or communities will be relocated or displaced. Protection Against Forced Displacement: The agreement includes provisions to prevent any form of forced physical or economic displacement resulting from the Project Activities. Measures will be implemented to mitigate and address any adverse impacts on livelihoods, cultural practices, and community well-being. Compensation: Appropriate measures for compensation have been allocated to parties whose lands, territories, or resources have been or will be impacted by the Project. Fair and equitable compensation mechanisms have been established through consultations with the community, ensuring that their rights and interests are upheld.

2.5.8 Benefit Sharing Mechanisms (VCS, 3.18, 3.19;)

2.5.8.1 Summary of Benefits Allocation

Process used to design the benefit sharing plan	<p>Demonstrate that the benefit-sharing agreement was agreed up on by the affected stakeholder groups, and that the agreement was shared in a culturally appropriate manner. Demonstrate that the agreement is readily accessible should stakeholders wish to review the agreement.</p> <p>The design process of the Benefits Sharing Plan for the COCOMACIA REDD+ Project involved a comprehensive and participatory approach to ensure the full and effective participation of community leaders in decision-making regarding benefit sharing. Here's a breakdown of the process:</p> <p>Stakeholder Identification: The beneficiaries of the Benefit-Sharing Plan have been identified as all members of the communities that make up COCOMACIA, because the development of this Project is community-based and the activities are implemented throughout the territory, meaning that the 124 communities and the total number of people who are part of the community council have been recognized as direct beneficiaries of the Project.</p> <p>Facilitated Discussions: Several meetings were held to jointly decide what the most objective structure of the Plan would be, and it was made clear that benefits are allocated through a performance-based payment plan and through community projects that benefit the collective, not individuals.</p> <p>Feedback Mechanisms: Feedback mechanisms, such as focus group discussions and workshops, were employed to gather input and suggestions during the design process. This ensured that the benefit-sharing plan accurately reflected the views and feedback of impacted communities.</p> <p>Iterative Refinement: The benefit-sharing plan was fine-tuned in several versions, in order to incorporate feedback received and make adjustments to address concerns or suggestions raised during the construction process.</p>
Summary of the benefit sharing plan	<p>The COCOMACIA REDD+ Benefit Allocation Plan establishes the mechanisms, principles, and procedures for distributing benefits derived from carbon revenues within COCOMACIA's collective territory. Its overarching goal is to ensure fair and transparent benefit sharing that strengthens community governance, promotes sustainable land use, and incentivizes actions that reduce deforestation and forest degradation.</p>
Approval and dissemination of benefit sharing plan	<p>The benefit allocation plan was presented, discussed and approved by the COCOMACIA Board of Directors and other leaders in 2021, but has since been updated to better reflect the operational dynamics observed during project implementation and to align benefit distribution with actual community participation and performance. This update, which has already been presented to the Board and the REDD+ team to gather their input, is expected to be submitted for approval to the COCOMACIA Board of Directors by the end of 2025. The refinement of the BAP has been conducted as the carbon projections have become more known as validation and verification progress, additional discussions are underway to review the carbon revenue, net income and repayment obligations to investors and any changes to the plan will be with mutual consent of COCOMACIA and Terra Global.</p>

The Plan defines two major categories of benefits: budgeted benefits and performance-based benefits. Budgeted benefits, finance core activities of the Long-Term Implementation Plan (LTIP), including capacity building, forest management, and livelihood diversification and development. Performance-based benefits are distributed after climate finance repayment. All the net income (project profits) are for COCOMACIA and include four different types of allocations: (1) social investment projects for infrastructure and community resilience; (2) COCOMACIA's Board and REDD+ Team for governance and coordination; (3) operational performance incentives rewarding effective implementation of field activities; and (4) VERR performance

incentives rewarding verified emission reductions. And portion of profits are also directed to a long-term Community Conservation Trust, ensuring sustainability after the end of carbon credit generation.

2.5.8.2 Components of Benefit Sharing Plan

The different components of the benefits sharing plan are detailed in Table 17.

Table 17. Components of the Benefit Sharing Plan

Component of ER Benefits	Description	Beneficiaries and Method of Distribution
Budgeted Benefits – Base	Funded through climate investment and carbon revenues to implement core activities addressing deforestation drivers, improving livelihoods, and covering MRV costs.	Managed jointly by COCOMACIA and Terra Global. Funds allocated based on the Long-Term Implementation Plan. Benefit distribution supports institutional and operational strengthening of COCOMACIA and on-the-ground activities.
Budgeted Benefits – Expanded	Additional benefits activated when carbon revenues or VER issuance exceed expectations, or when project scale-up is required.	Planned and approved jointly by COCOMACIA and Terra Global. Funds increase scale of activities, support new productive initiatives, and finance zonal and General Assembly meetings.
Operational Costs and Performance Reserve	Annual reserve (16% of net revenues) to cover cost increases or shortfalls in VER generation.	Deposited annually into a trust reserve account until reaching the target amount (USD 1.2 million). Used if the project has budget overruns
Social Investment Projects	Financing for territorial-scale projects that strengthen resilience, improve quality of life, and promote sustainable development.	Projects selected jointly by COCOMACIA and Terra. percentage of net income allocated after loan repayment. Benefits distributed through high-impact infrastructure or environmental initiatives benefiting multiple communities.
Board of Directors and REDD+ Team Allocation	Recognition of leadership, governance, and management of project implementation.	Percentage of net income allocated after loan repayment – Percentage to COCOMACIA Board (distributed equally) and Percentage to REDD+ Team (distributed by role).
Operational Performance-Based Allocation	Rewards communities that effectively implement REDD+ activities and demonstrate strong operational performance.	Percentage of net revenues allocated to the top 50% of communities achieving highest operational performance scores.
VERR Performance-Based Allocation	Rewards communities that achieve measurable reductions in deforestation and degradation.	Percentage of net revenues allocated to the top 50% of communities with the highest verified carbon performance (VERRs).
Community Conservation Trust Fund	Long-term fund to secure the sustainability of conservation efforts.	Financed through a percentage of annual net income once established. Supports ongoing community-based conservation and emergency interventions.

2.5.9 Property Rights Protection (VCS, 3.18, 3.19; CCB, G5.3)

As described in Section 0, 2.4.1, and 2.5.12 the planning, governance, and implementation of the Program have been developed jointly with the legitimate ethnic authorities of COCOMACIA, who are officially recognized by the Colombian State as the legal representatives and rightful owners of their collective territory under Law 70 of 1993 and Decree 1745 of 1995. These authorities exercise governance and decision-making power over the use, management, and protection of their ancestral lands. The Program fully respects and operates within these collective property rights, ensuring that all activities are aligned with COCOMACIA's internal regulations. Through this collaborative structure, the Project safeguards the territorial rights of the Afro-descendant communities, prevents any form of external appropriation or restriction of their land, and guarantees that benefits derived from carbon activities remain under the control of the legitimate collective owners.

None of the Program Activities require the relocation, whether voluntary or involuntary, of the owners of their lands or territories.

2.5.10 Illegal Activity Identification (VCS, 3.19; CCB, G5.4)

The Program is designed to mitigate illegal activities within the Project Activity Instance through increased protection of community forests and wildlife, as well as improved livelihoods and sustainable development. The most common illegal activities include illegal commercial logging, small and medium-scale mining, clearing for small-scale agriculture, wildlife poaching, and illegal clearing for timber production.

As stated in section 2.1.17, several project activities are planned to reduce the impacts of these illegal activities on the climate, community and biodiversity benefits of the Project. Specifically, Project proponents will strengthen land use across the 124 Community Council communities and forest governance, improve forest protection through forest boundary demarcation, and implement numerous Project Activities that allow the transition to productive activities that generate income and will reduce deforestation and degradation and at the same time improve the communities' livelihoods.

The Program reduces this risk through activities that include facilitating training and equipment for community members to effectively patrol the forest areas to address illegal activities in the Project Activity Instance. Other activities are encouraged and developed alternative economic opportunities to strengthen local productive systems which will reduce the pressure on the forest areas towards other sources of income. Patrolling field crews will be instructed to alert and patrol for illegal activities, particularly near and around community forests to report any incidents or evidence. Data will be collected, maintained through patrolling records and regularly analyzed to determine where vulnerable areas are for illegal activities. The concentration of patrols will then be directed to these areas.

The Program explicitly prohibits the use of victims of human trafficking, forced labor, and child labor. These prohibitions are formally incorporated into the COCOMACIA REDD+ Program Operations Manual, Section 9, *Relevant Policies*, which includes:

- *a Policy against Human Trafficking, framed under Law 985 of 2005 of Colombia; and*
- *a Policy for the Prevention and Eradication of Child Labor and the Comprehensive Protection of Adolescents, aligned with Resolution 3597 of 2013 of the Ministry of Labor.*

In addition, Terra Global, as developer, has adopted an Anti-Trafficking of Persons Policy, available in both English and Spanish, which it extends to all partners and subcontractors through formal agreements and contractual clauses. These combined instruments ensure that all individuals engaged in Program implementation - whether directly employed or participating through community structures—are protected from exploitation and that all work is carried out voluntarily, under fair and lawful. The Program also operates a Grievance and Redress Mechanism, accessible to all stakeholders, including workers, community members, and external actors. This mechanism provides safe, confidential, and non-retaliatory channels (e.g., in-person reports, written submissions, WhatsApp) to report any concerns related to abuse, coercion, or irregularities. All grievances are documented, reviewed, and addressed by COCOMACIA's REDD+ Management Team.

2.5.11 Ongoing Disputes (VCS, 3.18, 3.19; CCB, G5.5)

The collective territory of the *Consejo Comunitario Mayor de la Asociación Campesina Integral del Atrato* – COCOMACIA was formally titled in 1997 by the Instituto Colombiano de la Reforma Agraria (INCORA) under the framework of Law 70 of 1993 and Decree 1745 of 1995, covering approximately 700,000 ha in Chocó and 150,000 hectares in Antioquia

The adjudication process included public notifications and opportunities for objections, ensuring that all legitimate claims or private rights were properly addressed. Therefore, the collective title issued to COCOMACIA enjoys clear legal certainty, as no private ownership claims can legally exist within a collective title granted by the State. The following categories describe the different types of conflicts that have occurred over the years and been addressed by COCOMACIA:

2.5.11.1 Intra-ethnic Conflicts

Over the past decade, some internal disputes have arisen among members of local community councils concerning the recognition of private rights over lands within the collective territory. These intra-ethnic territorial conflicts involve claims for individual titles, inheritance rights, or rights of possession and usufruct over specific areas

Such conflicts are regulated by Law 70 of 1993 and Decree 1745 of 1995, which provide procedures for equitable territorial distribution, recognition of ancestral possession, and allocation of individual or family usufruct rights. COCOMACIA has ongoing actions to implement these internal regulatory processes, in accordance with Resolution 04566 of 1997.

2.5.11.2 Inter-ethnic Conflicts

COCOMACIA has also reported inter-ethnic territorial conflicts with neighboring indigenous communities that inhabit portions of its titled territory and seek to expand or formalize their occupation. These conflicts stem from overlapping cultural practices and territorial claims but are being addressed through an inter-ethnic commission, which develops coexistence and conflict-resolution mechanisms within the collective territory

2.5.11.3 Third-Party Occupants

Some non-ethnic third-party occupants remain within the titled area. The law distinguishes between:

- *Good-faith occupants, whose presence predates the collective title and who may retain use rights until COCOMACIA or the competent authority acquires their improvements; and*
- *Bad-faith occupants, who entered after 1997 and therefore have no legal claim or right to compensation*

In recent years, about 30 territorial claims have been filed through rights-of-petition and resolved satisfactorily; roughly 10 have been handled through judicial tutelas, all decided in favor of COCOMACIA, and one conciliation case remains pending before the Procuraduría Agraria y Ambiental

Based on these precedents, no ongoing or unresolved dispute jeopardizes the collective title or could prejudice the implementation of REDD+ activities. COCOMACIA's governance framework and legal standing guarantee that all project actions respect existing rights and are undertaken within areas of undisputed collective ownership. Conflict-resolution mechanisms—including internal regulations, inter-ethnic commissions, and coordination with oversight entities—ensure that any emerging dispute can be addressed through lawful and participatory means.

2.5.12 Approvals (CCB, G5.7)

The Project Activity Instance is Afro-Colombia communal tenure that in accordance with the legal governance requirements the development of the Carbon Project was granted by the General Assembly of COCOMACIA in the Local Community Council of Llano de Bebarama in 2019.

COCOMACIA and Terra Global Capital signed in February 2019 the Collaboration Agreement to develop the business case for the REDD+ Project through strengthening of initiatives aimed at the economic development of the 124 Local Community Councils of COCOMACIA.

In 01-February-2021, COCOMACIA and Terra Global subsequently signed the Agreement for the Development of Carbon, Carbon Rights and Distribution of Benefits with Regarding Emission Reductions for the territory of COCOMACIA. It establishes that COCOMACIA and Terra Global Capital agree to develop a Carbon project, where: COCOMACIA manages and implements the Project Activities to reduce deforestation and degradation on the Project Activity Instances, to generate Carbon Credits and improve the communities' livelihoods. Terra Global Capital LLC., as the Project's developer provides technical expertise to prepare Project Document and Monitoring Reports, in coordination with COCOMACIA, to produce Carbon Credits under the Standards and provide continuous training to the COCOMACIA team.

A PIK Loan Agreement between COCOMACIA and Chocó Conservation (a project entity owned by Investor 1 and Terra Global Capital) was signed on May 28, 2021. The signed document between the parties' states that the Lender shall make a loan facility available to Borrower in a maximum principal amount equal to the Loan Commitment Amount, pursuant to which Lender agrees to make disbursements (each, a "Loan Disbursement") to Borrower from time to time, solely to be used under the previously signed REDD+ Agreement.

2.5.13 Double Counting and Participation under Other GHG Programs (VCS, 3.23; CCB G5.9)

2.5.13.1 No Double Issuance

Is the project receiving or seeking credit for reductions and removals from a project activity under another GHG program, or any other form of community, social, or biodiversity unit or credit?

Yes No

The Program reserves the right to develop bioersivity credits under a standard like the Verra SD Vista Nature Framework in the future.

2.5.13.2 Registration in Other GHG Programs

Is the project registered or seeking registration under any other GHG programs?

Has the project registered under any other GHG programs?

Yes No

2.5.13.3 Projects Rejected by Other GHG Programs

Has the project been rejected by any other GHG programs?

Yes No

Has the project been rejected by any other GHG programs?

Yes No

2.5.14 Double Claiming, Other Forms of Credit, and Scope 3 Emissions (VCS, 3.24)

2.5.14.1 No Double Claiming with Emissions Trading Programs or Binding Emission Limits

Are project reductions and removals or project activities also included in an emissions trading program or binding emission limit? See the *VCS Program Definitions* for definitions of emissions trading program and binding emission limit.

Yes No

2.5.14.2 No Double Claiming with Other Forms of Environmental Credit

Has the project activity sought, received, or is planning to receive credit from another GHG-related environmental credit system? See the *VCS Program Definitions* for definition of GHG-related environmental credit system.

Yes No

2.5.14.3 Supply Chain (Scope 3) Emissions

Do the project activities affect the emissions footprint of any product(s) (goods or services) that are part of a supply chain?

Yes No

If yes:

Is the project proponent(s) or authorized representative a buyer or seller of the product(s) (goods or services) that are part of a supply chain?

Yes No

If yes:

Has the project proponent(s) or authorized representative posted a public statement on their website saying, “Carbon credits may be issued through Verified Carbon Standard project [project ID] for the greenhouse gas emission reductions or removals associated with [project proponent or authorized representative organization name(s)] [name of product(s) whose emissions footprint is changed by the project activities].”?

Yes No

If yes to all:

Provide evidence of the public statement. Evidence must be provided in this section or in an appendix.

2.6 Additional Information Relevant to the Project

2.6.1 Leakage Management (VCS, 3.11, 3.15)

2.6.1.1 Leakage Mitigation Measures

Project Activities are specifically designed to alleviate shifting of emissions to other areas both within and outside the Project Activity Instance and are part of the overall project design. These activities aim to reduce deforestation and degradation and effectively mitigate any potential leakage resulting from the Program. See Section 2.1.17 describing the Theory of Change and the overall activities and their positive effects that will take place across the COCOMACIA Territory. The goals of the Program is to solve issues where they are and not have any activities that degrade any landscape shift to somewhere else. Table 18 outlines the most appropriate leakage management activities as identified though VMD0055 and their impact carbon stocks.

Table 18. Leakage Mitigation Measures

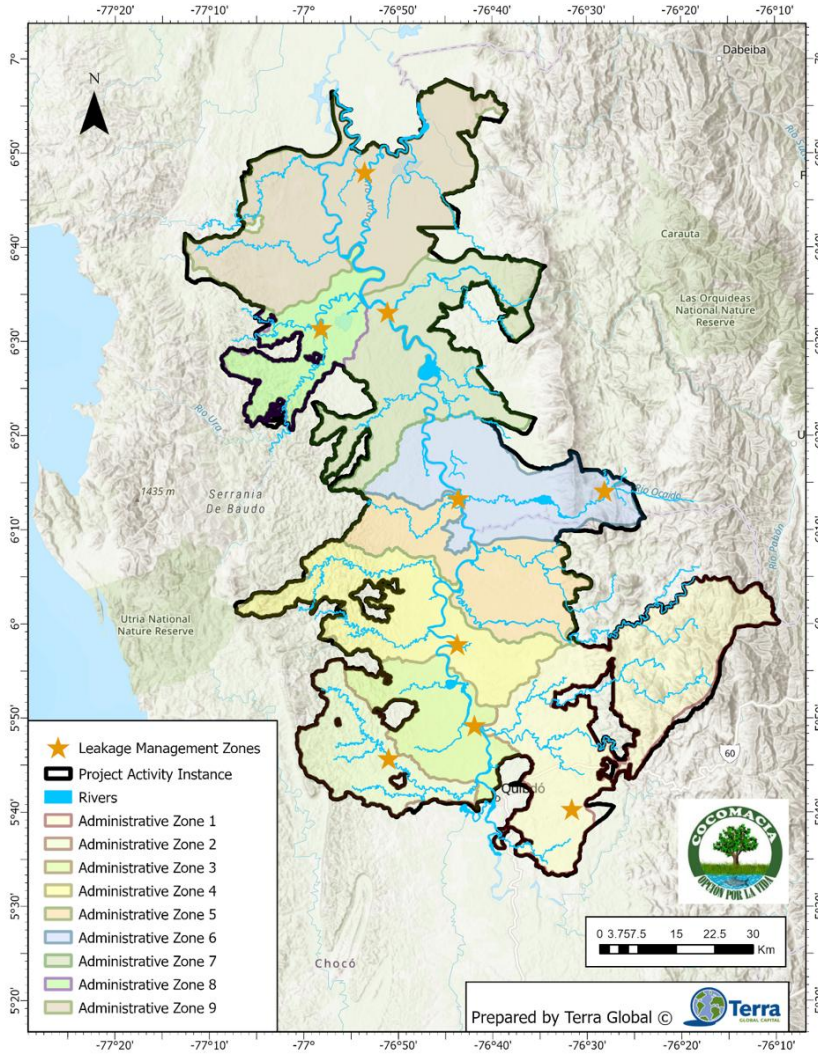
Leakage Management Activities from the Theory of Change	Description of the Leakage Management Activity and/or How it Relates to the Baseline	Impact on Carbon Stocks
<p>Carry out restoration, reforestation and forest enrichment activities with a participatory (including loggers) and technical approach – Activity 4.1.3.1</p>	<p>This activity contributes to the restoration of deforested areas through the use of native species. By engaging local community members and traditional loggers, it generates alternative sources of income, promotes sustainable practices and fosters a deeper appreciation for the importance of ecosystems. Additionally, by involving loggers in time-intensive restoration activities, their available time for conventional logging is reduced, further decreasing pressure on remaining forests. Over time, communities can also establish timber banks (bancos maderables) in these previously deforested areas, providing a sustainable source of timber and wood for their future needs. Under the baseline scenario, these degraded lands would remain unrecovered, and deforestation would likely continue expanding into adjacent areas.</p>	<p>This leakage mitigation management measure is expected to increase carbon on areas under the control of the project in both forest areas and non-forest areas. This activity directly contributes to carbon stock increases because it leads to the restoration and recovery of forest biomass in areas that were previously deforested or degraded. Through reforestation and enrichment planting with native species, new trees are established and existing stands are enhanced, resulting in net carbon sequestration both above and below ground. Conservative estimates for carbon sequestration by reforestation are 10.2 t CO_{2e} per hectare per year (IPCC, 2019).</p>
<p>Provide comprehensive technical assistance for species selection, the design, establishment, and management of agroforestry systems (AFS), as well as for strengthening and optimizing existing AFS in the region. – Activity 7.1.1.8.</p>	<p>This activity promotes the establishment of diversified agroforestry plots that integrate food crops, fruit trees, and timber species. These systems increase the local availability of food, fuelwood, and construction materials, reducing the need to extract resources from nearby natural forests. Additionally, by generating marketable surpluses, communities obtain income without resorting to unsustainable logging or forest conversion. Under the baseline scenario, farmers would continue to manage agroforestry systems in a traditional and low-productivity manner. Others would persist with extensive or shifting cultivation practices characterized by low yields and increased pressure on primary forests. Furthermore, monocultures depend heavily on synthetic fertilizers and pesticides to maintain productivity, and shifting cultivation repeatedly depletes soil nutrients, forcing farmers to abandon and clear new plots. Agroforestry systems (AFS) integrate trees, shrubs, and crops in ways that mimic natural forest processes, improving soil fertility and nutrient cycling with reduced need for nitrogen fertilizers.</p>	<p>This leakage mitigation management measure is expected to increase carbon on areas under the control of the project. Agroforestry plots actively sequester carbon through tree growth, litter accumulation, and improvements in soil organic matter. These systems promote ecological stability by maintaining continuous vegetation cover and enhancing nutrient cycling. Compared to the baseline scenario—characterized by poorly managed agroforestry systems or shifting cultivation with short fallow periods and frequent clearing. These improved systems significantly increase biomass accumulation and soil carbon retention. At the same time, they reduce emissions leakage by lowering community dependence on external forest resources for timber, fuelwood, and other products. Conservative estimates for carbon sequestration by agroforestry are between 2.2 and 22.9 t CO_{2e} per hectare per year (IPCC, 2022).</p>
<p>Develop a technical assistance plan</p>	<p>This activity enhances the resilience and productivity of existing agricultural systems by promoting agroecological practices that reduce</p>	<p>This leakage mitigation management measure is expected to increase</p>

Leakage Management Activities from the Theory of Change	Description of the Leakage Management Activity and/or How it Relates to the Baseline	Impact on Carbon Stocks
<p>to strengthen capacities in integrated pest and disease management using agroecological methods, as well as soil and biodiversity conservation practices.– Activity 7.1.1.4.</p>	<p>dependency on chemical inputs and maintain soil fertility over time. Through training and field support, farmers learn to manage pests and diseases using biological and cultural control methods, composting, crop diversification, and soil conservation techniques. These measures improve yields sustainably without the need to expand agricultural areas into forest land. Under the baseline scenario, farmers rely on unsustainable practices such as monocropping, excessive use of agrochemicals, and slash-and-burn clearing to restore declining soil productivity. Such practices lead to soil degradation, reduced yields, and subsequent agricultural expansion into forests. The technical assistance plan helps reverse these trends by maintaining productivity within existing plots and reinforcing sustainable land-use behavior.</p>	<p>carbon on areas under the control of the project. By maintaining soil fertility and vegetation cover, agroecological management enhances soil organic carbon and biomass carbon storage. It also reduces emissions from fertilizer production and application, prevents further deforestation, and promotes long-term carbon sequestration through healthier, more diverse, and productive agroecosystems.</p>
<p>Facilitate access to markets for agricultural products and NTFP initiatives – Intermediate Outcome 8.1.1</p>	<p>This activity promotes sustainable local economies by identifying agroforestry based cash-crops and NTFP with high market potential, and by connecting producers with regional and national buyers. Strengthening these value chains helps communities derive income from agroforestry systems and forest conservation rather than deforestation. Under the baseline scenario, communities rely heavily on extractive or short-term activities such as logging, mining, hunting, traditional low-yield and slash-and-burn agriculture to sustain their livelihoods.</p>	<p>This leakage mitigation management measure is expected to increase carbon on areas under the control of the project. By promoting agroforestry-based cash crops such as cacao, plantain, and fruit trees, this activity enhances carbon sequestration through increased tree biomass and long-term vegetation cover within productive landscapes. These systems integrate perennial species that continuously store carbon in both above- and below-ground pools while maintaining soil organic matter and preventing erosion. These activities are planned on Strengthened market access ensures that communities receive tangible economic benefits from sustainable production, making agroforestry a stable alternative to forest clearing. Over time, this reduces deforestation pressure, increases standing biomass, and improves the permanence of carbon stocks across managed areas.</p>
<p>Update community internal</p>	<p>This activity strengthens territorial governance by ensuring that the internal regulations governing land use, natural resource</p>	<p>This leakage mitigation management measure is expected to increase carbon on areas under the control of</p>

Leakage Management Activities from the Theory of Change	Description of the Leakage Management Activity and/or How it Relates to the Baseline	Impact on Carbon Stocks
<p>regulations to align them with the objectives of reducing deforestation due to mining. – Activity 5.1.2.3.</p>	<p>management, and environmental protection are coherent across all levels of COCOMACIA's organizational structure. Regular reviews and updates at the Board level help maintain alignment between community norms and REDD+ environmental objectives, including forest conservation and sustainable land-use practices. Under the baseline scenario, internal regulations are either outdated, inconsistent, or poorly enforced, leading to unclear responsibilities, overlapping land uses, and limited capacity to prevent unauthorized forest clearing or resource exploitation. By harmonizing these regulations, the project ensures stronger rule enforcement, greater accountability, and a unified governance framework that reduces deforestation drivers and promotes responsible use of natural resources.</p>	<p>the project. Enhanced regulatory coherence and governance capacity strengthen local control over resource management, preventing unregulated land-use changes and improving the protection of forest areas. By reducing illegal or unsanctioned deforestation and ensuring consistent environmental compliance, the activity maintains and enhances forest carbon stocks over time. It also reinforces the social infrastructure needed to sustain low-emission land-use systems and safeguard long-term carbon permanence.</p>
<p>Review and strengthen, with community participation and technical support, natural resource management plans, defining and delimiting the areas of agricultural use and forestry use approved by the General Assembly and the CCL – Activity 3.1.2.1</p>	<p>This activity contributes to reducing deforestation and emissions leakage by establishing clear and collectively agreed-upon land-use boundaries, which help prevent the expansion of agriculture into forest areas. Through participatory planning, communities identify suitable agricultural zones based on soil capacity, slope, and conservation priorities, aligning land use with sustainable practices. Under the baseline scenario, land-use planning is weak or nonexistent, leading to dispersed and unregulated cultivation, frequent boundary conflicts, and greater forest encroachment as households search for new arable land. Strengthened management plans provide spatial clarity and governance mechanisms that maintain forest cover while improving agricultural efficiency in already cleared areas.</p>	<p>This leakage mitigation management measures are expected to increase carbon on areas under the control of the project. By organizing and formalizing agricultural areas, forest clearing is minimized, and degraded lands are rehabilitated for sustainable use. Improved land-use governance reduces carbon loss from uncontrolled expansion while indirectly promoting carbon accumulation in protected and restored zones.</p>

2.6.1.2 Leakage Management Zones

As these leakage mitigation measures and project activities are planned across all of COCOMAICA map 13 outlines the Leakage Management Zones as the areas where the Participatory Rural Appraisal took place. These Leakage Management Zones are defined as community meeting locations as well as they are the locations where the Program Activities and Leakage Mitigation Measures were discussed by communities, where sensitivity workshops and trainings took place. These Leakage Management Zones do not fall within another VCS AFOLU project where these emissions are accounted for by the other project at this time, but is allowable in the future.



Map 13. Project area leakage Management Zones.

2.6.2 Further Information

No additional relevant legislative, technical, economic, sectoral, social, environmental, geographic, site-specific and/or temporal information will be included.

3 CLIMATE

3.1 Application of Methodology

3.1.1 Title and Reference of Methodology (VCS, 3.1)

The Program includes two spatially explicitly separated activities: 1) Avoided Unplanned Deforestation (UDef) and 2) Avoided unplanned degradation (UDeg), each activity uses a different set of methodologies, modules and tools from the VCS Standard. UDef is using a jurisdictional FREL for the Department of Choco (ID 5079) validated under the Jurisdictional and Nested REDD+ (JNR) Requirements v 3.4, using JNR Scenario 1 Requirements, v4.1 and issuing VCUs under the methodology “VM0048 Reducing Emissions from Deforestation and Forest Degradation, v1.0”. UDeg uses the VCS-Approved methodology “VM0006 Methodology for Carbon Accounting for Mosaic and Landscape-scale REDD Projects v2.1”.

The Program will apply the following VCS frameworks, methodologies, and tools listed in Table 19 and Table 20.

Table 19. VCS Frameworks, Methodologies, and Tools used for UDef in this Program

Type (methodology, tool, module)	Reference ID (if applicable)	Title	Version
Framework	N/A	JNR Requirements Scenario 1	v4.1
Methodology	VM0048	VM0048 Reducing Emissions from Deforestation and Forest Degradation	v1.0
Module	VMD0055	VMD0055 Estimation of Emission Reductions from Avoiding Unplanned Deforestation	v1.0
Module	VMD0002	VMD0002 Estimation of Carbon Stocks in the Dead Wood Pool (CP-D)	v1.1
Module	VMD0003	VMD0003 Estimation of Carbon Stocks in the Litter Pool (CP-L)	v1.1
Module	VMD0004	VMD0004 Estimation of Carbon Stocks in the Soil Organic Carbon Pool (CP-S)	v1.1
Module	VMD0005	VMD0005 Estimation of Carbon Stocks in the Long-Term Wood Products Pool (CP-W).	v1.1
Module	VMD0016	VMD0016 Methods for Stratification of the Project Area (X-STR)	V1.3
Tool	VT0005	VT0005 Tool for measuring aboveground live forest biomass using remote sensing	V1.0
Tool	VT0007	VT0007, Unplanned Deforestation Allocation (UDef-A)	v1.0

Table 20. VCS Frameworks, Methodologies, and Tools used for UDeg in this Program

Type (methodology, tool, module)	Reference ID (if applicable)	Title	Version
Framework	N/A	JNR Requirements Scenario 1	v4.1
Methodology	VM0048	VM0048 Reducing Emissions from Deforestation and Forest Degradation	v1.0
Methodology	VM0006	Methodology for Carbon Accounting for Mosaic and Landscape-scale REDD Projects	v2.2
Module	VMD0002	VMD0002 Estimation of Carbon Stocks in the Dead Wood Pool (CP-D)	v1.1
Module	VMD0003	VMD0003 Estimation of Carbon Stocks in the Litter Pool (CP-L)	v1.1
Module	VMD0004	VMD0004 Estimation of Carbon Stocks in the Soil Organic Carbon Pool (CP-S)	v1.1
Module	VMD0005	VMD0005 Estimation of Carbon Stocks in the Long-Term Wood Products Pool (CP-W).	v1.1
Module	VMD0016	VMD0016 Methods for Stratification of the Project Area (X-STR)	v1.3
Module	VMD0055	Estimation of Emission Reductions from Avoiding Unplanned Deforestation	v1.1
Tool	VT0005	VT0005 Tool for measuring aboveground live forest biomass using remote sensing	v1.0
Tool	VT0007	VT0007, Unplanned Deforestation Allocation (UDef-A)	v1.0

3.1.2 Applicability of Methodology (VCS, 3.1)

The first Project Activity Instance in this REDD+ Program is the forest area (at project start) within the COCOMACIA territory. The COCOMACIA Community REDD+ Program which meets all applicability criteria of the VM0048 and VM0006 methodologies and baseline requirements for JNR defined under Section 2.5.3.1 Applicability Conditions for Areas Using JNR FREL. The Project Activity Instance is a single parcel totaling 639,880 hectares of forest at Project Start. The required criteria, the relevance of the optional criteria and Project conditions are described below.

3.1.2.1 Applicability Conditions Related to the use of a JNR FREL (UDef)

3.1.2.1.1 General Requirements

Reference ID/Title	Applicability condition	Justification of conformance
JNR Requirements Scenario 1 v4.1 General Requirements	Section 3.12.1 A jurisdictional FREL shall be established for allocating FRELS and baselines to nested lower-level jurisdictional programs and projects. Jurisdictional proponents shall follow the requirements in this section to estimate jurisdictional FRELS.	The jurisdictional baseline was developed for the Choco Department covering forest areas subject to unplanned deforestation due to subsistence-based activities. These forest areas that make up the FREL complies with Section 3.12. The JNR FREL is listed as VCS ID 5079, and the Baseline Description can be found on the Verra Registry.
	3.12.2. The jurisdictional FREL shall remain fixed for a limited period (referred to as the FREL validity period), the duration of which shall be four to six years, as defined by the jurisdictional proponent. The jurisdictional FREL shall be updated at the end of the FREL validity period, following the requirements set out in Section 3.12.25 of the JNR Requirements Scenario 1 v4.1.	The jurisdictional FREL remains fixed for its validity period (January 1, 2021 to December 31, 2027) and will be updated every 6 years as described in Section 2.1. and 2.5.3.2 of the VCS-JNR Baseline Description Document for Chocó Colombia JNR Forest Reference Emission Level (ID 5079)
	3.12.3 The jurisdictional FREL shall be disaggregated by activity (i.e., deforestation or forest degradation).	The Jurisdictional Baseline includes avoided emissions from unplanned deforestation. The degradation emissions are significant, and will be included in a future version of the JNR FREL. The JNR FREL is expected to support the crediting from Project Activity Instances following Scenario 1 of the JNR Standard as described in Sections 2.3.1 and 2.5.1.1.4 of the VCS-JNR Baseline Description Document for Chocó Colombia JNR Forest Reference Emission Level (ID 5079).
	3.12.5 The jurisdictional FREL shall be consistent, to the extent possible, with the data and methods used to account for forest-related GHG emissions in the country's existing or emerging UNFCCC GHG inventory.	Consistency of the methodological approach and alignment with Colombian Government's last submission of an FREL to UNFCCC is demonstrated in Section 2.5.1.1 of the VCS-JNR Baseline Description Document for Chocó Colombia JNR Forest Reference Emission Level (ID 5079)

3.1.2.1.2 FREL GHG Emissions

Reference ID/Title	Applicability condition	Justification of conformance
JNR Requirements	3.12.6 As a default, the jurisdictional FREL shall be calculated as the historical annual average GHG	The baseline validity follows VMD0055 section 5.3.1 Initial

Reference ID/Title	Applicability condition	Justification of conformance
Scenario 1 v4.1 FREL GHG Emissions	<p>emissions from deforestation and forest degradation over a period – referred to as the historical reference period (HRP). The duration of the HRP shall be four to six years, as defined by the jurisdictional proponent, and its end shall be no more than one year before the start date of the jurisdictional FREL validity period.</p>	<p>Jurisdictional Baseline Validity Period as described in section 2.5.3.2 of the VCS-JNR Baseline Description Document for Chocó Colombia JNR Forest Reference Emission Level (ID 5079).</p>
	<p>3.12.7 Where GHG emissions from planned deforestation and planned forest degradation are estimated separately from unplanned activities, the jurisdictional FREL shall be calculated based on the common practice in the jurisdiction (i.e., based on observed historical average rate of change per permit type that allows for the deforestation or forest degradation). Where it is common practice to harvest/convert above the regulatory surplus in the jurisdiction, it shall be demonstrated that the law is not enforced and is not expected to be enforced for the entire FREL validity period. Emissions from planned deforestation and planned degradation shall be kept separate from the unplanned historical average emissions estimates to avoid double counting.</p>	<p>The activities planned deforestation and planned forest degradation are not included in the Project.</p>
	<p>3.12.8 In jurisdictions where the estimated annual average historical emissions represent a GHG emissions quantity larger than that which could possibly result from the loss of the remaining forest lands under threat in the jurisdiction during the FREL validity period, the remaining forests at risk must be assessed by applying VCS Tool VT0007 Unplanned Deforestation Allocation (UDef-A). The potential GHG emissions from the forest areas at risk of deforestation shall be estimated considering the same pools included in the FREL and compared to such FREL. Where the potential GHG emissions are lower than the total FREL emissions during the FREL validity period, the FREL shall be adjusted downwards so that it does not exceed the GHG emission potential of the remaining forest.</p>	<p>N/A - Annual average historical emissions do not represent more than what the loss of the remaining forest would represent as described in section 2.6 of the Chocó Colombia JNR Forest Reference Emission Level (ID 5079).</p>
	<p>3.12.9 Jurisdictional FRELS shall not include GHG emissions from forest loss events that occurred during the historical reference period but are unlikely to reoccur during the FREL validity period. Accordingly, large (i.e., more than 1000 ha) forest losses due to geological (e.g., volcano or landslide) or extreme weather events (e.g., hurricane) that have a return period longer than four to six years shall be excluded from the calculation of historical GHG emissions from unplanned deforestation and unplanned forest degradation. Where areas of loss are not contiguous, it shall be demonstrated that all affected areas are associated with the same natural disturbance event.</p>	<p>Extreme forest loss events that have a return period longer than four to six years were excluded from the calculation of historical GHG emissions from unplanned deforestation and as described in detail in section 2.5.7. of the Chocó Colombia JNR Forest Reference Emission Level (ID 5079).</p>

Reference ID/Title	Applicability condition	Justification of conformance
	<p>3.12.10 Where excluded, the area associated with historical losses attributed to natural disturbances shall be clearly identified and not included in the jurisdictional FREL, until such time as the forest has recovered to a state similar to that which existed prior to the disturbance. Once recovered, the area may be included in the jurisdictional FREL in a future update. However, if the area where historical losses attributed to natural disturbances have occurred is subsequently converted by human activities to a non-forest land use, the GHG emissions associated with the forest loss shall be accounted for by the nested project or lower-level jurisdictional program where the area is located.</p>	<p>Identified exclusions were clearly identified and not included in the jurisdictional FREL and where historical losses attributed to natural disturbances have occurred is subsequently converted by human activities to a non-forest land use, the GHG emissions associated were accounted for as described in detail in Section 2.5.7. of the Chocó Colombia JNR Forest Reference Emission Level (ID 5079).</p>
	<p>3.12.11 In addition to the historical average mentioned in Section 3.12.7 above, significant future GHG emissions from large unavoidable infrastructure projects (e.g., deforestation related to planned hydroelectric projects) may be included in the jurisdictional FREL as planned deforestation.</p>	<p>Areas such as the ones described in section 3.12.11 of the JNR Scenario 1 Requirements v4.1 were excluded and described in Section 2.5.7. of the Chocó Colombia JNR Forest Reference Emission Level (ID 5079).</p>

3.1.2.1.3 Historical GHG Emissions

Reference ID/Title	Applicability condition	Justification of conformance
<p>JNR Requirements Scenario 1 v4.1 Historical GHG Emissions</p>	<p>3.12.12 The jurisdictional FREL shall be based on the quantity of GHG emissions over the historical reference period, as set out in Section 3.12.1. Historical GHG emissions shall be estimated separately for each activity included in the jurisdictional FREL. The historical quantity of GHG emissions is determined by multiplying activity data (in ha/year) by the emission factor of each forest transition (e.g., forest to non-forest or forest to degraded forest) (in tCO₂e/ha). Requirements for estimating activity data and emission factors are set out in Sections 3.12.13 to 3.12.24, below.</p> <p>3.12.13 Activity data estimate the area of specific land-use transitions (e.g., forest to non-forest or forest to degraded forest) that occurred across the jurisdiction over a given time period. Activity data are expressed in ha/year.</p> <p>3.12.14 A time series of area estimates shall be used to estimate the rate of different land-use transitions during the historical reference period. The maximum duration between measurements shall be two years. For initial development of the jurisdictional FREL, the period between measurements may be up to five years.</p>	<p>The FREL data used in this project follow the requirements set out in sections 3.12.13 to 3.12.24 of the JNR Scenario 1 Requirements v4.1 document as described in section 2.6 of the Chocó Colombia JNR Forest Reference Emission Level (ID 5079).</p>

Reference ID/Title	Applicability condition	Justification of conformance
	<p>3.12.15 Activity data estimation results in mean area estimates for each land-use transition over the historical reference period. Only one activity (e.g., deforestation or forest degradation) shall be considered for each sample plot. Standard classification rules shall be used to determine which activity takes place in each sample plot. Each area estimate shall include an uncertainty estimate representing sampling error, as set out in Section 3.15.4.</p>	
	<p>3.12.16 Emission factors estimate GHG emissions (based on carbon stock changes in the carbon pools included in the jurisdictional FREL boundary) corresponding to land-use transitions in tCO₂e/ha.</p>	
	<p>3.12.17 Emission factors shall be fixed at validation. The same emission factors shall be used to estimate GHG emissions in the FREL scenario as well as GHG emission reductions achieved by the nested projects and lower-level jurisdictional programs during the FREL validity period.</p>	<p>Emission factors estimated for this project follow requirements in section 3.12.16 to 3.12.17 as described in section 3.2.1.1.3.1</p>
	<p>3.12.18 Emission factors shall be calculated as the difference in carbon stocks due to land-use transitions.</p>	<p>Emission factors were calculated to include emissions from carbon pool-related sources due to changes in carbon stock densities between LULC classes and forest strata as described in section 3.2.1.1.3.4</p>
	<p>3.12.19 Data sources for estimating forest carbon stocks shall be chosen as follows.</p>	
	<p>3.12.20 Data sources for estimating non-forest biomass shall be chosen noting the following...</p>	<p>Data sources for estimating emission factors for the project are described in section 3.2.1.1.3.1. and follow requirements of section 3.12.19 to 3.12.20 of the JNR Scenario 1 Requirements v4.1 document.</p>
	<p>3.12.21 Uncertainty shall be estimated for each carbon pool and each forest type as follows...</p>	<p>Emission factors were calculated using methods from VM0048 and the VMD0055 module, Estimation of Emission Reductions from Avoiding Unplanned Deforestation v1.0. The module includes robust and detailed methods for “Step 3: Evaluation of Uncertainty for Carbon Stock Estimates” and “Step 4: Estimate of an Uncertainty Discount Factor.”</p>
	<p>3.12.22 Biomass estimation shall result in mean biomass estimates for the land-use (sub) strata. The mean biomass estimate is calculated by summing all the pools. The uncertainty shall be propagated</p>	<p>Biomass estimations were obtained according to requirements in section 3.12.22 of the JNR Scenario 1 Requirements v4.1 document details are presented in section 3.2.1.1.3.4.</p>

Reference ID/Title	Applicability condition	Justification of conformance
	3.12.23 Biomass estimates shall be converted to tCO ₂ e per ha using a carbon fraction and ratio of molecular weights as per the 2019 Refinement to the 2006 IPCC guidance. Uncertainties shall be propagated.	Conversion from Biomass followed IPCC guidance 2006 refinement, and uncertainties were propagated as described in section 3.2.1.1.3.4.
	3.12.24 Each estimate shall include an uncertainty estimate representing the error sources, as set out in Section 3.15.6 below.	Uncertainty was estimated following requirements in section 3.15.6, and it is described in sections 3.2.1.1.3.3 for biomass and emission factors and in section 2.5.3.8 of the Chocó Colombia JNR Forest Reference Emission Level (ID 5079) for map accuracy assessment.

3.1.2.1.4 Nesting Requirements for Projects and Lower-level Jurisdictional Programs

Reference ID/Title	Applicability condition	Justification of conformance
	3.12.29 Jurisdictional proponents shall use VCS Tool VT0007 Unplanned Deforestation Allocation (UDef-A) to allocate corresponding portions of the higher-level jurisdictional FREL to nested projects and lower-level jurisdictional programs for deforestation.	Section 2.5.3.8 of the Chocó Colombia JNR Forest Reference Emission Level (ID 5079) describes the Application of the Procedure in VT0007 to Compare Accuracy of Maps. The procedures described in VT0007 were carefully followed and described in Section 2.5.4.3 of the Choco FREL BD.
JNR Requirements Scenario 1 v4.1 Nesting Requirements for Projects and Lower-level Jurisdictional Programs	3.12.30 All projects and lower-level jurisdictional programs that are registered under the VCS Program, including those that are undergoing a transition period as set out in Section 3.12.31 and already nested projects and lower-level jurisdictional programs, shall be allocated baseline activity data using VT0007.	The procedures described in VT0007 were carefully followed and described in Section 2.5.4.3 of the Choco FREL BD.
	3.12.31 Where the jurisdictional FREL does not include planned forest degradation, projects aimed at reducing planned forest degradation (e.g., IFM logged to protected forest projects) shall use the applicable VCS project methodology until planned forest degradation is included within the jurisdictional FREL scope.	N/A This project does not aim to avoid planned deforestation or planned forest degradation.
	3.12.31 Where the jurisdictional FREL does not include planned forest degradation, projects aimed at reducing planned forest degradation (e.g., IFM logged to protected forest projects) shall use the applicable VCS project methodology until planned forest degradation is included within the jurisdictional FREL scope.	N/A This project does not aim to avoid planned deforestation or planned forest degradation.

3.1.2.2 Applicability Conditions from the Choco Department JNR FREL (VCS ID 5079)

As the UDef portion of the Program is nested within the Choco FREL (VCS ID 5079) and will apply the Choco FREL for issuance of VCU, the following conditions were met:

- 1) *The area will be deforested in absence of the REDD project activity and the deforestation is mosaic in nature (described in the VCS AFOLU Requirements) described in Section 1.1.*
- 2) *Drivers of deforestation and forest degradation are unplanned as described in Section 2.2.1.3.*
- 3) *Deforestation from a planned forest conversion activities are excluded from the analysis as described in the Choco JNR FREL (VCS ID 5079).*
- 4) *The Project Area does not include peatland soil as described in the Choco JNR FREL (VCS ID 5079).*
- 5) *Both the Project Start and the Start Date of the FREL is January 1, 2021, which is within the number of years as specified by the VCS Standard of the start of the jurisdictional FREL validity period.*
- 6) *This project applies Verra approved methodologies, modules, tools, and other guidance to quantify ex-post leakage from geographically constrained activity shifting leakage, non-geographically constrained activity shifting leakage and market leakage as described in Section 3.2.3 full the procedures for the definition of defining the area susceptible to leakage can be found in the Choco FREL BD Section 2.4.5.6.*
- 7) *This Project Activity Instance does not include mangroves.*

3.1.2.3 Applicability of the Maximal Mitigation Potential (PMM) Prescribed by Colombian Law

This project complies Colombia’s legal requirements for Maximal Mitigation Potential (MMP) (as described in Section 1.7.2.5 of the Choco FREL BD). This ensures that this REDD+ project does not exceed the limits imposed by the government. The full allocation of the PMM is described in Section 1.7.2.5.1 in the Choco FREL Baseline Description.

3.1.2.4 Applicability Conditions Related to the Use of Module VMD0055 Estimation of Emission Reductions from Avoiding Unplanned Deforestation (UDef)

Reference ID/Title	Applicability condition	Justification of conformance
Module VMD0055 -	Condition 1. The land use transition in the baseline scenario is forest land to non-forest land, meeting the definition of unplanned deforestation;	The baseline scenario for the REDD+ project instance in Chocó includes several AFOLU (Agriculture, Forestry, and Other Land Use) transitions, specifically the transition from forest land to non-forest land.
	Condition 2. The project involves activities aimed at avoiding unplanned deforestation	As stated in Section 2.1.17, the REDD+ Program aims to develop and strengthen several activities which contribute to avoid process that lead to forest lost such as unplanned deforestation.

Reference ID/Title	Applicability condition	Justification of conformance
	Condition 3. Agents of deforestation in the baseline scenario clear the land for tree harvesting, settlements, roads, unsanctioned expansion of roads or other infrastructure, agricultural crop production, ranching, or aquaculture.	In the baseline scenario for the REDD+ Program first Project Activity Instance, agents of deforestation clear land for various purposes such as: illegal mining, illegal logging for timber, conversion of forestland to grassland for grazing as well as for establishing illicit crops, shifting agriculture for subsistence and unplanned fires (see for a full description).
	Condition 4. Not applicable if: The project harvests trees for wood products (e.g., timber, fuelwood, charcoal, fiber), unless the trees have been demonstrably planted during the project lifetime as part of project activities for leakage mitigation or community development	The REDD+ Project Activity Instance does not expect to harvest trees as a project activity.
	Condition 5. Not applicable if: More than two percent of the vegetation cover in the project area is peatland or tidal wetland vegetation	Project Activity Instance is located inland several kilometers away from the Pacific Coastline so there is no presence of tidal wetlands Project Activity Instance doesn't include organic soils or peatland.
	Condition 6. Not applicable if: Wetlands are being drained in the baseline scenario or wetland drainage occurs in the project scenario (including the use of trenches or ditches for the purpose of wetland drainage)	Under both the baseline and project scenarios, no wetland drainage activities have been identified. If any such areas are found, they will be conservatively excluded from the project area.
	Condition 7. Not applicable if: More than ten percent of the vegetation cover in a 10-kilometer-wide buffer around the project area is peatland or tidal wetland vegetation.	See abovementioned justification for condition 5.
	Condition 8. Not applicable if: Implemented leakage mitigation measures include: a) Flooding agricultural lands to increase production (e.g., for rice paddies), or b) Intensifying livestock production through the use of feed-lots 1F 2and/or manure lagoons.	No such activity have been identified as a potential mitigation measure (see Section 3.2.3.4).

3.1.2.5 Applicability Conditions Related to the Use of Tool VT0007 – Unplanned Deforestation Allocation (UDef-A)

Reference ID/Title	Applicability condition	Justification of conformance
Tool VT0007 General Requirements	Condition 1. The project is a standalone project meeting the applicability conditions for projects that aim to avoid unplanned deforestation as defined in VMD0055 and is seeking allocation of jurisdictional unplanned deforestation activity data.	The COCOMACIA REDD+ Program is nested within the Choco Department, Colombia Nested JNR FREL registered with Verra as ID# 5079.

Reference ID/Title	Applicability condition	Justification of conformance
	Condition 2. A higher-level jurisdiction is seeking to allocate their FREL to projects or lower-level jurisdictions aiming to avoid unplanned deforestation.	Optional applicability condition. Not applicable for the COCOMACIA REDD+ Program.

3.1.2.6 Applicability Conditions Related to VM0006 (UDeg)

Reference ID/Title	Applicability condition	Justification of conformance
VM0006 Criteria Related to Conditions on the Land before Project Implementation	Condition 1- Land in the Project Activity Instance consists of either one contiguous area or multiple discrete Project Activity Instance parcels, and must meet an internationally accepted definition of forest.	Satellite imagery before the project start has been analyzed to demonstrate that the land in the Project Activity Instance qualifies as forest in accordance with the Colombia’s national definition of forest: “Land mainly covered by trees which might contain shrubs, palms, guaduas, grass and vines, in which tree cover predominates with a minimum canopy density of 30%, a minimum canopy height (in situ) of 5 meters at the time of identification, and a minimum area of 1.0 ha” (Ministry of Environment and Sustainable Development – IDEAM, 2024).
	Condition 2 - The Project Activity Instance must be deforested or degraded in absence of the REDD+ project activity and the deforestation and degradation must be mosaic in nature as described in the VCS AFOLU Requirements.	The Project Activity Instance would be deforested in absence of the REDD+ Project Activities, as evidenced by 1) the presence of deforestation agents and drivers in and near the Project Activity Instance, and 2) an average deforestation rate in the Jurisdiction exceeding the minimum criteria of 0.5% during the historical reference period. Additionally, deforestation in the Jurisdiction is mosaic in nature, following the typology described in the VCS AFOLU requirements.
	Condition 3 - Drivers of deforestation and forest degradation must fall into one or more of	The most prevalent active drivers of unplanned deforestation and forest degradation in the Project Activity Instance were assessed by conducting social surveys, gathering input from local experts, and from field assessments. The drivers and their perceived rank according to the social surveys as identified by community members are listed below. Analysis of these drivers is presented later in section 3.2.1.2.5 <ul style="list-style-type: none"> • <i>Illegal Logging of timber for commercial sale</i> • <i>Shifting agriculture for subsistence</i>

Reference ID/Title	Applicability condition	Justification of conformance
VM0006 Criteria Related to Eligible Project Activities	defined categories.	<ul style="list-style-type: none"> • <i>Illicit Crops</i> • <i>Illegal Mining</i> • <i>Conversion of Forestland to Grassland for Grazing</i> • <i>Unplanned fires</i> <p>All these drivers are unplanned in nature and follow under the categories described in section 4.1.1 of the VM0006 Methodology.</p>
	Condition 4 - Accurate data on past LULC in the Reference Region is available for at least 3 points in time.	Remote sensing data from Landsat and Sentinel 1 were used to perform wall-to-wall classification of the jurisdictional region over the historical period. Satellite imagery was retrieved for three periods encompassing the beginning, somewhere in the middle, and the end of the historical period. Likewise, several ancillary layers representing geospatial data that may correlate with the land use history of the jurisdiction were used. All data was preprocessed and prepared as described in Section 2.5.3.3 and 2.5.3.5. of the VCS-JNR Baseline Description Document for Chocó Colombia JNR Forest Reference Emission Level (ID 5079).
	This methodology is not applicable to organic soils or peatland.	Project Activity Instance does not include organic soils or peatland.
	This methodology is applicable to projects that implement one or more of the activities listed under section 4.1.2 of the VM0006 Methodology	Project Activities are the activities designed to reduce pressure on the forest inside and outside of the Project Activity Instances and therefore reduce deforestation and decrease any leakage caused by the Project. All activities fall within the categories specified by the methodology. Activities are described in section 2.1.17.

3.1.2.7 Applicability Conditions Related to the Use of Tool VT0005 for Measuring Aboveground Live Forest Biomass using Remote Sensing (UDef and UDefg)

Reference ID/Title	Applicability condition	Justification of conformance
Tool VT0005 General Requirements	Condition 1. Applicable to all forest types and age classes	Condition met based on the forest classes described in Section 2.1.14.5.
	Condition 2. Applicable for use with methodologies or tools that require an estimate of area-normalized Aboveground Live Forest Biomass (ALFB) density.	The Verra methodologies VM0048 and VM006 used as the underlying methodologies for UDef and UDefg is compatible with the use of this tool.
	Condition 3. The tool is applicable in conjunction with AFOLU methodologies in which estimation of ALFB is required.	See abovementioned justification for condition 2.
	Condition 4. The remotely sensed data necessary to estimate ALFB is accessible for the time period desired.	The remote sensing data used for the project activity instances is accessible for the project time boundary in order to estimate ALFB.

Reference ID/Title	Applicability condition	Justification of conformance
	<p>Condition 5. Predictive model (PM) relating RS metrics to ALFB is parametric (eg, ALFB = $f(x, \alpha, \epsilon)$)</p>	<p>The predictive model use LiDAR flights all over the project boundaries displayed as flights transect which are couple with ground sampling plots. This process allows the project to develop a parametric relationship (see section 3.2.1.1.3.1)</p>
	<p>Condition 6. Not applicable if:</p> <p>The overarching methodology requires a specific method for determining change in biomass density over time. This tool does not provide methods for temporal change in ALFB density. However, the tool can be repeated at distinct points in time to determine an ALFB delta.</p>	<p>The tool is intended to be repeated to cover the difference in time as project activities develop over the years, only at baseline reset every 6 years.</p>

3.1.3 Project Boundary (VCS, 3.12)

The Project Boundary includes two spatially separated areas: 1) UDef and 2) UDeg. Table below and identifies the relevant GHG sources, sinks, and reservoirs for the project and baseline scenarios for each activity.

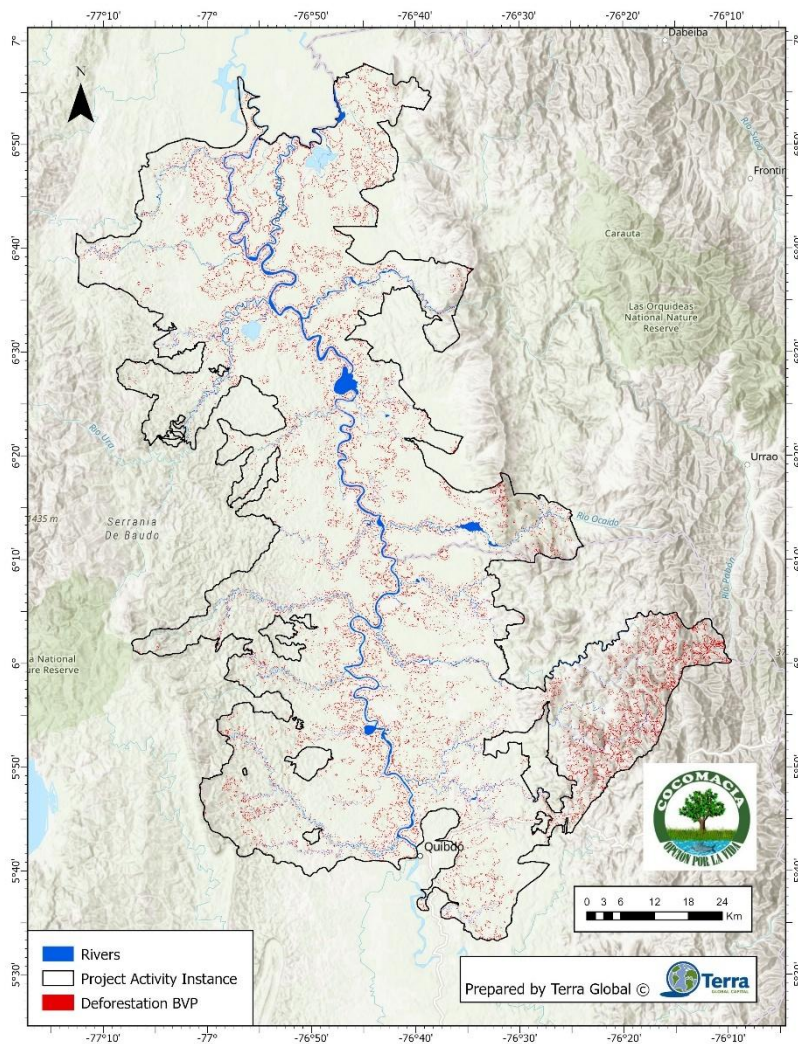
Table 21. Relevant GHG Sources, Sinks and Reservoirs

Source		Gas	Included?	Justification/explanation
Baseline	Deforestation	CO ₂	Yes	Emissions are included in the changes of carbon pool.
		CH ₄	No	Not required for REDD projects per the VCS AFOLU requirements, conservatively omitted except when CFE activities are implemented.
		N ₂ O	No	Not required for REDD projects per the VCS AFOLU requirements, emissions from burning woody biomass are assumed negligible and conservatively excluded except when CFE activities are implemented.
		Other	N/A	
	Forest Degradation	CO ₂	Yes	Emissions are included in the changes of carbon pool.
		CH ₄	No	Not required for REDD projects per the VCS AFOLU requirements, conservatively omitted except when CFE activities are implemented.
		N ₂ O	No	Not required for REDD projects per the VCS AFOLU requirements, emissions from burning woody biomass are assumed negligible and conservatively excluded except when CFE activities are implemented.
		Other	N/A	
Project	Deforestation	CO ₂	Yes	Emissions are already included in the changes of carbon pools. Include only when the degradation has not been included in the estimation of changes in carbon pool.
		CH ₄	No	CH ₄ emissions of burning woody biomass if significant.
		N ₂ O	No	N ₂ O emissions of burning woody biomass if activities are significant.
		Other	N/A	
	Forest Degradation	CO ₂	Yes	Emissions are included in the changes of carbon pool.
		CH ₄	No	CH ₄ emissions of burning woody biomass if significant.
		N ₂ O	No	N ₂ O emissions of burning woody biomass if activities are significant.
		Other	N/A	

3.1.3.1 Project Boundary Accounting for Unplanned Deforestation (UDef-PA) following VM0048

The UDef-PA boundary was defined based on the allocation results from the Chocó Department Jurisdictional Forest Reference Emission Level (FREL) (VCS ID 5079). The geographic boundary of the UDef-PA encompasses those zones that, according to the Chocó JNR FREL risk map and allocation tool, were projected to be deforested under the baseline scenario within the COCOMACIA Program Area during the first Baseline Validity Period (BVP), covering the years 2021 to 2026.

This configuration allowed for the spatial allocation of unplanned deforestation and the quantification of associated emissions. The resulting baseline provided a consistent and robust representation of historical and expected deforestation dynamics, enabling the generation of ICVCM CCP-compliant Verified Carbon Units (VCUs) in accordance with Verra’s latest guidance. Map 14 shows the location of the UDef area projected for the initial Baseline Validity Period (BVP).



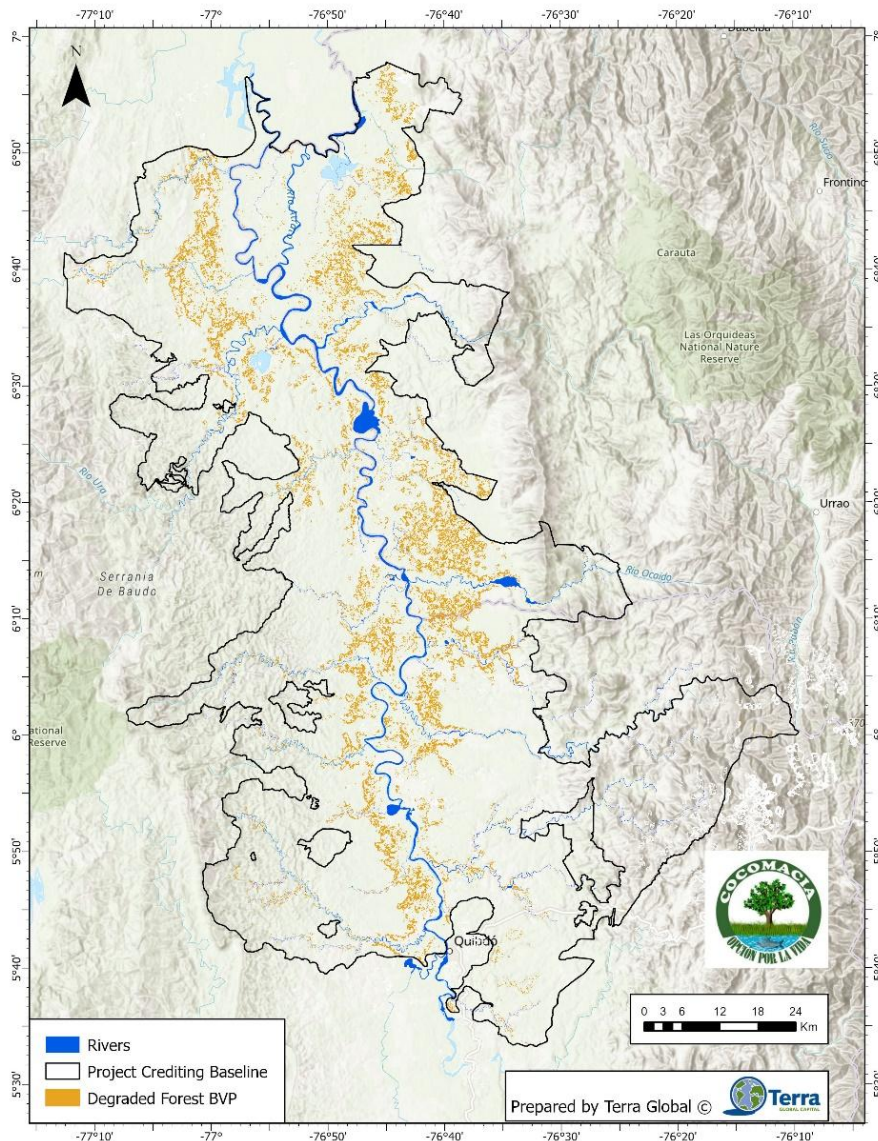
Map 14. UDef Project Area for the BVP 2021-2026

3.1.3.2 Project Boundary accounting for Unplanned Forest Degradation (UDeg-PA) following VM0006

The UDeg-PA boundary was defined based on the jurisdictional risk map of the Chocó Department FREL area. The geographic boundary of the UDeg-PA encompasses those zones that, according to the risk map developed for the entire Jurisdiction of Chocó Department FREL area, were projected to be degraded under the baseline scenario within the COCOMACIA Program Area during the years 2021 to 2026.

The forest degradation (UDeg) baseline was developed in accordance with the VM0006 Methodology for Carbon Accounting in Mosaic and Landscape-Scale REDD+ Activities, under Verra’s Jurisdictional and Nested REDD+ (JNR) Standard v4.1. This methodology provides guidance for spatially explicit accounting of land-use and land-cover (LULC) changes classified as degradation, specifically transitions from closed forest to the corresponding open forest class.

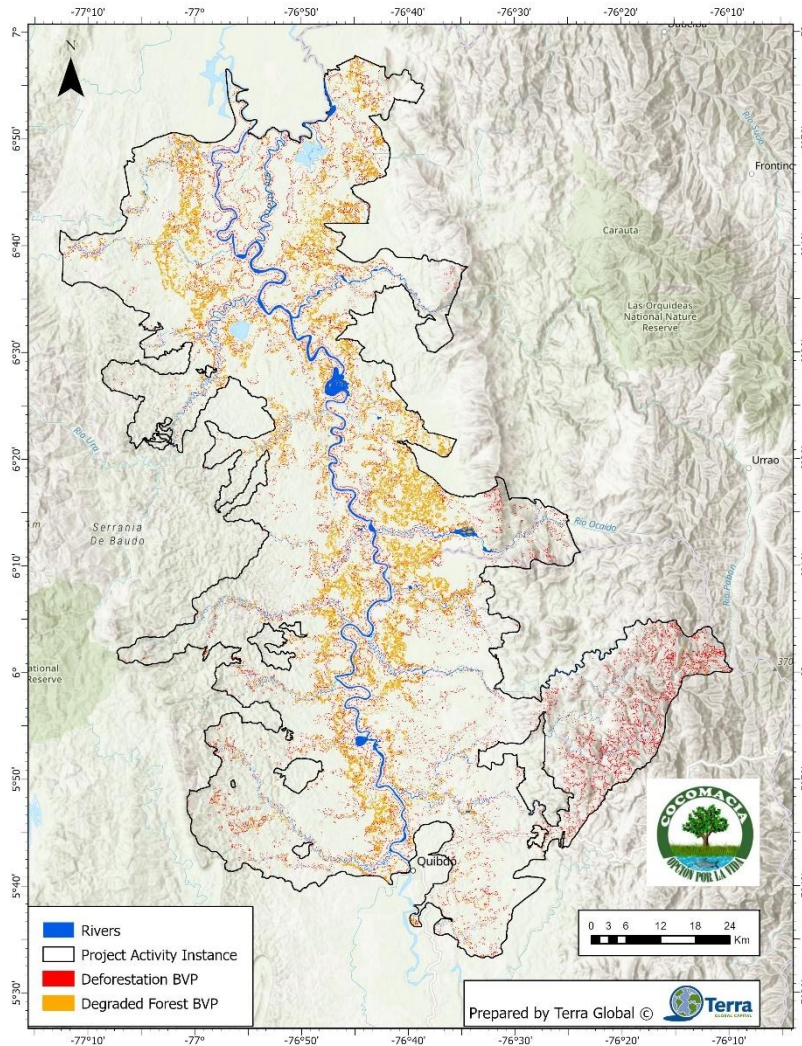
The application of VM0006 allows for a robust estimation of emissions from degradation processes, fully aligned with the Chocó Jurisdictional FREL and integrated into a unified, Verra-compliant baseline framework. Map 15 shows the location of the deforestation activities projected for the BVP.



Map 15. UDeg Project Area for the BVP 2021-2026

3.1.3.3 Combined Project Areas for Project Crediting Area

The Map 16 presents the combined UDef-PA and UDeg-PA areas for the 2021–2026 period, corresponding to the first Baseline Validity Period (BVP) of the Chocó Department JNR FREL.



Map 16. UDef-PA and UDeg-PA for the BVP of 2021-2026

3.1.4 Baseline Scenario (VCS, 3.13)

3.1.4.1 Rationale, and Methodological Choices

The baseline scenario was developed in accordance with the guidance and requirements established by Verra under the Jurisdictional and Nested REDD+ (JNR) Standard v4.1. The approach applies approved Verra methodologies, modules, and tools to ensure full consistency, transparency, and methodological rigor in the estimation of baseline emissions. It was designed to capture both deforestation and forest degradation processes, providing a comprehensive representation of land-use change dynamics within the COCOMACIA and Chocó Department.

For deforestation (UDef), the baseline was constructed using the VM0048 Methodology for Reducing Emissions from Deforestation and Forest Degradation (REDD+) v1.0 as the principal framework. Following Verra’s JNR Rules and Requirements for Scenario 1 (v4.1), this methodology was implemented in combination with Module VMD0055 and the VT0007 Unplanned Deforestation Allocation (UDef-A) v1.0 to spatially allocate unplanned deforestation and quantify associated emissions. The resulting configuration is consistent with the Chocó Jurisdictional FREL, ensuring methodological alignment between jurisdictional and nested project baselines. This structure also enables nested projects to generate ICVCM CCP-compliant Verified Carbon Units (VCUs) in accordance with Verra’s latest guidance.

For forest degradation, the VM0006 Methodology for Carbon Accounting in Mosaic and Landscape-Scale REDD+ Activities was applied to obtain a spatially-explicit separation of UDeg-PA, also following Verra’s directives under the JNR framework. This ensures consistency between deforestation and degradation components and prevents double counting of emission sources.

Overall, the baseline employs an activity-based accounting approach, integrating the outputs from both methodologies into a unified and coherent framework. The use of two harmonized baselines—one for deforestation (VM0048/VMD0055/VT0007) and another for degradation (VM0006)—provides a comprehensive and realistic representation of historical and expected land-use change across the jurisdiction. This integrated, Verra-compliant approach ensures that the baseline scenario accurately reflects the true dynamics of deforestation and degradation within the region while adhering to all applicable Verra standards and guidance.

The combined use of VM0048 and VM0006 was selected to ensure that both major drivers of forest carbon loss—deforestation and degradation—are fully captured within a single, consistent analytical framework. This approach reflects Verra’s recommended practice for representing complex tropical forest landscapes where both processes occur simultaneously. It also allows the baseline to incorporate the most recent spatial data, modeling tools, and jurisdictional parameters available, ensuring methodological robustness and compatibility with future updates to Verra’s REDD+ frameworks.

3.1.4.2 Baseline Scenario for Deforestation (UDef) under VMD0048

3.1.4.2.1 Determination of the Most Plausible Baseline Scenario

3.1.4.2.1.1 Step 1. Credible land use scenarios

As detailed in the Additionality section below, the outcome of Step 1b of the VT0001 Tool is as follows:

- Scenario 1: Continuation of the pre-project land use.
- Scenario 2: Implementation of the project activity within the project boundary without registration as a VCS AFOLU project.

The scenario describing ‘activities similar to the proposed project activity being implemented on at least part of the land within the project boundary of the proposed REDD project’ was considered not credible.”

3.1.4.2.1.2 Step 2a. Barrier analysis

This step is not applicable since the barrier analysis wasn’t used for demonstration of additionality.

3.1.4.2.1.3 Step 2b. Investment analysis

As described in detail in the additionality section below the most economically or financially attractive land use scenario was assessed through a simple cost analysis demonstrating that scenario 1: continuation of pre-project land use will continue in absence of the Program Activities which requires a significant upfront investment to be repaid through the generation of Verified Emission Reductions or Removals.

3.1.4.2.1.4 Step 3. Quantification of GHG emission Under the Selected Baseline Scenario.

Quantification of baseline emissions was done at the jurisdictional level under the Choco Department JNR FREL (VCS ID 5079) and allocated to the Project as described in Appendix 6: UDef AD Allocation Report.

3.1.4.2.2 Projects Implemented Where a Government has Established a REDD Baseline

The COCOMACIA REDD+ Program (VCS ID 2071) is nested according to the requirements set out in the JNR Scenario 1 Requirements under the Choco Department JNR FREL with VCS ID#5079.

The Program uses a baseline allocated from the FREL and described in the Choco Department JNR Baseline Description. The Choco Department JNR FREL includes all the procedures set out in both VM0048 and VMD0055 methodologies and describes each relevant step and the relevant tools.

The VCS Tool VT0007 was used to allocate activity data based on risk mapping for the Unplanned Deforestation to the Chocó Department in Colombia following the requirements of VMD0055. These risk maps for unplanned deforestation and allocation of activity data for the jurisdictional forest reference emission levels (FRELs) were provided with this nested project baseline for the COCOMACIA REDD+ Program. The AD Baseline Allocation Report (Appendix 6) was used to allocate deforestation risk to the COCOMACIA Project Area from the Existing COCOMACIA JNR FREL.

Following the requirements under VMD0055, the JNR Proponent allocated the deforestation baseline AD to the UDef PA and UDef LB using version 1.0 of VT0007. The JNR Proponent produced a deforestation AD Baseline Allocation Report and shared it with the COCOMACIA, which is attached as an annex (Appendix 6). The AD Baseline Allocation Report attached contains all the information required by this project to allocate the baseline UDef AD to each forest stratum of the UDef PA and UDef LB. The results from the allocated FREL are used to assess COCOMACIA baseline GHG emissions from deforestation and are attached to the annex.

As VMD0048 only addresses issues related to deforestation, forest degradation was allocated separately following similar allocation procedures but using VCS methodology VM0006.

3.1.4.2.3 Baseline Validity

This project adopts the Baseline Validity Period (BVP) of the Chocó Department Jurisdictional Forest Reference Emission Level (FREL) (VCS ID 5079), covering the years 2021–2026. Although baseline projections beyond this initial BVP are not required for REDD+ project activities (as per VM0048, Section 6.3), this Project Description (PD) includes both the allocation of baseline emissions from the Jurisdictional FREL (UDef) for the initial BVP and an additional 34 years of ex-ante projections to support long-term project design and planning.

3.1.4.3 Baseline Scenario for Degradation (UDef) under VM0006

Per VM0006, the most plausible baseline scenario for the project is the existing or historical changes in carbon stocks in the carbon pools within the Project Activity Instance. The Project Activity Instance would be degraded or deforested in the absence of the REDD+ Project activities, and the deforested and degraded areas are mosaic in nature.

This baseline scenario is consistent with scenario identified in the CDM Modalities and Procedures for afforestation and reforestation, project activities (Decision 5/CMP.1), paragraph 22, option (a):

“Existing or historical, as applicable, changes in carbon stocks in the carbon pools within the Project Activity Instance.”

This option applies because under the mosaic typology of degradation, the historical changes in land-use are representative for the most likely future changes in land-use.

This option was chosen because, according to the mosaic typology of degradation, historical changes in land use are representative of the most likely transformations in the future. The most appropriate scenario is one in which historical rates, variations in those rates, and the dynamics of deforestation and forest degradation continue.

The net GHG sources and sinks under the baseline scenario were estimated ex-ante for each year of the crediting period. Once validated, the baseline will be used for the calculation of actual NERs. Baseline calculations remain valid only for a limited period of time and will be updated according to the JNR Scenario 1 rules and requirements.

3.1.5 Additionality (VCS, 3.14)

Additionality of the VCS Program Activities is being demonstrated using the most recent version of VT0001 Tool for the Demonstration and Assessment of Additionality (VT0001). This meets the requirements of VM0048 and VM0006. VT0001 cites using the most recent CDM tool for the demonstration and assessment of additionality which is Version 7.0.0, Validity From 23 Nov 2012 onwards (UNFCCC, 2012).

3.1.5.1 Regulatory Surplus (VCS, 3.14)

Is the project located in an UNFCCC Annex 1 or Non-Annex 1 country?

Annex 1 country Non-Annex 1 country

Are the project activities mandated by any law, statute, or other regulatory framework?

Yes No

If the project is located inside a Non-Annex 1 country and the project activities are mandated by a law, statute, or other regulatory framework, are such laws, statutes, or regulatory frameworks systematically enforced?

Yes No

The Project is located inside a Non-Annex 1 country and the project activities are not mandated by a law, statute, or other regulatory framework, nor are such laws, statutes, or regulatory frameworks systematically

enforced. the relevant regulatory framework described in Section 2.5.1. provides a legal foundation and legitimacy for community environmental management, but does not compel, require, or directly finance the implementation of the Project activities. Therefore, all activities are voluntary and go beyond existing legal or regulatory requirements.

3.1.5.2 [Additionality Methods](#) (VCS, 3.14)

Following the requirements of CDM additionality tool and the Guidelines on the assessment of investment analysis”, available on the UNFCCC website the Program Activities demonstrate their additionality.

3.1.5.2.1 [Step 1: Identification of alternative land use scenarios to the proposed VCS AFOLU project activity.](#)

3.1.5.2.1.1 [Sub-step 1a.: Identify credible alternative land use scenarios to the proposed VCS AFOLU project activity.](#)

Two alternative land-use scenarios to have been identified and are described below, although only one is realistic and credible.

Alternative Scenario 1 - Continuation of the current situation of pre-project land use:

The Project Activity Instance is situated in large forest areas with communal Consejo tenure and natural resource rights. In these areas, the Regional Environmental Authority does not provide direct support for the protection against illegal and unsustainable logging and extraction of other natural resources, nor does the community have other resources needed to effectively protect their territory. Within the Project Activity Instance, areas located primarily along the Atrato River and its tributaries, as well as near larger towns and cities, are used for agriculture. There are also large forest areas under pressure from illegal logging, shifting agriculture, small- and medium-scale illegal mining, resulting in deforestation and forest degradation. The unaddressed illegal activities, coupled with the high levels of poverty in Chocó, mean that the pressure on forests would continue in the absence of the Project, leading to ongoing deforestation and degradation (Forero, 2023)

Alternative Scenario 2 - Project activities implemented on the land within the project boundary performed without being registered as the VCS AFOLU project:

The Program Activities within the Project Activity Instance might be performed without being registered as the VCS AFOLU project, if there was adequate financial support from national and international development organizations, as well as governmental agencies that could plan, finance and implement the Project Activities over the long-term with the focus on reducing deforestation and land degradation. However, governmental and donor funded programs are typically implemented within fixed project cycles of very limited duration, generally not exceeding four to five years. After this period, external support is often terminated or redirected to other priority areas or development causes, leaving no long-term support for these Project Activities.

The comparable initiatives identified within the Project Activity Instance and the broader COCOMACIA territory vary considerably in their nature, scale, and objectives. Table 22 summarizes the recent government and donor funding for COCOMACIA and the relevance each has in supporting the Program Activities. While some grant funded activities share some similarities with the proposed REDD+ Project,

such as community engagement, governance strengthening, or livelihood support, none encompass the integrated scope, territorial scale, or long-term vision of the COCOMACIA REDD+ Program. The reviewed initiatives are generally short-term, donor- or state-funded interventions, oriented toward sectoral development, and lack mechanisms for sustained forest protection, or performance-based climate finance.

This demonstrates that the while there are some projects that have some relevance in support Program Activities, they are nowhere near the scale or length that would be effective in reducing deforestation.

Table 22. Recent Donor and Government Funding to COCOMACIA

Project/initiative	Period of Implementation	Scale of Funding	Main Objective/Scope	Relevance to Program Activities
Juntanza Étnica (IPACE Program) (USAID/ACDI-VOCA)	2022-2026 (discontinued in 2025)	National program; no local budget breakout	Community governance strengthening, participation, and livelihoods with ethnic organizations across multiple municipalities	Medium: Its activities are mostly oriented towards governance strengthening; Its interventions are grant-based and rely on international aid budgets. Program implementation is medium-term. Furthermore, It was discontinued when political will in the US ended in 2025.
Investigación y Desarrollo para la estabilización de la Frontera Agrícola - Desira IDEAS	December 2020 - June 2025	National program (total allocation €2,700,000); no local budget breakout.	Strengthening territorial governance and stabilizing agricultural frontiers through agroecological intensification, landscape restoration, and sustainable forest management.	Low: The project had a very limited geographic scope within COCOMACIA (Vigía del Fuerte). It was Implemented by external institutions with temporary donor funding. Its implementation was medium-term.
Alianza Público-Popular - Ministerio de Vivienda	2025-2026	COCOMACIA would receive \$USD 7,2 million approximately. (Total program investment: USD \$28.98 million across 23 municipalities of the Chocó Department.)	Home improvement for 820 households in COCOMACIA affected by the winter flooding of 2024	Low: This project focuses specifically on home improvement, it is funded by the State and it is short-term implementation.
Bosques y humedales étnicos de comunidades negras conservados y manejados para la vida y la paz en el Medio Atrato	2024	Grant for USD \$30,523 with Co-Financing by COCOMACIA in kind for a value of USD \$39,466	Focused on strengthening the governance, conservation, and sustainable use of community forests and wetlands in Tadia and Punta de Ocaidó, Chocó.	Low: The project had a very limited geographic scope, (Tadia and Punta Ocaidó) was implemented over a short period, and operated with a small budget.

Project/initiative	Period of Implementation	Scale of Funding	Main Objective/Scope	Relevance to Program Activities
COCOMACIA - CHOCÓ - GEF Small Grants Program				
Desarrollo Rural con Equidad - DRE	Operational since the early 2010s - present	\$USD 127,500,000 allocated on an annual basis at a national level. (no local budget breakout)	It is an instrument aimed at improving the financing conditions of agricultural projects focused on short-cycle crops that are part of the basic food basket, have export potential, or are sensitive to imports	Low: Fully state-funded through the Ministry of Agriculture, with a narrow in scope (provision of agriculture subsidies with no strong forest conservation considerations)
Dejando un territorio vivo a nuestros renacientes” - GEF Project “Conservation of Biodiversity in Landscapes Affected by Mining in the Chocó Biogeográfico	2018-2019	USD \$206,500	Support the restoration and rehabilitation of degraded mining areas in the collective territory of COCOMACIA. Approximately 118 ha were restored	Low: The project had a very localized scope (three LCCs, 118 ha) and short-term implementation. Funding was grant-based and fully dependent on GEF/PNUD cycles,
Convenio Específico de Cooperación No. 026 - IIAP-COCOMACIA	Nov 2023 - Mar 2024	USD \$1.74 million	Acquire and deliver productive assets, tools, and inputs to family production units in some municipalities, under the national program El Campo Emprende, aiming to strengthen traditional livelihoods and productive capacities	Medium: Short-term implementation, Fully state-funded through the Ministry of Agriculture, and narrow in scope (provision of agricultural inputs). It was also limited in geographic scope, reaching only 5 out of 15 municipalities within COCOMACIA.

- *Alternative Scenario 3 - If applicable, activities similar to the proposed project activity on at least part of the land within the Project Activity Instance of the proposed project at a rate resulting from legal requirements:*

This is not applicable, for none of the VCS Program Activities are required by law and there are no similar activities occurring in the Project Activity Instance that are not VCS AFOLU projects.

3.1.5.2.1.1.1 Outcome of Step 1a

Alternative Scenario 1, continuation of the current situation of pre-project land use is the only credible alternative to the VCS Program Activities.

3.1.5.2.1.2 Sub-step 1b: Consistency of credible land use scenarios with enforced mandatory applicable laws and regulations

Alternative Scenario 1, continuing to pre-project activities, includes activities from outside actors who are illegally deforesting and degrading inside the Project Activity Instance. These include illegal logging and unpermitted mining. These activities do not comply with all applicable legal requirements and mandatory compliance. Given the lack of internal resources for forest protection and lack of support from the Regional Environmental Authorities (in Choco Department CODECHOCO and in Antioquia Department CORPOURABA), not all of the regulatory and legal requirements are enforced. With illegal mining it is the material impossibility of the State to combat this criminal phenomenon, and, among other aspects, the coordination of efforts by its institutions to control it (Burgos, 2018)

Additionally, at times the communities who are converting forests and logging do not obtain the required legal permits thus are illegally extracting forest resources. These illegal activities persist, and the regulations that prohibit them are not enforced.

Therefore, Scenario 1 remains a plausible alternative land use scenario.

3.1.5.2.1.2.1 Outcome from Sub-step 1b

The Alternative Scenario 1 - Continuation of the pre-project land use that are in compliance with mandatory legislation and regulations while considering the systematically unenforced and lack of compliance with legal requirements that are widespread in the region is a credible Scenario.

3.1.5.2.2 Step 2: Investment analysis

The application of VT0001 (CDM additionality tool Version 7.0.0) requires under requirement 23 states notes that “the latest version of the “Guidelines on the assessment of investment analysis”, available on the UNFCCC website, shall be taken into account when applying this step”. The most current guidelines are on the UNFCCC website are A6.4-SBM019-A01, Methodological tool A6.4-AMT-002: Investment analysis Version 01.0 (UNFCCC, 2024) which has been applied here.

3.1.5.2.2.1 Sub-step 2a: Determine appropriate analysis method

The investment analysis demonstrates that the VCS Program Activities are not economically or financially feasible, without the revenue from the sale of VCU. Since the VCS Program Activities and the alternatives identified in Step 1 generate no financial or economic benefits other than carbon related income the simple cost analysis (Option I) was applied.

3.1.5.2.2.2 Sub-step 2b: Option 1: apply simple cost analysis

The simple cost analysis was conducted in the following steps:

(a) Describe the Program activity scenario and the alternative scenarios to be considered in conducting the analysis

The scenarios analyzed here include:

- *Program Scenario - Project activities implemented on the land within the project boundary and registered as the VCS AFOLU project to generate carbon revenue*

- Alternative Scenario 1 – Pre-project activities continue

(b) Determine the assessment period

The assessment period is for the first crediting period of 40 years.

(c) Demonstrate that the Program Scenario does not generate any cost savings or revenues other than from VCU during the assessment period, and justify the analysis with appropriate evidence

3.1.5.2.2.3 Program Scenario

The costs and projected revenues associated with the Program are provided in summary in

Table 23

Table 23. Program Cashflow

Budget Start Date		1-Nov-25	1-Nov-26	1-Nov-27	1-Nov-28	1-Nov-29	1-Nov-30	1-Nov-31	1-Nov-32	
Budget Period #										
Budget Year Start	yr	1 yr	6 yr	11 yr	16 yr	21 yr	26 yr	31 yr	36 yr	Total 40 years
Budget Year End		5 yr	10 yr	15 yr	20 yr	25 yr	30 yr	35 yr	40 yr	
<i>VERRs and Revenue</i>										
VERRs per Vintage Verified - Typology 1 Total VERRs		5,311,996	6,128,133	7,586,491	8,585,423	9,272,443	9,651,223	9,292,821	1,805,708	57,634,237
1. Forecast Market Price Curve - Typology 1 (price on first verification in period)		\$7,27	\$9,53	\$12,49	\$16,36	\$21,44	\$28,09	\$36,80	\$48,22	
Total VERRs Delivered to Upfront Investors and Developer		4,023,787	2,618,166	3,105,104	3,427,066	3,605,501	3,693,834	3,625,337	714,598	24,813,393
POD Tons for Sale (tCO2e) - to Fund Project (POD sales)		9,041,241	10,421,483	12,420,418	13,708,264	14,422,005	14,775,337	14,501,347	2,858,392	92,148,487
Total Non-Carbon Revenue		\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Net Revenue for Project (after repayment of climate finance)		\$70,466,411	\$111,530,675	\$173,797,872	\$250,880,267	\$345,981,044	\$463,578,089	\$596,091,552	\$137,844,851	\$2,150,170,761
Total Revenue		\$70,466,411	\$111,530,675	\$173,797,872	\$250,880,267	\$345,981,044	\$463,578,089	\$596,091,552	\$137,844,851	\$2,150,170,761
Investment Funds (balance)	\$1,182,000									
<i>Costs</i>										
2. Program Impl & Mgt		(\$10,402,218)	(\$10,548,869)	(\$11,941,795)	(\$15,305,638)	(\$19,642,623)	(\$25,208,531)	(\$32,351,587)	(\$3,701,456)	(\$129,102,716)
3. FREL_VCS_CCB MRV + Issue		(\$4,667,927)	(\$6,145,369)	(\$7,829,956)	(\$8,353,239)	(\$7,703,419)	(\$11,721,642)	(\$15,080,718)	(\$2,852,033)	(\$64,354,304)
Total Costs		(\$15,070,144)	(\$16,694,237)	(\$19,771,751)	(\$23,658,877)	(\$27,346,043)	(\$36,930,173)	(\$47,432,305)	(\$6,553,489)	(\$193,457,020)
<i>Cashflow (Profits)</i>										
Cashflow (per period)	\$1,182,000	\$55,396,266	\$94,836,437	\$154,026,121	\$227,221,390	\$318,635,001	\$426,647,916	\$548,659,247	\$131,291,362	\$1,957,895,741
Cashflow (cumulative)	\$1,182,000	\$56,578,266	\$151,414,703	\$305,440,824	\$532,662,215	\$851,297,216	\$1,277,945,132	\$1,826,604,379	\$1,957,895,741	

While there will be some local income streams generated by the implementation of Program Activities, these are not of commercial scale to support the financing of the Program Activities.

Following the Section 7.2 of the guidance in the Methodological tool A6.4-AMT-002: Investment analysis Version 01.0, Table 24 provides details of the Program costs (showing the next 24 months starting June 2025).

Table 24. Program Implementation Costs by Cost Type and Cost Item (24 months)

Cost type	Cost Item	USD Total 24 months
Administrativo	Arriendo oficina (Asprodema)	5,897
Administrativo	Construccion de oficina - Adecuación	34,188
Administrativo	Costo del Patrimonio Autónomo	29,974
Administrativo	Créditos - Teléfonos y computadoras (minutos, datos, texto)	-
Administrativo	Elementos de Aseo	708
Administrativo	Franqueo / paquete / mensajería/ movilizacion/ bocinas-microfonos	590
Administrativo	Impresión / Duplicación / Copia (papel y tóner)/ pendones	1,179
Administrativo	Internet de oficina	2,772
Administrativo	Material de oficina (legajadores, cosedoras, ganchos, carpetas, etc)	1,179
Administrativo	Pago salarios retroactivos	89,744
Administrativo	Reserva (Imprevistos) 5%	100,000

Cost type	Cost Item	USD Total 24 months
Administrativo	Servicios publicos de oficina (electricidad / telefono / agua)	2,949
ER y Monitoreo de Impacto		
Equipo de campo e insumos		
Equipo de campo e insumos	Carpas	-
Equipo de campo e insumos	Dron topografico y software	12,821
Equipo de campo e insumos	Equipo de vivero (tubos de polietileno y semillas)	317,308
Equipo de campo e insumos	Insumos para cultivos y PFTM	34,188
Equipo de campo e insumos	Paquete de insumos agricolas fortalecimiento e inclusion de nuevos	353,846
Equipo de campo e insumos	Planes para telefonos patrulleros	58,503
Equipo de campo e insumos	Plántulas de árboles nativos	4,154
Equipo de campo e insumos	Teléfonos de campo para monitoreo	2,821
Equipo de campo e insumos	Unidades de radio y GPS	-
Equipo de campo e insumos	Uniformes (botas, pantalon, camisetas, chaleco, capas, cachucha, machete, limas para afilar)	-
Equipo de oficina		
Equipo de oficina	Antivirus	-
Equipo de oficina	Laptop / Desktop	-
Equipo de oficina	Linternas recargable y Baterías recargables	231
Equipo de oficina	Microsoft Office 365 - E3	-
Equipo de oficina	Otro	-
Operando		
Operando	Bote combustible	61,189
Operando	Bote conductor	8,077
Operando	Bote mantenimiento anual	385
Operando	Camioneta combustible	-
Operando	Camioneta conductor	-
Operando	Camioneta llantas	-
Operando	Camioneta mantenimiento anual	-
Operando	Camioneta poliza de seguro todoriesgo	-
Operando	Camioneta Soat y Tecnomecanica	-
Operando	Combustible para recorridos de comites zonales de conservacion	27,535
Operando	Combustible para recorridos de gestores ambientales	164,538
Operando	Desarrollo / actualización del plan de gestión (áreas forestales)	23,077
Operando	Desarrollo / Actualización del Plan de Gestión (Pueblos con Agricultura)	23,077
Operando	Lancha combustible	4,487
Operando	Lancha mantenimiento anual	1,641
Operando	Remuneracion de la comunidad: patrullaje	153,569
Operando	Servicio contratado de Tecnico agropecuario y PFTM	2,308
Operando	Servicio contratado de Tecnico en ecoturismo	2,308
Operando	Servicio contratado de Tecnico en mineria	2,308
Operando	Servicio contratado de Tecnico para manejo forestal	2,308
Viajes y viaticos		
Viajes y viaticos	Asamblea General	-
Viajes y viaticos	COCOMACIA - Directores y personal sénior - Hotel Big Cities	410
Viajes y viaticos	COCOMACIA - Directores y personal sénior - hotel en comunidades	1,795
Viajes y viaticos	COCOMACIA - Directores y personal sénior - Per Diem Big Cities	205
Viajes y viaticos	COCOMACIA - Directores y personal sénior -Tiquete ida y vuelta	923
Viajes y viaticos	COCOMACIA - Zona - Per Diem	1,795
Viajes y viaticos	COCOMACIA - Zona 1 - transporte terrestre	308
Viajes y viaticos	COCOMACIA - Zonas - transporte fluvial	2,564

Cost type	Cost Item	USD Total 24 months
Viajes y viaticos	Encuentros zonales	38,462
Viajes y viaticos	Refrigerios para socializaciones	10,256
Viajes y viaticos	Reuniones en quibdo	8,974
Viajes y viaticos	Talleres y capacitaciones	26,923
Viajes y viaticos	Terra Global - Hotel Cities	410
Viajes y viaticos	Terra Global - Per Diem Cities	359
Viajes y viaticos	Terra Global - Tiquete ida y vuelta	308
Vehículos		
Vehículos	Bote de 11 metros con motor de 40hp - para zonas	57,692
Vehículos	Camioneta - (van 12 personas - Volkswagen Crafter)	-
Personal - 2. Equipo REDD+		
Personal - 2. Equipo REDD+	Todos los miembros del equipo	258,141
Personal - 3. Lideres de Zonas		
Personal - 3. Lideres de Zonas	Lideres de zona	94,359
Personal - 4. Terra Global /Proveedor Técnico		
Personal - 4. Terra Global /Proveedor Técnico	Cordinador de Campo 1	20,641
Personal - 4. Terra Global /Proveedor Técnico	Cordinador de Campo 2	-
Total Program Costs USD		4,784,695

3.1.5.2.2.4 Scenario 1

(d) Demonstrate that the alternative scenarios do not generate any cost savings or revenues during the assessment period, and justify the analysis with appropriate evidence

The Alternative Scenario 1, continuation of the current situation of pre-project land use, does not generate cost savings or commercial scale revenue streams for the COCOMACIA communities engaging Program Activities. Non-community people who are illegally mining and logging in the Program Areas do not benefit the COCOMACIA communities and would in no way finance the planned Program Activities. COCOMACIA community members who engage in illegal and/or unsanctioned activities generate some revenue for them, however, this is not an investable income stream.

(e) Document any public funding provided to the VCS Program activity

As demonstrated in Table 22 the public and/or donor funding would not fill the funding gap of the VCS Program Activities (considering operational expenditures and any revenues other than VCSs of the activity in the absence of revenues from VCUs.

The simple cost analysis has concluded positively that the VCS Program Activities are not financially viable without the incentives from carbon revenues from sales of VCUs.

It is concluded that the proposed VCS Program Activities are more costly than Alternative Scenario I, thus Step 4 Common practice analysis has been completed.

3.1.5.2.3 Step 3: Barrier Analysis

This section is not developed because the investment analysis, STEP 2 was performed.

3.1.5.2.4 Step 4: Common Practice Analysis

This test is a credibility check to complement the investment analysis (Step 2) analyzing the Program in the context of common practice in the region.

3.1.5.2.4.1 Sub-step 4a: Analyze other activities similar to the proposed project activity

An evaluation of the other activities that are operational and similar to the Program Activities within the Pacific Region and more specifically Choco department shows that there are 10 other projects (**Error! Reference source not found.**) in Choco Department which are implementing similar activities and technologies to reduce deforestation and degradation, although the COCOMACIA Program is by far the largest.

Table 25. Verra Projects Similar to the Program Activities (as of October 2025)

Verra ID	Name	Status under Verra	Area Ha	% VCS Projects in Department	Initial Grant Funding BIOREDD+
1390	Carmen del Darién (CDD) REDD+ Project	Registered and Issued, baseline needs update to JNR	118,318	6.64%	Yes
1391	Sivirú-Usaragá-Pizarro-Pilizá (Supp) REDD+ Project	Registered and Issued, baseline needs update to JNR	47,667	2.67%	Yes
1396	Rio Pepe y ACABA REDD+ Project	Registered and Issued, baseline needs update to JNR	48,177	2.70%	Yes
1400	Concosta REDD+ Project	Registered and Issued, baseline needs update to JNR	118,318	6.64%	Yes
1806	Riscales REDD+ Project	Registration and Verification Approval Request - no issuance	25,545	1.43%	Yes
2071	COCOMACIA Community REDD+ Program, Choco/Antioquia Colombia	Under development (ready to start validation and verification under JNR)	695,000	38.99%	No
2356	REDD+ Conservation Of Ethno Sustainable Afro-Colombian Community In The Tropical Rain Forest Of Colombia	Under validation - will need to update to JNR baseline	10,433	0.59%	No
2723	CONDOTO REDD+	Registered and issuing, baseline needs update to JNR	65,853	3.69%	No
3210	Bajo Atrato REDD+ Project	Registration and Verification Approval Request	313,082	17.57%	No
3218	Origen Atrato-Baudó REDD+ Project	Registration and Verification Approval Request	121,489	6.82%	No
3475	ACABA REDD+ Project	In Development	98,638	5.53%	No

3.1.5.2.4.2 Sub-step 4b: Discuss any similar Options that are occurring

The activities that are similar to the Program Activities are all being registered as carbon projects under Verra and cover almost 40% of the forest cover in the Choco Department. There are also additional projects under Cercarbono, a Colombian GHG market standard. Some of these projects were initially funded by the long-expired USAID BIOREDD grant program but are currently only funded through the sale of carbon. There is no evidence of scaled activities to reduce deforestation and degradation in Choco that are not being registered as a carbon project.

Moreover, the COCOMACIA REDD+ Program is distinguished by the direct leadership and ownership of COCOMACIA as both the project proponent and implementing entity. This ensures that decision-making, benefit distribution, and forest governance are rooted in community institutions and guided by their collective management systems. Therefore, the proposed COCOMACIA REDD+ Program represents a unique and non-routine intervention within the region. In this context, the Project cannot be regarded as common practice, and it satisfies the requirements of Step 4 of the VCS Additionality Tool, demonstrating that essential distinctions exist relative to previously implemented initiatives.

3.1.6 Methodology Deviations (VCS, 3.20)

This section outlines the following Deviations that are necessary for the COCOMCAICA AFOLU Project nested within the Choco JNR Program (VCS ID# 5079). In order to correctly apply AUDeg and AUDef to a REDD+ PAI following the JNR Standard 4.1 (VM0048) and the VCS Standard v4.7 (VM0006) several deviations are necessary.

All the deviations below are specifically deviations from the criteria and procedures relating to monitoring and/or measurement set out in the methodology VM0006. Each of these deviations increase accuracy of quantification by creating quantification procedures or including data that is truly relevant to real land-use change dynamics. The deviations listed in this document are presented to Verra at Validation and will be reflected in subsequent verifications. It is understood that these Verra-approved methodology deviations are not precedent setting but are needed to accurately account for true land-use change dynamics while Verra completes VM0048.

3.1.6.1 JNR Scenario 1 Deviations

For deviations related to VM0048 and VMD0055, please see the Choco Department, Colombia Nested JNR FREL (VCS ID# 5079).

3.1.6.2 Deviations to VM0006

As this Program is nested within a Jurisdictional Baseline FREL for the Choco Department, there have been deviations from VM0006 to create consistencies between the FREL (using VM0048, VMD0055) and VM0006 which are described below.

3.1.6.2.1 Reference Region Definition for UDeg

The VM0006 methodology, which is applied to areas classified under UDeg, provides clear guidance for defining the Reference Region. As stated in VM0006, Section 8.1.1.2: “A *reference region must be*

representative of the future trajectory of the project area in the absence of the project activities. For a reference region to be fully representative, and selected without any bias, the following necessary conditions must be met: The minimum size of the reference region excluding the project area and leakage area must be 250,000 hectares or the size of the project area at the start of the crediting period, whichever is greater ...”

To ensure that the Reference Region for UDeg is also fully aligned with the Jurisdictional Area defined for the JNR Program, its boundaries are the same as the area of JNR FREL in accordance with the guidelines of VM0055. Following VM0055 harmonizes with the spatial framework so that the Reference Region selected for UDeg remains consistent with the areas defined for UDef.

This alignment accomplishes several important objectives:

- **Methodological consistency** – both UDeg and UDef components operate within a single jurisdictional context, improving comparability and verification.
- **Accurate emissions accounting** – overlapping or mismatched regions are avoided, minimizing the risk of double counting or omission of forest carbon stocks.
- **Regulatory compliance** – projects can demonstrate adherence to both VM0006 and VM0055 requirements, strengthening the credibility of reported greenhouse-gas reductions.

By integrating the VM0006 requirements with the jurisdictional framework of VM0055, the project establishes a Reference Region that is not only representative and unbiased, but also spatially coherent with UDef activities, ensuring a unified and transparent approach to carbon accounting across different land-use dynamics.

3.1.6.2.2 UDeg LB Boundaries Demarcation

According to the guidelines in VM0006, Section 8.3.2.2, the delineation of the leakage belt is defined through a cost-of-transportation GIS analysis combined with social assessments. First, movement costs are assigned to each land-cover class, forest stratum, and road type using the inverse of the maximum travel speed for the relevant modes of transport, while inaccessible areas—such as protected zones—are given very high costs. A cost raster of the reference region is then created and used to generate a cost-distance map that shows the travel time from every pixel to the nearest point of the project area. Social surveys determine how much additional travel time local agents of deforestation are willing to accept to reach alternative forest areas. Finally, the leakage belt is delineated as all forest and non-forest land reachable within 1.5 times that maximum tolerated travel time, ensuring it lies within the reference region and expanding the region if necessary.

To maintain consistency with the leakage belt established for UDef areas and to avoid double counting of emissions, the UDeg leakage belt is therefore delineated in alignment with the guidelines set forth in VM0055, the process is described clearly in the Chco Department Baseline Description.

UDeg leakage areas are encompassed within the same belt as UDef. Baseline emissions for the UDeg leakage belt are defined by the portions of this belt identified as being at risk of degradation in the jurisdictional risk map. Actual leakage emissions are assessed ex post, with all land-use and land-cover (LULC) changes systematically accounted for within the UDef-LB, UDeg-LB, or the residual belt area.

3.1.6.2.3 Treatment of Litter Pool

The COCOMACIA REDD+ Program includes the Litter carbon pool, which according to VM0006 is Excluded as per VCS AFOLU Requirements. Following the Methodology Requirements, the litter carbon pool “does not have to be included, because it is not subject to significant changes or potential changes are transient in nature. The pool may be included in the project boundary because of positive impacts to reducing or removing emissions. Where the carbon pool is included in the project boundary, methodologies shall establish criteria and procedures to set out when a project proponent may include the pool.” As including this pool is much more accurate it does not negatively affect the conservativeness of the quantification of the emission reductions. As VM0006 does not establish criteria and procedures to include when to include the carbon pool, this REDD+ Program establishes the following criteria and procedures:

Criteria: the litter pool maybe included because it will be a carbon pool that is significantly affected by project activities. Litter in forest areas is significantly higher than that of non-forest areas.

Procedures: litter is measured systematically at each monitoring event. Litter must be fully dried to identify bone dry weight to not overestimate carbon content.

Leakage Calculated following VMD0055 to Avoid Double Counting

The COCOMACIA REDD+ Program follows procedures in VMD0055 to assess leakage and does not follow the leakage quantification procedures in VM0006, As both methodologies attempt to capture the same leakage following slightly different procedures, only VMD0055 is followed to avoid double counting. This deviation is more accurate will not negatively impact the conservativeness of the quantification of GHG emission reductions as VMD0055 has recently been developed and assess leakage in the following ways 1) Activity shifting by geographically constrained agents; 2) Activity shifting by geographically mobile agents; 3) Market-effects leakage; and 4) Leakage mitigation emissions. This deviation to use Leakage from VMD0055 relates only to the criteria and procedures for measurement and does not relate to any other part of the methodology.

3.2 Quantification of Estimated GHG Emission Reductions and Removals

The GHG accounting for the Project applies the best of Verra’s standards, methodologies, modules, and tools. A set of methodological steps are follow for accounting for UDef following VM0048 and a separate set of steps for accounting UDeg following VM0006 as detailed in

Table 26 and Table 27.

Table 26. Under VM0048 -Application of Verra’s standards, methodologies, modules, and tools JNR FREL Baseline Validation

Methodological Component		Steps		Method Applied
1	Jurisdictional Baseline Boundary	1.1	Geographic Boundaries	VMD0055 A1.2.1
		1.2	Carbon Pools	VM0048 Section 5.2
		1.3	Sources of GHG E missions	VM0048 Section 5.3
		1.4	Significance of GHG Emission Sources	VM0048 Appendix 1

Methodological Component		Steps		Method Applied
2	Baseline Scenario	2.1	Conditions Prior to Jurisdictional Baseline Start Date	VMD0055 Section 5.2
		2.2	Identification and Characterization of Agents, Drivers and Underlying Causes of Deforestation.	VMD0055 Section 5.2
		2.3	Determination of the Most Plausible Baseline Scenario	VM0048 Section 6.1
		2.4	Baseline Scenario Selection Method	VM0048 Section 6.1
3	Baseline emissions	3.1	LULC Stratification Map	VMD0055 Section 5.3.2.1
		3.2	Areas of Identified Exclusions	VMD0055 A1.4.1
		3.3	Jurisdictional Activity Data for unplanned deforestation	VMD0055 with deviation for Wall-to-Wall Land Cover Map
		3.4	Calibration of a risk-based land-use change model	VT0007
		3.4	Jurisdictional Deforestation Risk Map	VT0007
		3.5	Allocation of Projected Activity Data to PAs and LBs	VT0007
		3.6	Estimation of Carbon Stocks per Forest Stratum	VMD0055 Section 5.3.2.3
		3.7	Estimate uncertainty-discounted emission factors	VMD0055 Section 5.3.2.3
		3.8	Estimation of Annual Baseline Emissions from Carbon Stock Changes	VMD0055 Section 5.3.2.3
4	Leakage	4	Leakage Emissions	VM0048 Section 8.3
		4.1	Activity-shifting leakage	VMD0055 Section 5.3.4.1
		4.2	Activity-shifting leakage mobile agents	VMD0055 Appendix 2

Table 27. Under VM0006 - Application of Verra's standards, methodologies, modules, and tools to project validation and issuance

Methodological Component		Steps		Method Applied
1	Jurisdictional Baseline Boundary	1.1	Geographic Boundaries	VM0048 Section 5.1
		1.2	Carbon Pools	VM0048 Section 5.2
		1.3	Sources of GHG E missions	VM0048 Section 5.3
		1.4	Significance of GHG Emission Sources	VM0048 Appendix 1
2	Baseline Scenario	2.1	Conditions Prior to Jurisdictional Baseline Start Date	VM0006 Section 6
		2.2	Identification and Characterization of Agents, Drivers and Underlying Causes of Deforestation and Forest Degradation	VM0006 Section 8.1.3

Methodological Component		Steps		Method Applied
		2.3	Determination of the Most Plausible Baseline Scenario	VM0048 Section 6.1
		2.4	Baseline Scenario Selection Method	VM0048 Section 6.1
3	Baseline emissions	3.1	LULC Stratification Map	VM0006 Section 8.1.2.2
		3.2	Areas of Identified Exclusions	VMD0055 A1.4.1
		3.3	Jurisdictional Activity Data for unplanned deforestation and forest degradation	VM0006 Section 8.1.2.4
		3.4	Calibration of a risk-based land-use change model	VM0006 Section 8.1.5.3
		3.6	Estimation of Carbon Stocks per Forest Stratum	VM0006 Section 8.1.4
		3.7	Estimate uncertainty-discounted emission factors	VMD0055 Section 5.3.2.3
		3.8	Estimation of Annual Baseline Emissions from Carbon Stock Changes	VM0006 Section 8.1.4
4	Leakage	3.9	Estimation of Other Baseline GHG Emissions	VM0006 Section 8.1
		4.1	Activity-shifting leakage	VM0006 Section 8.3
		4.2	Emissions from leakage prevention activities	VM0006 Section 8.3.4

3.2.1 Baseline Emissions (VCS, 3.15)

3.2.1.1 Baseline Emissions from UDef (VM0048)

The baseline emissions and removals were allocated to this Program from the Choco Department FREL (VCS ID 5079) through the Allocation Report (Appendix 6: UDef AD Allocation Report.) which was evaluated in accordance with the procedures established by the Jurisdictional and Nested REDD+ (JNR) Requirements v4.1, Scenario 1, and using the VT007 v1.0, in alignment with the methodology VM0048, Reducing Emissions from Deforestation and Forest Degradation, v1.0. The steps presented below follow the structure and order of the Module VMD0055 section 5.3.2. Additionally, all applicable requirements under the JNR baseline rules have been incorporated.

3.2.1.1.1 Stratification of Forests in the Project Area and Leakage Belt

This Program applied module VMD0016 Methods for Stratification of the Project Area (X-STR) v1.3 to stratify the Program Area. The stratification approach is fully consistent with the strata defined in the Chocó Department JNR FREL (VCS ID 5079) Baseline Description document, Section 2.5.5.1.6 LULC Classification and Forest Stratification. The Program Area stratification is further described in Appendix 6 – AD Baseline Allocation Report, Section 1.1.2 Portion of the Jurisdictional LULC, which presents the LULC at the end of the HRP.

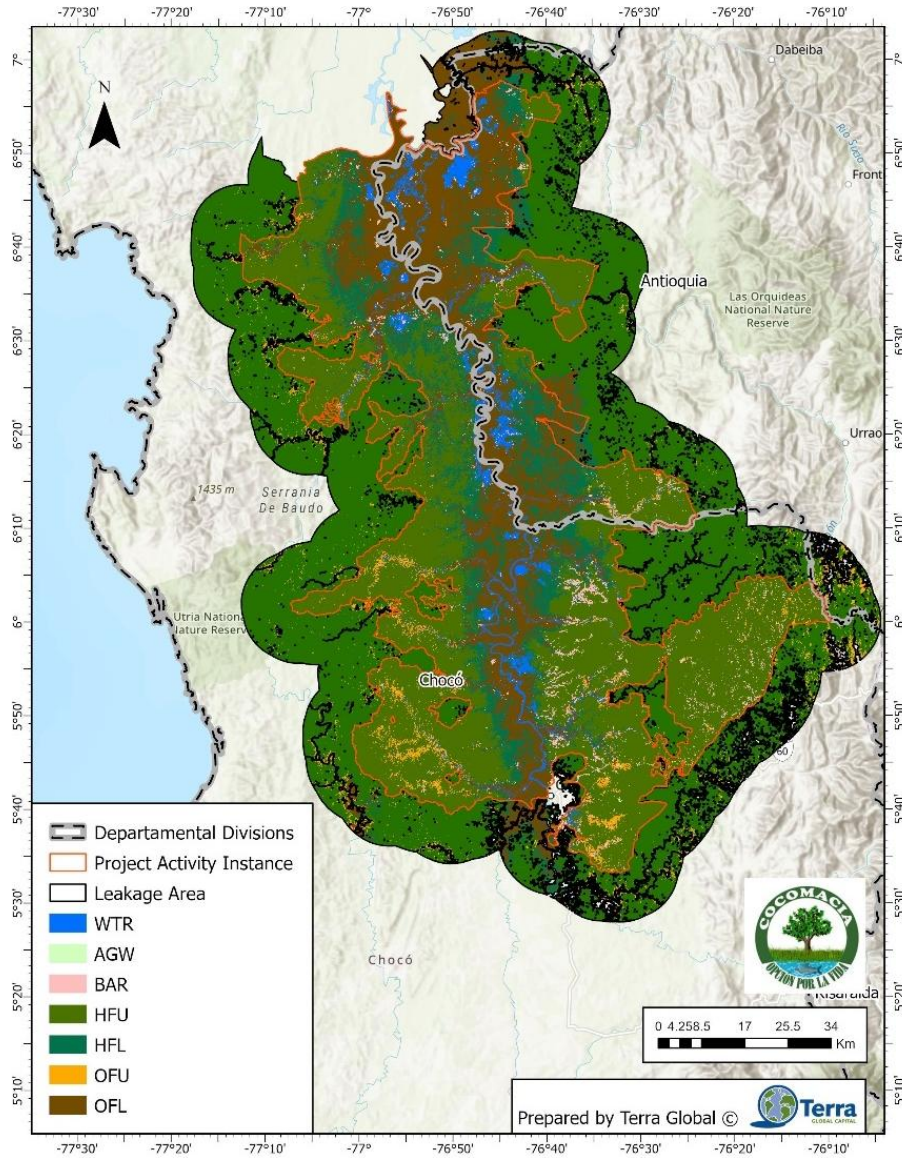
Uncertainty estimates for classification of activity data during the Historical Reference Period (HRP) were evaluated following the requirements of VMD0055 v1.0. The assessment focused on (a) the accuracy of Forest vs. Non-Forest classifications at the end of the HRP and (b) the accuracy of mapped land-cover transitions. A stratified random sampling approach was used to select plots in both stable areas and areas showing transitions, following the stratification rules in VMD0055.

A total of 318 plots were used to assess Forest/Non-Forest accuracy, 201 plots for Closed vs. Open Forest accuracy, and 292 plots for transition accuracy. Each plot (810 m²) was visually interpreted by two experts using Sentinel or, when not available, Landsat imagery. Disagreements led to discarding the plot. Interpretation followed a standardized procedure using 3×3 subplot grids to assign classes.

Results showed that user's and producer's accuracies for forest and open-forest classes at the end of the HRP exceeded 90%, meeting VMD0055 requirements. Transition accuracy was also above the 70% threshold required for deforestation and reforestation categories. Error matrices were generated for sample counts and estimated area proportions, and the results were used to determine accuracy metrics for each land-cover stratum.

Finally, the number of samples and area proportions for each land-cover transition class were calculated following VMD0055 instructions, including computing class frequencies, sampling weights, and area proportions for each change category. Refer to Chocó Department JNR FREL (VCS ID 5079) Baseline Description document, Section 2.5.5.1.8. Map Accuracy Assessment and Discounting Factor Determination, for further details.

Map 17 illustrates the spatial distribution of all LULC classes within the Program Area (UDef-PA) and leakage belt (UDef-LB), and Table 28 summarizes the forest area by forest stratum.



Map 17. LULC at the end of the HRP (2021) for the UDef PA and UDef LB.

Table 28. LULC at the end of the HRP (2022) for the UDef PA and UDef LB in hectares.

LULC Class	UDef PA (Ha)	UDef LB (Ha)
CFU	365,744	531,279
CFL	96,860	21,931
OFU	16,465	28,151
OFL	175,532	67,758
Total	654,601	649,119

3.2.1.1.2 Application of Allocated Baseline Unplanned Deforestation to the Forest Strata

This Program is nested under the Choco Department JNR FREL (VCS ID 5079) so it was allocated a portion of the jurisdictional risk as described in Appendix 6 - AD Baseline Allocation Report section 1.6.2 *Portion of Jurisdictional Deforestation Risk Map*. Baseline allocation of activity data-AD to forest strata in the Program Area (ADPA-UDef) and Leakage Belt (AD LB-UDef) is described in detail in Appendix 6 - AD Baseline Allocation Report section 1.4 AD Allocation over the BVP. Table 29 summarizes the results of the allocation of activity data to the Program Area and Leakage Belt.

Table 29. UDef AD allocation over the BVP for the Project Activity Instance in Hectares per Year

Year	ADPA-UDef (Hectares)	AD LB-UDef (Hectares)
1	4,873	5,572
2	4,873	5,572
3	4,873	5,572
4	4,873	5,572
5	4,873	5,572
6	4,873	5,572
Total	29,239	33,432

3.2.1.1.2.1 Application of Allocated Baseline Unplanned Deforestation beyond the first BVP

Estimation of baseline activity data beyond the initial validity period is not required for Project Proponents, however for planning purposes this Program provides projections of baseline activity data for the complete crediting period.

In accordance with Section 3.2.24 of the VCS Standard v4.7, the permanence of carbon stocks must be monitored for a minimum period of 40 years. This Program therefore extends its activity data projection to a 40-year horizon to ensure consistency with the required permanence monitoring period.

While the estimation of baseline activity data beyond the initial validity period is not mandatory for Project Proponents, this Program has developed baseline activity data projections for the entire crediting period to support long-term planning, monitoring, and management efforts.

The initial BVP AD allocation is kept constant during the 40-year crediting period.

Activity Data for UDef projections beyond the initial BVP are presented in Table 30 below.

Table 30. Estimated Activity Data for Unplanned Deforestation (UDef) beyond the initial Baseline Validity Period

Year	AD PA-UDef (Hectares)	AD LB-UDef (Hectares)	Year	AD PA-UDef (Hectares)	AD LB-UDef (Hectares)
2027	4,873	5,572	2044	4,873	5,572
2028	4,873	5,572	2045	4,873	5,572
2029	4,873	5,572	2046	4,873	5,572
2030	4,873	5,572	2047	4,873	5,572
2031	4,873	5,572	2048	4,873	5,572
2032	4,873	5,572	2049	4,873	5,572
2033	4,873	5,572	2050	4,873	5,572

Year	AD PA-UDef (Hectares)	AD LB-UDef (Hectares)	Year	AD PA-UDef (Hectares)	AD LB-UDef (Hectares)
2034	4,873	5,572	2051	4,873	5,572
2035	4,873	5,572	2052	4,873	5,572
2036	4,873	5,572	2053	4,873	5,572
2037	4,873	5,572	2054	4,873	5,572
2038	4,873	5,572	2055	4,873	5,572
2039	4,873	5,572	2056	4,873	5,572
2040	4,873	5,572	2057	4,873	5,572
2041	4,873	5,572	2058	4,873	5,572
2042	4,873	5,572	2059	4,873	5,572
2043	4,873	5,572	2060	4,873	5,572

3.2.1.1.3 Estimate Uncertainty-Discounted Emission Factors for each Stratum

For estimation of carbon stock density in each forest stratum, this Program used methods described in the module VMD0055 and each carbon pool-related module: VMD0002 Estimation of Carbon Stocks in the Dead Wood Pool (CP-D), VMD0003 Estimation of Carbon Stocks in the Litter Pool (CP-L), VMD0004 Estimation of Carbon Stocks in the Soil Organic Carbon Pool (CP-S), VMD0005 Estimation of Carbon Stocks in the Long-Term Wood Products Pool (CP-W). For aboveground carbon stocks methods in VT0005 Tool for measuring aboveground live forest biomass using remote sensing were used. For belowground carbon stocks appropriate root to shoot ratios were used as described in section 3.2.1.1.3.1. Estimated carbon stock density per forest stratum matches those from the Choco Department JNR FREL (VCS ID 5079) baseline description document section 2.5.4.5. Estimation of Emissions from Carbon Stocks Changes.

Results from each of the steps in VMD0055 are presented below:

3.2.1.1.3.1 Step 1: Estimation of Carbon Stocks per Forest Stratum

Carbon stocks per forest stratum used in this Program are presented in

Table 31. Mean Carbon Stocks per Pool and per Forest Stratum.

Carbon Stock per Pool (tCO ₂ e ha ⁻¹)	Forest Stratum			
	CFU	CFL	OFU	OFL
Carbon Aboveground Tree Biomass	288	462	146	212
Carbon Belowground Tree Biomass	60	97	31	44
Carbon Aboveground Biomass Nontree	11	16	19	17
Carbon Belowground Biomass Nontree	3	4	8	5
Carbon Stock of Dead Wood	22	41	6	21
Carbon Stock in Litter	0	0	0	0
Carbon Stock in Soil Organic Carbon	220	175	169	123
TOTAL	604	795	378	422

3.2.1.1.3.2 Step 2: Estimation of Emissions from Carbon Stock Changes

Results from applying VMD0055 step to estimate emissions from carbon stock change in from UDef are presented below in Table 32.

Table 32. Estimated Emissions from Carbon Stock Change

Total Carbon Stock (tCO ₂ e ha ⁻¹)	Forest Stratum			
	CFU	CFL	OFU	OFL
Carbon Stock Pre-Deforestation (C_p)	220	175	169	123
Carbon Stock Post-Deforestation ($C_{p,post}$)	112	89	86	62
Estimated Emissions from Carbon Stock Change ($\Delta C_{p,i}$)	108	86	83	60

3.2.1.1.3.3 Step 3: Evaluation of Uncertainty of Carbon Stock Estimates and Step 4 Estimation of an Uncertainty Discount Factor

Results from applying VMD0055 step 3 (section 2.5.4.5.3) and step 4 (section 2.5.4.5.4) for estimation of uncertainty are presented below in Table 33.

Table 33. Estimate of Uncertainty Discount Factor

Pool	Weighted Average Emissions from Carbon Stock Change (WΔC)	Estimate Uncertainty
	(t CO ₂ e/ha)	(tCO ₂ e ha ⁻¹)
Aboveground Tree	226.3	123.5
Belowground Tree	49.7	26.0
Aboveground Nontree	3.1	6.4
Belowground Nontree	1.0	2.2
Litter	16.4	9.6
Deadwood	0	0
SOC	60.7	102.5
U(WΔC)	357	163
	U%(WΔC)	45.7%
	Uncertainty Discount Factor	0.12

3.2.1.1.3.4 Step 5: Conservative Estimation of Emissions from Carbon Stock Change

Results from applying Step 5 of module VMD0055 to estimate conservative emissions from carbon stock changes are presented in Table 34. Emissions from aboveground biomass and litter carbon pools ($\Delta C_{CAB-LI,i}$) are assumed to occur within one year, while emissions from belowground biomass and deadwood pools ($\Delta C_{CBB-DW,i}$) are distributed over a 10-year period. Emissions from soil organic carbon and harvested wood products are accounted for over a 20-year period ($\Delta C_{CSOC-WP,i}$).

Table 34. Conservative Estimation of Emissions from Carbon Stock Change

Parameter/ Forest Stratum	CFU	CFL	OFU	OFL
	(tCO ₂ e ha ⁻¹)	(tCO ₂ e ha ⁻¹)	(tCO ₂ e ha ⁻¹)	(tCO ₂ e ha ⁻¹)
$\Delta C_{CAB-LI,i}$	263	421	145	202
$\Delta C_{CBB-DW,i}$	75	125	39	62

Parameter/ Forest Stratum	CFU	CFL	OFU	OFL
	(tCO ₂ e ha ⁻¹)	(tCO ₂ e ha ⁻¹)	(tCO ₂ e ha ⁻¹)	(tCO ₂ e ha ⁻¹)
$\Delta C_{SOC-WP,i}$	193	154	149	108
Annual UDef Emission Factor (tCO₂e ha⁻¹ yr⁻¹)	280	441	156	213

3.2.1.1.4 Estimate Annual Net Baseline Emissions for the Baseline Validity Period

The sum of emissions projected to take place in the UDef PA and UDef LB are estimated using the area of AD allocated from the Choco Department JNR FREL (VCS ID 5079) described in detailed on Appendix 6: UDef AD Allocation Report and the emissions from the carbon stock changes resulting from unplanned deforestation.

Table 35. Annual Net Baseline Emissions for the Baseline Validity Period.

BVP Year	Baseline Emissions UDef-PA	Baseline Emissions UDef-LB
(-)	(tCO ₂ e)	(tCO ₂ e)
2021	1,399,302	1,541,639
2022	1,475,264	1,633,190
2023	1,551,226	1,724,742
2024	1,627,188	1,816,293
2025	1,703,149	1,907,845
2026	1,779,111	1,999,396

3.2.1.1.5 Estimation of Other Baseline GHG Emissions

Emissions from Biomass and Peat Burning were deemed insignificant from the Choco JNR FREL (VCS ID 5079). Emissions from Fossil Fuel Combustion and Nitrogen Fertilization were assumed as zero, since Program activities don't include the use of nitrogen fertilizers or consumption of fossil fuel within the UDef PA and UDef LB.

3.2.1.2 Baseline Emissions from UDeg (VM0006)

Similarly, the baseline for forest degradation was developed following the procedures described in methodology VM0006, Methodology for Carbon Accounting for Mosaic and Landscape-scale REDD Projects, v2.2. These steps are detailed below.

3.2.1.2.1 Select Spatial and Temporal Boundaries

This step includes the demarcation of the Project Area and Reference Region. Three sub-steps specify the spatial and temporal boundaries of discrete Project Activity Instances (parcels) and present conditions for selecting the Reference Region.

For this Project, the Reference Region is the jurisdictional area associated with the administrative boundaries of the Chocó Department and a portion of area located in the Antioquia department. The forest areas located within such jurisdiction are embedded within the Choco Biogeographic Region, subject to similar drivers and agents of deforestation and forest degradation. Thus, the Jurisdiction and first Project Instance (meaning the total potential area in which a Project Activity Instance may be included) are the same (see JNR Baseline Description – Project 5079).

3.2.1.2.2 Describe Spatial Boundaries of the Discrete Project Area Parcels

The First Project Activity Instance is located in the administrative area of the territory of the Consejo Comunitario Mayor de la Asociación Campesina Integral del Atrato (COCOMACIA), which is a legally recognized Black community territory (Consejo), with tenure over 706,145 hectares of which 74.9% is in Chocó and 25.1% in the Antioquia Department at coordinates 6° 13' 41.8" N and 76° 44' 50.7" W, 6° 13' 42" N 76° 44' 51" W (see Project location maps in section 2.1.16.2).

Individual Project Activity Instances will be added as the Program continues; the first Project Activity Instance is the COCOMACIA territory, and it is described further in section 2.1.16.2. Digital (KML format) files of the discrete Project Area for the first Project Activity Instance are available to the validator.

As this is a grouped project, new discrete Project Activity Instance parcels (referred to as “new Project Activity Instance”) may be added after the Project start and such additions will be presented at subsequent verifications and will be required to meet the eligibility requirements set out in Section 2.1.6.1.

3.2.1.2.3 Select a Valid Reference Region

This REDD+ Program applies the Jurisdictional FREL Baseline for the Chocó Department, Colombia, as described in the VCS JNR Baseline Description #5079, in accordance with the VCS JNR Standard.

To ensure consistency with the JNR Baseline for Unplanned Deforestation (UDef), the Reference Region for Unplanned Degradation (UDeg) was defined to coincide with the same JNR Baseline area used for UDef, following the guidelines established in VMD0055. This approach and its rationale are detailed in the Chocó Department Baseline Description, with a specific explanation of the deviation for selecting the Reference Region provided in Section 3.1.6.

3.2.1.2.4 Analysis of Historical Deforestation and Forest Degradation in the JNR FREL Area

3.2.1.2.4.1 Description of the Data Sources

For the Activity Data (AD) analysis for Unplanned Degradation (UDeg), the classifications from the Historical Reference Period (HRP) of the JNR Baseline were used. For more information on the data sources employed in the classification, refer to the Chocó Department, Colombia Nested JNR FREL Baseline Description, Section 2.5.5.1.1 – Description of Data Sources.

3.2.1.2.4.2 Description of LULC Classes and Forest Strata for which Carbon Stocks are to be Quantified

For more information see CHOCO DEPARTMENT, COLOMBIA NESTED JNR FREL Baseline Description: Appendix 1 - Application of VT0007 Unplanned Deforestation Risk Modelling and Allocation (UDef-A), Section 1.1.1 LULC Classes and Forest Strata for which Carbon Stocks are to be Quantified.

3.2.1.2.4.3 Allowed LULC Change Categories

For more information see CHOCO DEPARTMENT, COLOMBIA NESTED JNR FREL Baseline Description: Appendix 1 - Application of VT0007 Unplanned Deforestation Risk Modelling and Allocation (UDef-A), Section 1.2.1 Allowed LULC Change Categories.

3.2.1.2.4.4 Analysis of Historical Land Use Change

Pre-processing of Remote Sensing Data

For more information see CHOCO DEPARTMENT, COLOMBIA NESTED JNR FREL Baseline Description, Section 2.5.5.1.5. Pre-processing of Remote Sensing Data.

LULC Classification and Forest Stratification

For more information see CHOCO DEPARTMENT, COLOMBIA NESTED JNR FREL

Baseline Description, Section 2.5.5.1.6. LULC Classification and Forest Stratification and Appendix 6 - AD Baseline Allocation Report, Section 1.1.2 Portion of the Jurisdictional LULC. Map 17 presents the LULC at the end of the HRP.

Classification Uncertainty

For more information see CHOCO DEPARTMENT, COLOMBIA NESTED JNR FREL Baseline Description, Section 2.5.5.1.8. Map Accuracy Assessment and Discounting Factor Determination

Classification Change Matrices

For more information see CHOCO DEPARTMENT, COLOMBIA NESTED JNR FREL Baseline Description, Section 2.6.1.1. Historical Land Cover/Land Cover Change Dataset.

3.2.1.2.5 Analyze the Agents and Drivers of Deforestation and Degradation

Detailed description of agents, drivers and underlying causes of deforestation and forest degradation in the jurisdiction are presented in section 2.2.1.3.

3.2.1.2.6 Identify the Spatial Variables Driving Deforestation

For each identified driver, provide potential spatial driving variables that explain the location of land cover change. Unplanned deforestation and degradation in the Choco Jurisdiction can be linked to a number of static and dynamic drivers. The following provides a description of the spatial layers used as explanatory variables for the model used to predict ex-ante emissions from unplanned deforestation and degradation over the lifespan of the project (40 years). To evaluate the significance of each driver in affecting deforestation a t-test was performed. Any driver deemed not-significant (p -value < 0.001) was removed from the model. A list of the drivers follows.

- **Distance to Roads and Rivers**

Distance from transition vectors map was generated in a two steps process. First, a binary mask of roads and rivers was generated by extracting pixels classified as rivers in the Rivers of Colombia World Bank dataset (<https://datacatalog.worldbank.org/search/dataset/0041760>) and pixels classified as roads in the Instituto Nacional de Vías dataset from <https://www.datos.gov.co/Transporte/Red-Vial/dkuf-xn5d>. The final dataset was then generated by calculating the Euclidian distance from any pixel that was classified as either roads or rivers in the aforementioned binary mask.

- **Distance from Communities**

Distance from communities was calculated as the Euclidian distance from the locations of the centroids of the Local Community Councils (LCCs) located within the Jurisdiction.

- **Distance from Settlements**

The map of distance from settlements was generated by calculating the Euclidean distance from pixels classified as settlements in the World Settlement Footprint (WSF) 2015 data layer (Marconcini, 2020). This raster map is the result of a Support Vector Machine binary classification of Human settlements using upscaled 10m resolution imagery from Landsat-8 and Sentinel-1, for the time stamp of 2014-2015, which is a good proxy of the beginning of the HRP for the Jurisdiction.

- **Distance to Roads and Rivers**

Distance from transition vectors map was generated in a two steps process. First, a binary mask of roads and rivers was generated by extracting pixels classified as rivers in the Rivers of Colombia World Bank dataset (<https://datacatalog.worldbank.org/search/dataset/0041760>) and pixels classified as roads in the Instituto Nacional de Vías dataset from <https://www.datos.gov.co/Transporte/Red-Vial/dkuf-xn5d>. The final dataset was then generated by calculating the Euclidian distance from any pixel that was classified as either roads or rivers in the aforementioned binary mask.

- **Elevation**

The data for the elevation map was provided by ALOS DSM PRISM 30m resolution data (v.2.2).

- **Slope**

The raster data representing the slope in the Choco Jurisdiction was extracted from ALOS PRISM 30m resolution data (v 2.2).

- **Aspect**

The raster data representing the aspect in the Choco Jurisdiction was extracted from ALOS PRISM 30m resolution data (v 2.2).

- **Hillshade**

The raster data representing the hillshade in the Choco Jurisdiction was extracted from ALOS PRISM 30m resolution data (v 2.2).

- **Tidal ecosystems likelihood**

The raster data representing the likelihood to host tidal flat ecosystems in the Choco Jurisdiction was extracted from the High-resolution global maps of tidal flat ecosystems from (Murray, 2022).

- **Topographic Diversity**

Topographic diversity is a proxy of topographic variation that uses the multi-scale Topographic Position Index (mTPI) and the Continuous Heat-Insolation Load Index (CHILI), to measure hillslope and physiographic patterns (Theobald, 2015). The index is based on the 30m SRTM DEM.

- **Density of Forests around each Pixel**

Forests density was calculated using a moving window approach and counting the number of forested pixels, including closed, open and mangroves forests, in the proximity of the pixel. To generate this map a circular shaped filter of 15 pixels (~450m) radius was used.

- **Density of Degraded Forests around each Pixel**

Similarly to the forest density map, this layer was calculated as the number of pixels belonging to the two open/degraded forests types in Choco in a radius of 15 pixels (~450m).

- **Density of Closed Forests around each Pixel**

Similarly to the forest density map, this layer was calculated as the number of pixels belonging to the either upland or lowland closed forests types in Choco LULC maps, in a radius of 15 pixels (~450m).

- **Density of Non Forests around each Pixel**

Similarly to the forest density map, this layer was calculated as the number of pixels belonging to any LULC class that did not represent a forest type in Choco LULC maps, in a radius of 15 pixels (~450m).

- **Distance from Forest Edges**

Distance from forest edges was calculated as the Euclidian distance from the closest non forest pixel. The square root transformation of the distances was applied to the original map of distances. This transformation was done to take into account the nonlinear effect of distance from forest edges on deforestation and degradation.

- **Distance from Open Forest Edges**

Distance from open forest edges was calculated as the Euclidian distance from the closest open forest pixel. The square root transformation of the distances was applied to the original map of distances. This transformation was done to take into account the nonlinear effect of distance from forest edges on deforestation and degradation.

- **Land Tenure**

Collective land tenure maps of indigenous resguardos, collective Black community land recognized by the National Constitution, and other type of lands were used to generate a categorical raster with areas belonging to different combinations of land tenure. This data was used as a categorical layer.

- **From class**

To assess the potential difference in deforestation vulnerability across different forest classes, the forest class identifier from the LULC map of Choco was used as a categorical variable.

Each of the spatial drivers can affect one or more deforestation drivers. These spatial drivers are used in a predictive statistical model to predict the location of future deforestation. The model is calibrated based on data from the historical reference period. The model is re-calibrated during every baseline reset.

3.2.1.2.7 Quantification of Carbon Stock Densities

This Program uses the same procedures for quantification of carbon stock densities at the Project and Jurisdictional level. Section 2.5.4.5. *Estimation of Emissions from Carbon Stocks Changes* of the Choco Department JNR FREL Baseline Description Document describes the methodological steps for quantification of carbon stocks. The text below follows VM0006 section 8.1.4 *Determine Emission Factors for All Included Transitions*, demonstrating compliance with all methodologies and tools used for the UDef -PA.

3.2.1.2.7.1 Identify the LULC Classes and Forest Strata for carbon stock quantification

Detailed description of the methods used for LULC classification for this Program are found in the Choco Department, Colombia Nested JNR FREL Baseline Description document, Section 2.5.5.1.2. The results of the classification at the Program level are included in Appendix 6: UDef AD Allocation Report.

Map 17 shows the LULC at the end of the HRP (2021) for the UDef PA and UDef LB.

3.2.1.2.7.2 Review Existing Data of Biomass Stock Densities and Biomass Net Annual Increments

Table 36 contains the results of a detailed review based on Colombia's FREL submit by the Colombian government to the UNFCCC, regional scientific studies and a review of projects registered in the Verra Registry to understand the existing biomass stocks in the main forest strata identified above in the Department of Chocó. Given the scarcity of specific data for the region, it is important to note that some of the estimates come from studies conducted in ecosystems similar to the Department of Chocó.

Table 36. Literature review of parameters related to biomass forest

Forest/ Land Type	Total Aboveground Biomass [tCO ₂ e ha ⁻¹]	Source
Closed Forest/ Tropical wet forest	413	(Duque, et al., 2017)
Closed Forest/ Tropical wet forest	275	(Alvarez, et al., 2012)
Dense tropical forest	562	Concosta REDD+ Project
Alluvial forests /Dense forest	526	Mutata REDD+ Project
Alluvial forests /Dense forest	344	Rio Pepe y Acaba REDD+ Project
Intact terra firme (non-flooded) forest	413	Bajo Calima y Bahia Malaga REDD+ Project
Alluvial forests /Dense forest	445	Cajambre REDD+ Project
Intact terra firme (non-flooded) forest	426	Siviru-Usaraga-Pizarro-Piliza REDD+ Project
wetland forest/ intact terra firme (non-flooded) forest	280	Carmen del Darien REDD+ Project
Intact terra firme (non-flooded) forest	362	Acapa-bajo Mira y Frontera REDD+ Project
Stable forest /Pacific biome	391	FREL Chocó
Mangrove forest	312	(Josephraj Selvaraj & Gallego Pérez, 2023)

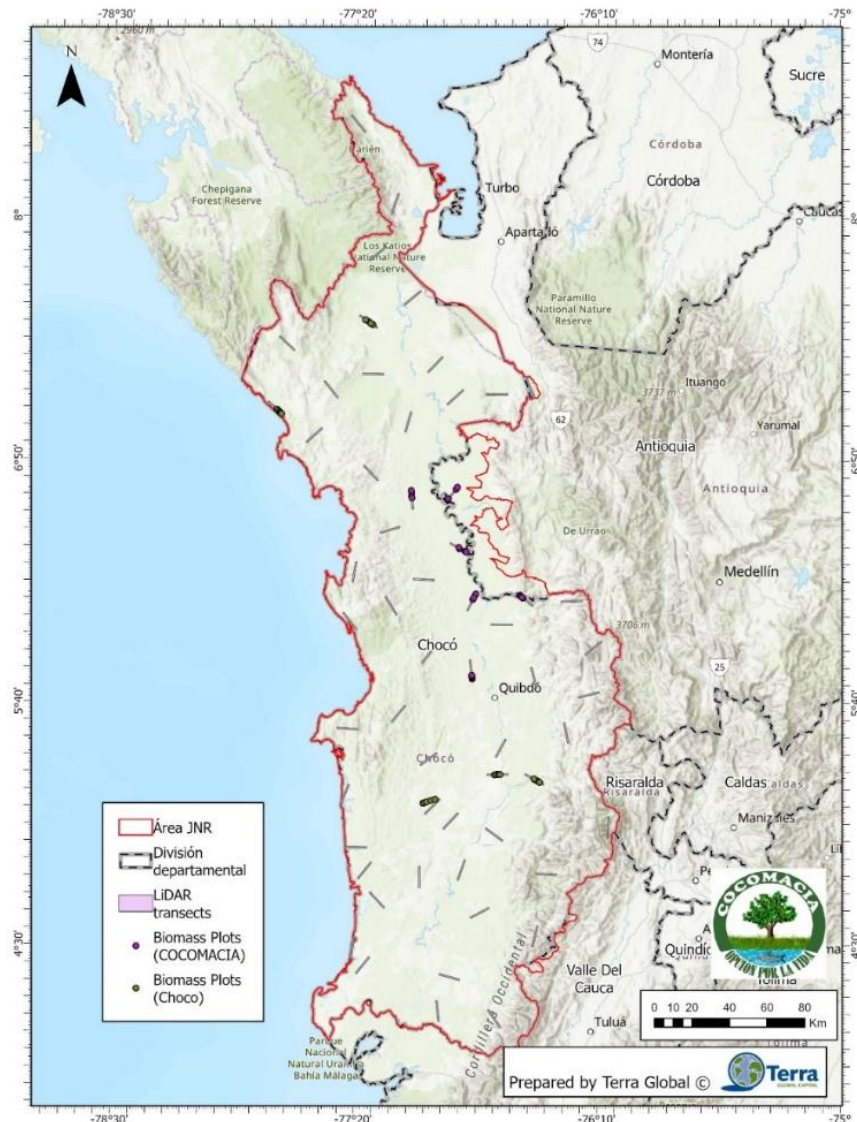
3.2.1.2.7.3 Determined Sampling Design

This Program uses the same sampling design as the Choco Department, Jurisdictional FREL. Detail designed is the Choco Department, JNR FREL Baseline Description document, Section BD Section 2.5.7.

Table 37 show the number of plots per forest stratum, Map 18 show the location of the biomass plots and LIDAR flights.

Table 37. Number of biomass sample plots per land cover classification.

Land Cover Classification	Sample Plots
Closed Forest Upland (CFU)	22
Open Forest Upland (OFU)	2
Closed Forest Lowland (CFL)	9
Open Forest Lowland (OFL)	5
Mangrove (MGR)	6
Bare (BAR)	2
Agriculture (AGW)	2
Total	48



Map 18. Distribution of LiDAR transects and field Biomass plots across the jurisdiction.

Section 2.5.7.3 of the Choco BD describes in detail the sampling design of the collection and processing of LiDAR data.

Uncertainty from sampling and data processing—biomass plots, LULC classification, LiDAR-derived metrics, and emission factors—is quantified and propagated to jurisdictional-level estimates in line with VM0048, VMD0055, and recent literature, with measurement error managed through SOP-based QA/QC. Below-ground biomass is derived using IPCC guidance (Mokany et al., 2006)

3.2.1.2.7.4 Measure and Calculate Carbon Stock Density

Carbon stocks density per forest stratum used in this Program matches the Choco Department JNR FREL (VCS ID 5079), section 2.5.4.5.1. Carbon stock densities used in this Program are presented in Table 31.

Emission factors supporting UDeg-PA and UDeg-LB were calculated using Equation 26 of VM0006 (Section 8.1.4.5). This equation provides the framework for estimating emissions associated with land-cover class transitions; in this Program it was applied to transitions from Closed Forest classes to their respective Open Forest classes.

$$EF_{AGL}(CS1 \rightarrow CS2) = \frac{44}{12} \times (C_{AGL}(CS2) - C_{AGL}(CS1)) \quad \text{Equation 1}$$

$$EF_{AGD}(CS1 \rightarrow CS2, t) = \frac{44}{12} \times \frac{(C_{AGC}(CS2) - C_{AGD}(CS1))}{10} \quad \text{Equation 2}$$

$$\text{For } t > 10: EF_{AGD}(CS1 \rightarrow CS2, t) = 0 \quad \text{Equation 3}$$

$$EF_{BG}(CS1 \rightarrow CS2, t) = \frac{44}{12} \times \frac{(C_{AGC}(CS2) - C_{AGD}(CS1))}{10} \quad \text{Equation 4}$$

$$\text{For } t > 10: EF_{BG}(CS1 \rightarrow CS2, t) = 0 \quad \text{Equation 5}$$

$$EF_{SOM}(CS1 \rightarrow CS2, t) = \frac{44}{12} \times \frac{(C_{SOM}(CS2) - C_{SOM}(CS1))}{20} \quad \text{Equation 6}$$

$$\text{For } t > 20: EF_{SOM}(CS1 \rightarrow CS2, t) = 0 \quad \text{Equation 7}$$

Emission factors were adjusted based on the discount factor following methods in VMD0055. For consistency across all Program included activities, UDeg emission factors were grouped following the conventions of VMD0055. Table 38 presents the emission factors used for the Program.

Table 38. UDeg Emission Factors used for the COCOMACIA Program.

Parameter	CFU→OFU	CFL→OFL
$\Delta C_{CAB-LI,i}$	118	219
$\Delta C_{CBB-DW,i}$	31	55
$\Delta C_{CSOC-WP,i}$	44	46
Annual factor	123	227

3.2.1.2.7.5 Estimate Land Transition Rates under the Baseline Scenario

This section follows VM006 Methodology Section 8.1.5 to calculate all land transitions. The procedure calculates the relative total forest degradation.

Define LULC Classes and Forest Strata

Stratification of forest classes is described in section 3.2.1.1.1. This Program applied module VMD0016 Methods for Stratification of the Project Area (X-STR) v1.3 to stratify the Program Area. The stratification approach is fully consistent with the strata defined in the Chocó Department JNR FREL (VCS ID 5079) Baseline Description document, Section 2.5.5.1.6

Calculate Total Rates of Deforestation, Forest Degradation and Relative Increases in Forest Cover

Program Area rates are taken from the Chocó Department FREL degradation-risk map and distributed proportionally across the Program Area and the Leakage Belt. They indicate the extent of degradation projected for the initial Baseline Validity Period (2021–2026) under the jurisdictional baseline (i.e., in the absence of the project).

For consistency across the Program, baseline rates derived from the jurisdictional risk map and allocated to the Program Area and the Leakage Belt for the initial baseline validity period are hereafter termed Activity Data for Unplanned Degradation (AD UDeg-PA; AD UDeg-LB). Map 15 depicts the areas within the Program Area that are at risk of degradation during the initial Baseline Validity Period (BVP), 2021–2026.

Table 39. Activity Data for UDeg-PA and UDeg-LB for the initial BVP (2021-2026)

Year	AD UDeg -PA (Hectares)	AD UDeg -LB (Hectares)
1	8,320	3,246
2	7,857	2,907
3	7,430	3,029
4	6,966	3,260
5	6,638	3,506
6	6,405	3,753
Total	43,616	19,700

Calibrating Land-use Risk-based Model and Predicative Maps

The calibration of the risk model for this Program follows procedures described in VM0006 section 8.1.5.3. To spatially allocate expected deforestation and degradation in a dynamic and spatially explicit manner, the alternative model (TerraChange) utilizes a modeling module composed of two hierarchical subcomponents:

1. A logistic regression model, which estimates the probability that a land-use transition event—such as deforestation or degradation—will occur at a given location.
2. A multinomial logistic (multi-logit) model, which determines the most likely transition destination, i.e., the specific non-forest land-use class that a deforested pixel converts into.

For example, in the case of deforestation (DF), the first component assesses the likelihood that a DF event will occur, while the second identifies the target non-forest class (e.g., agriculture, settlement) into which the land transitions.

These estimated parameters are then integrated into the TerraChange land-use change model to predict the spatial distribution of future deforestation and degradation events across the landscape.

The logistic regression model is trained using a balanced dataset of approximately 50,000 observations, evenly split between pixels where deforestation was observed and those where it was not. The multi-logit model, by contrast, is calibrated using only those pixels where deforestation transitions were observed during the historical reference period.

The entire modeling system is re-calibrated during each baseline reset to reflect updated trends and drivers of land-use change.

The calibration process for the risk model and the application of the VT0007 tool, which is used to:

- Determine the Jurisdictional and Nested REDD+ (JNR) Area FREL;
- Generate risk maps;
- Produce activity density (AD) data, expressed in hectares per square kilometer (ha/km²), spatially allocated across the JNR FREL to inform project-level estimates under AFOLU methodologies.

3.2.2 Project Emissions (VCS, 3.15)

Explain and justify all relevant methodological choices (e.g., with respect to selection of emission factors and default values). Include all calculations in the emission reduction and removal calculation spreadsheet.

This section describes the procedures for quantification of project emissions in accordance with the two applied methodologies 1) VM0048/VMD0055 for project emissions from UDef-PA and 2) VM0006 for project emissions from UDeg-PA. The same project Scenario effectiveness assessment was used for both portions of the PA and LB as drivers, agents of deforestation and forest degradation are the same and Project activities to reduce them are also implemented at Program-level.

3.2.2.1 Project Emissions from UDef (VM0048)

Project emissions from the UDef-PA follow the next steps described in VMD0055 section 5.3.3.

Estimate ex-ante Emission Reductions Anticipated by the Project

Ex-ante estimates used the baseline deforestation allocation provided by the Jurisdictional Proponent of the Choco Department FREL (VCS ID 5079) which are described in detail in the Appendix 6 Allocation Report. Emission factors were estimated based on the procedures described in section 3.2.1.1.3.4 of this document which matches the procedures followed at the Jurisdictional level.

Emission reductions were projected over the entire crediting period for planning purposes; the annual emission reductions projected beyond the initial BVP were estimated based on the estimating of ex-ante effectiveness. The estimated ex-ante effectiveness was assessed at the Program Level including both the UDef and UDeg Project Areas which is consistent with the analysis of agents and drivers of deforestation

and forest degradation described in detail in section **Error! Reference source not found.** as well as the measures to be implemented to reduce them (section 2.1.17).

Specific methods for ex-ante effectiveness estimated used in the Program are described below. The resulting annual effectiveness is presented in Figure 3 below.

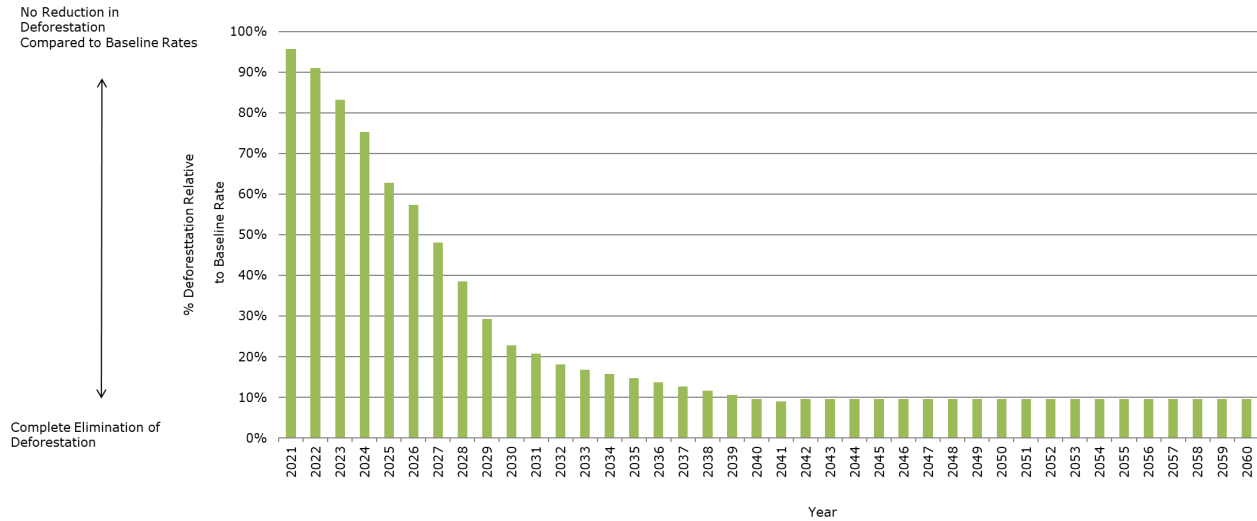


Figure 3. Deforestation Rates in the Project Scenario. Expressed as the percentage of baseline UDef.

The yearly percentages were then applied to the allocated activity data for the first BVP (Appendix 6 Allocation Report) and in the following years until the end of the crediting period was applied to the projected baseline activity data based on the results from the VT0007 code.

Project effectiveness increases the potential for leakage: the more baseline deforestation the project expects to avoid in the Project Area, the more pressure may be displaced beyond the project boundary. Ex-ante, VMD0055 requires estimating activity-shifting leakage as a share of the PA’s baseline emissions using a displacement leakage factor (DLF) that reflects the proportion of baseline agents not covered by leakage-mitigation measures (DLF = 100% if no agents participate). In practice: ex-ante leakage is equal to the DLF times the baseline activity data, and these ex-ante leakage estimates are kept separate from ex-ante emission-reduction projections.

During monitoring, leakage within the UDef Leakage Belt from geographically constrained agents is assessed by comparing baseline-allocated deforestation in the LB with deforestation observed ex post; leakage from geographically mobile agents is quantified using the net reduction across the PA+LB and jurisdictional emission factors for areas outside the LB.

This Program uses a yearly DLF related to the baseline effectiveness expressed as a percentage of the baseline AD as described in Figure 4.

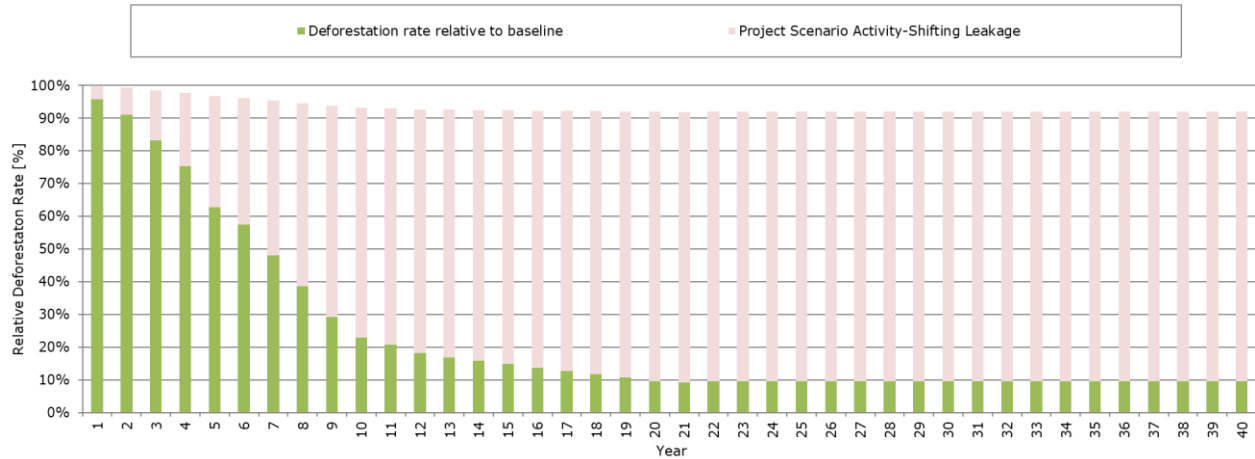


Figure 4. Net Decrease in Deforestation Rate after Accounting for Leakage

Determine AD per Stratum per Monitoring Period

Activity Data-AD for the first monitoring period was allocated from the Choco Department JNR FREL as described in Appendix 6. Allocation Report. Even though baseline AD projections beyond the initial BVP are not required from Project Proponents, this Program made estimates for the complete crediting period, as described in Table 40.

Ex-ante activity data for the crediting period in the baseline and project scenario ex-ante are presented in Table 40 below.

Table 40. Baseline AD for UDef-PA and UDef-LB, projections beyond the initial BVP and expected yearly rate under the Project Scenario.

Year	Baseline UDef-PA AD (hectares)					Project UDef-PA AD (hectares)				
	CFU	CFL	OFU	OFL	Total	CFU	CFL	OFU	OFL	Total
2021	1,805	1,091	163	1,814	4,873	1,686	1,019	152	1,695	4,551
2022	1,805	1,091	163	1,814	4,873	1,600	967	144	1,608	4,319
2023	1,805	1,091	163	1,814	4,873	1,453	878	131	1,461	3,923
2024	1,805	1,091	163	1,814	4,873	1,400	847	126	1,408	3,781
2025	1,805	1,091	163	1,814	4,873	1,203	728	108	1,210	3,249
2026	1,805	1,091	163	1,814	4,873	1,144	692	103	1,150	3,090
2027	1,805	1,091	163	1,814	4,873	1,005	608	91	1,010	2,713
2028	1,805	1,091	163	1,814	4,873	840	508	76	844	2,268
2029	1,805	1,091	163	1,814	4,873	679	411	61	683	1,833
2030	1,805	1,091	163	1,814	4,873	558	337	50	561	1,507
2031	1,805	1,091	163	1,814	4,873	514	311	46	516	1,387
2032	1,805	1,091	163	1,814	4,873	458	277	41	460	1,236
2033	1,805	1,091	163	1,814	4,873	430	260	39	432	1,162
2034	1,805	1,091	163	1,814	4,873	411	248	37	413	1,110
2035	1,805	1,091	163	1,814	4,873	392	237	35	394	1,058
2036	1,805	1,091	163	1,814	4,873	372	225	34	374	1,006
2037	1,805	1,091	163	1,814	4,873	353	214	32	355	954
2038	1,805	1,091	163	1,814	4,873	334	202	30	336	902
2039	1,805	1,091	163	1,814	4,873	315	190	28	316	850
2040	1,805	1,091	163	1,814	4,873	295	179	27	297	798
2041	1,805	1,091	163	1,814	4,873	286	173	26	288	773
2042	1,805	1,091	163	1,814	4,873	295	179	27	297	798
2043	1,805	1,091	163	1,814	4,873	295	179	27	297	798
2044	1,805	1,091	163	1,814	4,873	295	179	27	297	798
2045	1,805	1,091	163	1,814	4,873	295	179	27	297	798
2046	1,805	1,091	163	1,814	4,873	295	179	27	297	798

Year	Baseline UDef-PA AD (hectares)					Project UDef-PA AD (hectares)				
	CFU	CFL	OFU	OFL	Total	CFU	CFL	OFU	OFL	Total
2047	1,805	1,091	163	1,814	4,873	295	179	27	297	798
2048	1,805	1,091	163	1,814	4,873	295	179	27	297	798
2049	1,805	1,091	163	1,814	4,873	295	179	27	297	798
2050	1,805	1,091	163	1,814	4,873	295	179	27	297	798
2051	1,805	1,091	163	1,814	4,873	295	179	27	297	798
2052	1,805	1,091	163	1,814	4,873	295	179	27	297	798
2053	1,805	1,091	163	1,814	4,873	295	179	27	297	798
2054	1,805	1,091	163	1,814	4,873	295	179	27	297	798
2055	1,805	1,091	163	1,814	4,873	295	179	27	297	798
2056	1,805	1,091	163	1,814	4,873	295	179	27	297	798
2057	1,805	1,091	163	1,814	4,873	295	179	27	297	798
2058	1,805	1,091	163	1,814	4,873	295	179	27	297	798
2059	1,805	1,091	163	1,814	4,873	295	179	27	297	798
2060	1,805	1,091	163	1,814	4,873	295	179	27	297	798

Ex-post monitoring activity data is based on a wall-to-wall mapping of LULC changes. Detailed methods for ex-post monitoring of LULC changes are included in Appendix 7: VCS Monitoring Plan.

Multiply AD by Emission Factors

Annual emissions resulting from changes in carbon stocks caused by unplanned deforestation in the project scenario were estimated using the same estimates of carbon stock differences that were established for the baseline paired with the conservatively inflated annualized UDef AD obtained.

For carbon pools in the UDef PA and the UDef LB strata, the following equation was used:

$$\begin{aligned}
 \Delta C_{MP,PA-UDef,i,t} = & (AD_{MP,PA-UDef,i,t} \times \Delta C_{AB-LI,i}) + \sum_{t-10}^t \left(AD_{MP,PA-UDef,i,t} \times \frac{\Delta C_{BB-DW,i}}{10} \right) \\
 & + \sum_{t-20}^t \left(AD_{MP,PA-UDef,i,t} \times \frac{\Delta C_{SOC-WP,i}}{20} \right)
 \end{aligned}
 \tag{Equation 8}$$

Where:

$\Delta C_{MP,PA-UDef,i,t}$ = Total emissions from carbon stock change in all carbon pools in forest stratum i in the UDef PA in year t (t CO₂e)

$AD_{MP,PA-UDef,i,t}$ = UDef AD in the UDef PA in forest stratum i in year t (ha)

$\Delta C_{AB-LI,i}$ = Conservatively estimated emissions from carbon stock change in the UDef PA in aboveground biomass and litter pools in forest stratum i (t CO₂e/ha)

$\Delta C_{BB-DW,i}$ = Conservatively estimated emissions from carbon stock change over a 10year period in the UDef PA in belowground biomass and dead wood pools in forest stratum i (t CO₂e/ha)

$\Delta C_{SOC-WP,i}$ = Conservatively estimated emissions from carbon stock change over a 20year period in the UDef PA in the soil organic carbon and wood product pools in forest stratum i (t CO₂e/ha)

i = 1, 2, 3, ..., M forest stratum

t = 1, 2, 3, ..., t^* years elapsed since the start of the project

Sum with Estimated other Project Emissions

Emissions from Biomass and Peat Burning were deemed insignificant from the Choco JNR FREL (VCS ID 5079). Emissions from Fossil Fuel Combustion and Nitrogen Fertilization were assumed as zero, since Program activities don't include the use of nitrogen fertilizers or consumption of fossil fuel within the UDef PA and UDef LB.

3.2.2.2 Project Emissions from UDef (VM0006)

The ex-ante estimation of the deforestation and forest degradation rates was based on a breakdown of the effectiveness of every project activity (a) in decreasing any driver of deforestation (d) relative to that driver's contribution to deforestation and forest degradation, i.e. *effectiveness* (a, d). Note that effectiveness values are only meant for ex-ante estimates of emission reductions. Ex-post emission reductions are not quantified based on these values.

3.2.2.2.1 Identify Program Activities and Estimate Total Deforestation and Degradation Rates under the Project Scenario

A list of the Program Activities that are included, together with procedures to quantify the effectiveness for each project activity and each targeted driver are described in Table 41.

Table 41. Reduction in Deforestation Drivers due to Project Activities.

Program Activity	Target driver	Maximal effectiveness quantification
1. Empowered COCOMACIA REDD+ Project management with independent fiscal, operational and governance capacity	1. Illegal Mining	N/A set to 0%
	2. Illegal Logging for Timber	10%. Assumption based in project partners and experts/locals
	3. Conversion of Forestland to Grassland for Grazing	10%. Assumption based in project partners and experts/locals
	4. Illicit crops	N/A set to 0%
	5. Unplanned wildfires	10%. Assumption based in project partners and experts/locals
	6. Shifting agriculture for subsistence	15%. Assumption based in project partners and experts/locals
2. COCOMACIA territory has clear boundaries and with internal management plans and use rights recognized	1. Illegal Mining	15%. Assumption based in project partners and experts/locals
	2. Illegal Logging for Timber	50% < effectiveness < 100% 50% Since legally sanctioned logging is already regulated under forest management plans, the main driver affected here is illegal logging for commercial on-sale. With a sound forest patrolling plan in place, it is assumed that illegal logging for commercial on-sale can be at least halved.

Program Activity	Target driver	Maximal effectiveness quantification
and enforced by local communities	3. Conversion of Forestland to Grassland for Grazing	effectiveness = 100% Boundary demarcation and forest protection can eliminate conversion of forest land to cropland (grazing land) in most instances. Actual percentage used (15%) based on based in project partners and experts/locals.
	4. Illicit crops	15%. Assumption based in project partners and experts/locals
	5. Unplanned wildfires	5%. Assumption based in project partners and experts/locals
	6. Shifting agriculture for subsistence	N/A set to 0%
3. Strengthen governance capacity and robust land-use planning and zoning	1. Illegal Mining	10%. Assumption based in project partners and experts/locals
	2. Illegal Logging for Timber	20%. Assumption based in project partners and experts/locals
	3. Conversion of Forestland to Grassland for Grazing	$effectiveness = \left(1 - \frac{GR_{allowed}}{GR_{baseline}}\right) \% (Equation 9)$ 20%. Forest and land use plans usually explicitly indicate how much land can be converted from forest to grasslands. The baseline conversion rates was estimated based on remote sensing analysis.
	4. Illicit crops	N/A set to 0%
	5. Unplanned wildfires	5%. Assumption based in project partners and experts/locals
	6. Shifting agriculture for subsistence	$effectiveness = \left(1 - \frac{\Delta area_{cropland,allowed}}{\Delta area_{cropland,allowed}}\right) \% (Equation 10)$ 20%. Forest and land use plans usually explicitly indicate how much land can be converted from forest to cropland. The baseline conversion rates was estimated based on remote sensing analysis.
4. Communities supportive of REDD+ program and actively engaged in planning and implementation	1. Illegal Mining	10%. Assumption based in project partners and experts/locals
	2. Illegal Logging for Timber	10%. Assumption based in project partners and experts/locals
	3. Conversion of Forestland to Grassland for Grazing	10%. Assumption based in project partners and experts/locals
	4. Illicit crops	N/A set to 0%
	5. Unplanned wildfires	15%. Assumption based in project partners and experts/locals
	6. Shifting agriculture for subsistence	10%. Assumption based in project partners and experts/locals
5. Develop a land use plan to delimit areas of use for mining that is consistent	1. Illegal Mining	20%. Assumption based in project partners and experts/locals
	2. Illegal Logging for Timber	N/A set to 0%
	3. Conversion of Forestland to Grassland for Grazing	N/A set to 0%

Program Activity	Target driver	Maximal effectiveness quantification
with the regulations of the community council and the POTA for Choco	4. Illicit crops	N/A set to 0%
	5. Unplanned wildfires	N/A set to 0%
	6. Shifting agriculture for subsistence	N/A set to 0%
6. Agricultural productivity increased for subsistence crops (e.g., corn, rice and cassava)	1. Illegal Mining	5%. Assumption based in project partners and experts/locals
	2. Illegal Logging for Timber	N/A set to 0%
	3. Conversion of Forestland to Grassland for Grazing	10%. Assumption based in project partners and experts/locals
	4. Illicit crops	20%. Assumption based in project partners and experts/locals
	5. Unplanned wildfires	15%. Assumption based in project partners and experts/locals
	6. Shifting agriculture for subsistence	<i>effectiveness</i> = (maximal adoption rate) × (increase in yield per hectare) (<i>Equation 11</i>) 10%. Estimates the maximal adoption rate based on the willingness of project participants to change their practices based on (1) quantified in social assessments, or (2) expert opinion. Estimate the relative increase in yield from (1) field studies, (2) peer-reviewed literature or (3) local agricultural extension experts.
7. Agricultural productivity increased for cash crops (e.g. cacao, achote)	1. Illegal Mining	10%. Assumption based in project partners and experts/locals
	2. Illegal Logging for Timber	5%. Assumption based in project partners and experts/locals
	3. Conversion of Forestland to Grassland for Grazing	10%. Assumption based in project partners and experts/locals
	4. Illicit crops	20%. Assumption based in project partners and experts/locals
	5. Unplanned wildfires	15%. Assumption based in project partners and experts/locals
	6. Shifting agriculture for subsistence	(<i>Equation 12</i>) 10%. Estimates the maximal adoption rate based on the willingness of project participants to change their practices based on (1) quantified in social assessments, or (2) expert opinion. Estimate the relative increase in yield from (1) field studies, (2) peer-reviewed literature or (3) local agricultural extension experts.
8. Alternative income opportunities available for participating communities	1. Illegal Mining	$effectiveness = 0.75 \cdot \frac{\sum \text{income through alternative livelihood}}{\sum \text{total value of baseline income}}$ (<i>Equation 13</i>)
	2. Illegal Logging for Timber	
	3. Conversion of Forestland to Grassland for Grazing	
	4. Illicit crops	
	5. Unplanned wildfires	

Program Activity	Target driver	Maximal effectiveness quantification
	6. Shifting agriculture for subsistence	

Based on the above maximal effectiveness quantification for each drivers and each Project Activity, Table 42 presents the relative reduction in the impact of drivers of deforestation and degradation due to project activities.

Table 42. Relative reduction (%) in the impact of drivers of deforestation and degradation due to Project Activities

Driver of Deforestation / Project Actions	1. Empowered COCOMACIA REDD+ Project management with independent fiscal, operational and governance capacity	2. COCOMACIA territory has clear boundaries and with internal management plans and use rights recognized and enforced by local communities	3. Strengthen governance capacity and robust land-use planning and zoning	4. Communities supportive of REDD+ program and actively engaged in planning and implementation	5. Develop a land use plan to delimit areas of use for mining that is consistent with the regulations of the community council and the POTA for Choco	6. Agricultural productivity increased for subsistence crops (e.g., corn, rice and cassava)	7. Agricultural productivity increased for cash crops (e.g. cacao, achiote)	8. Alternative income opportunities available for participating communities	TOTAL REDUCTION (DF and DG)
Illegal Logging for Timber	0%	50%	10%	10%	0%	0%	5%	5%	80%
Shifting agriculture for subsistence	15%	0%	20%	10%	0%	10%	5%	5%	65%
Illicit crops	0%	15%	0%	0%	0%	20%	20%	20%	75%
Illegal Mining	0%	15%	10%	10%	20%	5%	10%	10%	80%
Conversion of Forestland to Grassland for Grazing	10%	15%	20%	10%	0%	10%	10%	10%	85%
Unplanned Wildfires	5%	10%	5%	15%	0%	15%	15%	15%	80%
Net Effect on Total Deforestation (Excl. Leakage)	3%	15%	10%	10%	11%	8%	11%	11%	
Net Effect on Total Forest Degradation	1%	41%	10%	10%	3%	2%	7%	7%	

The effectiveness of project actions may change during the crediting period, due to the increased experience of project implementers or an increased allocation of funds during the crediting period. This time-dependent project activity rate is accounted for by integrating a factor $rate(a,t)$ for project activity a during year t . Effectiveness (a,d) represents the maximally attainable effectiveness given project conditions and capacity are optimal. Consequently, rate (a,t) must be 100% at least once during the crediting period. The relative reduction in deforestation can be estimated ex-ante by integrating the relative

proportion of each driver of deforestation with the effectiveness coefficients and the estimated adoption rates for each project activity.

$$\begin{aligned}
 & \text{RelativeDriverImpact}_{DF}(t, d) \\
 &= \sum_{\alpha=1}^{nrActivities} (\text{rate}(\alpha, t) \cdot \text{effectiveness}(\alpha, d) \cdot \text{contribution}_{DF}(d))
 \end{aligned}
 \tag{Equation 14}$$

$$\begin{aligned}
 & \text{RelativeDriverImpact}_{DG}(t, d) \\
 &= \sum_{\alpha=1}^{nrActivities} (\text{rate}(\alpha, t) \cdot \text{effectiveness}(\alpha, d) \cdot \text{contribution}_{DG}(d))
 \end{aligned}
 \tag{Equation 15}$$

$$\text{RelativeProjectImpact}_{DF}(t, d) = \sum_{\alpha=1}^{nrActivities} \text{RelativeDriverImpact}_{DF}(t, d)
 \tag{Equation 16}$$

$$\text{RelativeProjectImpact}_{DG}(t, d) = \sum_{\alpha=1}^{nrActivities} \text{RelativeDriverImpact}_{DG}(t, d)
 \tag{Equation 17}$$

Where:

- | | | | |
|---|-----|---|---|
| $\text{RelativeDriverImpact}_{DF}(t, d)$ | and | = | Relative impact of a driver d on deforestation and forest degradation, respectively for year t of the crediting period. [-] |
| $\text{RelativeDriverImpact}_{DG}(t, d)$ | | | |
| $\text{RelativeProjectImpact}_{DF}(t, d)$ | and | = | Impact of all project activities on deforestation and forest degradation respectively, relative to the baseline deforestation and forest degradation rates during year t . [-] |
| $\text{RelativeProjectImpact}_{DG}(t, d)$ | | | |
| $nrActivities$ | | = | Total number of project activities. [-] |
| $nrDrivers$ | | = | Total number of drivers of deforestation. [-] |
| $\text{rate}(\alpha, t)$ | | = | Adoption rate or relative degree of activity for activity a during year t . A value of 100% indicates that the activity cannot be more efficient in reducing deforestation or forest degradation. [-] |
| $\text{effectiveness}(\alpha, d)$ | | = | The effectiveness of project action aa to reduce driver of deforestation d . [-] |
| $\text{contribution}_{DF}(d)$ and $\text{contribution}_{DG}(d)$ | | = | The relative importance of driver d in deforestation and degradation to the total deforestation and degradation, respectively. [-] |

Figure 3 show that the project activities are expected to reduce deforestation by up to 20% of the baseline deforestation rate. Figure 5 show how degradation rate is expected to be reduce by up to 20% of the baseline degradation rate.

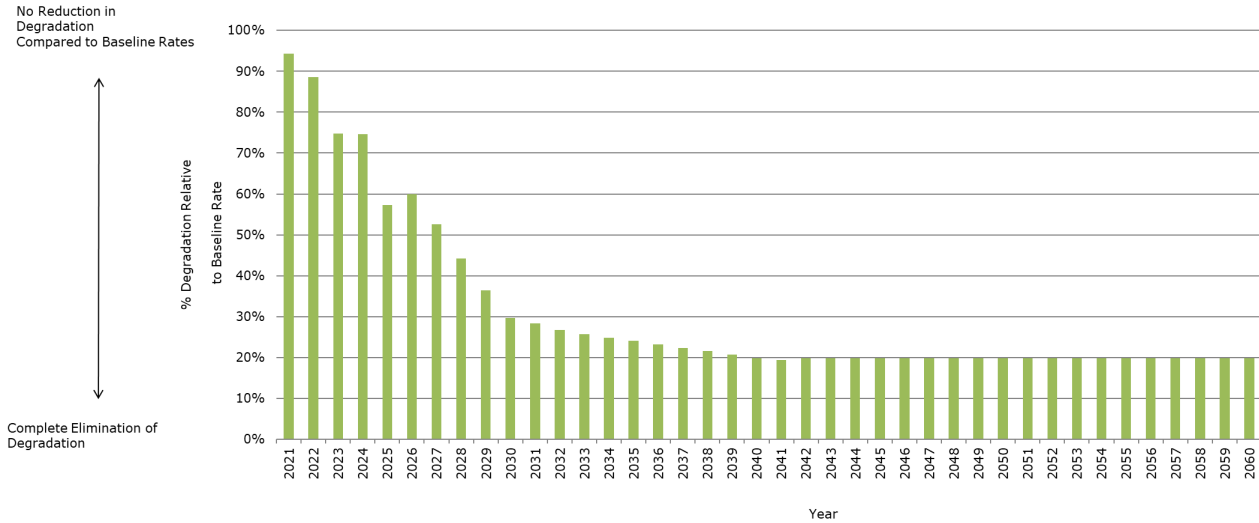


Figure 5. Degradation Rates in the Project Scenario. Expressed as the percentage of baseline UDeg.

3.2.2.2.2 Calculation of Effectiveness of Project Activities in Reducing GHG Emissions

Table 43 provides the expected effectiveness project activities to address deforestation and degradation and to prevent leakage based on expected level of implementation and local experts knowledge. Expected effectiveness is set ex-ante and only impact the ex-ante Project Scenario estimates.

Table 43. Annual implementation level of project activities

Project Year	Calendar Year	Level of project activity implementation and adoption rates during the crediting period							
		Empowered COCOMACIA REDD+ Project management with independent fiscal, operational and governance capacity	COCOMACIA territory has clear boundaries and with internal management plans and use rights recognized and enforced by local communities	Strengthen governance capacity and robust land-use planning and zoning	Communities supportive of REDD+ program and actively engaged in planning and implementation	Develop a land use plan to delimit areas of use for mining that is consistent with the regulations of the community council and the POTA for Choco	Agricultural productivity increased for subsistence crops (e.g., corn, rice and cassava)	Agricultural productivity increased for cash crops (e.g. cacao, achiotte)	Alternative income opportunities available for participating communities
1	2021	10%	10%	10%	5%	0%	0%	0%	0%
2	2022	25%	20%	20%	10%	0%	0%	0%	0%
3	2023	40%	30%	30%	15%	0%	0%	0%	0%
4	2024	45%	40%	40%	35%	25%	10%	10%	15%
5	2025	65%	50%	50%	45%	33%	20%	15%	25%
6	2026	80%	60%	60%	55%	42%	35%	30%	30%
7	2027	100%	70%	70%	65%	55%	45%	39%	35%
8	2028	100%	80%	90%	75%	71%	55%	51%	40%
9	2029	100%	90%	100%	85%	92%	65%	66%	45%

Project Year	Calendar Year	Level of project activity implementation and adoption rates during the crediting period							
		Empowered COCOMACIA REDD+ Project management with independent fiscal, operational and governance capacity	COCOMACIA territory has clear boundaries and with internal management plans and use rights recognized and enforced by local communities	Strengthen governance capacity and robust land-use planning and zoning	Communities supportive of REDD+ program and actively engaged in planning and implementation	Develop a land use plan to delimit areas of use for mining that is consistent with the regulations of the community council and the POTA for Choco	Agricultural productivity increased for subsistence crops (e.g., corn, rice and cassava)	Agricultural productivity increased for cash crops (e.g. cacao, achiotte)	Alternative income opportunities available for participating communities
10	2030	100%	100%	100%	95%	100%	75%	86%	50%
11	2031	100%	100%	100%	100%	100%	85%	90%	55%
12	2032	100%	100%	100%	100%	100%	95%	100%	60%
13	2033	100%	100%	100%	100%	100%	100%	100%	65%
14	2034	100%	100%	100%	100%	100%	100%	100%	70%
15	2035	100%	100%	100%	100%	100%	100%	100%	75%
16	2036	100%	100%	100%	100%	100%	100%	100%	80%
17	2037	100%	100%	100%	100%	100%	100%	100%	85%
18	2038	100%	100%	100%	100%	100%	100%	100%	90%
19	2039	100%	100%	100%	100%	100%	100%	100%	95%
20	2040	100%	100%	100%	100%	100%	100%	100%	100%
21	2041	100%	100%	100%	100%	100%	100%	100%	100%
22	2042	100%	100%	100%	100%	100%	100%	100%	100%
23	2043	100%	100%	100%	100%	100%	100%	100%	100%
24	2044	100%	100%	100%	100%	100%	100%	100%	100%
25	2045	100%	100%	100%	100%	100%	100%	100%	100%
26	2046	100%	100%	100%	100%	100%	100%	100%	100%
27	2047	100%	100%	100%	100%	100%	100%	100%	100%
28	2048	100%	100%	100%	100%	100%	100%	100%	100%
29	2049	100%	100%	100%	100%	100%	100%	100%	100%
30	2050	100%	100%	100%	100%	100%	100%	100%	100%
31	2051	100%	100%	100%	100%	100%	100%	100%	100%
32	2052	100%	100%	100%	100%	100%	100%	100%	100%
33	2053	100%	100%	100%	100%	100%	100%	100%	100%
34	2054	100%	100%	100%	100%	100%	100%	100%	100%
35	2055	100%	100%	100%	100%	100%	100%	100%	100%
36	2056	100%	100%	100%	100%	100%	100%	100%	100%
37	2057	100%	100%	100%	100%	100%	100%	100%	100%
38	2058	100%	100%	100%	100%	100%	100%	100%	100%
39	2059	100%	100%	100%	100%	100%	100%	100%	100%
40	2060	100%	100%	100%	100%	100%	100%	100%	100%

3.2.2.2.3 Calculation Forest Strata-specific Degradation Rates

The project degradation rates relative to baseline conditions as shown in Table 44 was multiplied by the degradation rate under the baseline scenario to estimate the absolute degradation under the project scenario. Table 44 presents the forest strata specific degradation rates in hectares per each year of the crediting period for both baseline and project scenario.

Table 44. Baseline AD for UDeg-PA, projections beyond the initial BVP and expected yearly rate under the Project Scenario.

Year	Baseline Degradation Transitions (hectares)		Project Degradation Transitions (hectares)	
	CFU→OFU	CFL→OFL	CFU→OFU	CFL→OFL
2021	40	8,280	36	7,447
2022	207	7,650	172	6,350
2023	339	7,091	238	4,977
2024	444	6,522	315	4,623
2025	593	6,045	313	3,187
2026	740	5,665	407	3,116
2027	740	5,665	347	2,658
2028	740	5,665	273	2,091
2029	740	5,665	209	1,602
2030	740	5,665	160	1,221
2031	740	5,665	150	1,144
2032	740	5,665	137	1,046
2033	740	5,665	130	992
2034	740	5,665	123	945
2035	740	5,665	117	897
2036	740	5,665	111	850
2037	740	5,665	105	803
2038	740	5,665	99	756
2039	740	5,665	93	709
2040	740	5,665	86	661
2041	740	5,665	83	633
2042	740	5,665	86	661
2043	740	5,665	86	661
2044	740	5,665	86	661
2045	740	5,665	86	661
2046	740	5,665	86	661
2047	740	5,665	86	661
2048	740	5,665	86	661
2049	740	5,665	86	661
2050	740	5,665	86	661
2051	740	5,665	86	661
2052	740	5,665	86	661
2053	740	5,665	86	661
2054	740	5,665	86	661
2055	740	5,665	86	661
2056	740	5,665	86	661
2057	740	5,665	86	661
2058	740	5,665	86	661
2059	740	5,665	86	661
2060	740	5,665	86	661

3.2.2.2.4 Estimate GHG Emissions Sources from Firebreaks

The Project does not support removing biomass to create firebreaks, and thus has not estimated emissions.

3.2.2.2.5 Estimate the Net GHG Sequestration from Assisted Natural Regeneration Activities

The Project does not plan to claim credits from ANR activities separately. Therefore, no ANR management plan is included.

3.2.2.2.6 Estimate the New GHG Emissions Reduction from Cookstoves and Fuel Efficiency (CFE) Activities

The Project does not plan to claim credits from Cookstoves and Fuel Efficiency (CFE) Activities.

3.2.2.2.7 Estimate GHG Emissions from Harvesting

Wood harvesting is not allowed in the Project Activity Instance and therefore, estimation of the long-term average carbon stock, and emissions from harvesting, is not relevant.

3.2.3 Leakage Emissions (VCS 2.5, 3.2, 3.6, 3.15, 4.3)

3.2.3.1 Activity Shifting by Geographically Constrained Agents

One leakage belt was used for both UDef and UDeg from activity shifting by geographically constraint agents. The spatial extent of the UDef LB was defined by the Choco Department FREL Jurisdictional Proponent following the criteria described in VMD0055 Section A1.2.2 of Appendix 1. UDef Baseline AD was allocated by the Jurisdictional Proponent through the allocation report (Appendix 6). UDeg Baseline AD comes from the Jurisdictional Risk Map developed for the Choco Department FREL boundary.

Leakage from Geographically Constrained Drivers is measured ex-post as the difference between the deforestation and degradation in the Leakage Belt of the Project Activity Instance under the baseline scenario and the actual ex-post monitored deforestation and degradation in the Leakage Belt. If monitored deforestation and/or degradation is higher than the baseline, then it is deducted from the monitored emissions, if lower than leakage is zero.

3.2.3.1.1 Delineation of Leakage Belt

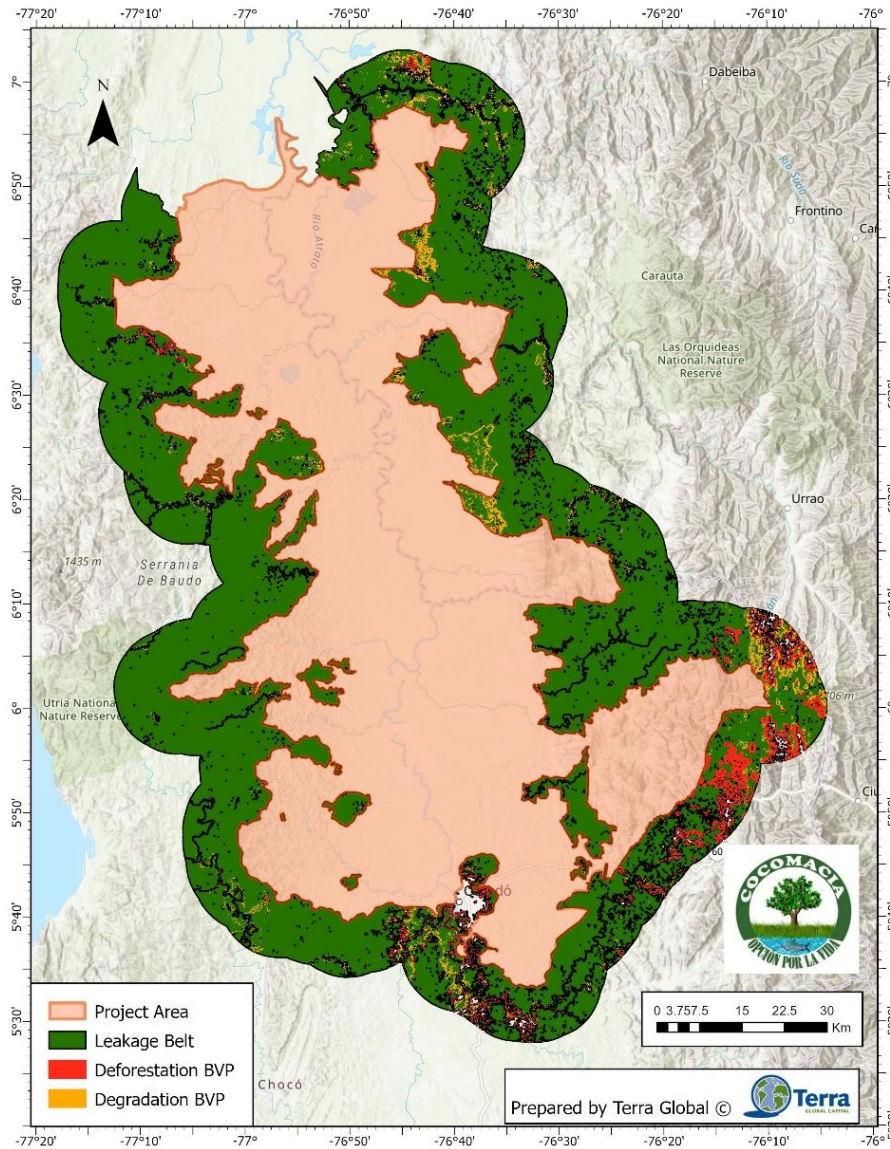
The Leakage Belt delineation is described in Section 2.2 UDef LB Boundaries of the Appendix 6 - AD Baseline Allocation Report.

To maintain consistency with the leakage belt for unplanned deforestation (UDef) and to avoid double counting of emissions, the leakage belt for forest degradation (UDeg) was delineated following the guidelines of VMD0055, as described in detail in the Chocó Department Baseline Description. See Section 3.1.6 for a detailed description of the deviation for selecting the Reference Region.

3.2.3.1.2 Allocation of Activity Data to the UDef and UDeg Areas within the Leakage Belt

This COCOMACIA Program uses one area for a Leakage Belt as described in VM0048 and follows the procedures in VM0055 section 5.1.3 Avoiding Unplanned Deforestation Project Leakage Belt (UDef LB). The area described as the Leakage Belt is used for both Deforestation and Degradation. This methodology deviation to the leakage belt definition is described in Appendix 6 allocation report . The Leakage Belt

where the Program monitors Activity Shifting Leakage of Deforestation and Degradation can be seen in Map 19 below.



Map 19. Leakage Belt with allocated Deforestation and Degradation

The Leakage Area deforestation rate relative to baseline conditions was multiplied by the deforestation and degradation rate under the baseline scenario to estimate the absolute deforestation and degradation under the project scenario. The land-use change simulation model was then run using these values to estimate the rates for each relevant transition under the project scenario Table 39 and Table 40 summarize the transitions for under the Project scenario for each area. Baseline deforestation and degradation rates during the first 6 years correspond with the allocation of the initial BVP, the rest are projection beyond the BVP made by the Program for planning purposes.

Table 45. Baseline AD for UDef-LB, projections beyond the initial BVP and expected yearly rate under the Project Scenario.

Year	Baseline UDef-LB AD (hectares)					Project UDef-LB AD (hectares)				
	CFU	CFL	OFU	OFL	Total	CFU	CFL	OFU	OFL	Total
2021	4,228	387	314	643	5,572	4,251	389	315	646	5,602
2022	4,228	387	314	643	5,572	4,267	391	317	649	5,624
2023	4,228	387	314	643	5,572	4,295	393	319	653	5,661
2024	4,228	387	314	643	5,572	4,306	394	319	655	5,674
2025	4,228	387	314	643	5,572	4,344	398	322	661	5,724
2026	4,228	387	314	643	5,572	4,355	399	323	662	5,739
2027	4,228	387	314	643	5,572	4,381	401	325	666	5,774
2028	4,228	387	314	643	5,572	4,414	404	327	671	5,817
2029	4,228	387	314	643	5,572	4,446	407	330	676	5,860
2030	4,228	387	314	643	5,572	4,470	409	332	680	5,891
2031	4,228	387	314	643	5,572	4,478	410	332	681	5,902
2032	4,228	387	314	643	5,572	4,489	411	333	683	5,915
2033	4,228	387	314	643	5,572	4,494	412	333	683	5,922
2034	4,228	387	314	643	5,572	4,497	412	334	684	5,927
2035	4,228	387	314	643	5,572	4,501	412	334	684	5,932
2036	4,228	387	314	643	5,572	4,505	413	334	685	5,936
2037	4,228	387	314	643	5,572	4,508	413	334	686	5,941
2038	4,228	387	314	643	5,572	4,512	413	335	686	5,946
2039	4,228	387	314	643	5,572	4,516	414	335	687	5,951
2040	4,228	387	314	643	5,572	4,519	414	335	687	5,956
2041	4,228	387	314	643	5,572	4,521	414	335	687	5,958
2042	4,228	387	314	643	5,572	4,519	414	335	687	5,956
2043	4,228	387	314	643	5,572	4,519	414	335	687	5,956
2044	4,228	387	314	643	5,572	4,519	414	335	687	5,956
2045	4,228	387	314	643	5,572	4,519	414	335	687	5,956
2046	4,228	387	314	643	5,572	4,519	414	335	687	5,956
2047	4,228	387	314	643	5,572	4,519	414	335	687	5,956
2048	4,228	387	314	643	5,572	4,519	414	335	687	5,956
2049	4,228	387	314	643	5,572	4,519	414	335	687	5,956
2050	4,228	387	314	643	5,572	4,519	414	335	687	5,956
2051	4,228	387	314	643	5,572	4,519	414	335	687	5,956
2052	4,228	387	314	643	5,572	4,519	414	335	687	5,956
2053	4,228	387	314	643	5,572	4,519	414	335	687	5,956
2054	4,228	387	314	643	5,572	4,519	414	335	687	5,956
2055	4,228	387	314	643	5,572	4,519	414	335	687	5,956
2056	4,228	387	314	643	5,572	4,519	414	335	687	5,956
2057	4,228	387	314	643	5,572	4,519	414	335	687	5,956
2058	4,228	387	314	643	5,572	4,519	414	335	687	5,956
2059	4,228	387	314	643	5,572	4,519	414	335	687	5,956
2060	4,228	387	314	643	5,572	4,519	414	335	687	5,956

Table 46. Baseline AD for UDeg-LB, projections beyond the initial BVP and expected yearly rate under the Project Scenario.

Year	Baseline Degradation Transitions (hectares)		Project Degradation Transitions (hectares)	
	CFU→OFU	CFL→OFL	CFU→OFU	CFL→OFL
2021	790	2,456	796	2,478
2022	1,246	1,661	1,263	1,684
2023	1,633	1,397	1,666	1,425
2024	2,021	1,238	2,061	1,263
2025	2,308	1,198	2,0363	1,227
2026	2,550	1,203	2,611	1,231
2027	2,550	1,203	2,611	1,232
2028	2,550	1,203	2,607	1,230
2029	2,550	1,203	2,600	1,226
2030	2,550	1,203	2,592	1,222
2031	2,550	1,203	2,590	1,221
2032	2,550	1,203	2,587	1,220
2033	2,550	1,203	2,585	1,219
2034	2,550	1,203	2,584	1,219
2035	2,550	1,203	2,583	1,218
2036	2,550	1,203	2,581	1,218
2037	2,550	1,203	2,580	1,217
2038	2,550	1,203	2,578	1,216
2039	2,550	1,203	2,577	1,215
2040	2,550	1,203	2,575	1,215
2041	2,550	1,203	2,574	1,214
2042	2,550	1,203	2,575	1,215
2043	2,550	1,203	2,575	1,215
2044	2,550	1,203	2,575	1,215
2045	2,550	1,203	2,575	1,215
2046	2,550	1,203	2,575	1,215
2047	2,550	1,203	2,575	1,215
2048	2,550	1,203	2,575	1,215
2049	2,550	1,203	2,575	1,215
2050	2,550	1,203	2,575	1,215
2051	2,550	1,203	2,575	1,215
2052	2,550	1,203	2,575	1,215
2053	2,550	1,203	2,575	1,215
2054	2,550	1,203	2,575	1,215
2055	2,550	1,203	2,575	1,215
2056	2,550	1,203	2,575	1,215
2057	2,550	1,203	2,575	1,215
2058	2,550	1,203	2,575	1,215
2059	2,550	1,203	2,575	1,215
2060	2,550	1,203	2,575	1,215

3.2.3.2 Activity Shifting by Geographically Mobile Agents

Emissions from activity shifting outside the Leakage Belt (LB) were estimated in accordance with Section 5.3.4.4 of Module VMD0055 (v1.1). Following the prescribed procedure, the project quantified the potential displacement of unplanned deforestation activities by geographically mobile agents to areas available for conversion outside the UDef LB.

3.2.3.2.1 Estimation of the Proportion of Migrated Land Cover Transition Agents in the Baseline ($PROP_{MIG}$)

A randomly-sample survey was conducted, which included 474 household within the project activities region. For the estimation of the proportion of migrated land cover transition agents in the baseline the following criteria were checked.

- a) *Criteria 1. Migrated into the area within the last five years*
- b) *Criteria 2. Engages in land use activities identified as a baseline driver of deforestation.*

Related to criteria 1, in COCOMACIA's collectively titled territory, settlement and land access are governed by internal by-laws. Membership (and thus lawful land access) is restricted to recognized community households; migrants are not admitted as community members unless they marry a member and comply with the internal regulations for a prolonged period (10-15 years). Consequently, recent migrants do not qualify as member households with legal access to farm or extractive areas and therefore are not represented among the agent group that carries out baseline land-use activities (i.e., those activities that drive unplanned deforestation). Given this governance context and the community census frame, the numerator of $PROP_{MIG}$ (recent migrant households engaging in baseline drivers) is zero, yielding $PROP_{MIG} = 0$ for the BVP. The household frame and zero result will be documented through a participatory rural appraisal and community census records, consistent with Section 5.3.4.4 requirements.

Because leakage outside the UDef LB scales directly with $PROP_{MIG}$, setting $PROP_{MIG} = 0$ reflects the territory's closed-membership tenure system rather than an absence of data, and aligns the leakage estimate with the actual absence of recent-migrant households among baseline agents in the project activities region. The current assumption of 0 is therefore contingent on the evidence described above and will be re-assessed 2 years prior to each new BVP, as required.

Criteria 2 was assessed using the results of the household survey. From the 474 surveys 17% (81) confirmed to be engaged in land use activities identified as a baseline driver of deforestation. 1% was engaged in illegal logging and 16% in illegal mining, this households mentioned these activities as the main income source for their families.

3.2.3.2.2 Total Area of Activity Shifting to Outside the UDef LB

The amount of leakage to areas outside the UDef Leakage Belt (UDef LB) was calculated as the total area of avoided land cover transition within the UDef Project Area (UDef PA), scaled by the proportion of recent migration ($PROP_{MIG}$). Using the following equation.

$$AD_{SA-OLB,t} = PROP_{MIG,t} \times \sum_{t=1}^{t^*} \sum_{i=1}^M (AD_{BSL,PA-UDef,i,t} - AD_{MP,PA-UDef,i,t}) \quad \text{Equation 18}$$

Where

$AD_{SA-OLB,t}$	=	Cumulative area outside the UDef LB experiencing land cover conversion due to activity shifting in year t (ha)
$PROP_{MIG,t}$	=	Proportion of households living in the project activities region that are recent migrants and are engaging in land use activities identified as a baseline driver of unplanned deforestation, as calculated for year t (proportion)
$AD_{BSL,PA-UDef,i,t}$	=	UDef AD in the baseline scenario allocated to forest stratum i in the UDef PA for year t (ha)
$AD_{MP,PA-UDef,i,t}$	=	UDef AD in the UDef PA in forest stratum i in year t (ha)
i	=	1, 2, 3, ..., M forest stratum
t	=	1, 2, 3, ..., t * years elapsed since the start of the project

3.2.3.2.3 Emissions from Activity Shifting to Areas Outside the UDef LB

Emissions from activity shifting to areas outside the UDef Leakage Belt (UDef LB) were estimated in accordance with Equation (46) of Module VMD0055 (v1.1). The area of deforestation displaced from the UDef Project Area (UDef PA) ($AD_{AS-OLB,t}$) was assumed to result in an equivalent extent of land cover conversion occurring beyond the UDef LB. The cumulative emissions associated with this displaced activity ($\Delta C_{LK,OLB,t}$) were obtained by multiplying the displaced area by the jurisdictional emission factor ($\Delta C_{OLB,t}$), which represents the average carbon stock change per hectare of land available for activity shifting outside the leakage belt. Details about land Available for Activity Shifting-Mobile Agents and the jurisdictional emission factor are in sections 2.6.2.2.1 and 2.6.2.2.2 of the Choco Department JNR FREL (VCS ID5079).

$$\Delta C_{LK,OLB,t} = AD_{AS-OLB,t} \times \Delta C_{OLB,t} \quad \text{Equation 19}$$

Where

$\Delta C_{LK,OLB,t}$	=	Cumulative area outside the UDef LB experiencing land cover conversion due to activity shifting in year t (ha)
$AD_{AS-OLB,t}$	=	Proportion of households living in the project activities region that are recent migrants and are engaging in land use activities identified as a baseline driver of unplanned deforestation, as calculated for year t (proportion)
$\Delta C_{OLB,t}$	=	UDef AD in the baseline scenario allocated to forest stratum i in the UDef PA for year t (ha)

$t = 1, 2, 3, \dots, t^*$ years elapsed since the start of the project

The emission factor $\Delta C_{OLB,t}$ was derived from jurisdictional baseline following Appendix 2 of the module VMD0055.

The emission factor was as follows: **294 tCO₂e ha⁻¹**

Given that $PROP_{MIG,t}$ is zero, for the initial BVP, activity shifting leakage outside the leakage belt is zero.

3.2.3.3 Market-Effects Leakage

The Program applied Module VMD0011 *Estimation of Emissions from Market-Effects (LK-ME)* to quantify potential indirect emissions resulting from changes in regional supply and demand of wood products. The resulting parameter ($\Delta CLK-ME,t$) represents the cumulative emissions from increased harvesting pressure or production displacement in areas outside both the UDef Project Area (UDef PA) and the UDef Leakage Belt (UDef LB).

3.2.3.3.1 Market-Effects Leakage Through Decreased Timber Harvest

Emissions due to market effects are equal to baseline emissions from logging multiplied by a leakage factor and, where applicable, also by a leakage management factor.

Emissions due to market leakage are calculated as follows:

$$LK_{MarketEffects,timber} = \sum_{i=1}^M (LF_{ME} * LK_{MAF} * AL_{T,i}) \quad \text{Equation 20}$$

Where:

$LK_{MarketEffects,timber}$ = Total GHG emissions due to market-effects leakage through decreased timber harvest (t CO₂e)

LF_{ME} = Leakage factor for market-effects calculations (dimensionless)

LK_{MAF} = Leakage management adjustment factor (dimensionless)

$AL_{T,i}$ = Summed emissions from timber harvest in stratum i in the baseline case potentially displaced through implementation of the project (t CO₂e)

i = 1, 2, 3, ...M strata (dimensionless)

3.2.3.3.1.1 Leakage factor for market-effects leakage through decreased timber harvest

For each stratum, the commercial biomass was calculated and divided by the total aerial biomass to obtain a proportion of the total aerial biomass. This proportion is compared with the following table in the module:

Table 47. Deduction factor for LF_{ME}

Deduction Factors for LF_{ME}	
PML_{FT} is equal ($\pm 15\%$) to PMP_i	$LF_{ME} = 0.4$
PML_{FT} is > 15% less than PMP_i	$LF_{ME} = 0.7$
PML_{FT} is > 15% greater than PMP_i	$LF_{ME} = 0.2$

Where:

PML_{FT} = Mean merchantable biomass as a proportion of total aboveground tree biomass for each forest type (%)

PMP_i = Merchantable biomass as a proportion of total aboveground tree biomass for stratum I within the project boundary (%).

LF_{ME} = Leakage factor for market-effects calculations (dimensionless).

Table 48. Leakage factor for market-effects leakage through decreased timber harvest

Description	Parameter	Value
Mean merchantable biomass as a proportion of total aboveground tree biomass for each forest type (%)	PML_{FT}	27%
Merchantable biomass as a proportion of total aboveground tree biomass for stratum i within the project boundary (%)	PMP_i	13%
Leakage factor for market-effects calculations	LF_{ME}	0.2

3.2.3.3.1.2 Leakage Management Adjustment Factor

For this Program, no leakage management activities will be implemented to offset or compensate for potential market-effects leakage. Consequently, the leakage management adjustment factor ($LKMAF$) was not applied, and market-effects leakage was estimated without deductions.

3.2.3.3.1.3 Emissions From Timber Harvest

Carbon emissions from displaced logging were estimated in accordance with Equation (5) of Module VMD0011 (v1.2). These emissions comprise two main components: (i) the biomass carbon of the extracted timber and (ii) the biomass carbon from forest damage occurring during the logging process. The total emissions from displaced timber harvests ($C_{BSL, XBT, i, t}$) were calculated as the sum of carbon in extracted timber, the collateral damage factor (LDF), and the logging infrastructure factor (LIF), multiplied by the molecular weight ratio of CO_2 to carbon.

$$C_{BSL, XBT, i, t} = \left[(V_{BSL, XE, i, t} \times D_{mn} \times CF) + (V_{BSL, XE, i, t} \times LDF) + (V_{BSL, XE, i, t} \times LIF) \right] \times \frac{44}{12} \quad \text{Equation 21}$$

Where:

- $C_{BSL, XBT, i, t}$ = Carbon emission due to timber harvests in the baseline scenario in stratum i in year t (t CO₂e)
- $V_{BSL, XE, i, t}$ = Volume of timber projected to be extracted from within the project boundary during the baseline in stratum i in year t (m³).
- D_{mn} = Mean wood density of commercially harvested species (t d.m.m-3)
- CF = Carbon fraction of biomass for commercially harvested species j (t C t d.m.-1)
- LDF = Logging damage factor (t C m-3)
- LIF = Logging infrastructure factor (t C m-3)
- i = 1, 2, 3, ...M strata
- t = 1, 2, 3, ... t^* time elapsed since the start of the project activity (years)

Default parameters for *LDF* and *LIF* were adopted from Winrock International field data and represent conservative upper confidence limits derived from empirical analyses conducted in tropical forests of Bolivia, Belize, the Republic of Congo, Brazil, Indonesia, and Mexico. The *LDF* accounts for non-commercial biomass losses (branches, stumps, and trees incidentally felled), while the *LIF* represents emissions from logging infrastructure, including roads, skid trails, and decks.

Table 49. Parameters used to estimate total volume of commercial timber harvested in 2013 and emission in the baseline.

Parameter	Value Used
Logging damage factor (LDF)	0.53 tC m-3
Logging infrastructure factor (LIF)	0.29 tC m-3
The volume legal and illegal commercial timber in 2013 ($V_{BSL, XBT, i, t}$)	60,334 m-3.
Carbon emission due to timber harvests in the baseline scenario in stratum i in year t ($C_{BSL, XBT, i, t}$)	239,211 tCO₂e

3.2.3.3.1.4 Results Market Effects Leakage

Using the equation in this section, the tons of CO₂e resulting from market effects were estimated. The total GHG emissions due to market-effects leakage through decreased timber harvest is the following $LK_{MarketEffects, timber}$ is 47,842 tCO₂e yr-1.

3.2.3.4 Leakage Mitigation Emissions

This Program activities include leakage mitigation measures, that directly target deforestation and degradation agents, those activities apply across all Program Area (UDef-PA and UDef-PA) as described in detail in Table 18. These activities are designed to avoid significant increases in emissions from carbon stock changes, biomass burning, and/or increased fertilizer usage. Location of this measures are described in Map 13.

Since the net sum of carbon stock changes within the leakage management zones over the BVP period is zero, emissions from leakage mitigation activities are not included in the calculation of net GHG emission reductions of the Program.

3.2.3.5 Estimation of Summed Leakage Emissions

Total leakage emissions are equal to the summed emissions from activity shifting, market-effects, and GHG emissions associated with leakage mitigation measures.

$$\Delta C_{LK-UDef,t} = \Delta C_{LK-AS,t} + \Delta C_{LK-ME,t} + GHG_{LK-E,t} \quad \text{Equation 22}$$

Were:

- $\Delta C_{LK-UDef,t}$ = Cumulative net GHG emissions due to leakage from the project activity in year t (t CO2e)
- $\Delta C_{LK-AS,t}$ = Cumulative net GHG leakage emissions due to the displacement of unplanned deforestation in year t (t CO2e)
- $\Delta C_{LK-ME,t}$ = Cumulative net GHG emissions due to market-effects leakage in year t, from VMD0011 (t CO2e)
- $GHG_{LK-E,t}$ = Cumulative other GHG emissions as a result of leakage mitigation measures in year t (t CO2e)
- t = 1, 2, 3, ..., t* years elapsed since the start of the project

Error! Reference source not found. presents the ex-ante projection of leakage emissions over the Program crediting period. Because emissions from the displacement of geographically unconstrained activities outside the UDef and UDef leakage belts, market leakage effects, and emissions from leakage-mitigation measures are not spatially explicit, they are quantified as a single consolidated leakage value for UDef and UDef combined. This total leakage is then allocated between the UDef and UDef project activity instances in proportion to their respective ex-ante emission reductions (i.e., each instance is assigned a share of total leakage equal to its share of the Program’s combined ex-ante emission reductions).

Table 50. Estimation of Summed ex-ante Leakage Emissions for the Program

Year	Activity Shifting Leakage			Market Effects	Leakage Mitigation Activities	Total Leakage UDef	Total Leakage UDef
	UDef-LB	UDef-LB	Outside LB	UDef & UDef	UDef & UDef		
(-)	(tCO2e)	(tCO2e)	(tCO2e)	(tCO2e)	(tCO2e)	(tCO2e)	(tCO2e)
2021	7,578	5,272	0	43,779	0	21,884	19,579
2022	14,795	7,503	0	47,842	0	31,430	24,138
2023	25,902	11,081	0	47,842	0	43,044	28,224

Year	Activity Shifting Leakage			Market Effects	Leakage Mitigation Activities	Total Leakage UDef	Total Leakage UDeg
	UDef-LB	UDeg-LB	Outside LB	UDef & UDeg	UDef & UDeg		
(-)	(tCO2e)	(tCO2e)	(tCO2e)	(tCO2e)	(tCO2e)	(tCO2e)	(tCO2e)
2024	31,084	11,558	0	47,842	0	50,840	31,314
2025	46,679	14,892	0	47,842	0	66,227	34,441
2026	53,094	16,032	0	47,842	0	74,770	37,708
2027	65,630	16,709	0	47,842	0	87,702	38,782
2028	80,829	16,400	0	47,842	0	103,155	38,727
2029	96,669	15,267	0	47,842	0	119,360	37,958
2030	110,043	13,842	0	47,842	0	132,965	36,764
2031	118,030	13,632	0	47,842	0	141,269	36,871
2032	126,838	13,203	0	47,842	0	150,417	36,782
2033	133,658	12,918	0	47,842	0	157,478	36,738
2034	139,974	12,654	0	47,842	0	163,965	36,646
2035	145,991	12,286	0	47,842	0	170,164	36,459
2036	151,981	11,880	0	47,842	0	176,305	36,203
2037	157,785	11,450	0	47,842	0	182,253	35,918
2038	163,345	11,024	0	47,842	0	187,957	35,635
2039	168,663	10,624	0	47,842	0	193,414	35,374
2040	173,826	10,257	0	47,842	0	198,712	35,143
2041	178,011	9,961	0	47,842	0	203,006	34,957
2042	180,688	10,087	0	47,842	0	205,791	35,190
2043	183,572	9,964	0	47,842	0	208,771	35,163
2044	186,300	9,843	0	47,842	0	211,582	35,126
2045	188,542	9,688	0	47,842	0	213,899	35,045
2046	190,623	9,531	0	47,842	0	216,042	34,950
2047	192,352	9,383	0	47,842	0	217,823	34,854
2048	87,486	9,257	0	47,842	0	112,999	34,770
2049	82,073	9,166	0	47,842	0	107,616	34,709
2050	76,346	9,112	0	47,842	0	101,910	34,677
2051	70,506	9,071	0	47,842	0	95,958	34,524
2052	64,561	9,033	0	47,842	0	89,895	34,367
2053	58,556	9,000	0	47,842	0	83,769	34,212
2054	52,509	8,971	0	47,842	0	77,596	34,058
2055	46,418	8,946	0	47,842	0	71,378	33,906
2056	40,285	8,926	0	47,842	0	65,115	33,756
2057	34,108	8,911	0	47,842	0	58,805	33,608
2058	30,773	8,901	0	47,842	0	55,332	33,461
2059	27,394	8,896	0	47,842	0	51,813	33,316
2060	23,972	8,896	0	47,842	0	48,248	33,172
2061	703	489	0	4,063	0	2,031	1,817
TOTAL 40-years	4,008,171	434,518	0	1,913,688	0	4,952,693	1,379,040

3.2.4 Estimated GHG Emission Reductions and Carbon Dioxide Removals (VCS, 3.15, 4.1)

State the non-permanence risk rating (%)	12%
Has the non-permanence risk report been attached as either an appendix or a separate document?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
For ARR and IFM projects with harvesting, state, in tCO ₂ e, the Long-term Average (LTA).	Not applicable
Has the LTA been updated based on monitored data, if applicable?	<input type="checkbox"/> Yes <input type="checkbox"/> No Not applicable
State, in tCO ₂ e, the expected total GHG benefit to date.	112,041,399
Is the number of GHG credits issued below the LTA?	<input type="checkbox"/> Yes <input type="checkbox"/> No Not applicable

3.2.4.1 Ex-ante Estimation of GHG Emission Reductions from AUDef (VM0048)

Conservative ex ante estimations of the project activity's total AUDef net GHG emissions reductions. The potential number of Verified Carbon Units (VCUs) was estimated as follows:

$$NER_{UDef,t} = \Delta C_{BSL,PA-UDef,t} - \Delta C_{MP,PA-UDef,t} - \Delta C_{LK,PA-UDef,t} \quad \text{Equation 23}$$

Were:

- $NER_{UDef,t}$ = Cumulative total net GHG emission reductions of the project activity in year t (t CO₂e)
- $\Delta C_{BSL,PA-UDef,t}$ = Cumulative net GHG emissions in the baseline within the UDef PA in year t (t CO₂e)
- $\Delta C_{MP,PA-UDef,t}$ = Total emissions from carbon stock change in all pools in the UDef PA in year t (t CO₂e)
- $\Delta C_{LK,PA-UDef,t}$ = Cumulative net GHG emissions due to leakage from the UDef PA in year t (t CO₂e)
- t = 1, 2, 3, ..., t* years elapsed since the start of the project

A summary of the conservative ex-ante estimations of the total net GHG emissions reductions from Avoided Unplanned Deforestation (AUDef) following VM0048, VMD0055 and VT0007 are presented below.

Table 51. Summary of Ex-ante Estimation of GHG Emission Reductions from AUDef (VM0048)

Vintage period	Estimated baseline emissions (tCO2e)	Estimated project emissions (tCO2e)	Estimated leakage emissions (tCO2e)	Estimated buffer pool allocation (tCO2e)	Estimated reduction VCUs (tCO2e)	Estimated removal VCUs (tCO2e)	Estimated total VCU issuance (tCO2e)
01-February-2021 to 31-December-2021	1,280,457	1,195,876	(21,884)	(10,150)	52,548	0	52,548
01-January-2022 to 31-December-2022	1,475,264	1,311,170	(31,430)	(19,691)	112,973	0	112,973
01-January-2023 to 31-December-2023	1,551,226	1,264,724	(43,044)	(34,380)	209,078	0	209,078
01-January-2024 to 31-December-2024	1,627,188	1,285,100	(50,840)	(41,050)	250,197	0	250,197
01-January-2025 to 31-December-2025	1,703,149	1,191,305	(66,227)	(61,421)	384,196	0	384,196
01-January-2026 to 31-December-2026	1,779,111	1,196,276	(74,770)	(69,940)	438,125	0	438,125
01-January-2027 to 31-December-2027	1,855,073	1,136,168	(87,702)	(86,269)	544,934	0	544,934
01-January-2028 to 31-December-2028	1,931,035	1,050,580	(103,155)	(105,655)	671,646	0	671,646
01-January-2029 to 31-December-2029	2,006,997	961,187	(119,360)	(125,497)	800,952	0	800,952
01-January-2030 to 31-December-2030	2,082,958	896,018	(132,965)	(142,433)	911,543	0	911,543
01-January-2031 to 31-December-2031	2,119,831	848,550	(141,269)	(152,554)	977,458	0	977,458
01-January-2032 to 31-December-2032	2,156,703	792,136	(150,417)	(163,748)	1,050,402	0	1,050,402
01-January-2033 to 31-December-2033	2,193,576	758,641	(157,478)	(172,192)	1,105,265	0	1,105,265
01-January-2034 to 31-December-2034	2,230,448	731,496	(163,965)	(179,874)	1,155,112	0	1,155,112
01-January-2035 to 31-December-2035	2,267,321	707,808	(170,164)	(187,141)	1,202,207	0	1,202,207
01-January-2036 to 31-December-2036	2,304,193	684,586	(176,305)	(194,353)	1,248,949	0	1,248,949
01-January-2037 to 31-December-2037	2,341,065	663,579	(182,253)	(201,298)	1,293,935	0	1,293,935
01-January-2038 to 31-December-2038	2,377,938	645,334	(187,957)	(207,913)	1,336,735	0	1,336,735
01-January-2039 to 31-December-2039	2,414,810	629,763	(193,414)	(214,206)	1,377,428	0	1,377,428
01-January-2040 to 31-December-2040	2,451,683	616,001	(198,712)	(220,282)	1,416,688	0	1,416,688
01-January-2041 to 31-December-2041	2,451,683	575,792	(203,006)	(225,107)	1,447,778	0	1,447,778
01-January-2042 to 31-December-2042	2,451,683	552,334	(205,791)	(227,922)	1,465,635	0	1,465,635
01-January-2043 to 31-December-2043	2,451,683	525,770	(208,771)	(231,110)	1,486,033	0	1,486,033
01-January-2044 to 31-December-2044	2,451,683	500,697	(211,582)	(234,118)	1,505,286	0	1,505,286
01-January-2045 to 31-December-2045	2,451,683	480,065	(213,899)	(236,594)	1,521,124	0	1,521,124
01-January-2046 to 31-December-2046	2,451,683	461,054	(216,042)	(238,875)	1,535,711	0	1,535,711
01-January-2047 to 31-December-2047	2,451,683	445,312	(217,823)	(240,764)	1,547,783	0	1,547,783
01-January-2048 to 31-December-2048	2,451,683	433,357	(112,999)	(242,199)	1,663,127	0	1,663,127
01-January-2049 to 31-December-2049	2,451,683	425,106	(107,616)	(243,189)	1,675,771	0	1,675,771
01-January-2050 to 31-December-2050	2,451,683	419,742	(101,910)	(243,833)	1,686,197	0	1,686,197
01-January-2051 to 31-December-2051	2,429,599	415,483	(95,958)	(241,694)	1,676,463	0	1,676,463
01-January-2052 to 31-December-2052	2,407,514	412,170	(89,895)	(239,441)	1,666,008	0	1,666,008

Vintage period	Estimated baseline emissions (tCO2e)	Estimated project emissions (tCO2e)	Estimated leakage emissions (tCO2e)	Estimated buffer pool allocation (tCO2e)	Estimated reduction VCUs (tCO2e)	Estimated removal VCUs (tCO2e)	Estimated total VCU issuance (tCO2e)
01-January-2053 to 31-December-2053	2,385,430	409,418	(83,769)	(237,121)	1,655,122	0	1,655,122
01-January-2054 to 31-December-2054	2,363,346	407,059	(77,596)	(234,754)	1,643,936	0	1,643,936
01-January-2055 to 31-December-2055	2,341,262	405,093	(71,378)	(232,340)	1,632,450	0	1,632,450
01-January-2056 to 31-December-2056	2,319,177	403,520	(65,115)	(229,879)	1,620,664	0	1,620,664
01-January-2057 to 31-December-2057	2,297,093	402,340	(58,805)	(227,370)	1,608,578	0	1,608,578
01-January-2058 to 31-December-2058	2,275,009	401,554	(55,332)	(224,815)	1,593,308	0	1,593,308
01-January-2059 to 31-December-2059	2,252,925	401,161	(51,813)	(222,212)	1,577,739	0	1,577,739
01-January-2060 to 31-December-2060	2,230,841	401,161	(48,248)	(219,562)	1,561,870	0	1,561,870
01-January-2061 to 31-January-2061	118,845	110,994	(2,031)	(942)	4,877	0	4,877
Total	88,087,893	27,555,478	(4,952,693)	(7,263,890)	48,315,832	-	48,315,832

3.2.4.2 Ex-ante Estimation of GHG Emission Reductions from AUDeg (VM0006)

This section describes the calculations that are required for VM0006 and summarizes the ex-ante calculations of the GHG benefits. Baseline Emissions Project years are based on the project start date of February 1, 2021. Hence project year and vintage year 2021 starts February 1, 2021, and ends on 31 January 2061.

Net Emission Reductions (NERs) =

$$\begin{aligned}
 & \textcircled{1} \Delta\text{GHG from avoided deforestation excluding ANR and harvest areas} + \\
 & \textcircled{2} \Delta\text{GHG from deforestation due to leakage} + \\
 & \textcircled{3} \Delta\text{GHG from avoided degradation} + \textcircled{4} \Delta\text{GHG from avoided degradation} + \\
 & \textcircled{5} \Delta\text{GHG from leakage by unconstrained geographic drivers} + \text{Equation 24} \\
 & \textcircled{6} \Delta\text{GHG from assisted natural regeneration} + \textcircled{7} \Delta\text{GHG from changes in long-lived wood products} + \\
 & \textcircled{8} \Delta\text{GHG from improved cookstoves} + \\
 & \textcircled{9} \Delta\text{GHG from other and secondary sources} + \\
 & \textcircled{10} \Delta\text{GHG from avoided deforestation from areas under harvest}
 \end{aligned}$$

$$\text{Verified Carbon Units} = \text{NERs} - \text{buffer} \cdot (\textcircled{1} + \textcircled{3} + \textcircled{6} + \textcircled{7} + \textcircled{10}) \quad \text{Equation 25}$$

Where:

ΔGHG from avoided deforestation:

$$\begin{aligned}
 \textcircled{1} = & \sum_{i=1}^{nr\text{NFtransitions}} \sum_{tt=1}^t u_{\text{classification}} \cdot u_{\text{transition}}(i) \\
 & \cdot \left(+\Delta\text{area}_{\text{projectAreaEAH,projectScenario}}(t, i) \right. \\
 & \quad \left. -\Delta\text{area}_{\text{projectAreaEAH,baselineScenario}}(t, i) \right) \\
 & \cdot \left(EF_{\text{AGL}}(i) + EF_{\text{AGD}}(i, t - tt) + EF_{\text{BG}}(i, t - tt) + EF_{\text{SOM}}(i, t - tt) \right)
 \end{aligned} \quad \text{Equation 26}$$

ΔGHG from deforestation due to leakage:

$$\textcircled{2} = \sum_{i?1}^{nrFNFtransitions} \sum_{tt=1}^t u_{classification} \cdot u_{transition}(i) \cdot \left(+\Delta area_{leakageArea,projectScenario}(t,i) \right) \cdot (EF_{AGL}(i) + EF_{AGD}(i, t - tt) + EF_{BG}(i, t - tt) + EF_{SOM}(i, t - tt))$$

Equation 27

ΔGHG from avoided deforestation:

$$\textcircled{3} = \sum_{i?1}^{nrFNFtransitions} \sum_{tt=1}^t u_{classification} \cdot u_{transition}(i) \cdot \left(+\Delta area_{projectAreaEAH,projectScenario}(t,i) \right) \cdot (EF_{AGL}(i) + EF_{AGD}(i, t - tt) + EF_{BG}(i, t - tt) + EF_{SOM}(i, t - tt))$$

Equation 28

ΔGHG from degradation due to leakage:

$$\textcircled{4} = \sum_{i?1}^{nrFNFtransitions} \sum_{tt=1}^t u_{classification} \cdot u_{transition}(i) \cdot \left(+\Delta area_{leakageArea,projectScenario}(t,i) \right) \cdot \left(-\Delta area_{leakageArea,baselineScenario}(t,i) \right) \cdot (EF_{AGL}(i) + EF_{AGD}(i, t - tt) + EF_{BG}(i, t - tt) + EF_{SOM}(i, t - tt))$$

Equation 29

ΔGHG from leakage by unconstrained geographic drivers:

$$\textcircled{5} = -GHG_{otherLeakageSources}(t) - GHG_{marketLeakage}(t)$$

Equation 30

ΔGHG from assisted natural regeneration:

$$\textcircled{6} = C_{ANR}(t)$$

Equation 31

ΔGHG from changes in long – lived wood products:

$$\textcircled{7} = \frac{44}{12} \cdot (C_{LWP,project}(t) - C_{LWP,baseline}(t))$$

Equation 32

ΔGHG from GHG reduction from Cookstove and Fuel Efficiency (CFE):

$$\textcircled{8} = ER_{CFE}(t)$$

Equation 33

ΔGHG from other and secondary sources:

$$\textcircled{9} = -GHG_{fireBreaks}(t) - GHG_{sources,leakagePrevention}(t) - GHG_{sources,ANR}(t)$$

Equation 34

ΔGHG from avoided deforestation and degradation from areas under harvest

Equation 35

In case:

$$\sum_i^t \Delta C_{areaWithHarvest}(i) \geq \sum_{i=1}^{nrStrata} area_{projectAreaWithHarvest,projectScenario}(t,i) \cdot LTAC_{Harvest}$$

10 = 0

In case the inequality above does not hold, (10) must be:

Equation 36

10 = $\Delta C_{areaWithHarvest}(t)$

Note that *i* and *t* are simple indices to the summations and do not have any further meaning; *t* is the year for which the emissions and removals are calculated

Were:

<i>NER_s(t)</i>	Net emission reductions during time <i>t</i> . Section 8.4.4. [tCO _{2e}].
<i>VCUs(t)</i>	Verified Carbon Units generated during year <i>t</i> . [tCO _{2e}].
<i>buffer</i>	Buffer withholding percentage according to the latest version of the VCSAFOLU Non-Permanence Risk Tool analysis and buffer determination. [-].
<i>nrFNFtransitinos</i>	Number of forest/non-forest transitions among land classes or forest strata, meaning transitions in which either the “from” or the “to” class are non-forests. Section 8.1.2.3.
<i>nrStrataTransition</i>	Number of transitions among forest strata. Section 8.1.2.3.
<i>nrStrata</i>	Number of strata within the ANR area. Section 8.1.2.3.
<i>Δarea_{projectAreaEAH}</i>	Hectares undergoing transition <i>i</i> within the project area, excluding ANR and harvest areas, under the project scenario during year <i>t</i> . [ha yr ⁻¹]. Section 8.2.3.
<i>Δarea_{projectAreaEAH}</i>	Hectares undergoing transition <i>i</i> within the project area, excluding the ANR area and harvest areas, under the baseline scenario during year <i>t</i> . [ha yr ⁻¹]. Section 8.1.5.4.
<i>C_{ANR}(t)</i>	Net anthropogenic greenhouse gas removals due to biomass increase in assisted natural regeneration during year <i>t</i> . [tCO _{2e}]. Section 8.2.5.2.

$\Delta area_{leakageArea,pro}$	Hectares undergoing transition i within the leakage area under the project scenario during year t . [$ha\ yr^{-1}$]. Section 8.3.2.3.
$\Delta area_{leakageArea,bas}$	Hectares undergoing transition i within the leakage area under the baseline scenario during year t . [$ha\ yr^{-1}$]. Section 8.1.5.4.
$GHG_{otherLeakageSour}$	GHG emissions from leakage by unconstrained geographic drivers during year t . [$tCO_2e\ yr^{-1}$].
$GHG_{marketLeakage}(t)$	GHG emissions from market leakage during time t . [tCO_{2e}]. Section 8.3.1.
$EF_{AGL}(i), EF_{AGD}(i, t - tt), EF_{BG}(i, t - tt), EF_{SOM}(i, t - tt)$	Aboveground live, aboveground dead, belowground, and soil emission factor for transition i , and time after transition $t - tt$. Section 8.1.4.5.
CF	Carbon fraction of wood (use 0.5 by default).
$area_{projectAreaWith}$	Size of strata i within the project area with harvest activities during year t under the project scenario.
$u_{stratification}$	Discounting factor for NERs from avoided degradation, based on the accuracy of stratification, i.e. dividing forest into individual forest biomass classes. Section 8.1.2.7.
$u_{stratification}$	Discounting factor for NERs from avoided deforestation, based on the accuracy of classification, i.e. dividing land into broad land use types. Section 8.1.2.7.
$u_{stratification}(i)$	Discounting factor for all emission reductions, based on the uncertainty of biomass inventory related to transition i .
$\Delta C_{ARN}(t)$	Annual change in carbon stock in all selected carbon pools for forest stratum during year t . Section 8.2.5.3 [EQ72]. [$tCO_2e\ yr^{-1}$].
$u_{inventory,ANR}(t)$	Uncertainty discounting factor around biomass stock densities in transition stratum i within ANR areas.[-].
$GHG_{sources,projectArct}$	Annual GHG emissions from implementation of fire-preventing actions as REDD project activities. Section 8.2.4. [$tCO_2e\ yr^{-1}$].

$GHG_{sources,leakagePr}$	Emissions from sources of methane, nitrous oxide or fuel-CO ₂ from leakage prevention activities during year t . Emission sources within the leakage area are included in Table 1. Section 8.3.4. [tCO ₂ ·tCO ₂ e yr ⁻¹].
$GHG_{sources,ANR}(t)$	Emissions of sources of methane, nitrous oxide or fuel-CO ₂ from assisted natural regeneration activities during year t . Section 8.2.5.5. [tCO ₂ e yr ⁻¹].
$ER_{CFE}(t)$	Emission reductions from reducing biomass use through high efficiency cookstoves and fuel efficiency activities during year t when degradation is not included in general quantification i.e. [EQ78]. [tCO ₂ e yr ⁻¹].
$C_{LWPbaseline}(t)$	GHG sink in long-lived wood product in baseline scenario at year t [Mg C].
$C_{LWPproject}(t)$	GHG sink in long-lived wood product in project scenario at year t [Mg C].
$CreditingPeriod$	Project crediting period. [year].
$C_{harvest}(t, i)$	Carbon stock density in harvested areas in stratum ii at year tt . [tCO ₂ ha ⁻¹].
$LTAC_{harvest}$	Long term average carbon stock density in harvest areas. [tCO _{2e} ha ⁻¹].
$u_{inventory,harvest}(i)$	Uncertainty in estimated carbon stock density in harvest areas in stratum i . [-].
$\Delta C_{areaWithHarvest}(i)$	Net greenhouse gas emissions or removals in project area with harvest activities during year t . [tCO ₂ e].

The baseline emissions allocated to the Project Area and Leakage Belt as well as the ex-ante predicted emissions after leakage for the Project Activity Instance are provided in Table 39.

A summary of the conservative ex-ante estimations of the total net GHG emissions reductions from Avoided Unplanned Deforestation (AUDeg) following VM0006 are presented below.

Table 52. Summary of Ex-ante Estimation of GHG Emission Reductions from AUdeg (VM0006)

Vintage period	Estimated baseline emissions (tCO2e)	Estimated project emissions (tCO2e)	Estimated leakage emissions (tCO2e)	Estimated buffer pool allocation (tCO2e)	Estimated reduction VCUs (tCO2e)	Estimated removal VCUs (tCO2e)	Estimated total VCU issuance (tCO2e)
01-February-2021 to 31-December-2021	1,731,273	1,557,021	(19,579)	(20,910)	133,763	-	133,763
01-January-2022 to 31-December-2022	1,841,125	1,533,266	(24,138)	(36,943)	246,778	-	246,778
01-January-2023 to 31-December-2023	1,797,553	1,284,470	(28,224)	(61,570)	423,289	-	423,289
01-January-2024 to 31-December-2024	1,744,386	1,258,056	(31,314)	(58,360)	396,655	-	396,655
01-January-2025 to 31-December-2025	1,713,261	972,428	(34,441)	(88,900)	617,492	-	617,492
01-January-2026 to 31-December-2026	1,700,911	997,353	(37,708)	(84,427)	581,423	-	581,423
01-January-2027 to 31-December-2027	1,754,343	915,023	(38,782)	(100,718)	699,820	-	699,820
01-January-2028 to 31-December-2028	1,807,775	801,522	(38,727)	(120,750)	846,777	-	846,777
01-January-2029 to 31-December-2029	1,861,207	702,076	(37,958)	(139,096)	982,077	-	982,077
01-January-2030 to 31-December-2030	1,914,639	624,142	(36,764)	(154,860)	1,098,874	-	1,098,874
01-January-2031 to 31-December-2031	1,915,249	569,356	(36,871)	(161,507)	1,147,514	-	1,147,514
01-January-2032 to 31-December-2032	1,919,262	515,108	(36,782)	(168,499)	1,198,874	-	1,198,874
01-January-2033 to 31-December-2033	1,926,356	479,272	(36,738)	(173,650)	1,236,695	-	1,236,695
01-January-2034 to 31-December-2034	1,936,688	446,550	(36,646)	(178,816)	1,274,675	-	1,274,675
01-January-2035 to 31-December-2035	1,949,515	422,527	(36,459)	(183,239)	1,307,290	-	1,307,290
01-January-2036 to 31-December-2036	1,964,223	398,171	(36,203)	(187,926)	1,341,924	-	1,341,924
01-January-2037 to 31-December-2037	1,978,932	376,497	(35,918)	(192,292)	1,374,224	-	1,374,224
01-January-2038 to 31-December-2038	1,993,640	358,258	(35,635)	(196,246)	1,403,500	-	1,403,500
01-January-2039 to 31-December-2039	2,008,348	342,911	(35,374)	(199,852)	1,430,210	-	1,430,210
01-January-2040 to 31-December-2040	2,023,056	329,724	(35,143)	(203,200)	1,454,990	-	1,454,990
01-January-2041 to 31-December-2041	2,018,571	303,942	(34,957)	(205,755)	1,473,917	-	1,473,917
01-January-2042 to 31-December-2042	2,015,170	294,669	(35,190)	(206,460)	1,478,851	-	1,478,851
01-January-2043 to 31-December-2043	2,012,768	282,120	(35,163)	(207,678)	1,487,808	-	1,487,808
01-January-2044 to 31-December-2044	2,011,447	270,537	(35,126)	(208,909)	1,496,875	-	1,496,875
01-January-2045 to 31-December-2045	2,010,897	262,596	(35,045)	(209,796)	1,503,460	-	1,503,460
01-January-2046 to 31-December-2046	2,010,897	254,933	(34,950)	(210,716)	1,510,298	-	1,510,298
01-January-2047 to 31-December-2047	2,010,897	248,781	(34,854)	(211,454)	1,515,808	-	1,515,808
01-January-2048 to 31-December-2048	2,010,897	244,425	(34,770)	(211,977)	1,519,725	-	1,519,725
01-January-2049 to 31-December-2049	2,010,897	241,660	(34,709)	(212,308)	1,522,220	-	1,522,220
01-January-2050 to 31-December-2050	2,010,897	240,206	(34,677)	(212,483)	1,523,531	-	1,523,531

Vintage period	Estimated baseline emissions (tCO2e)	Estimated project emissions (tCO2e)	Estimated leakage emissions (tCO2e)	Estimated buffer pool allocation (tCO2e)	Estimated reduction VCUs (tCO2e)	Estimated removal VCUs (tCO2e)	Estimated total VCU issuance (tCO2e)
01-January-2051 to 31-December-2051	2,010,897	239,147	(34,524)	(212,610)	1,524,616	-	1,524,616
01-January-2052 to 31-December-2052	2,010,897	238,149	(34,367)	(212,730)	1,525,651	-	1,525,651
01-January-2053 to 31-December-2053	2,010,897	237,291	(34,212)	(212,833)	1,526,561	-	1,526,561
01-January-2054 to 31-December-2054	2,010,897	236,556	(34,058)	(212,921)	1,527,362	-	1,527,362
01-January-2055 to 31-December-2055	2,010,897	235,943	(33,906)	(212,994)	1,528,053	-	1,528,053
01-January-2056 to 31-December-2056	2,010,897	235,453	(33,756)	(213,053)	1,528,634	-	1,528,634
01-January-2057 to 31-December-2057	2,010,897	235,085	(33,608)	(213,097)	1,529,106	-	1,529,106
01-January-2058 to 31-December-2058	2,010,897	234,840	(33,461)	(213,127)	1,529,469	-	1,529,469
01-January-2059 to 31-December-2059	2,010,897	234,717	(33,316)	(213,142)	1,529,722	-	1,529,722
01-January-2060 to 31-December-2060	2,010,897	234,717	(33,172)	(213,142)	1,529,865	-	1,529,865
01-January-2061 to 31-January-2061	160,687	144,514	(1,817)	(1,941)	12,415	-	12,415
Total	77,874,731	20,034,015	(1,379,040)	(6,940,886)	49,520,791	-	49,520,791

3.2.4.3 Estimate Ex-ante NERs from both Deforestation and Degradation

Following VM0048 section 8.4 Net GHG Emission Reductions were conservatively ex-ante estimated as follows:

$$VCU_t = VCU_{AUDef} + VCU_{APDef} + VCU_{AUDeG} \quad \text{Equation 37}$$

Were:

- VCU_t = Number of potential Verified Carbon Units at year $t = t2 - t1$ (VCU)
- VCU_{AUDef} = Number of potential Verified Carbon Units from unplanned deforestation at year $t = t2 - t1$ (VCU)
- VCU_{APDef} = Number of potential Verified Carbon Units from planned deforestation at year $t = t2 - t1$ (VCU)
- VCU_{AUDeG} = Number of potential Verified Carbon Units from unplanned forest degradation at year $t = t2 - t1$ (VCU)

Avoided Planned Deforestation (APDef) was not part of this Program scope and therefore accounted as zero. The sum of emissions, emission reductions and removals from AUDef and AUDeG are summarized in Table 53.

Table 53. Baseline Emissions and Ex-ante Predicted Emissions for the COCOMACIA Community REDD+ Program.

Vintage period	Estimated baseline emissions (tCO2e)	Estimated project emissions (tCO2e)	Estimated leakage emissions (tCO2e)	Estimated buffer pool allocation (tCO2e)	Estimated reduction VCUs (tCO2e)	Estimated removal VCUs (tCO2e)	Estimated total VCU issuance (tCO2e)
01 February 2021 to 31 December 2021	3,011,731	2,752,897	(41,463)	(31,060)	186,311	-	186,311
01 January 2022 to 31 December 2022	3,316,389	2,844,436	(55,567)	(56,634)	359,751	-	359,751
01 January 2023 to 31 December 2023	3,348,779	2,549,194	(71,268)	(95,950)	632,367	-	632,367
01 January 2024 to 31 December 2024	3,371,573	2,543,157	(82,154)	(99,410)	646,852	-	646,852
01 January 2025 to 31 December 2025	3,416,410	2,163,734	(100,668)	(150,321)	1,001,687	-	1,001,687
01 January 2026 to 31 December 2026	3,480,023	2,193,628	(112,479)	(154,367)	1,019,548	-	1,019,548
01 January 2027 to 31 December 2027	3,609,416	2,051,191	(126,484)	(186,987)	1,244,754	-	1,244,754
01 January 2028 to 31 December 2028	3,738,810	1,852,101	(141,882)	(226,405)	1,518,422	-	1,518,422
01 January 2029 to 31 December 2029	3,868,203	1,663,262	(157,319)	(264,593)	1,783,029	-	1,783,029
01 January 2030 to 31 December 2030	3,997,597	1,520,159	(169,728)	(297,293)	2,010,417	-	2,010,417
01 January 2031 to 31 December 2031	4,035,080	1,417,906	(178,140)	(314,061)	2,124,972	-	2,124,972
01 January 2032 to 31 December 2032	4,075,965	1,307,244	(187,199)	(332,247)	2,249,276	-	2,249,276
01 January 2033 to 31 December 2033	4,119,931	1,237,913	(194,216)	(345,842)	2,341,960	-	2,341,960
01 January 2034 to 31 December 2034	4,167,136	1,178,047	(200,611)	(358,691)	2,429,788	-	2,429,788
01 January 2035 to 31 December 2035	4,216,836	1,130,336	(206,623)	(370,380)	2,509,497	-	2,509,497
01 January 2036 to 31 December 2036	4,268,416	1,082,757	(212,508)	(382,279)	2,590,873	-	2,590,873
01 January 2037 to 31 December 2037	4,319,997	1,040,076	(218,172)	(393,591)	2,668,159	-	2,668,159
01 January 2038 to 31 December 2038	4,371,578	1,003,592	(223,592)	(404,158)	2,740,235	-	2,740,235
01 January 2039 to 31 December 2039	4,423,158	972,674	(228,788)	(414,058)	2,807,638	-	2,807,638
01 January 2040 to 31 December 2040	4,474,739	945,725	(233,855)	(423,482)	2,871,677	-	2,871,677
01 January 2041 to 31 December 2041	4,470,254	879,734	(237,963)	(430,862)	2,921,694	-	2,921,694
01 January 2042 to 31 December 2042	4,466,853	847,004	(240,981)	(434,382)	2,944,486	-	2,944,486
01 January 2043 to 31 December 2043	4,464,451	807,890	(243,933)	(438,787)	2,973,841	-	2,973,841
01 January 2044 to 31 December 2044	4,463,129	771,234	(246,707)	(443,027)	3,002,160	-	3,002,160
01 January 2045 to 31 December 2045	4,462,579	742,661	(248,944)	(446,390)	3,024,584	-	3,024,584
01 January 2046 to 31 December 2046	4,462,579	715,987	(250,993)	(449,591)	3,046,009	-	3,046,009
01 January 2047 to 31 December 2047	4,462,579	694,093	(252,677)	(452,218)	3,063,591	-	3,063,591
01 January 2048 to 31 December 2048	4,462,579	677,783	(147,769)	(454,176)	3,182,852	-	3,182,852
01 January 2049 to 31 December 2049	4,462,579	666,766	(142,325)	(455,498)	3,197,991	-	3,197,991
01 January 2050 to 31 December 2050	4,462,579	659,948	(136,587)	(456,316)	3,209,728	-	3,209,728
01 January 2051 to 31 December 2051	4,440,495	654,630	(130,482)	(454,304)	3,201,079	-	3,201,079

Vintage period	Estimated baseline emissions (tCO2e)	Estimated project emissions (tCO2e)	Estimated leakage emissions (tCO2e)	Estimated buffer pool allocation (tCO2e)	Estimated reduction VCUs (tCO2e)	Estimated removal VCUs (tCO2e)	Estimated total VCU issuance (tCO2e)
01 January 2052 to 31 December 2052	4,418,411	650,319	(124,262)	(452,171)	3,191,659	-	3,191,659
01 January 2053 to 31 December 2053	4,396,327	646,709	(117,980)	(449,954)	3,181,683	-	3,181,683
01 January 2054 to 31 December 2054	4,374,243	643,614	(111,655)	(447,675)	3,171,298	-	3,171,298
01 January 2055 to 31 December 2055	4,352,158	641,036	(105,285)	(445,335)	3,160,503	-	3,160,503
01 January 2056 to 31 December 2056	4,330,074	638,973	(98,871)	(442,932)	3,149,298	-	3,149,298
01 January 2057 to 31 December 2057	4,307,990	637,425	(92,412)	(440,468)	3,137,684	-	3,137,684
01 January 2058 to 31 December 2058	4,285,906	636,394	(88,793)	(437,941)	3,122,777	-	3,122,777
01 January 2059 to 31 December 2059	4,263,821	635,878	(85,129)	(435,353)	3,107,461	-	3,107,461
01 January 2060 to 31 December 2060	4,241,737	635,878	(81,420)	(432,703)	3,091,735	-	3,091,735
01 January 2061 to 31 January 2061	279,532	255,508	(3,848)	(2,883)	17,292	-	17,292
Total	165,962,624	47,589,493	(6,331,732)	(14,204,776)	97,836,623	-	97,836,623

3.3 Monitoring

3.3.1 Data and Parameters Available at Validation (VCS, 3.16)

3.3.1.1 Data and Parameters specific to UDef (VM0048-VMD0055)

Data / Parameter	$A_{PA-UDef}$
Data unit	ha
Description	Area of project where activities aimed at avoiding unplanned deforestation will take place
Equations	Table 29
Source of data:	Calculated within a GIS see Appendix 6
Value Applied:	4,873 ha
Justification of choice of data or description of measurement methods and procedures applied	Data was allocated by Jurisdictional proponent from the Choco JNR FREL (ID VCS 5079) see Appendix 6 Allocation Report
Purpose of Data	Calculation of project emissions
Comments	None

Data / Parameter	DLF
Data unit	%
Description	Displacement leakage factor
Equations	Figure 4
Source of data:	Activity-shifting leakage cancellation rates were estimated based on expert knowledge and social assessments
Value Applied:	Yearly value presented in Figure 4
Justification of choice of data or description of measurement methods and procedures applied	Estimating based on the extent of implementation of deforestation mitigation activities and the expected impact of activities on leakage.
Purpose of Data	Calculation of leakage
Comments	None

Data / Parameter	$EA_{EF,t}$
Data unit	%
Description	Ex ante effectiveness of halting baseline emissions in year t
Equations	Figure 3

Source of data:	Estimated based on expert knowledge and social assessments.
Value Applied:	Yearly value presented in Figure 3
Justification of choice of data or description of measurement methods and procedures applied	Estimation based on the annual level of implementation of the workplan, relative contribution of each driver and relative reduction of each driver of UDef and UDefg.
Purpose of Data	Calculation of project emissions
Comments	None

Data / Parameter	$t_{\alpha=10\%}$
Data unit	unitless
Description	Value of the Student's t distribution for a two-sided 90 percent confidence interval of project where activities aimed at avoiding unplanned deforestation will take place
Equations	N/A
Source of data:	Common statistical tables or software
Value Applied:	The t value corresponds to the number of degrees of freedom (sample size) and a probability of 0.05
Justification of choice of data or description of measurement methods and procedures applied	Based on the central limit theorem, sample estimates are assumed to approach a normal distribution, from which a confidence interval may be constructed. The Student's t distribution is used to allow for small sample sizes. was allocated by Jurisdictional proponent from the Choco JNR FREL (ID VCS 5079) see Appendix 6 Allocation Report
Purpose of Data	Calculation of baseline emissions and project emissions
Comments	None

Data / Parameter	CF_{soc}
Data unit	[Mg C (Mg DM) ⁻¹]
Description	Carbon fraction of soil organic matter
Source of data:	
Value Applied:	0.58
Justification of choice of data or description of measurement methods and procedures applied	2006 IPCC Guidelines for National Greenhouse Gas Inventories default value
Purpose of Data	Partitions carbon from biomass data. Used in calculations of carbon stock density from OM pools (VM0006 Section 8.1.4.4, EQ 24. This data is used for: <ul style="list-style-type: none"> • Calculation of baseline emissions

Comments	
Data / Parameter	CF_j
Data unit	t C t d.m.-1
Description	Carbon fraction of dry matter in wood
Source of data:	Values from the literature (e.g. IPCC 2006 INV GLs AFOLU Chapter 4 Table 4.3) shall be used if available, otherwise default value of 0.47 t C t-1 d.m. can be used
Value Applied:	0.47
Justification of choice of data or description of measurement methods and procedures applied	default value
Purpose of Data	Calculation of baseline and project emissions
Comments	Where new species are encountered in the course of monitoring, new carbon fraction values must be sourced from the literature or otherwise use the default value.

Data / Parameter	$f_j(X,Y)$								
Data unit	t d.m. tree-1								
Description	Allometric equation for species j linking measured tree variable(s) to aboveground biomass of living trees, expressed as t d.m. tree-1								
Equations	Equation 3								
Source of data	<table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th style="background-color: #1a3d4d; color: white;">Vegetation</th> <th style="background-color: #1a3d4d; color: white;">Source</th> </tr> </thead> <tbody> <tr> <td>Mangroves</td> <td>(Chave et al., 2005)</td> </tr> <tr> <td>Palms</td> <td>(Duque, et al., 2017)</td> </tr> <tr> <td>Tropical Wet</td> <td>(Alvarez, et al., 2012)</td> </tr> </tbody> </table>	Vegetation	Source	Mangroves	(Chave et al., 2005)	Palms	(Duque, et al., 2017)	Tropical Wet	(Alvarez, et al., 2012)
Vegetation	Source								
Mangroves	(Chave et al., 2005)								
Palms	(Duque, et al., 2017)								
Tropical Wet	(Alvarez, et al., 2012)								
Value applied	<table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th style="background-color: #1a3d4d; color: white;">Vegetation</th> <th style="background-color: #1a3d4d; color: white;">Allometric equation</th> </tr> </thead> <tbody> <tr> <td>Mangroves</td> <td>$AGB = 0.0509 \times WD \times DBH^2 \times H$</td> </tr> <tr> <td>Palms</td> <td>$AGB = 0.334 \times (DBH^2 \times H \times DMF)^{0.803}$</td> </tr> <tr> <td>Tropical Wet</td> <td> $Ln(AGB) = -2.857 + 2.081 \times Ln(DBH)$ $+ 0.587 \times Ln(H)$ $+ 0.453 \times Ln(WD)$ </td> </tr> </tbody> </table>	Vegetation	Allometric equation	Mangroves	$AGB = 0.0509 \times WD \times DBH^2 \times H$	Palms	$AGB = 0.334 \times (DBH^2 \times H \times DMF)^{0.803}$	Tropical Wet	$Ln(AGB) = -2.857 + 2.081 \times Ln(DBH)$ $+ 0.587 \times Ln(H)$ $+ 0.453 \times Ln(WD)$
Vegetation	Allometric equation								
Mangroves	$AGB = 0.0509 \times WD \times DBH^2 \times H$								
Palms	$AGB = 0.334 \times (DBH^2 \times H \times DMF)^{0.803}$								
Tropical Wet	$Ln(AGB) = -2.857 + 2.081 \times Ln(DBH)$ $+ 0.587 \times Ln(H)$ $+ 0.453 \times Ln(WD)$								
Justification of choice of data or description of measurement methods and procedures applied	Procedures for field measurements are described in the VCS Monitoring Plan and the Biomass SOP								

Purpose of Data	Calculation of baseline and project emissions
Comments	Where new species are encountered in the course of monitoring, new carbon fraction values must be sourced from the literature or otherwise use the default value.

Data / Parameter	R						
Data unit	t root d.m. t ⁻¹ shoot d.m.						
Description	Root to shoot ratio appropriate to species or forest type / biome; note that as defined here, root to shoot ratio is applied as belowground biomass per unit area:aboveground biomass per unit area (not on a per stem basis)						
Equations	Equation 5						
Source of data	<table border="1"> <thead> <tr> <th>Species Group</th> <th>Source</th> </tr> </thead> <tbody> <tr> <td>Tropical Forest</td> <td>(Mosquera & Moreno, 2017)</td> </tr> <tr> <td>Mangroves</td> <td>(Santos et al., 2017)</td> </tr> </tbody> </table>	Species Group	Source	Tropical Forest	(Mosquera & Moreno, 2017)	Mangroves	(Santos et al., 2017)
Species Group	Source						
Tropical Forest	(Mosquera & Moreno, 2017)						
Mangroves	(Santos et al., 2017)						
Value applied	<table border="1"> <thead> <tr> <th>Species Group</th> <th>Root to Shoot Ratio</th> </tr> </thead> <tbody> <tr> <td>Tropical Forest</td> <td>0.21</td> </tr> <tr> <td>Mangroves</td> <td>1.14</td> </tr> </tbody> </table>	Species Group	Root to Shoot Ratio	Tropical Forest	0.21	Mangroves	1.14
Species Group	Root to Shoot Ratio						
Tropical Forest	0.21						
Mangroves	1.14						
Justification of choice of data or description of measurement methods and procedures applied	Procedures for field measurements are described in the VCS Monitoring Plan and the Biomass SOP						
Purpose of Data	Calculation of baseline and project emissions						
Comments	Where new species are encountered in the course of monitoring, new carbon fraction values must be sourced from the literature or otherwise use the default value.						

Data / Parameter	D _{DWdc}						
Data unit	t d.m. m ⁻³						
Description	Mean wood density of dead wood in the density class (dc) – sound (1), intermediate (2), and rotten (3); t d.m. m ⁻³						
Equation	Section 3.2.1.1.3.1						
Source of data	Research publications relevant to the project area: (Duque, et al., 2017)						
Value applied	<table border="1"> <thead> <tr> <th>Decomposition Class</th> <th>Mean Wood density</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>0.89</td> </tr> <tr> <td>2</td> <td>0.53</td> </tr> </tbody> </table>	Decomposition Class	Mean Wood density	1	0.89	2	0.53
Decomposition Class	Mean Wood density						
1	0.89						
2	0.53						

		3	0.28
Justification of choice of data or description of measurement methods and procedures applied	Regionally appropriate study		
Purpose of Data	Calculation of baseline and project emissions		
Comments	-		

Data / Parameter	Dep_{sample}
Data unit	cm.
Description	Depth in cm to which soil sample is collected
Equations	Section 3.2.1.1.3
Source of data	Core dimensions recorded in the field
Value applied	30 cm
Justification of choice of data or description of measurement methods and procedures applied	Depth of sampling for soil organic carbon is centered on the upper soil horizons where root biomass and organic matter inputs are concentrated. Depth of soil sampling employed in inventories is held constant for the duration of the project.
Purpose of Data	Calculation of baseline and project emissions
Comments	-

Data / Parameter	FLU
Data unit	Dimensionless
Description	Land use factor before or after conversion
Equations	Section 3.2.1.1.3.1
Source of data	Stock Change Factors are provided in Tables 5.5, 5.10, and 6.2 of the IPCC 2006GL Volume 4
Value applied	0.48
Justification of choice of data or description of measurement methods and procedures applied	-
Purpose of Data	Calculation of baseline and project emissions

Comments	<p>Stock Change Factors as defined in IPCC 2006GL are equal to the carbon stock in the altered condition as a proportion of the reference carbon stock. Stock Change Factors must be selected to reflect the circumstances most closely matching those of the project area and baseline scenario, especially regarding climate and post-conversion land-use, taking into account management practices and carbon inputs (e.g. manure).</p>
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Data / Parameter	F _{MG}
Data unit	Dimensionless
Description	Management factor before or after conversion
Equations	Section 3.2.1.1.3.1
Source of data	Stock Change Factors are provided in Tables 5.5, 5.10, and 6.2 of the IPCC 2006GL Volume 4
Value applied	1.15
Justification of choice of data or description of measurement methods and procedures applied	Default value allowed by the VMD0055 methodology
Purpose of Data	Calculation of baseline and project emissions
Comments	<p>Stock Change Factors as defined in IPCC 2006 GL are equal to the carbon stock in the altered condition as a proportion of the reference carbon stock. Stock Change Factors must be selected to reflect the circumstances most closely matching those of the project area and baseline scenario, especially regarding climate and post-conversion land-use, taking into account management practices and carbon inputs (e.g. manure).</p>

Data / Parameter	FI
Data unit	Dimensionless
Description	Input factor before or after conversion
Equations	Section 3.2.1.1.3.1

Source of data	Stock Change Factors are provided in Tables 5.5, 5.10, and 6.2 of the IPCC 2006GL Volume 4
Value applied	0.92
Justification of choice of data or description of measurement methods and procedures applied	Default value allowed by the VMD0055 methodology
Purpose of Data	Calculation of baseline and project emissions
Comments	Stock Change Factors as defined in IPCC 2006GL are equal to the carbon stock in the altered condition as a proportion of the reference carbon stock. Stock Change Factors must be selected to reflect the circumstances most closely matching those of the project area and baseline scenario, especially regarding climate and post-conversion land-use, taking into account management practices and carbon inputs (e.g. manure).

3.3.1.2 Data and Parameters specific to UDeg (VM0006)

Data / Parameter	CF_{soc}
Data unit	[Mg C (Mg DM) ⁻¹]
Description	Carbon fraction of soil organic matter
Source of data:	
Value Applied:	0.58
Justification of choice of data or description of measurement methods and procedures applied	2006 IPCC Guidelines for National Greenhouse Gas Inventories default value
Purpose of Data	Partitions carbon from biomass data. Used in calculations of carbon stock density from OM pools (VM0006 Section 8.1.4.4, EQ 24. This data is used for: <ul style="list-style-type: none"> • Calculation of baseline emissions
Comments	

Data / Parameter	E
Data unit	[-]

Description	Average combustion efficiency of the aboveground tree biomass
Source of data:	<ul style="list-style-type: none"> Project-specific measurements Regionally valid estimates Estimates from Table 3.A.14 of IPCC GPG LULUCF If no appropriate combustion efficiency can be used, use the IPCC default of 0.5
Value Applied:	0.47
Justification of choice of data or description of measurement methods and procedures applied	IPCC default of 0.47.
Purpose of Data	<p>Used in calculations of carbon loss from biomass burning. In VM0006 this parameter is used in the deforestation drivers' analysis to account carbon loss from forest fires (Section 8.1.3.2 EQ 10). This data is used for:</p> <ul style="list-style-type: none"> Calculation of baseline emissions Calculation of project emissions Calculation of leakage
Comments	This default value is assigned by Terra Global.

Data / Parameter	P
Data unit	[-]
Description	Average proportion of mass burned from the aboveground tree biomass.
Source of data:	GPG-LULUCF Table 3A.1.13
Value Applied:	100%
Justification of choice of data or description of measurement methods and procedures applied	GPG-LULUCF Table 3A.1.13, default value.
Purpose of Data	Used in calculations of carbon loss from biomass burning. In VM0006 used to account carbon loss from forest fires in the deforestation drivers' analysis to (Section 8.1.3.2 EQ 10).
Comments	This default value is assigned by Terra Global.

Data/parameter [EA1]:	GWP_{CH_4}
Data unit	[-]
Description	Global Warming Potential for CH ₄
Source of data:	IPCC default value of 25
Value Applied:	25

Justification of choice of data or description of measurement methods and procedures applied	IPCC default value.
Purpose of Data	Used to convert CH ₄ emissions to CO ₂ emissions. Methane accounted in calculations that include prescribed burning for firebreaks (VM0006 Section 8.2.3 EQ 70) prescribed burning for ANR (VM0006 Section 8.2.4.5 EQ77) and flooded rice agriculture (VM0006 Section 8.3.4.2.2 EQ 100. This data is used for: <ul style="list-style-type: none"> • Calculation of project emissions • Calculation of leakage
Comments	This will be used if increased rice production becomes a project activity in the future. This default value is assigned by Terra Global.

Data / Parameter [EA2]:	ER_{CH_4}
Data unit	Proportion
Description	Emission ratios for CH ₄
Source of data:	Table 3A.1.15 in IPCC GPG-LULUCF 2003
Value Applied:	IPCC default value of 0.012
Justification of choice of data or description of measurement methods and procedures applied	Used in CH ₄ calculations that include prescribed burning for firebreaks (VM0006 Section 8.2.3 EQ 70) and ANR (VM0006 Section 8.2.4.5 EQ77).
Purpose of Data	This data is used for: <ul style="list-style-type: none"> • Calculation of project emissions • Calculation of leakage
Comments	This will be used if increased rice production becomes a project activity in the future. This default value is assigned by Terra Global.

Data / Parameter [EA6]:	sc_1
Data unit	[-]
Description	First shape factor for the forest scarcity equation; steepness of the decrease in deforestation rate (greater is steeper).
Source of data:	Statistical fitting procedure. Using remotely sensed forest cover data in heavily deforested areas close to the Project Area such as neighboring provinces, states or countries
Value Applied:	20
Justification of choice of data or description of measurement methods and procedures applied	Used model-fitting procedures described in VM0006 Section 8.1.5.

Purpose of Data	Used in calculation of class/stratum transition rates. One of two parameters that determine the shape of the forest scarcity factor curve (VM0006 Section 8.1.5.4, EQ 40). This data is used for: <ul style="list-style-type: none"> • Determination of baseline scenario • Calculation of baseline emissions • Calculation of project emissions • Calculation of leakage
Comments	This parameter is calculated by Terra Global.

Data / Parameter [EA3]:	sc_2
Data unit	[-]
Description	Second shape factor for the forest scarcity equation; relative deforested area at which the deforestation rate will be 50% of the initial deforestation rate.
Source of data:	Statistical fitting procedure. Using remotely sensed forest cover data in heavily deforested areas close to the Project Area such as neighboring provinces, states or countries
Value Applied:	0.7
Justification of choice of data or description of measurement methods and procedures applied	Used procedure from Methodology 8.1.5.4
Purpose of Data	Used in calculation of class/stratum transition rates. One of two parameters that determine the shape of the forest scarcity factor curve (VM0006 Section 8.1.5.4, EQ 40). This data is used for: <ul style="list-style-type: none"> • Determination of baseline scenario • Calculation of baseline emissions • Calculation of project emissions • Calculation of leakage
Comments	Higher values of sc_2 result in lower deforestation and are therefore conservative. This parameter is calculated by Terra Global.

Data/Parameter [EA4]:	$\rho_{wood,j}$
Data unit:	[Mg DM m ⁻³]
Description:	Average basic wood density of species or species group j
Source of data:	(Duque, et al., 2017)
Value Applied:	0.56
Justification of choice of data or description of measurement methods and procedures applied	When no species-specific or species-group specific densities are available, an average representative density may be used for all species or species groups.

Purpose of Data	Used to calculate total tree carbon stock (VM0006 Section 8.4.1.1, EQ 101). This data is used for: <ul style="list-style-type: none"> • Calculation of baseline emissions • Calculation of project emissions • Calculation of leakage
Comments	Average density value of Asian tree species. This parameter is calculated by Terra Global.

Data/parameter [EA5]:	BEF_2
Data unit:	[-]
Description:	Biomass expansion factor for converting volumes of extracted round wood to total aboveground biomass (including bark).
Source of data:	IPCC GPG LULUCF Table 3A.1.10 or published data from scientific peer reviewed literature.
Value Applied:	3.4
Justification of choice of data or description of measurement methods and procedures applied	IPCC GPG LULUCF default value 3.4 from IPCC GPG LULUCF Table 3A.1.10 for tropical, broadleaf forest for trees >10cm DBH.
Purpose of Data	Converts wood volume to biomass. Used in calculations of annual carbon loss per deforestation driver for logging, wood collecting and fuelwood collecting (VM0006 Section 8.1.3.2, EQ 4,5,6,7). This data is used for: <ul style="list-style-type: none"> • Calculation of project emissions • Calculation of leakage
Comments	To be used if found that extracted round wood is found to be significant in the future. This parameter is calculated by Terra Global.

Data/parameter [EA6]:	$NCV_{biomass}$
Data unit:	[TJ (Mg DM) ⁻¹]
Description:	Net calorific value of non-renewable biomass that is substituted.
Source of data:	0.015 TJ (Mg DM) ⁻¹ IPCC default value.
Value Applied:	N/A
Justification of choice of data or description of measurement methods and procedures applied	Used for cookstove efficiency.
Purpose of Data	Parameter used to quantify emissions from CFE activities (VM0006 Section 8.2.5, WE 108)
Comments	Cookstove efficiency is not assessed at Validation but will be assessed in future verification periods when sufficient data is collected. This

	parameter is calculated by Terra Global from data from the FD or their contractors.
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Data/parameter [EA7]:	$Bias(nh)$
Data unit:	ha
Description:	Bias correction for each land use transition
Source of data:	LULC classification
Value Applied:	See section 3.2.1.1.1
Justification of choice of data or description of measurement methods and procedures applied	Calculated based on the directions of the GOFI Methods and Guidance v.2.0 Box 24 and Box 25
Purpose of Data	Parameter required by the JNR Allocation Tool
Comments	N/A

Data/parameter [EA8]:	s_{hj}^2
Data unit:	ha
Description:	Standard error for each land use transition
Source of data:	LULC classification
Value Applied:	See 3.2.1.1.1
Justification of choice of data or description of measurement methods and procedures applied	Calculated based on the directions of the GOFI Methods and Guidance v.2.0 Box 24 and Box 25
Purpose of Data	Parameter required by the JNR Allocation Tool
Comments	N/A

3.3.2 Data and Parameters Monitored (VCS, 3.16)

3.3.2.1 Data and Parameters specific to UDef (VM0048-VMD0055)

Data/Parameter	A_i
Data unit	ha
Description	Area of stratum i
Equations	Section 3.2.1.1.1
Source of data	Determined during spatial analysis
Description of measurement methods and procedures to be applied	N/A

Frequency of monitoring/recording	Prior to each verification event.
QA/QC procedures to be applied	See Appendix 7. VCS Monitoring Plan
Purpose of data	Calculation of project emissions
Calculation method	In GIS
Comments	None

Data/Parameter	A_{PSF}
Data unit	ha
Description	Area of project sampling frame
Equations	Section 3.2.1.1.3.1
Source of data	Determined during spatial analysis
Description of measurement methods and procedures to be applied	N/A
Frequency of monitoring/recording	Prior to each verification event.
QA/QC procedures to be applied	See Appendix 7. VCS Monitoring Plan
Purpose of data	Calculation of project emissions
Calculation method	In GIS
Comments	None

Data/Parameter	$AD_{LB-UDef}$
Data unit	ha
Description	Unplanned deforestation activity data allocated to the UDef LB
Equations	Section 3.2.1.1.2
Source of data	Allocation report see Appendix 7. VCS Monitoring Plan
Description of measurement methods and procedures to be applied	VT0007 and Appendix 1
Frequency of monitoring/recording	Every six years at baseline renewal. Note that a project's initial BVP may be shorter than six years, as provided for in Section 5.3.1; subsequent baselines will be renewed every six years.
QA/QC procedures to be applied	N/A

Purpose of data	Calculation of leakage emissions
Calculation method	Application of Appendix 1 and VT0007 by jurisdictional proponent
Comments	None

Data/Parameter	$AD_{PA-UDef}$
Data unit	ha
Description	Unplanned deforestation activity data allocated to the UDef PA in the jurisdiction
Equations	Section 3.2.1.1.2
Source of data	Jurisdictional Proponent (through the AD Baseline Allocation Report and VT0007)
Description of measurement methods and procedures to be applied	see Appendix 6 Allocation Report
Frequency of monitoring/recording	Every six years at baseline renewal. Note that a project's initial BVP may be shorter than six years, as provided for in Section 5.3.1; subsequent baselines will be renewed every six years.
QA/QC procedures to be applied	N/A
Purpose of data	Calculation of baseline emissions
Calculation method	Application of VM0048 Appendix 1 by Jurisdictional Proponent
Comments	None

Data/Parameter	Buffer%
Data unit	%
Description	Buffer withholding percentage
Equations	Section 3.2.4.1
Source of data	VCS AFOLU Non-Permanence Risk Tool
Description of measurement methods and procedures to be applied	See VCS AFOLU Non-Permanence Risk Tool
Frequency of monitoring/recording	Every verification event
QA/QC procedures to be applied	N/A
Purpose of data	Calculation of VCUs
Calculation method	See VCS AFOLU Non-Permanence Risk Tool

Comments	None
Data/Parameter	$C_{p,i}$
Data unit	t CO ₂ e/ha
Description	t CO ₂ e/ha
Equations	Section 3.2.1.1.3.1
Source of data	Field biomass measurements and estimations following: VMD0001, VMD0002, VMD0003, VMD0004, VMD0005
Description of measurement methods and procedures to be applied	See Appendix 7. VCS Monitoring Plan
Frequency of monitoring/recording	Every verification event
QA/QC procedures to be applied	N/A
Purpose of data	Calculation of baseline emissions, project emissions and leakage emissions
Calculation method	See VMD0001, VMD0002, VMD0003, VMD0004, VMD0005
Comments	None

Data/Parameter	$C_{p,post,i}$
Data unit	t CO ₂ e/ha
Description	Estimated carbon stock in post-deforestation pool p in forest stratum i
Equations	Section 3.2.1.1.3.2
Source of data	Carbon stocks densities and IPCC default values for F_{LU} , F_{MG} , F_{IN}
Description of measurement methods and procedures to be applied	Section 3.2.1.1.3.2
Frequency of monitoring/recording	Every verification event
QA/QC procedures to be applied	N/A
Purpose of data	Estimated carbon stock in post-deforestation pool p in forest stratum i
Calculation method	VMD0055 section 5.3.2.3
Comments	None

Data/Parameter	$C_{AB_{nontree},i}$
Data unit	t CO ₂ e/ha
Description	Forest carbon stock in aboveground non-tree woody vegetation in stratum i
Equations	Section 3.2.1.1.3.1
Source of data	Field biomass measurements
Description of measurement methods and procedures to be applied	See VMD0001
Frequency of monitoring/recording	At each monitoring event
QA/QC procedures to be applied	see Appendix 7. VCS Monitoring Plan
Purpose of data	Calculation of baseline emissions, project emissions, and leakage emissions
Calculation method	See VMD0001
Comments	None

Data/Parameter	$C_{AB_{tree},i}$
Data unit	t CO ₂ e/ha
Description	Forest carbon stock in aboveground tree biomass in stratum i
Equations	Section 3.2.1.1.3.1
Source of data	Field biomass measurements paired with LiDAR data
Description of measurement methods and procedures to be applied	See VT0005
Frequency of monitoring/recording	Every six years at baseline renewal.
QA/QC procedures to be applied	Choco JNR FREL (VCS ID 5079) section 2.5.7.3
Purpose of data	Calculation of baseline emissions, project emissions, and leakage emissions
Calculation method	See VT0005
Comments	None

Data/Parameter	$C_{BB_{tree},i}$
Data unit	t CO ₂ e/ha
Description	Forest carbon stock in aboveground tree biomass in stratum i

Equations	Section 3.2.1.1.3.1
Source of data	Field biomass measurements paired with LiDAR data and species group appropriate root to shoot ratios
Description of measurement methods and procedures to be applied	See VT0005
Frequency of monitoring/recording	Every six years at baseline renewal.
QA/QC procedures to be applied	Choco JNR FREL (VCS ID 5079) section 2.5.7.3
Purpose of data	Calculation of baseline emissions, project emissions, and leakage emissions
Calculation method	See VT0005
Comments	None

Data/Parameter	$C_{DW,i}$
Data unit	t CO ₂ e/ha
Description	Forest carbon stock in the dead wood pool in stratum i
Equations	Section 3.2.1.1.3.1
Source of data	Field biomass measurements in biomass plots
Description of measurement methods and procedures to be applied	See VMD0002
Frequency of monitoring/recording	At every monitoring event.
QA/QC procedures to be applied	See Appendix 7. VCS Monitoring Plan
Purpose of data	Calculation of baseline emissions, project emissions, and leakage emissions
Calculation method	See VMD0002
Comments	None

Data/Parameter	$C_{LI,i}$
Data unit	t CO ₂ e/ha
Description	Forest carbon stock in the litter pool in stratum i
Equations	Section 3.2.1.1.3.1
Source of data	Field biomass measurements in biomass plots

Description of measurement methods and procedures to be applied	See VMD0003
Frequency of monitoring/recording	At every monitoring event.
QA/QC procedures to be applied	See Appendix 7. VCS Monitoring Plan
Purpose of data	Calculation of baseline emissions, project emissions, and leakage emissions
Calculation method	See VMD0003
Comments	None

Data/Parameter	$C_{SOC,i}$
Data unit	t CO ₂ e/ha
Description	Forest carbon stock in the soil organic carbon pool in stratum i
Equations	Section 3.2.1.1.3.1
Source of data	Field biomass measurements in biomass plots
Description of measurement methods and procedures to be applied	See VMD0004
Frequency of monitoring/recording	At every monitoring event.
QA/QC procedures to be applied	See Appendix 7. VCS Monitoring Plan
Purpose of data	Calculation of baseline emissions, project emissions, and leakage emissions
Calculation method	See VMD0004
Comments	None

Data/Parameter	MPL
Data unit	years
Description	Length of monitoring period
Equations	N/A
Source of data	Metadata of imagery used for project monitoring
Description of measurement methods	N/A

and procedures to be applied	
Frequency of monitoring/recording	At every monitoring event.
QA/QC procedures to be applied	N/A
Purpose of data	Calculation of project emissions
Calculation method	Calculated as the difference between the average dates of imagery used to assess sample plots at the start and end of the monitored period.
Comments	None

Data/Parameter	$\Delta C_{LK-ME,t}$
Data unit	t CO ₂ e
Description	Cumulative net GHG emissions due to market-effects leakage in year t
Equations	Section 3.2.3.3.1
Source of data	(CODECHOCO, 2013)
Description of measurement methods and procedures to be applied	See VMD0011
Frequency of monitoring/recording	At every monitoring event.
QA/QC procedures to be applied	N/A
Purpose of data	Calculation of leakage
Calculation method	See VMD0011
Comments	None

Data/Parameter	$\Delta C_{OLB,t}$
Data unit	t CO ₂ e/ha
Description	Emissions from carbon stock change due to land cover transition in areas available for activity shifting outside the UDef LB, as calculated for year t
Equations	Section 0
Source of data	Choco JNR FREL (VCS ID 5079) and results of household surveys
Description of measurement methods and procedures to be applied	Section 0

Frequency of monitoring/recording	At every monitoring event.
QA/QC procedures to be applied	N/A
Purpose of data	Calculation of leakage
Calculation method	See VMD0011
Comments	None

Data/Parameter	$E_{Cstocks,LMZ,t}$
Data unit	t CO2e
Description	Net CO2e emissions from carbon stock changes due to the implementation of leakage mitigation measures in the leakage management zone in year t
Equations	Section 0
Source of data	Long-Term Implementation Workplan
Description of measurement methods and procedures to be applied	Section 0
Frequency of monitoring/recording	At every monitoring event.
QA/QC procedures to be applied	N/A
Purpose of data	Calculation of leakage
Calculation method	Section 0
Comments	None

Data/Parameter	$PROP_{MIG}$
Data unit	Proportion
Description	Proportion of households living in the project activities region that are recent migrants and are engaging in land use activities identified as a baseline driver of unplanned deforestation
Equations	Section 0
Source of data	Household surveys
Description of measurement methods and procedures to be applied	CDM Guideline: Sampling and surveys for CDM project activities and programmes of activities
Frequency of monitoring/recording	At every monitoring event.

QA/QC procedures to be applied	N/A
Purpose of data	Calculation of leakage
Calculation method	Survey
Comments	None

3.3.2.2 Data and Parameters specific to UDeg (VM0006)

3.3.2.2.1 Sizes, Areas and Transitions

Data/parameter [MN1]:	$size_{projectArea}$, $size_{leakageArea}$, $size_{referenceregion}$, $size_{referenceForest}$
Data unit:	[ha]
Description:	Size of Project Activity Instance, Instance Leakage Area, Reference Region, Project Area and forest area in the Reference Region
Source of data:	Project design
Description of measurement methods and procedures to be applied	GIS delineation of protected area boundaries based on official records, RS analysis of forest cover.
Frequency of monitoring/Recording:	$size_{projectArea}$ and $size_{leakageArea}$ may be adjusted during crediting period per the rules for grouped projects and updated at verification, but only for the additional instances that were added after the project start date, and may be adjusted during crediting period per the rules for grouped projects and updated at verification, but only for the additional instances that were added after the project start date.
Value applied:	See section 2.1.16.2
Monitoring equipment:	GIS
QA/QC procedures to be applied:	Visual evaluation and comparison to Google Earth
Purpose of data	$size_{leakageArea}$ and $size_{projectArea}$ used to calculate the Forest Strata-specific Deforestation and Degradation Rates in the Leakage Area (VM0006 Section 8.3.2.3, EQ 94, 95). $size_{projectArea}$ used to calculate forest scarcity factor (VM0006 Section 8.1.4.4, EQ 40). $size_{referenceForest}$ and $size_{projectArea}$ used to calculate baseline total deforestation and degradation rates (VM0006 Section 8.1.4.1, EQ 37, 38). $size_{referenceregion}$ used to test applicability conditions for the Reference Region. This data is used for: Calculation of baseline emissions Calculation of project emissions Calculation of leakage
Calculation method:	GIS delineation of boundaries
Comments:	This parameter is calculated by Terra Global.

Data/parameter [MN2]:	$\Delta area_{projectAreaEAH,projectScenario}(t,i)$
Data unit:	[ha yr ⁻¹]
Description:	Hectares undergoing transition <i>i</i> within the Project Activity Instance, excluding ANR and harvest areas, under the Project scenario during year <i>t</i> . [ha yr ⁻¹].
Source of data:	Land-use change modelling (ex-ante) Remote sensing analysis (ex-post)
Description of measurement methods and procedures to be applied:	Calculated based on the LULC classification.
Frequency of monitoring/recording:	At least once before verification
Value applied:	For the ex-ante predictions see table relating to expected land transitions under the project scenario.
Monitoring equipment	Land-use classification
QA/QC procedures to be applied:	
Purpose of data:	Used to predict LULC transitions in the baseline scenario. This data is used for: Calculation of baseline emissions Calculation of project emissions
Calculation method:	Follow the procedures described in Section 8.1.5 of the methodology to calculate a land use change transition matrix, which summarizes all predicted LULC transitions
Comment:	This parameter is calculated by Terra Global.

Data/parameter [MN3]:	$\Delta area_{projectAreaEAH,baselineScenario}(t,i)$
Data unit:	[ha yr ⁻¹]
Description:	Hectares undergoing transition <i>i</i> within the Project Activity Instance, excluding the ANR area, and harvest areas, under the baseline scenario for year <i>t</i> .
Sources of data:	Historical LULC classification and land-use change modelling
Description of measurement methods and procedures to be applied:	Calculate based on the LULC classification
Frequency of monitoring/recording:	At least once before every baseline. For added instances, may be recalculated at verification. This data is used for: Calculation of baseline emissions Calculation of project emissions

Value applied:	See the land-use change transition matrix.
Monitoring equipment:	GIS
QA/QC procedures to be applied:	n/a
Purpose of data:	Used to establish LULC transitions in the baseline scenario. This data is used for: Calculation of baseline emissions
Calculation method:	Follow the procedures described in Section 8.1.5 of the methodology to calculate a land-use change transition matrix, which summarizes all predicted LULC transitions.
Comments:	This parameter is calculated by Terra Global.

Data/parameter [MN4]:	$\Delta area_{projectAreaWithANR,baselineScenario}(t, i)$
Data unit:	[ha yr ⁻¹]
Description:	Hectares undergoing transition <i>i</i> within the Instance leakage area under the Project scenario for year <i>t</i> .
Source of data:	Land-use change modeling
Description of measurement methods and procedures to be applied:	Calculate based on the LULC classification, summarized in the transition rates analysis described in the PD.
Frequency of monitoring/recording	At least once before every baseline update. For added instances, may be recalculated at verification.
Value applied:	n/a
Monitoring equipment:	GIS
QA/QC procedures to be applied:	n/a
Purpose of data:	Used to predict LULC transitions in the baseline scenario. This data is used for: Calculation of leakage
Calculation method:	Follow the procedures described in Section 8.1.5 of the methodology to calculate a land use change transition matrix, which summarizes all predicted LULC transitions.
Comments:	This parameter is calculated by Terra Global.

Data/parameter [MN5]:	$\Delta area_{leakageArea,projectScenario}(t, i)$
Data unit:	[ha yr ⁻¹]
Description:	Hectares undergoing transition <i>i</i> within the leakage area under the Project scenario for year <i>t</i>
Source of data:	Remote sensing analysis

Description of measurement methods and procedures to be applied:	Follow the procedures described in Section 8.1.2.4. In case emissions reductions/removals from avoided degradation are included, this parameter will provide the data required to calculate the activity data to estimate the emissions from both deforestation and forest degradation.
Frequency of monitoring/recording	At least once before verification
Value applied:	For the ex-ante predictions see table relating to land-use transitions in the Instance leakage area.
Monitoring equipment:	n/a
QA/QC procedures to be applied:	QA/QC procedures for RS analysis.
Purpose of data:	Used to predict LULC transitions in the Instance Leakage Area under the project scenario. This data is used for: Calculation of leakage
Calculation method:	Follow the procedures described in Section 8.1.5 of the methodology to calculate a land use change transition matrix, which summarizes all predicted LULC transitions.
Comments:	This parameter is calculated by Terra Global.

Data/parameter [MN6]:	$\Delta area_{leakageArea,baselineScenario}(t, i)$
Data unit:	[ha yr ⁻¹]
Description:	Hectares undergoing transition <i>i</i> within the Instance leakage area under the baseline scenario during year <i>t</i>
Sources of data:	Land-use change modeling
Description of measurement methods and procedures to be applied:	Calculate based on the LULC classification, summarized in the transition rates analysis described in this PD.
Frequency of monitoring/recording:	Once every baseline update. May also be updated at the time of instance inclusion that requires new Instance Leakage Area.
Value applied:	For the ex-ante predictions see table relating to land-use transitions in the Instance leakage area.
Monitoring equipment:	GIS
QA/QC procedures to be applied:	QA/QC procedures for RS analysis.
Purpose of data:	Used to predict LULC transitions in the Instance Leakage Area under the baseline scenario. This data is used for: <ul style="list-style-type: none"> • Calculation of leakage
Calculation method:	Follow the procedures described in Section 8.1.5 of the methodology to calculate a land use change transition matrix, which summarizes all predicted LULC transitions.

Comments:	This parameter is calculated by Terra Global.
Data/parameter [MN7]:	$\Delta area_{historical}(CS_1 \rightarrow CS_2, t_1 \rightarrow t_2)$
Data unit:	[ha yr ⁻¹]
Description:	Area of transition from LULC class or forest stratum 1 to 2 from time 1 to 2 during the historical reference period.
Source of data:	Remote sensing analysis
Description of measurement methods and procedures to be applied:	Calculate based on the LULC classification, summarized in the transition rates analysis described in Section VCS PD 3.1.5.
Frequency of monitoring/recording:	At least once before every baseline update
Value applied:	See Gross Emission Workbooks sheet “2a. RR - Transition rates”
Monitoring equipment:	GIS
QA/QC procedures to be applied:	QA/QC procedures for RS analysis.
Purpose of data:	To calculate the baseline annualize deforestation rate. This data is used for: Calculation of baseline emissions
Calculation method:	Follow the procedures described in Section 8.1.5 of the methodology to calculate a land use change transition matrix, which summarizes all predicted LULC transitions.
Comments:	This parameter is calculated by Terra Global.

Data/parameter [MN8]:	$RFRGrate(CS_1 \rightarrow CS_2)$
Data unit:	[yr ⁻¹]
Description:	Relative annual forest cover increase and regeneration factor for the transition from class or stratum 1 to 2.
Sources of data:	Remote sensing analysis
Description of measurement methods and procedures to be applied:	Calculate based on the remote sensing-based classification and stratification procedures detailed in section. Multiply with 100 to obtain a forest cover increase and regeneration rate in percentage per year.
Frequency of monitoring/recording:	At least once before every baseline update
Value applied:	See Gross Emission Workbooks sheet “2a. RR - Transition rates”
Monitoring equipment:	GIS
QA/QC procedures to be applied:	QA/QC procedures for RS analysis.

Purpose of data:	To calculate the baseline annualized reforestation rate. This data is used for: <ul style="list-style-type: none"> • Calculation of baseline emissions
Calculation method:	Follow the procedures described in Section 8.1.5 of the methodology to calculate a land use change transition matrix, which summarizes all predicted LULC transitions.
Comments:	This parameter is calculated by Terra Global.

Data/parameter [MN9]:	$area_{historical}(CS_1, t_1)$
Data unit:	[ha]
Description:	Total area of LULC class or forest stratum 1 at time 1
Sources of data:	Remote sensing analysis
Description of measurement methods and procedures to be applied:	Calculate based on the remote sensing-based classification and stratification procedures detailed in this PD.
Frequency of monitoring/recording:	At least once before every baseline update
Value applied:	See worksheet 2c. RR - DF, RF, DG, RG in GER workbook for values.
Monitoring equipment:	GIS
QA/QC procedures to be applied:	n/a
Purpose of data:	This data is used for: <ul style="list-style-type: none"> • Calculation of baseline emissions
Calculation method:	
Comments:	This parameter is calculated by Terra Global.

Data/parameter [MN10]:	$area_{projectAreaWithANR,projectScenario}(t, i)$
Data unit:	[ha]
Description:	Amount of land on which ANR activities are planned under the Project scenario for year t and in stratum i
Sources of data:	Records of implemented activities
Description of measurement methods and procedures to be applied:	Only to be included if ANR activities are implemented.
Frequency of monitoring/recording:	At least once before verification
Value applied:	n/a

Monitoring equipment:	
QA/QC procedures to be applied:	
Purpose of data:	This data is used for: <ul style="list-style-type: none"> • Calculation of project emissions
Calculation method:	
Comments:	Not assessed at validation, to be verified at future verifications. This parameter is calculated by Terra Global.

Data/parameter [MN11]:	$area_{projectAreaWithHarvest,projectScenario}(t, i)$
Data unit:	[ha yr ⁻¹]
Description:	Size of strata i within the Project Area with harvest activities during year t under the Project scenario.
Sources of data:	Remote sensing analysis
Description of measurement methods and procedures to be applied:	Follow the procedures described in Section 8.1.5.4 of the methodology.
Frequency of monitoring/recording:	At least once before verification if harvesting is determined in the baseline or as a project activity.
Value applied:	n/a
Monitoring equipment:	
QA/QC procedures to be applied:	
Purpose of data:	This data is used for: <ul style="list-style-type: none"> • Calculation of project emissions
Calculation method:	
Comments:	This parameter is calculated by Terra Global.

Data/parameter [MN12]:	$BetaReg_{DF}(t)$ and $BetaReg_{DG}(t)$
Data unit:	[ha yr ⁻¹]
Description:	Beta regression model describing the relationship between time and deforestation/degradation rate in the reference region during the historical reference period.
Sources of data:	Historic forest degradation and deforestation modeling
Description of measurement methods and procedures to be applied:	Procedure described in Section 4 or similar approach from peer-reviewed scientific literature.

Frequency of monitoring/recording:	At least once every baseline update
Value applied:	See regression model
Monitoring equipment:	GIS/Regression model
QA/QC procedures to be applied:	
Purpose of data:	This data is used for: <ul style="list-style-type: none"> • Calculation of baseline emissions • Calculation of project emissions Calculation of leakage
Calculation method:	
Comments:	This parameter is calculated by Terra Global.

3.3.2.2.2 Locations, Descriptions, Qualitative, and Social Data

Data/parameter [MN13]:	Area under agricultural intensification
Data unit:	[ha]
Description:	Size of the area of agricultural intensification separated for each agricultural intensification measure if found to be a significant emission due to project activities.
Sources of data:	Participatory Rural Appraisals
Description of measurement methods and procedures to be applied:	Calculate based on areas of cropland in the leakage and Project Areas. Only to be included if agricultural intensification activities are implemented.
Frequency of monitoring/recording:	At least once before verification
Value applied:	n/a
Monitoring equipment:	
QA/QC procedures to be applied:	
Purpose of data:	To estimate amount of non-CO ₂ emissions from increased crop intensification if a significant source of emissions. Qualitatively indicate the economic benefits to the local communities in ha are not used.
Calculation method:	
Comments:	If crop intensification activities do not result in additional GHG emissions, there is no need in demarcating agricultural intensification activities. This parameter is calculated by Terra Global with input from FD or their contractors.

Data/parameter [MN14]:	Yields under agricultural intensification
Data unit:	[Mg ha ⁻¹]
Description:	Harvested yield for agricultural intensification practices
Sources of data:	Participatory rural appraisals
Description of measurement methods and procedures to be applied:	Only to be included if agricultural intensification activities are implemented.
Frequency of monitoring/recording:	At least once before verification.
Value applied:	n/a
Monitoring equipment:	Field studies.
QA/QC procedures to be applied:	
Purpose of data:	To estimate of the reduction of drivers impact on deforestation.
Calculation method:	
Comments:	If crop intensification activities do not result in additional GHG emissions, there is no need in quantifying agricultural intensification activities.

Data/parameter [MN15]:	NTFP harvest rate
Data unit:	[m ³ yr ⁻¹] or [kg yr ⁻¹]
Description:	Annual volumes of non-timber forest products extracted
Sources of data:	Participatory rural appraisals
Description of measurement methods and procedures to be applied:	Participatory rural appraisal SOP. Estimated among participating communities and communities living in the leakage area.
Frequency of monitoring/recording:	At least once before verification
Value applied:	Absolute values can be substituted with qualitative data
Monitoring equipment:	HH Survey and/or PRA
QA/QC procedures to be applied:	See QA/QC Procedures on Social Assessments
Purpose of data:	Indicator of the role of NTFP in reducing the deforestation drivers' impact.
Calculation method:	

Any comment:	<p>The PRA survey did not result in exact quantity of the NTFPs harvest rate. The survey reported that many NTFPs are becoming harder to find, and therefore are overexploited. NTFPs are an important livelihood activity and project will continue to support such activities and help them remain a sustainable supply. This parameter is calculated by Terra Global, with data from the FD or their contractors.</p> <table border="1" style="margin-left: auto; margin-right: auto; border-collapse: collapse;"> <thead> <tr style="background-color: #1a3d4d; color: white;"> <th>NTFP Status</th> <th>Percent</th> </tr> </thead> <tbody> <tr> <td>Declined</td> <td>74%</td> </tr> <tr> <td>Stayed the Same</td> <td>21%</td> </tr> <tr> <td>Increased</td> <td>6%</td> </tr> </tbody> </table> <p style="text-align: center; font-size: small;">(source PRA)</p>	NTFP Status	Percent	Declined	74%	Stayed the Same	21%	Increased	6%
NTFP Status	Percent								
Declined	74%								
Stayed the Same	21%								
Increased	6%								

Data/parameter [MN16]:	Local NTFP price
Data unit:	Local currency
Description:	Price of non-timber forest products on local markets
Sources of data:	Participatory rural appraisals.
Description of measurement methods and procedures to be applied:	Participatory rural appraisal SOP. Estimated among participating communities and communities living in the leakage area.
Frequency of monitoring/recording:	At least once before verification
Value applied:	See PRA results workbook.
Monitoring equipment:	
QA/QC procedures to be applied:	See QA/QC Procedures on Social Assessments
Purpose of data:	Indicator of the role of NTFP in reducing the deforestation drivers' impact.
Calculation method:	
Comments:	<p>Our PRA survey did not ask the specific prices of NTFPs. We used scarcity as a proxy for increases in price. The survey reported that many NTFPs are becoming harder to find (decreased supply), and therefore more costly. NTFPs are an important livelihood activity and project will continue to support such activities and help them remain a sustainable supply. This parameter is calculated by Terra Global, with data from the FD or their contractors.</p>

		NTFP Status	Percent
		Declined	74%
		Stayed the Same	21%
		Increased	6%

(source PRA)

3.3.2.2.3 Data on Drivers and Actions

Data/parameter [MN17]:	$CFW_{baseline}$
Data unit:	[m ³ yr ⁻¹]
Description:	Annual volume of fuelwood gathering for commercial sale and charcoal production in the baseline scenario
Sources of data (*):	Participatory rural appraisals
Description of measurement methods and procedures to be applied:	If emission reductions from avoided degradation were excluded due to insufficient accuracy, in which case $u_{classification} = 0$, and emission reductions from fuel-efficient woodstoves are included, $CFW_{baseline}$ may only be measured using the first option, social assessments.
Frequency of monitoring/recording:	At least once before every baseline update
Value applied:	6,316 t C Yr ⁻¹ for charcoal
Monitoring equipment:	Household survey SOP
QA/QC procedures to be applied:	See QA/QC Procedures on Social Assessments
Purpose of data:	
Calculation method:	The HH survey was used to determine the amount of charcoal use per HH per year.
Comments:	1. GER Workbook sheet "0. Drivers and parameters". Value is estimated in Mg DM per year. This parameter is calculated by Terra Global, with data from the FD or their contractors.

Data/parameter [MN18]:	$DFW_{baseline}$
Data unit:	[m ³ yr ⁻¹]
Description:	Annual volume of fuelwood gathered for domestic and local energy in the baseline scenario
Sources of data (*):	Participatory rural appraisals
Description of measurement methods and procedures to be applied:	If emission reductions from avoided degradation were excluded due to insufficient accuracy, in which case $u_{classification} = 0$, and emission reductions from fuel-efficient woodstoves are included,

	$DFW_{baseline}$ may only be measured using the first option, social assessments.
Frequency of monitoring/recording:	At least once before every baseline update
Value applied:	4,087 t C Yr ⁻¹ for fuelwood
Monitoring equipment:	
QA/QC procedures to be applied:	See QA/QC Procedures on Social Assessments
Purpose of data:	To estimate amount of GHG emissions from driver – fuelwood gathering.
Calculation method:	
Comments:	See GER Workbook sheet “0. Drivers and parameters. This parameter is calculated by Terra Global, with data from the FD or their contractors.

Data/parameter [MN19]:	$DFW_{project}$
Data unit:	[m ³ yr ⁻¹]
Description:	Biomass (dry matter) of fuelwood collected by Project participants under the project scenario.
Sources of data (*):	Participatory rural appraisals Recent (<10 yr) literature in the reference region Recent (<10 yr) literature in an area similar to the reference region
Description of measurement methods and procedures to be applied:	If emission reductions from avoided degradation were excluded due to insufficient accuracy, in which case $u_{classification} = 0$, and emission reductions from fuel-efficient woodstoves are included, $DFW_{baseline}$ may only be measured using the first option, social assessments.
Frequency of monitoring/recording:	At least once before verification
Value applied:	n/a
Monitoring equipment:	
QA/QC procedures to be applied:	See QA/QC Procedures on Social Assessments
Purpose of data:	
Calculation method:	
Comments:	No emission reductions are estimated from cookstoves at this time. When cookstove efficiency, wood energy statistics, and monitoring data becomes available then emission reductions from cookstoves will be assessed. This parameter is calculated by Terra Global, with data from the FD or their contractors.

Data/parameter [MN20]:	$DFW_{allowed}$
Data unit:	[m ³ yr ⁻¹]
Description:	Biomass (dry matter) of allowed fuelwood collection in the Project Area under the project scenario. This amount is typically fixed in a management plan. [m ³ yr ⁻¹]
Sources of data (*):	Forest management plan
Description of measurement methods and procedures to be applied:	
Frequency of monitoring/recording:	At least once before every baseline update
Value applied:	Equivalent to $DFW_{project}$
Monitoring equipment:	
QA/QC procedures to be applied:	
Purpose of data:	Used if Community Forestry Agreements include allowable fuelwood collection.
Calculation method:	
Comments:	This parameter is calculated by Terra Global, with data from the FD or their contractors.

Data/parameter [MN21]:	$contribution_{DF}(d)$ and $contribution_{DG}(d)$																																
Data unit:	[-]																																
Description:	Relative contribution of driver i respectively to total deforestation and forest degradation.																																
Sources of data:	Calculated using procedure described in 8.1.3 of the methodology, following.																																
Description of measurement methods and procedures to be applied:	Social Assessments, and expert opinion.																																
Frequency of monitoring/recording:	At least once before baseline update.																																
Value applied:	<table border="1"> <thead> <tr> <th></th> <th colspan="3">Contribution</th> </tr> <tr> <th>Driver of Deforestation</th> <th>DF</th> <th>DG</th> <th>Total</th> </tr> </thead> <tbody> <tr> <td>Illegal Logging for Timber</td> <td>3.5%</td> <td>74.6%</td> <td>78.1%</td> </tr> <tr> <td>Shifting agriculture for subsistence</td> <td>0.8%</td> <td>0.2%</td> <td>1.0%</td> </tr> <tr> <td>Illicit crops</td> <td>6.6%</td> <td>1.7%</td> <td>8.4%</td> </tr> <tr> <td>Illegal Mining</td> <td>57.1%</td> <td>15.0%</td> <td>72.1%</td> </tr> <tr> <td>Conversion of Forestland to Grassland for Grazing</td> <td>17.0%</td> <td>4.5%</td> <td>21.5%</td> </tr> <tr> <td>Unplanned Wildfires</td> <td>15.0%</td> <td>4.0%</td> <td>19.0%</td> </tr> </tbody> </table>		Contribution			Driver of Deforestation	DF	DG	Total	Illegal Logging for Timber	3.5%	74.6%	78.1%	Shifting agriculture for subsistence	0.8%	0.2%	1.0%	Illicit crops	6.6%	1.7%	8.4%	Illegal Mining	57.1%	15.0%	72.1%	Conversion of Forestland to Grassland for Grazing	17.0%	4.5%	21.5%	Unplanned Wildfires	15.0%	4.0%	19.0%
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Monitoring equipment:																																	

QA/QC procedures to be applied:	See QA/QC Procedures on Social Assessments
Purpose of data:	Used for Ex-anti Calculations for Project emissions.
Calculation method:	
Comments:	This parameter is calculated by Terra Global, with data from the FD or their contractors.

Data/parameter [MN22]:	$RelativeDriverImpact_{DF}(t, d)$ and $RelativeDriverImpact_{DG}(t, d)$
Data unit:	[-]
Description:	Relative impact of the geographically unconstrained driver d at time t of the crediting period respectively on deforestation and forest degradation.
Sources of data:	Calculated using procedure described in Section 8.2.2 of the methodology
Description of measurement methods and procedures to be applied:	Social Assessments, and expert opinion.
Frequency of monitoring/recording:	At least once before baseline update.
Value applied:	See section relating to leakage from geographically unconstrained drivers.
Monitoring equipment:	
QA/QC procedures to be applied:	See QA/QC Procedures on Social Assessments
Purpose of data:	Used for Ex-anti Calculations for Project emissions.
Calculation method:	
Any comment:	There is no geographically unconstrained driver applicable in the Project Area.

Data/parameter [MN23]:	$leakage_{unconstrained}(d)$
Data unit:	[-]
Description:	Leakage cancellation rate for avoiding deforestation/degradation from geographically unconstrained drivers.
Sources of data:	Valid sources to substantiate a smaller leakage rate include social assessments, scientific literature, and reports from civil society or governments. Sources have to be reliable and based on scientific methods and a good statistical design.

Description of measurement methods and procedures to be applied:	
Frequency of monitoring/recording:	At least once before baseline update.
Value applied:	n/a
Monitoring equipment:	
QA/QC procedures to be applied:	See QA/QC Procedures on Social Assessments
Purpose of data:	
Calculation method:	
Comments:	There is no geographically unconstrained driver applicable in the Project Area. This parameter is calculated by Terra Global, with data from the FD or their contractors.

Data/parameter [MN24]:	$effectiveness(a, d)$
Data unit:	[-]
Description:	Effectiveness of every project activity a in decreasing any driver of deforestation d relative to that driver's contribution to deforestation and forest degradation,
Sources of data:	Relevant academic literature or documented expert opinion.
Description of measurement methods and procedures to be applied:	
Frequency of monitoring/recording:	At least once before baseline update.
Value applied:	See Figure 3 relating to the Relative reduction (%) in the impact of drivers of deforestation and degradation due to Project Activities
Monitoring equipment:	
QA/QC procedures to be applied:	See QA/QC Procedures on Social Assessments
Purpose of data:	Used for ex-anti Calculation of Project Emissions.
Calculation method:	
Comments:	The $effectiveness(a, d)$ factor represents the maximal effectiveness during the crediting period. This parameter is calculated by Terra Global, with data from the FD or their contractors.

Data/parameter [MN25]:	$Fuelwood(t)$, $Fuel(t)$
Data unit:	[m ³ yr ⁻¹ HH ⁻¹]
Description:	Average annual volume of biomass fuel consumed by households in the absence of the project activity in year t for cooking purpose.
Sources of data:	Social assessments results or wood energy statistics applicable to the project
Description of measurement methods and procedures to be applied:	Participatory Rural Appraisal SOP
Frequency of monitoring/recording:	At least once every baseline update
Value applied:	4,087 t C yr ⁻¹
Monitoring equipment:	
QA/QC procedures to be applied:	See QA/QC Procedures on Social Assessments
Purpose of data:	Estimating emission reductions from cookstoves during the ex-anti project emissions.
Calculation method:	
Comments:	Emission reduction from cookstoves will be monitored at Verification. This data is gathered by FD or their contractors.

Data/parameter [MN26]:	$HH_{non-CFE}(t)$
Data unit:	[-]
Description:	Total number of households in the Project Area that collect biomass fuel from the Project Area and do not use CFE in year t .
Sources of data:	Social assessments results or wood energy statistics applicable to the project
Description of measurement methods and procedures to be applied:	<i>Ex-post</i> , this value must be obtained from socio-economic survey.
Frequency of monitoring/recording:	At least once before verification
Value applied:	n/a
Monitoring equipment:	
QA/QC procedures to be applied:	See QA/QC Procedures on Social Assessments
Purpose of data:	Calculating emission reductions from cookstoves for Project Emissions.

Calculation method:	
Comments:	Emission reduction from cookstoves will be monitored at Verification. This data is gathered by the FD or their contractors.

Data/parameter [MN27]:	η_{old}
Data unit:	[-]
Description:	Efficiency of the project cookstoves or appliances.
Sources of data:	Default value of 0.10 for three stone stove or conventional stove that lacks improved combustion air supply mechanism and flue gas ventilation systems i.e., without a grate as well as a chimney; for rest of the systems 0.2 default value may be used.
Description of measurement methods and procedures to be applied:	Measured using representative sampling method or based on referenced literature values. Use weighted average values if more than one type of systems are used. If measured, the procedure must comply with the Water Boiling Test (WBT) based on VITA 1985 - the 'International Standards'.
Frequency of monitoring/recording:	At least once every baseline update
Value applied:	n/a
Monitoring equipment:	Scientific Literature
QA/QC procedures to be applied:	
Purpose of data:	Calculating emission reductions from cookstoves for Project calculations.
Calculation method:	Emission reduction from cookstoves will be monitored at Verification.
Comments:	Emission reduction from cookstoves will be monitored at Verification. This calculation is completed by Terra Global.

Data/parameter [MN28]:	η_{new}
Data unit:	[-]
Description:	Efficiency of the baseline cookstoves or appliances.
Sources of data:	Values obtained from the manufacturer of the stove. Calculated from field testing using ISO standards.
Description of measurement methods and procedures to be applied:	Will be measured using representative sampling method when data becomes available. Weighted average values will be used if more than one type of systems is used.
Frequency of monitoring/recording:	Every Verification.
Value applied:	n/a

Monitoring equipment:	
QA/QC procedures to be applied:	
Purpose of data:	Calculating emission reductions from cookstoves for project calculations.
Calculation method:	
Comments:	Emission reduction from cookstoves will be monitored at Verification. This data is measured by the FD, or their contractors.

Data/parameter [MN29]:	$U_{CFE}(t)$
Data unit:	[-]
Description:	Fraction of cumulative usage rate for technologies in project scenario in year t. [-]
Sources of data:	Social assessments or wood energy statistics applicable to the project
Description of measurement methods and procedures to be applied:	Cumulative adoption rate and drop off rate revealed by usage surveys [-].
Frequency of monitoring/recording:	Annual use data monitored at Verification.
Value applied:	n/a
Monitoring equipment:	
QA/QC procedures to be applied:	
Purpose of data:	Calculating emission reductions from cookstoves for project calculations.
Calculation method:	
Comments:	Emission reduction from cookstoves will be monitored at Verification. This data is gathered by the FD, or their contractors.

Data/parameter [MN30]:	$DF_{LeakageCFE}(t)$
Data unit:	[-]
Description:	Leakage discount factor applicable to GHG emissions reduction benefits from CFE activities [-]
Sources of data:	Social assessments or wood energy statistics applicable to the project. Default value of 0.95 following AMS.II.G CDM methodology.
Description of measurement methods	Leakage related to the non-renewable biomass saved by the project activity must be assessed based on surveys of users and the areas from which woody biomass saved under the project by non-project

and procedures to be applied:	households that previously used renewable energy or efficient appliances must be considered. If this leakage assessment quantifies an increase in the use of non-renewable biomass, that is attributable to the project activity, then biomass used in the baseline must be adjusted by a factor ($DF_{LeakageCFE}$) to account for the leakage.
Frequency of monitoring/recording:	Annual
Value applied:	n/a
Monitoring equipment:	
QA/QC procedures to be applied:	
Purpose of data:	Calculating emission reductions from cookstoves for project calculations.
Calculation method:	
Comments:	Emission reduction from cookstoves will be monitored at Verification. This calculation is completed by Terra Global.

Data/parameter [MN31]:	$EF_{non-CO_2, fuel}$, $EF_{CO_2, fuel}$
Data unit:	[t CO ₂ TJ ⁻¹]
Description:	Respectively, non-CO ₂ emission factor of the fuel that is reduced and CO ₂ emission factor for the substitution of non-renewable biomass by similar consumers.
Sources of data:	Social assessments or wood energy statistics applicable to the project
Description of measurement methods and procedures to be applied:	Emission factor can include a combination of emission factors from fuel production, transport, and use. Both CO ₂ and Non-CO ₂ of the fuel such as emissions factors for charcoal can be estimated from project specific monitoring or alternatively by researching a conservative wood to charcoal production ratio (from IPCC, credible published literature, project-relevant measurement reports, or project-specific monitoring) and multiplying this value by the pertinent emission factor of wood.
Frequency of monitoring/recording:	At least once before verification
Value applied:	
Monitoring equipment:	
QA/QC procedures to be applied:	
Purpose of data:	
Calculation method:	
Comments:	Emission reduction from cookstoves will be monitored at Verification. This calculation is completed by Terra Global.

Data/parameter [MN32]:	EF_{forest}
Data unit:	[t CO ₂ e]
Description:	Emission factor related to leakage.
Sources of data:	If comprehensive national-level statistics on biomass densities are available, EF_{forest} must be calculated based on the average biomass of the country, if local data is not available. Sources of the data allowed are (1) academic research papers and (2) studies and reports published by the Forest Department or other organizations, including the FAO's Forest Resource Assessment reports, (3) the upper range of biomass in the GPG-LULUCF (2003) Table 3A.1.2.
Description of measurement methods and procedures to be applied:	
Frequency of monitoring/recording:	At least once before verification
Value applied:	n/a
Monitoring equipment:	
QA/QC procedures to be applied:	
Purpose of data:	To estimated emission factor for unconstrained leakage.
Calculation method:	
Comments:	See parameter 'Maximum biomass emissions' in worksheet "8. Emissions factor" in workbook '1. Gross Emissions Reductions.' This calculation is completed by Terra Global.

3.3.2.2.4 Data on Organic Matter and Carbon Densities

Data/parameter [MN33]:	$OM_o(i)$
Data unit:	[Mg DM ha ⁻¹]
Description:	Plant-derived organic matter of LULC class or forest stratum i in pool o . [Mg DM ha ⁻¹]
Sources of data:	Field measurements using sampling plots in forest strata and LULC classes.
Description of measurement methods and procedures to be applied:	The average biomass stock density in applicable organic matter pools: aboveground tree – $OM_{AGT}(i)$, aboveground non-tree – $OM_{AGNT}(i)$, lying dead wood – $OM_{LDW}(i)$, standing dead wood $OM_{SDW}(i)$, and belowground $OM_{BG}(i)$.
Frequency of monitoring/recording:	At least once before every baseline update

Value applied:	See the table relating to basic statistical measures of field measurements in different LULC classes, and Biomass Excel sheet.
Monitoring equipment:	
QA/QC procedures to be applied:	Follow uncertainty deduction procedures described in methodology. Re-measured plots by independent teams. See QA/QC Procedures for Biomass Inventories.
Purpose of data:	This data is used for: <ul style="list-style-type: none"> • Calculation of baseline emissions • Calculation of project emissions • Calculation of leakage
Calculation method:	
Comments:	Summed across multiple pools. This data is gathered by the FD or their contractors.

Data/parameter [MN34]:	$proportion_{DF}(d)$ and $proportion_{DG}(d)$																					
Data unit:	[-]																					
Description:	Proportion of the gradual carbon loss that leads to deforestation or forest degradation, respectively, due to driver d																					
Sources of data:	This is based on information from project partners, local implementers expertise																					
Description of measurement methods and procedures to be applied:	Estimate using the procedure detailed in Table 8 in Section 8.1.3.2 of the methodology.																					
Frequency of monitoring/recording:	At least once before every baseline update																					
Value applied:	<table border="1"> <thead> <tr> <th>Drivers</th> <th>Proportion _DF(i)</th> <th>Proportion _DG(i)</th> </tr> </thead> <tbody> <tr> <td>Illegal Logging for Timber</td> <td>10</td> <td>90</td> </tr> <tr> <td>Shifting agriculture for subsistence</td> <td>90</td> <td>10</td> </tr> <tr> <td>Illicit crops</td> <td>90</td> <td>10</td> </tr> <tr> <td>Illegal Mining</td> <td>90</td> <td>10</td> </tr> <tr> <td>Conversion of Forestland to Grassland for Grazing</td> <td>90</td> <td>10</td> </tr> <tr> <td>Unplanned Wildfires</td> <td>90</td> <td>10</td> </tr> </tbody> </table>	Drivers	Proportion _DF(i)	Proportion _DG(i)	Illegal Logging for Timber	10	90	Shifting agriculture for subsistence	90	10	Illicit crops	90	10	Illegal Mining	90	10	Conversion of Forestland to Grassland for Grazing	90	10	Unplanned Wildfires	90	10
Drivers	Proportion _DF(i)	Proportion _DG(i)																				
Illegal Logging for Timber	10	90																				
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Conversion of Forestland to Grassland for Grazing	90	10																				
Unplanned Wildfires	90	10																				
Monitoring equipment:																						
QA/QC procedures to be applied:	See QA/QC Procedures for Social Assessments																					
Purpose of data:	This data is used for: <ul style="list-style-type: none"> • Calculation of project ex-ani emissions 																					
Calculation method:																						
Comments:	See worksheet '0. Drivers and Parameters' in workbook '1. Gross Emission Reduction.' This calculation is completed by Terra Global Capital.																					

Data/parameter [MN35]:	$C(t, i)$
Data unit:	[Mg C ha ⁻¹ yr ⁻¹]
Description:	Carbon stock density at time t in stratum i .
Sources of data:	Estimated within the biomass inventory plots
Description of measurement methods and procedures to be applied:	See Field Sampling SOP
Frequency of monitoring/recording:	At least once before verification
Value applied:	Section 3.2.1.1.3.1
Monitoring equipment:	
QA/QC procedures to be applied:	See QA/QC Procedures for Biomass Inventories.
Purpose of data:	This data is used for: <ul style="list-style-type: none"> • Calculation of baseline emissions • Calculation of project emissions • Calculation of leakage
Calculation method:	
Comments:	Used in estimating change in carbon stock density such as in ANR areas. This calculation is completed by Terra Global Capital.

Data/parameter [MN36]:	$f_{allometric}(y)$								
Data unit:	Equation								
Description:	Allometric relationship to convert a tree metric such as DBH or tree height into biomass								
Sources of data :	<table border="1"> <thead> <tr> <th>Vegetation</th> <th>Source</th> </tr> </thead> <tbody> <tr> <td>Mangroves</td> <td>(Chave et al., 2005)</td> </tr> <tr> <td>Palms</td> <td>(Duque, et al., 2017)</td> </tr> <tr> <td>Tropical Wet</td> <td>(Alvarez, et al., 2012)</td> </tr> </tbody> </table>	Vegetation	Source	Mangroves	(Chave et al., 2005)	Palms	(Duque, et al., 2017)	Tropical Wet	(Alvarez, et al., 2012)
Vegetation	Source								
Mangroves	(Chave et al., 2005)								
Palms	(Duque, et al., 2017)								
Tropical Wet	(Alvarez, et al., 2012)								
Description of measurement methods and procedures to be applied:	-								
Frequency of monitoring/recording:	May be updated at baseline update								
Value applied:	<table border="1"> <thead> <tr> <th>Vegetation</th> <th>Allometric equation</th> </tr> </thead> <tbody> <tr> <td>Mangroves</td> <td>$AGB = 0.0509 \times WD \times DBH^2 \times H$</td> </tr> <tr> <td>Palms</td> <td>$AGB = 0.334 \times (DBH^2 \times H \times DMF)^{0.803}$</td> </tr> </tbody> </table>	Vegetation	Allometric equation	Mangroves	$AGB = 0.0509 \times WD \times DBH^2 \times H$	Palms	$AGB = 0.334 \times (DBH^2 \times H \times DMF)^{0.803}$		
Vegetation	Allometric equation								
Mangroves	$AGB = 0.0509 \times WD \times DBH^2 \times H$								
Palms	$AGB = 0.334 \times (DBH^2 \times H \times DMF)^{0.803}$								

	Tropical Wet	$\begin{aligned} \ln(AGB) = & -2.857 + 2.081 \times \ln(DBH) \\ & + 0.587 \times \ln(H) \\ & + 0.453 \times \ln(WD) \end{aligned}$
Monitoring equipment:		
QA/QC procedures to be applied:	See QA/QC Procedures for Biomass Inventories.	
Purpose of data:	This data is used for: <ul style="list-style-type: none"> • Calculation of baseline emissions • Calculation of project emissions • Calculation of leakage 	
Calculation method:		
Comments:	Equation applicable for tropical forest from Chave et al. 2005. This calculation is completed by Terra Global Capital.	

Data/parameter [MN37]:	$f_{belowground}(y)$
Data unit:	Equation
Description:	Relationship between aboveground and belowground biomass, such as a root-to-shoot ratio
Sources of data (*):	Standard root-to-shoot ratios as found in Table 4.4 of the IPCC GPG-LULUCF 2003
Description of measurement methods and procedures to be applied:	
Frequency of monitoring/recording:	May be updated at baseline update
Value applied:	0.23
Monitoring equipment:	
QA/QC procedures to be applied:	R:S ratio from Aboveground tree biomass. See QA/QC from
Purpose of data:	This data is used for: <ul style="list-style-type: none"> • Calculation of baseline emissions • Calculation of project emissions • Calculation of leakage
Calculation method:	Estimated based on findings from Myanmar's FREL, averaged from Tropical Moist Deciduous Forest (based off of Table 4.4 of Chapter 4: Forest Land in 2006 IPCC Guidelines for National Greenhouse Gas Inventories)
Comments:	This calculation is completed by Terra Global Capital.

Data/parameter [MN38]:	$CE_{inventory,ANR(t,i)}$
Data unit:	[-]
Description:	Combined error in estimate of average biomass stock density in ANR areas in stratum i at time t .
Sources of data (*):	Field inventory
Description of measurement methods and procedures to be applied:	Procedure is described in Section 8.2.5.3 of the methodology
Frequency of monitoring/recording:	At least once before verification if ANR is a project activity.
Value applied:	
Monitoring equipment:	
QA/QC procedures to be applied:	To be determined in ANR activities are to take place.
Purpose of data:	This data is used for: <ul style="list-style-type: none"> • Calculation of project emissions
Calculation method:	Uncertainty estimate in carbon stocks in harvested strata must come from sampling of plots in ANR areas.
Comments:	There is no ANR activities that are demarcated at this time.

Data/parameter [MN39]:	$u_{transition}(i)$
Data unit:	[]
Description:	Discounting factor for the emission factor for the transition from LULC class or forest stratum 1 to class 2 according to the uncertainty of the biomass inventory.
Sources of data:	Biomass inventory
Description of measurement methods and procedures to be applied:	See section 8.1.2.4.3 of the methodology.
Frequency of monitoring/recording:	At least once before verification
Value applied:	n/a
Monitoring equipment:	See Biomass SOP
QA/QC procedures to be applied:	See QA/QC of biomass inventory.
Purpose of data:	This data is used for: <ul style="list-style-type: none"> • Calculation of project emissions
Calculation method:	Discounting factor described in Section 8.1.2.4.3 of the methodology.

3.3.3 Monitoring Plan (VCS, 3.16, 3.20)

The VCS Monitoring Plan explains how the Program will track carbon stock changes and GHG emissions by combining methodology VM0048 (for unplanned deforestation) with VM0006 (for forest degradation). Using both methodologies ensures that areas where forest is completely cleared and areas where forest remains but loses biomass are treated consistently, with compatible field procedures, parameters and calculations across all verification events.

Implementation monitoring (activities, governance, community work, etc.) is not handled here but in a separate CCB Monitoring Plan. That CCB plan covers climate, community, biodiversity and adaptation benefits through two main streams: Impact Monitoring, carried out once per verification period, and continuous Operational Performance Monitoring of the long-term workplan and indicators. Roles and responsibilities for the REDD+ team, COCOMACIA, Terra Global and contractors are defined there, and results are fed into a theory of change and adaptive management cycle.

For carbon, the Plan describes how ex post changes are monitored in both the project area and leakage belt using field biomass plots and remote sensing. It defines all relevant carbon pools (above- and belowground biomass, dead wood, litter and soil organic carbon) and specifies a 50 × 50 m permanent plot design with nested subplots to measure trees, saplings, non-tree biomass, litter, dead wood and soils. Deforestation is detected as forest-to-non-forest transitions through VMD0055, while degradation is captured with VM0006 as biomass loss in areas that remain forest, using a multi-sensor approach that merges Sentinel-2 optical data, Sentinel-1 SAR and auxiliary layers. The Plan also details the wall-to-wall LULC mapping, ensemble classification, sample-based area estimation and uncertainty analysis (VMD005), together with field/office QA/QC, data validation, correction, version control and clear task division between Terra teams and field crews.

Leakage monitoring applies the same remote-sensing workflow to detect deforestation and degradation in the leakage belt. No additional biomass plots are installed there; instead, carbon stock changes in the leakage area are inferred from the carbon data collected in the project's permanent plots, assigning those carbon values to the land-cover changes mapped in the leakage belt. This keeps leakage monitoring consistent with project methods while avoiding redundant and costly field campaigns.

Finally, the Plan explains how all these elements are combined to estimate ex post net carbon stock changes and GHG emissions. Land-use and land-cover changes are taken from the monitored transitions, respecting the transition rules of the jurisdictional baseline (for example forest to BAR/AGW as deforestation, and BAR/AGW to OFU/OFL as regrowth, with topographic limits between upland and lowland forests). Updated carbon stocks per pool and stratum from the plots are compared against previous periods and linked to these transitions to quantify changes over time, and the results are aggregated to obtain the net ex post carbon stock changes and associated GHG emissions for each monitoring period.

Detailed VCS Monitoring plan can be found in Appendix 7 VCS Monitoring Plan.

3.3.4 Dissemination of Monitoring Plan and Results (VCS, 3.18; CCB, CL4.2)

The Program has completed field data collection. Summaries of the results that define the baseline of the program were prepared in Spanish and didactical posters were prepared and shared for easy reading and

understanding by the communities. The REDD+ team conducted a 3-month dissemination process, where they visited all zones and 124 communities, met with them, discussed and shared the results.

Other events and multiple communication channels are used to ensure that the monitoring plan and its results are widely accessible to the main program stakeholders: During the dissemination process and meetings stakeholders are asked to comment on the monitoring plan and project description.

- WhatsApp groups are used to share program updates, and materials, especially with those who do not have email access.
- Local radio stations are used to provide updates on program activities.
- General Assembly meetings are held annually to report on program progress.
- Virtual and inperson meetings with the Cocomacia Board of Directors and the REDD team are also held for communicating results and progress..
- The monitoring plan and the combined VCS/CCB project description and monitoring report are available
- in the VERRA website: <https://registry.verra.org/app/projectDetail/VCS/2071>

3.4 Optional Criterion: Climate Change Adaptation Benefits

3.4.1 Regional Climate Change Scenarios (CCB, GL1.1)

3.4.1.1 Regional climate change and climate variability scenarios

The El Niño Southern Oscillation (ENSO) is a significant weather phenomenon that affects how much it rains in tropical areas, often causing either droughts or floods in specific regions. Numerous studies have shown that ENSO has a big impact on rainfall and river flow in parts of northern and northwestern South America, specifically in the Choco department, leading to negative consequences for Colombia's economy, biodiversity, and people's health. During El Niño events, there are reduced rainfall, soil moisture, and streamflow in central, northern, and western Colombia, while La Niña events bring the opposite effects.

Looking at longer-term trends, the average river flows in Colombia are also linked to certain climate patterns like the North Atlantic Oscillation (NAO) and the Pacific Decadal Oscillation (PDO). ENSO events will potentially increase beyond 1.5°C warming stabilization according to CMIP5. It is very likely that ENSO-related rainfall variability, defining extreme El Niño and La Niña, will significantly increase by the second half of the 21st century in various scenarios (Ramirez-Villegas, Salazar, Jarvis, & Navarro-Racines, 2012).

Projections indicate warming and drier conditions, leading to a reduction in total annual precipitation, increase frequency of extreme precipitation, and consecutive wet days, along with an increase in consecutive dry days. Heatwaves are expected to become more frequent and severe in equatorial regions like Colombia, accompanied by a decrease in coastal wetting, pluvial and river floods, and an increase in mean wind. Models project a very likely increase in the intensity and frequency of hot extremes and a decrease in cold extremes. However, models show inconsistent changes for extreme precipitation in the region. Climate impact drivers, such as extreme heat, mean precipitation, and coastal and oceanic factors, are expected to increase (Ramirez-Villegas, Salazar, Jarvis, & Navarro-Racines, 2012).

3.4.1.2 Local land use scenario in the absence of the project

The impacts of climate change in the region and especially within COCOMACIA include an increase in the frequency of climate-related disasters. Flood risk is expected to increase, particularly in higher emission scenarios, affecting riverbank and areas of low infrastructure. ENSO events, coupled with climate change, will impact various activities within COCOMACIA, including small-scale fishery infrastructure, small scale agriculture, etc. Extreme precipitation events frequently damage or destroy infrastructure like irrigation, potable water, health and education facilities, roads, bridges, and residential constructions, affecting sediment transport, river erosion, and annual discharge.

Colombian Ministry of Environment (MoE) and The Pacific Environmental Research Institute (IIAP acronym in Spanish) developed in 2015 the Integral Plan for Climate Change in the Chocó Department which outlines the vulnerability of the Chocó Department to different extreme weather events. This documents states that in the Atrato subregion, where COCOMACIA, the Project Activity Instance is located, the most frequent events are floods, windstorms, and landslides (MoE & IIAP, 2015), which will significantly affect the communities of COCOMACIA.

COCOMACIA's vulnerability to floods, windstorms and landslides is directly related to inadequate land management practices, lack of implementation of planning instruments, inadequate productive practices, poverty conditions, conflicts involving armed groups, lack of information, awareness, and education on the subject, disregard for ancestral knowledge, governance and territorial governance issues, limited inclusion and effective participation of the collective vision in public policy, and the lack of long-term planning. For these and more reasons, there is a need to move towards the consolidation of development models that seek the collective well-being of the population, focusing on reducing vulnerability and risk (MoE & IIAP, 2015).

3.4.2 Climate Change Impacts (CCB, GL1.2)

Floods affected over 1,800,000 inhabitants of Chocó between 1935 and 2015, destroying over 5,000 homes and affecting more than 100,000. Additionally, they impacted nearly 9,000 hectares of crops or forests, making their effects on the collective well-being of the population predictable, represented primarily in housing, food security, and health (MoE & IIAP, 2015).

The 218 windstorms and landslides that mainly occurred in the regions of Atrato and San Juan have affected over 214,000 people, destroyed 1,575 homes, and ruined more than 2,200 hectares of forests or crops (MoE & IIAP, 2015).

The Choco department has some of the highest levels of biodiversity in the world and offers very unique ecosystems, fauna, and flora. Degradation and deforestation in this area has not only put these ecosystems at risk, but also the unique wildlife that rely on them. The COCOMACIA Project Area has a very wet climate especially in the more mountainous areas, but climate change is expected to change the annual precipitation. Flora, and fauna that depend on this constant wet climate will face ecosystem loss or significant ecosystem fragmentation with possible local extinction if they are unable to adapt.

3.4.2.1 Description of climate change impact on community well-being the project zone and surrounding regions

Vulnerability is high for local economies relying on limited resources, especially those dependent on ecosystem services like water and soil fertility, small-scale fishers, farmers. Vulnerabilities increase due to unequal value chains, incomplete technology transfers, and socioeconomic and environmental drivers. Informal housing in high-risk areas exacerbates vulnerability. Regions dependent on biodiversity, and water-dependent activities are particularly vulnerable (IPCC, 2022). Extreme precipitation events frequently damage infrastructure such as irrigation, water supply, health and education facilities, roads, bridges, and residential constructions. This affects sediment transport, river erosion, and annual discharge.

Agriculture and Communities

Crops most likely to be affected by the impacts below, include coffee, plantains, upland rice, maize, soybeans, common beans, fruit trees, palm oil, potatoes, cassava, sugarcane, citric fruit trees, and most of those are grown in COCOMACIA.

The effects of climate change are multiple and will impact crop phenology, affecting the timing for planting and harvesting, leading to mismatches in supply and demand, consequently affecting food availability and market price compromising crop productivity and soil health; with the warmer temperatures pests and diseases will thrive in new areas and their lifecycle will be shortened; small-scale producers will be more prone to face risks due to their limited capacity and resources, technology and market access to adapt to climate variability; crops will become unsuitable where they are being grown currently, which will impact food security and livelihoods' and rising sea levels will affect soil salinity and crop productivity (Ramirez-Villegas, Salazar, Jarvis, & Navarro-Racines, 2012).

3.4.2.2 Description of climate changes impact on biodiversity conservation status the project zone and surrounding regions

The Choco Biogeographic is a megadiverse hotspot, due to its unique features and the Andes Mountains that limit spatial connectivity. Due to these features, many flora and fauna species are either endemic to the region or have restricted ranges, which attributes to the high diversity of the region (Velasquez-Tibata, Salaman, & Graham, 2013). The flooding during the wet season, low overall annual precipitation, and extreme temperatures will have detrimental effects on the wildlife and ecosystem services. These factors could drive the reduction of water sources, forest productivity and diversity, and increase habitat loss for important forest and non-forest species. Because of the restricted ranges of many of these species, they are more at risk of extinction due to the habitat changes and loss of productivity (IPCC, 2022). Habitat loss and ecosystem dysfunction may force many species to have more restricted ranges or shift their potential ranges. For example, pollinators in the region will have a reduction in suitable habitats and their ranges will reduce significantly. The loss or restricted ranges of important pollinators may put the agricultural at risk in the region, specifically in communities, like COCOMACIA, that rely on forest resources and small-scale agriculture (Gonzalez, Cobos, Jaramillo, & Ospina, 2021). Threatened bird species will also be affected by loss of suitable habitat and deforestation. The shifts in these species' range sizes and structure will have dramatic effects that will most likely lead to loss of viability of these already threatened bird species, where most of these bird species will disappear altogether. Changes in community composition will also follow

and decrease total species richness dramatically. Though, the impacts of these changes aren't well known, it can be assumed that it will cause a chain reaction in the habitats as loss of prey species for many other animals will occur (Velasquez-Tibata, Salaman, & Graham, 2013). Mammal ranges will also be reduced and many important hunted species for communities may disappear. These climate changes will most likely cause complete ecosystem dysfunction, and many important species of this megadiverse region will disappear.

3.4.3 Measures Needed and Designed for Adaptation (CCB, GL1.3)

The Integral Plan for Climate Change in the Chocó Department (MoE & IIAP, 2015) establishes six programs for adaptation of the Chocó Department to climate change:

- **Program 1:** Environmental Education as the Foundation, Support, and Structure of a New Civic and Institutional Culture to Confront Climate Change in Chocó.
- **Program 2:** Data Production, Information, and Knowledge as the Foundation for Innovation and Decision-making to Confront Climate Change in Chocó.
- **Program 3:** Timely and Effective Management of Knowledge and Information as a Strategy for Informed Decision-making on Climate Change.
- **Program 4:** Institutional and Community Articulation and Strengthening as a Condition to Confront Climate Change in Chocó in a Collective Manner.
- **Program 5:** Environmental and Productive Territorial Planning to Return to a Development Model Based on Sustainability to Confront Climate Change in Chocó.
- **Program 6:** Reduction of Vulnerability and Enhancement of Adaptation Capacity, Comprehensive Community Care Mechanisms to Confront Climate Change.

The following table describes the measures necessary to help communities adapt to impacts of climate change. Biodiversity and Climate adaptation activities will be developed in the following monitoring period as carbon credits will allow the implementation of more activities in the program.

Table 54. Measures needed for adaptation to Impacts of Climate Change.

Component	Outcome	Strategy	Specific Activities	Alignment with Integral Plan for Climate Change in the Chocó Department
Community	Improved food security and productivity of food crops	Improved food security in face of climate change by increasing productivity of subsistence crops (i.e., corn, rice, cassava, plantain, lulo), distribution of improved varieties of seeds/bundles,	Identify key subsistence crops and implement efficient farming technology needed for intensification and diversification	Program 5
			Find local technical partners for agricultural development	Program 6
			Conduct training for efficient agricultural techniques and crop diversification	Program 1

Component	Outcome	Strategy	Specific Activities	Alignment with Integral Plan for Climate Change in the Chocó Department
		adopting sustainable practices and crop diversification, application of learnt sustainable methods from training and support from agricultural extensionists, leading to an increase of income.	Distribute seeds/seedlings and bundles of improved varieties	Program 6
			Facilitate training of trainers to provide extension support to farmers	Program 1
Climate & Biodiversity	Small-scale mining is formalized under COCOMACIA's control and sustainably implemented	Plan and develop restoration and recovery activities in the areas most impacted by mining	Select the areas after prior agreement with the community to not continue with the mining activity	Program 5
			Identify and measure the abandoned areas that have been affected by mining, the state of the territory, degree of affectation, determine with which species it will be repopulated and who will intervene in the activity	Program 5
			Provide training for communities, families involved, and leaders involved and committed	Program 1
	Additional Environmental and Livelihood Programs	Other environmental programs and livelihood programs	Design a solid and liquid waste management plan that adjusts to the conditions of the territory, which is sustainable in the time frame in judgment T622 of 2016.	Program 5

4 COMMUNITY

4.1 Without-Project Community Scenario

4.1.1 Descriptions of Communities at Project Start (CCB, CM1.1)

Communities across the Program area face persistent challenges related to poverty, limited infrastructure, and insufficient public investment. Many households lack reliable access to electricity, clean water, sanitation, or basic health services. Education is often limited to the primary level, with few options for secondary or technical training nearby. Most communities depend on small-scale farming, fishing, forest use, and informal trade. These livelihood activities are highly sensitive to environmental conditions and offer limited financial security.

The region continues to experience significant environmental degradation. Forests are cleared for unregulated mining, illegal logging, and small-scale agriculture, leading to water pollution, soil erosion, and biodiversity loss. These activities often result from the lack of alternative income sources and weak enforcement of land use regulations. Within communities, disparities are visible—women, young people, and lower-income households have fewer opportunities to access services or participate in decision-making.

In the absence of the Program, these trends are expected to continue. Deforestation and land degradation reduce food security, worsen access to clean water, and increase the vulnerability of local livelihoods. Without external investment, there is no pathway to improve land management, create sustainable income opportunities, or strengthen infrastructure. Communities remain economically dependent on extractive and high-risk practices.

Local governance institutions, particularly the Community Council of COCOMACIA—the principal local authority in the program area—continue to operate with limited capacity and support. Without structured land-use planning processes, adequate resources, or technical assistance, communities are unable to effectively manage their territories or respond to increasing climate risks. Ecosystems that provide essential services—such as water, wild food sources, and soil stability—continue to decline. This puts additional pressure on forests, rivers, and swamps and reduces the prospects for long-term environmental recovery and economic resilience. Additionally, the significant role filled by forests in supplying fundamental community needs such as timber and non-timber forest products for domestic uses (e.g., construction, medicines, fuel wood, food) and cultural identity will be further at risk.

4.1.1.1 Community Council Structure

The Higher Community Council of the Atrato Unitary Countryside Association (COCOMACIA) is an organization made up of 124 Local Community Councils (LCCs) which holds a single collective title for a territory consisting of 704,921 hectares located in the Colombian Pacific/Chocó region, also called “*El Chocó Biogeográfico*” (Ocampo-Díaz, 2022). The Chocó Biogeographic Region is one of the five major natural regions of Colombia and one of the most biodiverse areas on the planet. It includes the Colombian Pacific, humid forests, hydrographic basins, estuaries, mangroves, and coastlines. This region historically

has been known for its alluvial deposits of gold and platinum, as well as rich timber resources. It is also the Colombian territory with the largest number of Afro-descendant communities since colonial times (Oyola, 2017).

The collective territory titled to COCOMACIA is located in the tropical rainforests in the Middle Atrato river basin and encompasses the municipalities of Atrato, Quibdó, Medio Atrato, Bojayá and Carmen del Darién (in the department of Chocó), and the municipalities of Vigía del Fuerte, Murindó, and Urrao (in the department of Antioquia). Its main tributaries are the rivers Murindó, Napipí, Opogadó, Murrí, Bojayá, Buchadó, Gengadó, Salado, Guaguandó, Arquía, Tagachí, Bebará, Bebaramá, Ox, Beté, Amé, Puné, Paina, Munguidó, Neguá, Tanguí, Tanandó, and Cabí. The COCOMACIA territory is inhabited by 7,094 families comprising approximately 45,000 people (COCOMACIA, 2016). The COCOMACIA organization defends the right of these communities to the lands and to the use of the local natural resources; it advocates for the implementation of an ethno-development model based on the vision and culture of the local Black communities.

On August 27, 1993, President César Gaviria Trujillo signed Law 70, formally recognizing the territorial, cultural, and environmental rights of Afro-descendant communities living in the Pacific region; this law established that their territories are inalienable, unattachable, and imprescriptible. It also provided a preferential right for Afro-descendant communities in the use of local mining resources and outlined mechanisms to protect their cultural, territorial, and environmental rights, ensuring they can preserve their identity and way of life as a Black community in Colombia. This Law allowed Black communities to create Community Councils, which are legal structures that provide internal administration within Black communities, in accordance with legal and constitutional commandments (Moreno, 2022).

The Community Councils are made up of the General Assembly and the Community Council Board. The Community Councils, according to this law and Decree 1745 of 1995, have the following functions:

- 8) *Environmental: Guard and monitor the use and preservation of natural resources in accordance with environmental regulations and traditional production practices to ensure sustainable management of natural resources.*
- 9) *Civil: Carry out the delimitation and assignment of the Lands of the Black Communities in usufruct and areas of use for individual, family and community use.*
- 10) *Political: Through the General Assembly, elect the members of the board of the Community Council and the legal representative.*
- 11) *Legal: Reconcile when internal conflicts arise (Moreno, 2022).*

Table 55 shows the hierarchical authority structure of the COCOMACIA council.

Table 55. Hierarchy of authority within the COCOMACIA council

Level	Composition
1 degree	General Assembly
2nd grade	Disciplinary committee-surveillance and control entity
3rd grade	Senior board of directors - general administrator of the territory
4th grade	Legal representative – legal person representing the collective title
5th grade	Zonal committees and zone assemblies - instance of support and control
6th grade	Local community councils – local land managers

Table 56 shows the percentage of COCOMACIA's area by municipality.

Table 56. Area Percentage by Municipality of COCOMACIA. Source: (COCOMACIA, 2016)

Department	Municipality	Municipality Area (ha)	COCOMACIA area by municipality (ha)	Percentage of area of COCOMACIA
Chocó	Atrato	43,205	15,459	4%
	Bojayá	360,752	143,250	40%
	Carmen del Darien	317,612	2,643	1%
	Medio Atrato	181,395	142,260	74%
	Quibdó	350,168	246,656	70%
	Murindo	126,665	48,988	40%
	Urrao	256,130	11,016	4%
Antioquia	Vigía del Fuerte	165,802	124,615	71%

4.1.1.2 Well Being

Black communities have developed lifeways and cultural practices that are closely linked to the natural resources found within the COCOMACIA territory, with the Atrato river serving as the main means of communication between the communities of the Great Council and other population groups settled on its shores. Within the Atrato basin, the landscape consists of rivers, swamps, forests, wild animals, sacred sites, and areas where the local populations have settled and developed subsistence activities such as small-scale livestock and agricultural production of crops such as cassava, plantain, banana, rice, and achín. Forest use is very important for their culture as it is their source of wood for construction of houses and canoes, firewood, materials for hunting tools, plants for traditional medicine, and other uses. Women are more interested than men in issues related to local knowledge associated with the use of plants for medicine, which is why they are more empowered in this regard. Therefore, women are considered the main guardians of knowledge about the use of local biodiversity due to the roles they play within the territory (COCOMACIA, 2016).

Women are a pillar of the communities as they are responsible for the transfer of culture in all its manifestations, through the upbringing of children. They also participate in productive activities such as artisanal mining, collecting wood for firewood, and sowing of transitory crops such as yams, cassava, plantain, banana, sugar cane, and others. The festivities are an important part of the Black communities' cultural life and revolve around natural resources. In all nine zones, the Patron Saints are celebrated through different activities such as dances and gatherings. On the celebration days, they navigate the different rivers using rafts built with wood harvested from the forest and prepare food from hunted species such as the Guagua, armadillo, bears, and guatín, among others (COCOMACIA, 2016).

In terms of livelihood activities, two main areas are relevant: 1) the Atrato River where fishing and rice cultivation are the main activities and are essential to satisfy the communities' food needs; 2) the Atrato tributaries or micro-basins where activities such as agroforestry systems, hunting, domestic forest use, use of non-timber products, and mining take place. Therefore, the local economy revolves around products obtained from the exploitation of natural resources, logging, mining at different scales, and agricultural products. These products are commercialized in the main communities or transported and sold in Quibdó, the regional capital; some of these resources such as gold and wood are commercialized illegally because the majority of the sellers do not have permits for exploitation, especially at large scale (COCOMACIA, 2016).

Within the COCOMACIA territory, traditional production practices have been maintained based on ancestral knowledge, traditions and customs, but have evolved based on the adapted knowledge of the soils, climate,

and context of each of the areas. Among their traditional production systems, agriculture constitutes a fundamental activity, practiced by 90% of the population, and whose primary use is consumption. In general, the agricultural communities who settled on the river banks of the middle Atrato have an average area of 50 to 100 hectares, but farmers only work small extensions for family consumption, minimal surpluses which are sold in local markets, and seed production (COCOMACIA, 2016). Agroforestry systems are the most common practices as well as the establishment of polycultures of Musácea (plantain, popocho, bananas, guineo), rice, cassava, sugar cane, corn, achín, chinese potato, and fruits such as pineapple, mango, borjón, bacao, almirajón, guava, chontaduro, pepa, coconut, orange, and lemon. They also raise cows, pigs, chickens, pond fish, ducks, and turkeys on a small scale for consumption. The demographic growth in some communities is increasing the expansion of agricultural areas, which contributes to forest area decline and forest degradation (CODECHOCO, 2006).

In terms of access to basic services, according to an assessment conducted in 2000 by the Ministry of the Environment, from the 124 local community councils which are part of the COCOMACIA territory, only 7 LCCs (5%) have aqueducts, no sewage system, and some type of electric systems; while 33 LCCs (28%) have power plants (Ministry of the Environment, Codechocó, IIAP and COCOMACIA, 2000).

4.1.1.3 Community Characteristics

The Project Activity Instance is made up of 9 local zones, in which there are 124 distinct communities distributed in a territory of 704,921 hectares located between the departments of Chocó and Antioquia.

The inhabitants of these areas base their development on the natural wealth, although they lack many essential services, which place them, like the entire department of Chocó, in the highest levels of poverty in Colombia. These communities include in majority Afro-descendant populations, a few indigenous groups (from the Emberá community composed of the Chamí, Katío, Dodiba, and Siapidara peoples) including displaced people who were forced to leave their lands due to the armed conflict, and mixed-race populations who come in this area mainly to carry out mining and logging activities. Artisanal mining is practiced at small-scale by local people and large-scale mining (mechanized and mostly illegal) is led largely by big private companies from outside the territory who hire people from the territory to perform minor tasks as operators.

A description of the nine zones comprised in the Program Area is presented in Table 57¹⁶.

¹⁶ Sources COCOMACIA, Comisión Colombiana de Juristas, 2020 (<https://www.coljuristas.org/COCOMACIA/>), and (COCOMACIA, 2016).

Table 57. Description of the zones in the Program area including area, population size, main economic activities and communities

Zone-Location	Area (ha)	Population (inhabitants/families)	Main Economic Activities	Communities and rivers
1-Southeast	141,267	5,856 inhabitants/ 1,273 families	Agriculture (bananas, corn, cassava, yams and pineapple), fishing, logging, small scale mining of minerals such as gold and platinum, and tourism	Twenty-two community councils (of which 2 are in conditions of displacement). The Neguá River is divided into two arms: 1) the south arm, where the villages of San Antonio de Icho, Tutunendo, San Francisco de Icho, Mungirrí, La Equis, La Troje, Cubi (Guadalupe) and Pacurita are located; 2) the north arm in which the villages of Las Brisas, San Rafael de Neguá, San Joaquín, Boca de Nemotá, Boca de Naurita, Villa del Rosario and El Fuerte are located. In addition, in the Tanandó River located south of the headwaters of Quibdó are the communities of Santo Domingo (Boca de Tanandó), Real de Tanandó, Boca de Motoldó, San Martín de Purré, San José de Purré, La Lomita and Puerto Mosquera.
2-Southwestern	43,710	5,358 inhabitants/ 1,064 families	Agriculture (bananas pineapple, almirajó, lemon, chontaduro and borojó), fishing, forestry, aromatic planting, and hunting	14 communities: La Comunidad, Puerto Aluma, Altagracia, Bella luz, El Tambo, Campo Bonito, Calahorra, Winandó, La Divisa, San Pedro Claver (Mojaudó), Surco, Jitradó, Guarandó, Giatardó, Villa Nueva and Jaguó, distributed along the Munguidó River.
3-Central south	46,173	2,944 inhabitants/ 38 families	Agriculture (banana and rice crops), mining, fishing, and timber extraction activities	On the banks of Tanguí River are the villages of Tanguí, Campo Alegre and Angostura. The other community councils in this area are settled on the banks of the Atrato River: Calle Quibdó, Sanceno, Barranco, Loma de Belén, Purdú, Las Mercedes, Curiquidó, Paina and Baudó Grande, thus completing a total of 12 communities. The main swamp areas are La Sucia, Hondita, La Honda, Cabello de Indio, Palo Blanco, Las Lomas and La Grande
4-South central	75,674	3,743 inhabitants /1,047 families	Fishing, logging, and agricultural activities (mainly banana and rice) .	14 communities spread across the Buey and Beté rivers. The communities of La Manza, Chibugá, San José del Buey, La Vuelta, Curichí, San Antonio de Buey and Auro Buey are settled on the banks of the Buey River. On the Beté River, are the Beté, Medio Beté and San Roque communities. Other communities located in this zone on the Atrato are Baudocító, Puné, Boca de Amé, and Puerto Salazar. The best-known swamps are La Grande de Beté, La de Concha, Cumbí, Punecito, Tumaradó, Curaçao del Medio, Curaçao de Bajo and Curazadito, Las Mujeres, Matamba, the Round of Cauldron.

Zone-Location	Area (ha)	Population (inhabitants/families)	Main Economic Activities	Communities and rivers
5-Northwestern	73,642	3,831 inhabitants/752 families	Agriculture (rice, plantain, chontaduro, and corn), fishing, timber extraction and open-pit mining	13 local community councils. The communities of Campo Alegre, Llano de Bebaramá, La Platina, Tutumaco, and Playón are settled along the Bebaramá River, while in the Bebará River located a little further north of the Bebaramá River are the communities of San Francisco de Tauchigadó and Boca de Bebará plain, the Villa, La Peña, Pueblo Viejo and Tagachi. The best-known swamps are Agua Clara, La Grande, Quesada, La Honda, Los Cacaos, Remolino, Ramírez, Guamal, Quitasol, La Larga and Bebareño.
6-Northeastern	76,806	2,701 inhabitants, /621 families	Agriculture (plantains, rice, corn and fruit trees) logging, hunting, and fishing.	13 local community councils. Communities are settled in the Arquía and Tagachí river basins and include Palo Blanco, Puerto Medellín, Playita, Puerto Palacios, Vidrí, Boca de Luisa, Vegaez, Velén, Isleta and Punta de Ocaidó. A little higher above the Atrato River are located Santa María de Antioquia, San Antonio de Padua and El Tigre. Main swamps areas in this zone are Achuarra, Ogodó, Poza de la Redondita, Ñangaveni, Chicaravia, Despensa, la Despensita, Arrastradero, Ipurrú, Cabezal and Retirada.
7- Northeastern and northwestern	91,815	3,477 inhabitants, represented by 960	Agriculture (with products such as bananas and rice), fishing, and wood extraction activities.	13 communities are part of this zone. The basins of the Buchadó, Paracucundó and Salado rivers together with the Murrí River constitute zone 7 and are home to the communities of Buchadó, La Boba, Arenal, Veracruz, San Miguel, San Martín Porres and Puerto Conto. While on the banks of the Murrí River are the communities of Vuelta Cortada, La Playa, Pueblo Nuevo, La Loma de Murrí and Alfonso López. The Local Community Council of Pueblo Nuevo (La Lomita) has been displaced for more than 15 years. The best-known swamps are Guaguandó, Tebadá, Amaya, Bernal, Tebadá, Yarumal and Ranchería.
8-Northwestern	41,422	1,649 inhabitants, represented by 560 families	Agriculture (with products such as plantains, bananas, cassava, and corn), fishing, timber extraction and the breeding of minor species for commercialization.	6 local community councils. The communities of Sagrado Corazón de Jesús, Caimanero, Loma de Bojayá, Piedra Candela, Pogué and Cuía are distributed around the Bojayá River basin. The best-known swamps are Yarumal and Bojayá.

Zone-Location	Area (ha)	Population (inhabitants/families)	Main Economic Activities	Communities and rivers
9-Northern	131,637	2,972 inhabitants, /902 families	Agriculture (banana, corn, and fruit crops (borojó, chontaduro, avocado, soursop, bread tree)), fishing and forestry activities	18 local community councils. Along the Napipí River, are settled the communities of Napipí, Amburibidó, Carrillo and Briceño. The Opogadó River is home to the communities of Puerto Antioquia, Boca de Opogadó, Mesopotamiaca and Villanueva Guagualito, while north of COCOMACIA's territory, on the Atrato River are the communities of Isla de los Palacios, Pueblo Nuevo, San Alejandro, Isla de las Rojas, Bebarameño, Bella Luz and Tadíá. The local community councils of Pueblo Nuevo, Briseño and Amburidó have been displaced for more than 15 years. The best-known swamps are Los Plátillos, Arrastradero, Quesada, Tigre, Marmolejo, Redondita, Murielito, Muriel, El Muerto and Rojero.

4.1.2 Interactions between Communities and Community Groups (VCS, 3.19; CCB, CM1.1)

COCOMACIA is organized under community councils (LCCs), which were established under Law 70 of 1993 and governed by Decree 1745 of 1995. They function as the main internal authority within Afro-descendant territories. LCCs coordinate environmental protection, land assignment, internal conflict resolution, and political representation through general assemblies and board structures.

Community members participate through various organized groups that are active within these governance structures. These include youth groups, women’s groups, and working groups dedicated to activities such as environmental monitoring, sustainable farming, and other economic activities. These groups maintain communication and coordination with the local councils, especially through regular assemblies and planning meetings.

Other groups are organized around productive sectors such as forestry, and artisanal mining. They are open to collaboration with external actors—such as NGOs, technical teams, or government institutions—when the proposed activities align with the community’s territorial vision and internal priorities. Participation mechanisms such as meetings, surveys, and workshops are used to facilitate these interactions and ensure community input in program-related decisions.

4.1.3 High Conservation Values (CCB, CM1.2)

The HCVs areas below were found through PRAs done in all the 9 zones where the participants mentioned the importance of rivers, marshes and forest areas for their subsistence source of the local communities.

High Conservation Value	HCV 5 (Community Needs): Rivers
Qualifying Attribute	Riverbanks are used as living spaces, for settlements and other constructions, ports of transportation and trade by communities within the Program Area. Rivers are also a source of water to homes, farms, and industries (logging and mining); beaches and rivers are used for recreational purposes (e.g., cultural events, social events), and for income-generating activities such as agriculture, fishing, hunting; and also as administrative boundaries.
Focal Area	Program Activities related to anti-logging and conservation will help reduce deforestation, consequently mitigating soil erosion and sedimentation within water bodies, including rivers. Water quality should be monitored in connection with various factors such as agricultural activities (runoff) and mining activities (mercury release into water bodies).

High Conservation Value	HCV 5 (Community Needs): Herbaceous wetlands (<i>ciénegas</i>)
Qualifying Attribute	<p>Marshes are thriving ecosystems abundant in diverse fish species and other wildlife. They serve as vital sources of subsistence for local communities, acting as food storehouses and providing important resources for their economic livelihoods.</p> <p>Providing various food sources and specific local plant species for medicinal purposes. Offering ample shade, facilitating trade activities between communities, enhancing fishing experiences, and wild game hunting. The marshes also serve as recreational havens.</p>
Focal Area	Program Activities related to anti-logging and conservation will help reduce deforestation, consequently mitigating soil erosion and sedimentation within water bodies, including marshes. Water quality should be monitored in connection with various factors such as agricultural activities (runoff) and mining activities (mercury release into water bodies).

High Conservation Value	HCV 5(Community Needs): Forests areas
Qualifying Attribute	Communities have access to surrounding forest areas, which have high social and economical significance as community members use these areas for diverse purposes such as hunting, logging, NTFPs, firewood, timber for construction materials, plants for medicinal and religious purposes. The communities relies on the forests as a source of subsistence for their families, obtaining fruits and wood.
Focal Area	The Program will promote anti-logging, restoration, and conservation policies within the forest area. It will also conduct training and environmental education sessions targeting various groups including youth, conservation leaders per zone, community patrollers, mining-involved communities, and small farmers. These sessions promote the importance of conserving forest areas as well as the plant and animal species in them. The Program will establish nurseries and provide native seeds and will plant native species in degraded areas.

4.1.4 Without-Project Scenario: Community (CCB, CM1.3)

Information relevant to this section is included in subsection and section 4.1

4.2 Net Positive Community Impacts

4.2.1 Expected Community Impacts (CCB, CM2.1)

Outcome 1. Robust administrative and fiscal management of the REDD+ program led by COCOMACIA

Community Group	COCOMACIA Governance structures (Board, Community Councils) and REDD+ team
Impact(s)	The REDD+ Team will be hired and trained to provide financial and operational management of the Program Transparent and equitable benefit-sharing mechanisms will be established and maintained to guarantee equitable distribution among the participating community councils.
Type of Benefit/Cost/Risk	The impact is predicted, direct and benefit to these mentioned communities
Change in Well-being	Social Capital S5.3: Accountability of elected representation

Outcome 2. The Program area has clear boundaries and land tenure secured with internal management plans and use rights recognized and applied by local communities

Community Group	COCOMACIA Governance structure (Community Councils)
Impact(s)	The program will support the COCOMACIA Board and Community Councils (CC) for the territory to have clear and agreed boundaries. CC will develop management plans and validate the land use rights. Councils will also negotiate and resolve conflicts with neighboring communities.
Type of Benefit/Cost/Risk	The impact is predicted, and indirect
Change in Well-being	Natural Capital 1.1: Access to land, water, grazing.

Outcome 3. Strengthened governance, planning, and zoning capacity for the conservation of the Program Area

Community Group	Cocomacia governance structures (Board and Community Councils)
Impact(s)	Community structures will have strengthened governance capacity and facilitate land planning participatory exercises for communities to

	actively engage and enforce their recognized rights and zoning of productive activities. The Program will also support the Cocomacia's structures and government authorities to study and analyze the possibility of designating Protected Areas within the Program Area.
Type of Benefit/Cost/Risk	The impact is predicted, direct
Change in Well-being	Financial Capital F2.1: Income levels, variability over time, distribution within society Human Capital 4.2: educational level, skills

Outcome 4. Communities participating in the REDD+ program are committed to the conservation of forest areas.

Community Group	Community members
Impact(s)	The Program will build awareness on the importance of the conservation of the forest areas, through a structured communication strategy and training programs for youth. Additionally, community members will be participating in community-based patrolling activities reinforcing the conservation efforts locally. Patrolling becomes an employment opportunity for community members, diversifying their incomes. The Program will support restoration activities in identified degraded forest areas.
Type of Benefit/Cost/Risk	The impact is predicted, direct
Change in Well-being	Financial Capital F2.1: Income levels, variability over time, distribution within society Human Capital 4.2: educational level, skills

Outcome 5. Artisanal and traditional mining areas are operated in accordance with agreements, zoning, and protocols established by Local Community Councils.

Community Group	Community members (Miners)
Impact(s)	The Program will develop and implement a plan to regulate, restore, and manage traditional and artisanal mining. The Program will do this through the following activities:

	<ul style="list-style-type: none"> -Identify degraded areas due to mining activities and restore those by planting native species -Engage small and medium scale miners in restoration activities and income opportunities (agroforestry) to provide them with alternatives -Develop a land use plan to delimit mining areas in accordance with the regulations of the community councils and the POTA for Choco.
Type of Benefit/Cost/Risk	This is a predicted and direct benefit
Change in Well-being	Natural capital 1.4. Soil, water, rangeland, quality

Outcome 6. Reduction of the expansion of illicit crops in the program area

Community Group	Community members (Coca growers)
Impact(s)	Practices associated with illicit crop cultivation cause soil degradation, deforestation, and socio-environmental conflicts in the territory. The Program will identify areas affected by these crops, promote community agreements for their gradual substitution with sustainable production systems (such as agroforestry, cacao, and NTFPs), strengthen local capacities for alternative livelihoods, and support ecological restoration of the affected areas. These actions will contribute to reducing deforestation and improving community food security.
Type of Benefit/Cost/Risk	This is a predicted and direct benefit.
Change in Well-being	<p>Natural Capital 1.3: Productivity (per unit of land, per unit of water, per unit of inputs)</p> <p>Financial Capital F2.1: Income levels, variability over time, distribution within society</p> <p>Human Capital 4.2: Educational level and skills</p> <p>Natural capital 1.4. Soil, water, rangeland, quality</p>

Outcome 7. Diversified agricultural production (legal crops) to facilitate communities' access to food

Community Group	Community members (Farmers)
Impact(s)	The program will promote the adoption of sustainable agricultural practices and crop diversification. Increased productivity of subsistence crops will enable the commercialization of food surplus.

	Improved agricultural outcomes will also provide benefits in terms of climate resilience, and food security for COCOMACIA communities.
Type of Benefit/Cost/Risk	This is a predicted and direct benefit.
Change in Well-being	<p>Natural Capital 1.3: Productivity (per unit of land, per unit of water, per unit of inputs)</p> <p>Financial Capital F2.1: Income levels, variability over time, distribution within society</p> <p>Human Capital 4.2: Educational level and skills</p>

Outcome 8. Increased income of participants from Program communities (crops and NTFPs)

Community Group	Community members (Farmers and NTFPs producers)
Impact(s)	Community livelihoods will be strengthened through income diversification by establishing Non-Timber Forest Product (NTFP) enterprises such as beekeeping, minimal processing of fresh fruits, and medicinal plants, alongside the commercialization of subproducts from annatto and cacao. These activities will enhance local processing capacities, and open new market opportunities, generating stable income sources for COCOMACIA communities members.
Type of Benefit/Cost/Risk	This is a predicted and direct benefit.
Change in Well-being	<p>Natural Capital 1.3: Productivity (per unit of land, per unit of water, per unit of inputs)</p> <p>Financial Capital F2.1: Income levels, variability over time, distribution within society</p> <p>Human Capital 4.2: Educational level and skills</p>

4.2.2 Negative Community Impact Mitigation (VCS, 3.19; CCB, CM2.2)

The Program will not introduce new sources of pollution such as industrial waste, hazardous chemicals, or promote the use of synthetic pesticides and fertilizers. However, in accordance with the precautionary principle, safeguards are in place to identify and mitigate any indirect risks to community well-being through participatory risk assessments and continuous monitoring.

A core focus is ensuring the safety, participation, and equitable access of women and other marginalized groups. The Program integrates gender-sensitive approaches into its training and outreach activities,

collects disaggregated data to monitor inclusion, and actively promotes the participation of women-headed households and individuals with limited access to formal education and economic opportunities

To avoid negative impacts, the Program ensures that activities do not interfere with access to key community resources such as agricultural lands, water sources, forests, or culturally significant areas. Participatory Rural Appraisal (PRA) tools are used to confirm alignment with community priorities and to uphold customary land-use practices.

Community-based Forest monitoring is conducted by community members themselves. This reinforces collective responsibility, territorial control, and community ownership over natural resource conservation. These efforts also contribute to maintaining High Conservation Value (HCV) areas important for cultural identity, food security, and ecological balance.

4.2.3 Net Positive Community Well-Being (VCS, 3.19; CCB, CM2.3, GL1.4)

The Program’s impact on communities is expected to be positive. Well-being indicators demonstrate how community well-being is impacted positively through Program Activities, based on the results of that impact indicator. Table 58 was adopted from the Sustainable Rural Livelihood (SRL) Framework from *A Framework for Research on Sustainability Indicators for Agriculture and Rural Livelihoods* by Phil Woodhouse, David Howlett and Dan Rigby (2000), and used to demonstrate the significant benefits the Program will produce for the local communities. By determining how many communities or households gained access to productivity, employment, income diversification, food security, and educational levels the Program will register progress towards the positive trend in the well-being indicators being impacted by the Program ’s Activities.

Table 58. Well-being Indicators for the Program

	Well-being Indicators	Long-term and Short-term Program indicators (see COCOMACIA Long-term Implementation Plan)
Natural capital:	Access to land, water, grazing	<p><u>Outcome 2:</u> Program boundaries (coordinates) verified</p> <p><u>Intermediate Outcome 2.1:</u> COCOMACIA territory has clear boundaries and land tenure is secured with internal management plans and use rights recognized and enforced by local communities.</p> <p><u>Output 2.1.1:</u> The boundaries of COCOMACIA are verified and conflict resolution with the government and neighboring communities is facilitated.</p> <p><u>Outcome 3:</u> Improved management and governance plans for the protection and sustainability of the Program Area</p> <p><u>Intermediate Outcome 3.1:</u> Strengthened land use governance, planning and territorial</p> <p><u>Output 3.1.1:</u> Policies and institutional support for the REDD+ program with the COCOMACIA board established</p> <p><u>Outcome 6:</u> Greater diversity of agricultural production to strengthen access to food and improve community food security</p>
	Productivity (per unit of land, per unit of water, per unit of inputs)	<p><u>Intermediate Outcome 6.1:</u> Increased agricultural productivity through the adoption of crop diversification and sustainable practices</p> <p><u>Output 6.1.1:</u> Communities receive training in good agricultural practices and demonstration plots are established to promote the adoption of sustainable agricultural practices</p> <p><u>Outcome 7:</u> Increased community income through sustainable crop and NTFP production.</p>

Well-being Indicators	Long-term and Short-term Program indicators (see COCOMACIA Long-term Implementation Plan)
	<p><u>Intermediate outcome 7.1:</u> Strengthened and competitive local producers and NTFP value chains, with increased capacities in management, processing, and access to sustainable markets that generate stable incomes for communities</p> <p><u>Output 7.1.2.1:</u> Strengthen the technical, organizational, and commercial capacities of communities in best practices for the sustainable harvesting, post-harvesting, processing, and marketing of NTFPs and associated crops.</p> <p><u>Outcome 9:</u> Increased local capacity for data collection and on-going monitoring</p> <p><u>Intermediate outcome 9.1:</u> Establishment of a data collection and monitoring system for the program, with all participants trained and with sufficient capacity</p> <p><u>Output 9.1.1:</u> Build local capacity for continual data collection over time</p>

4.2.4 High Conservation Values Protected (CCB, CM2.4)

It is anticipated that there would be no negative impact expected by the Program to HCV attributes. The Program aims to secure access to cultural and social High Conservation Values (HCV), encompassing areas of cultural, social and ecological significance. The ecosystem services and resources provided by those ecological HCV will also be maintained through the conservation of those areas.

Furthermore, by focusing on forest conservation and restoration, both plant and animal species will experience positive effects. The resulting economic benefits will enable the communities to persist in the conservation of the forest area. Through this, the communities in the Program area anticipate a reinforcement and revitalization of their cultural identity.

4.3 Other Stakeholder Impacts

4.3.1 Impacts on Other Stakeholders (VCS, 3.18, 3.19; CCB, CM3.1)

CODECHOCO (Autonomous Corporation for the Choco Region) and CORPOURABA (Autonomous Corporation for the Uruba Region) are stakeholders that have influence in Program area thus influence Program implementation . The potential impacts on these Corporations are positive, as their goal aligns with the Program’s goal of promoting sustainable resource management and to improve community livelihoods.

4.3.2 Mitigation of Negative Impacts on Other Stakeholders (VCS, 3.18, 3.19; CCB, CM3.2)

There is no negative impact on CODECHOCO and CORPOURABA.

4.3.3 Net Impacts on Other Stakeholders (VCS, 3.18, 3.19; CCB, CM3.3)

There are no negative impacts on CODECHOCO and CORPOURABA. The positive impacts from the implementation of program activities is the achievement of CODECHOCO and CORPOURABA goals on implementing sustainable environmental practices and improving community livelihoods. Community Impact Monitoring

Social impacts of the Project will be monitored over the crediting period. A detailed social monitoring plan will be developed to quantify the social impacts and meet the requirements of the Climate, Community and Biodiversity Standard. Participatory community monitoring is essential to the Program. As part of the activities, the Program’s staff will engage in community monitoring. The community members will assist in field-based assessments.

4.4 Community Impact Monitoring

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

The Monitoring Plan aims to monitor changes in the well-being, participation, and resilience of local communities and community groups benefiting from the REDD+ program, assessing the social, economic, and gender impacts and the effectiveness of the activities implemented. The stakeholders, variables monitored and frequency are described on Table 59.

Table 59. Variables and frequencies to be monitored by the Program

Stakeholders to be monitored	Variables to monitor	Type of monitoring and monitoring frequency
<ul style="list-style-type: none"> 124 communities of the COCOMACIA major council Community Councils Community associations Community members (farmers, including women and youth) Non-timber forest products (NTFP) associations Local authorities 	<ul style="list-style-type: none"> Demographic and socioeconomic characteristics Sources of income and livelihoods Food security Community participation, employment opportunities, adoption of agricultural sustainable practices Gender equity Governance 	<ul style="list-style-type: none"> Household surveys conducted every verification Participatory Rural Assessments (PRAs) conducted every verification Technical and Financial reports prepared by the partner per quarter

The program will implement a monitoring system to assess the impacts of program activities and benefits on various community groups, while also focusing on women, and youth as main vulnerable groups.

These assessments will identify both direct benefits (increased income, access to training, participation in governance, improved well-being) and potential risks or impacts from changes in land use or productive community dynamics. To this end, different measurement instruments will be applied according to the type of stakeholder and their role in the Program, allowing the effects of the project to be compared in three groups, as described on Table 60.

Table 60 Indicator for Groups Analyzed on Monitoring Plan

Stakeholder Group	Indicator	Data Collection Method	Frequency	Responsible
Women	% women participating in program activities (trainings, workshops, implementing sustainable activities)	Attendance records	Annual	REDD+ Team

Stakeholder Group	Indicator	Data Collection Method	Frequency	Responsible
Youth	% young people involved in program activities, (trainings, workshops)	Attendance records	Annual	REDD+ Team
Small producers	Changes in net income Adoption of sustainable practices # of hectares planted under sustainable production systems	Socioeconomic surveys	Every verification	Contractor

The Monitoring Plan will be available at the Verra website (www.verra.org), where the description of each Outcome and how it will be measured through specific metrics is detailed. The Monitoring Plan will assess the following Indicators:

Impact - Outcomes	Indicator	Verification Source	Monitoring frequency
Robust administrative and fiscal management of the REDD+ program led by COCOMACIA	REDD+ Team is hired and trained, office space is leased, salaries are paid, Program governance is supported to manage the Program	Technical and financial reports	Quarterly
The Program area has clear boundaries and land tenure secured with internal management plans and use rights recognized and applied by local communities.	# COCOMACIA land management plans approved and adopted by local communities, # of reported and resolved conflicts over land use rights	Operational Database, Operational Performance Monitoring Report, Attendance lists	Quarterly
Strengthened governance, planning and zoning capacity for conservation of the Program Area	# of updated land management plans, # of COCOMACIA internal policies supporting the REDD+ program, # of meetings, # of incremental benefits (beyond REDD+), # of sustainable resources management plans updated for Protected Areas	Operational Performance Monitoring Reports (including database), Attendance lists	Quarterly
Communities participating in the REDD+ program are committed to the conservation of forest areas.	# of community members actively engaged in sustainable forest management, abundance of wildlife species (monitoring data), # of trainings, # of meetings, # of communities involved in the REDD+ program	Operational Performance Monitoring Reports (including database), Attendance lists	Quarterly
Artisanal and traditional mining areas are carried out in accordance with agreements, zoning and protocols established by the Local Community Councils.	# of restoration agreements signed, # of hectares planted, # of planted individuals, annual survival rate of planted individuals, # of participating miners, # of meetings, # of trainings, # of restoration activities, # of technical visits made	Operational Performance Monitoring Report (including database), Attendance lists	Quarterly

Impact - Outcomes	Indicator	Verification Source	Monitoring frequency
Diversified agricultural production to facilitate communities' access to food	# of people that have subsistence crop surpluses to sell, Average income or earnings generated from selling subsistence crop surpluses, # of skipped meals during the low harvest season per individual in target communities, # of trainings, # of inputs	Household Surveys, attendance list	Every verification
Increased income of participants from Program communities (crops and NTFPs)	% Households reporting income for each of the key cash crops (HHS) Average income and % change in household income generated for each of the key cash crops (HHS), # of trainings	Household Surveys, Operational Performance Monitoring Report,	Quarterly and every verification

The HCV areas that are forest will be monitored using SMART and biomass plots, while HCV areas that are marshes and rivers, will be monitored using SAR, to assess the water fluctuation. The impact of the activities in the HCV areas will also be assessed through Participatory Rural Appraisals (PRAs) to be conducted every verification.

4.4.2 Monitoring Plan Dissemination (CCB, CM4.3)

During the dissemination of the project description and first monitoring report, a translated summary of the community sections of the CCB Monitoring Plan will be shared with the communities within the Project Activity Instances. These meetings will be held with each of the 124 communities and will be facilitated by the REDD+ team. Stakeholders will be asked to comment on the Monitoring Plan along with the summaries of the results.

The following community meetings will be held to disseminate the PD and Monitoring Plan:

Participants	Purpose	Date
REDD+ Team, communities	Informational meetings, socialize PD summary and process for comments and feedback	Sep-25
Board of directors, community leaders, small-scale farmers	“Encuentros zonales”, to socialize PD summary and receive comments and feedback	June-October of every year
Board of directors, legal Representative, and local representatives of all communities	General Assembly to socialize results and communicate progress of the Program	December every year

Relevant feedback from the communities will be collected during the meetings and summarized into public comments which will be posted for the CCB public comment period. The Monitoring Plan will be made publicly available on the public website <https://registry.verra.org/app/projectDetail/VCS/2071>. All direct stakeholders will be asked to comment on the project description along with the summarized translated version in Spanish, and if needed to send comments to CCBStandards@vcs.org. During each Monitoring Period, the COCOMACIA Great Council will share the results and progress of the Program to stakeholders.

4.5 Optional Criterion: Exceptional Community Benefits

Gold Level Exceptional Community Benefits is applicable to this Program.

The COCOMACIA Program Activities will be led and executed in collaboration with community members on land they own or manage. The Program explicitly aims to benefit impoverished communities. It is designed to provide sustainable livelihoods to support the communities' well-being . This includes both short and long term benefits, along with natural resource management (improved land management rights, improved food security, improved livelihoods, and increased capacity to adapt to climate change) and empowerment (by facilitating community participation in decisions affecting local land-use and development and building social capital to participate more effectively).

To ensure the active involvement of smallholders and community members in decision-making, program implementation, and management, appropriate institutional and governance structures will be reinforced. This approach will also help in mitigating risks associated with aggregating community members on a larger scale. Moreover, the Program will ensure that the benefits are shared fairly, not only among the smallholders and community members in general but also among marginalized and vulnerable households and individuals within the communities in the Program area.

4.5.1 Exceptional Community Criteria (CCB, GL2.1)

Colombia is a country with a high human development index (0.78). In contrast the Program Zone is located in an administrative area with high poverty levels. Based on the household surveys conducted for this program, 48% of households within COCOMACIA live below the national poverty line (USD \$3.65/day in 2022, according to the World Bank Group (2023)).

4.5.2 Short-term and Long-term Community Benefits (CCB, GL2.2)

Information relevant to this section is also available in section 4.2.1 and section 4.2.3. The short-term and long-term well-being benefits of the Program to the community members are the Outputs and Outcomes mentioned on Table on Section 4.2.3. The Outputs are the short-term results from the many activities listed below each Output. The long-term positive well-being benefits are the results of the many Outputs and Intermediate Outcomes together which lead to each Outcome of the Program.

Table 61. Long-term and Short-term Program Indicators

	Well-being Indicators	Long-term and Short-term Program indicators (see COCOMACIA Long-term Implementation Plan)
Natural capital:	Access to land, water, grazing	<p><u>Outcome 2:</u> Program boundaries (coordinates) verified</p> <p><u>Intermediate Outcome 2.1:</u> COCOMACIA territory has clear boundaries and land tenure is secured with internal management plans and use rights recognized and enforced by local communities.</p> <p><u>Output 2.1.1:</u> The boundaries of COCOMACIA are verified and conflict resolution with the government and neighboring communities is facilitated.</p> <p><u>Outcome 3:</u> Improved management and governance plans for the protection and sustainability of the Program Area</p> <p><u>Intermediate Outcome 3.1:</u> Strengthened land use governance, planning and territorial</p>

	Well-being Indicators	Long-term and Short-term Program indicators (see COCOMACIA Long-term Implementation Plan)
		<p><u>Output 3.1.1:</u> Policies and institutional support for the REDD+ program with the COCOMACIA board established</p>
	<p>Productivity (per unit of land, per unit of water, per unit of inputs)</p>	<p><u>Outcome 6:</u> Greater diversity of agricultural production to strengthen access to food and improve community food security <u>Intermediate Outcome 6.1:</u> Increased agricultural productivity through the adoption of crop diversification and sustainable practices <u>Output 6.1.1:</u> Communities receive training in good agricultural practices and demonstration plots are established to promote the adoption of sustainable agricultural practices <u>Outcome 7:</u> Increased community income through sustainable crop and NTFP production. <u>Intermediate outcome 7.1:</u> A Strengthened and competitive local producers and NTFP value chains, with increased capacities in management, processing, and access to sustainable markets that generate stable incomes for communities <u>Output 7.1.1:</u> Expanded access to markets for sustainable community products, as well as identified and prioritized NTFP initiatives with the greatest market potential and sustainability in the territory. <u>Output 7.1.3:</u> Improved producer-managed processing</p>
	<p>Soil, water quality</p>	<p><u>Outcome 5:</u> Artisanal and traditional mining areas are slowing down their expansion and are implemented in accordance with agreements, zoning and protocols established with the Local Community Councils <u>Intermediate outcome 5.1:</u> The community territory has a system of planning, restoration, and management of traditional and artisanal mining that promotes the recovery of degraded areas and reduces the environmental impacts of mining activity <u>Output 5.1.1:</u> Restoration and recovery activities carried out in the areas most impacted by mining.</p>
	<p>Financial capital</p> <p>Income levels, variability over time, distribution within society</p>	<p><u>Outcome 4:</u> Communities involved in the REDD+ program and committed to conservation through local outreach and training <u>Intermediate Outcome 4.1:</u> Communities actively participating in the planning and implementation of forest conservation and sustainable use activities <u>Output 4.1.2:</u> Organized and strengthened communities implement restoration, monitoring, and sustainable management actions for the territory. <u>Outcome 7:</u> Increased community income through sustainable crop and NTFP production <u>Intermediate outcome 7.1:</u> Strengthened and competitive local producers and NTFP value chains, with increased capacities in management, processing, and access to sustainable markets that generate stable incomes for communities <u>Output 7.1.2:</u> Support and advise local productive initiatives at trade fairs and negotiations of commercial agreements with potential buyers.</p>
	<p>Human capital</p> <p>Educational level, skills</p>	<p><u>Outcome 4:</u> Communities involved in the REDD+ program and committed to conservation through local outreach and training <u>Intermediate Outcome 4.1:</u> Communities actively participating in the planning and implementation of forest conservation and sustainable use activities <u>Output 4.1.2:</u> Organized and strengthened communities implement restoration, monitoring, and sustainable management actions for the territory</p>

Well-being Indicators	Long-term and Short-term Program indicators (see COCOMACIA Long-term Implementation Plan)
	<p><u>Outcome 6:</u> Greater diversity of agricultural production to strengthen access to food and improve community food security</p> <p><u>Intermediate Outcome 6.1:</u> Increased agricultural productivity through the adoption of crop diversification and sustainable practices</p> <p><u>Output 6.1.1:</u> Communities receive training in good agricultural practices and demonstration plots are established to promote the adoption of sustainable agricultural practices.</p> <p><u>Outcome 7:</u> Increased community income through sustainable crop and NTFP production</p> <p><u>Intermediate outcome 7.1:</u> Strengthened and competitive local producers and NTFP value chains, with increased capacities in management, processing, and access to sustainable markets that generate stable incomes for communities</p> <p><u>Output 7.1.2.1:</u> Strengthen the technical, organizational, and commercial capacities of communities in best practices for the sustainable harvesting, post-harvesting, processing, and marketing of NTFPs and associated crops.</p> <p><u>Outcome 9:</u> Increased local capacity for data collection and on-going monitoring</p> <p><u>Intermediate outcome 9.1:</u> Establishment of a data collection and monitoring system for the program, with all participants trained and with sufficient capacity</p> <p><u>Output 9.1.1:</u> Build local capacity for continual data collection over time</p>

4.5.3 Community Participation Risks (CCB, GL2.3)

The primary goal of the Program is to ensure communities' well-being and improved rural livelihoods for community members within the COCOMACIA territory. To address potential risks associated with their participation, including trade-offs with food security, land loss, yield reduction, and short-term and long-term climate change adaptation, the following comprehensive approach will be adopted:

- 1) *Participatory Risk Assessment: The input and perspectives of the local communities directly affected by the Project will continue to be a driving force in decision-making processes, ensuring that their voices are heard, and their interests are prioritized throughout the Program's implementation. Through a participatory process, the COCOMACIA Council Board, the REDD+ team, Terra Global, and local partners will collaboratively identify potential risks and challenges, ensuring that community concerns are an integral part of Project design.*
- 2) *Avoidance of Trade-offs: The Project design prioritizes the avoidance of trade-offs with improvements expected in food security, access to and management of land, and agricultural productivity. The Project partners will work closely with local communities to select carbon implementation areas that will not interfere with their agricultural or livelihood activities. This approach will safeguard access to productive land and minimize disruptions to traditional practices.*
- 3) *Climate Change Adaptation: Recognizing the long-term impacts of climate change, adaptation measures will be incorporated into the Project. These include training and capacity-building for smallholders and community members in climate-resilient agricultural practices and income diversification.*

- 4) *Monitoring and Evaluation: The Monitoring Plan includes specific indicators related to risks for smallholders/community members. These indicators will be regularly tracked and reported on to ensure that the Project achieves its goals without compromising local communities' well-being. Identify, through a participatory process, risks for the smallholders/community members to participate in the project. Explain how the project is designed to avoid such trade-offs and the measures taken to manage the identified risks.*

4.5.4 Marginalized and/or Vulnerable Community Groups (CCB, GL2.4)

The COCOMACIA REDD+ Program has identified as marginalized and vulnerable groups Black communities within the COCOMACIA territory, and more specifically poorer households, women, and children. The identification was done through social surveys' analysis, participatory rural appraisals (PRAs) exercises, and literature review. Barriers and risks that may prevent benefits from going to the most marginalized and vulnerable community groups are managed by the disaggregated structure by which the COCOMACIA staff members manage access to resources from the Program.

Determining the impact to vulnerable and marginalized groups of the Project Activities was based on evaluating the household surveys for these groups compared to whole set of households sampled.

This data was based on three vulnerable and marginalized groups defined as follows:

- *Community members living under the poverty line*
- *Women head of households, who are single, widowed, and/or with children*
- *Head of households who reported with primary or no education.*

Community Group 1	Community members living under poverty line.
Net positive impacts	<p>Household income will increase from sustainable forestry, agriculture, and other income opportunities that will enable communities to participate in the formal economy. With an increase of income, more community members will be living above the poverty line.</p> <p>Training and acquisition of skills and knowledge on alternative income opportunities will contribute to the protection of natural resources by ensuring the long-term availability of natural capital. Training communities in NTFPs will reinforce their knowledge and skills equipping them with the skills to make informed decisions on natural resource utilization. The training sessions will also serve as a platform to build on social capital by encouraging collective action and shared responsibility for sustainable resource management.</p> <p>Increase income generation opportunities at the household level will also encourage the communities to stay committed to forest conservation.</p>
Benefit access	The possible barriers for this group is their attendance to trainings and workshops due to lack of time available, resources and education, but this will be mitigated through continuous monitoring of attendance list of those participating in project activities and

	<p>adoption of those activities through the HHS (Social Survey INGEOBOSQUES, 2022) and PRAs. The Program will ensure this group is represented in the trainings, workshops and overall activities, so they can improve their livelihoods. The Program will also ensure that this group received any agricultural inputs or equipment distributed during trainings and workshops.</p>
Negative impacts	<p>This vulnerable group represents 48% of the inhabitants of the COCOMACIA territory, they will be identified through household surveys. One possible negative impact would be in communities participating in illegal activities (illicit crops and illegal mining) to try to increase their income, but the different sources of income through NTFP and cash crops should mitigate the risks of illegal income.</p>
Community Group 2	<p>Women headed households, who are single, widowed, and/or with children. The forced recruitment of their children in armed groups and killing of their partners, have left them as heads of household responsible for providing for their families.</p> <p>Patriarchal and racist attitudes have had their consequences. Illegal mining has increased violence and sexual abuse against women, and prostitution. Despite the Peace Agreement, sexual violence remains a constant dynamic, with a variation in the armed actors, but with an equally disproportionate impact on women, The risk of violence for Afro-Colombian women in Colombia is high and deeply rooted in historical dynamics of racism, armed conflict, and social exclusion. The lack of institutional recognition and reparation perpetuates this situation. Indigenous women being 2.5 times more likely to be victims of violence. Partner violence is also increasing, UN Women stated that one in every three women in Colombia has been beaten by their current or former intimate partner. There is also an increased political and gender-based violence associated with the armed conflict against women who hold elected office and exercise political and social leadership.</p> <p>Rural Afro-Colombian women face various forms of discrimination and marginalization. They confront challenges due to their race, gender, and rural farming status. Their land rights are endangered, facing threats from both grassroots land occupations and government development plans. This struggle is further complicated by the intersection of gender and racial discrimination.</p>
Net positive impacts	<p>Women headed households will experience an expected increase in their annual income through their participation in the alternative livelihood Project Activities, from their employment as staff members of the REDD+ Project, from carbon revenues, etc.</p> <p>Training activities will also benefit women, and special attention has been given to ensure that women are actively present and involved in the meetings, including disaggregated data showing the number of women in attendance to trainings and meetings.</p>
Benefit access	<p>Widowed or single women who are heads of households are often overlooked for benefit access since there are not many resources available for them. The attendance in meetings and trainings, subsequent adoption of trainings, and participation of this group in the REDD+ team are potential barriers to benefit access.</p> <p>Thus, the Project has a Gender Action Plan, developed jointly with COCOMACIA, that will ensure the participation of women in the activities, and their adoption of the trainings.</p>

	And, the trainings will be during times that do not affect their other activities in the household, ensuring their participation in the Program activities.
Negative impacts	Single or widowed women head of household will be identified through disaggregated data from the household surveys, PRA, attendance of meetings and training, and REDD+ team composition. A potential negative impact is further ostracization of women head of household with some income by male community members, however to mitigate this risk, all the trainings and workshops will be open for everybody, thus male community members shall not feel excluded from those activities.

Community Group 3	Head of households who reported with primary/no education
Net positive impacts	<p>Head of households, including those with primary or no education, are expected to experience an increase in their annual income through their participation in the alternative livelihood Project Activities, as well as from their employment as staff members of the REDD+ Program, and from carbon revenues.</p> <p>The increase of sources of income should benefit this group and give more autonomy and security.</p>
Benefit access	The lack of education (or limited education) presents a barrier to access of income sources such as employment and alternative sources of income (NTFP). Therefore, the project will include this group in the project activities (trainings) and will not discriminate when hiring personnel for patrolling or other activities. The trainings will be tailored to the participants to ensure everybody can acquire knowledge and later adopt it in their daily activities.
Negative impacts	This group will be identified through disaggregated data from the household surveys, PRA, minutes of meetings and trainings, and REDD+ team composition. There is no negative impact on this group from the activities implemented.

4.5.5 Net Impacts on Women (CCB, GL2.5)

The inclusion of women in community governance structures and income-generating activities is a key objective of the community benefits that the Program expects to deliver. Women play a major role in agricultural activities, both as producers and consumers, especially in supplying high-value produce, yet women are disadvantaged in access to markets and agricultural technologies. Working towards social and local understanding of gender equity is expected to enhance the community, as increasing women's roles in governance results in improvements in land reform and long-term planning.

Training will be provided to all community members, including women, and special attention has been given to ensure that women are actively present and involved in the meetings, including disaggregated data showing the number of women in attendance to trainings and meetings.

Women in the Program have been involved in various steps of the design and implementation. There is a strong education base on gender equality and women's participation in decision-making meetings. Community Indicators that are particularly focused on women's empowerment are listed in Table 62, and was created jointly with the local gender group.

Table 62. REDD+ Program Gender Action Plan

Output	Activities	Gender Specific action	Gender Verifiable Indicator (From workplan)	Gender Verifiable Indicator (CCB Standardized)
Output 1.1.1: The REDD+ Program has trained personnel and established policies	Activity 1.1.1.3. Hire and train to the Program staff	Build capacity of the staff on how to incorporate a gender perspective in their work Gender policy and zero tolerance policy on sexual harassment, violence, abuse of employees and community members, and requirements for equal pay and nondiscrimination regarding women	Baseline: 0 Indicator: # COCOMACIA REDD+ Team members hired and trained (# women) Target: 100% REDD+ staff attended gender training activities.	Number of female community members who are expected to have improved skills and/or knowledge resulting from training as part of project activities
Output 1.1.2: Complete funder requirements and secure initial funding	Activity 1.1.2.4. Develop Community Participation Plan	Incorporate a gender perspective in the community engagement plan	Baseline: 0 Indicator: Community engagement plan agreed and signed Target: Community engagement plan has effectively incorporated a gender perspective	
	Activity 1.1.2.5. Develop and monitor the Complaints and Redress Mechanism	Implement a dialogue platform that provides a safe and trusted space which allows women and vulnerable population groups to share any complaints or concerns related to gender-based violence (GBV)	Baseline: 0 Indicator: # of complaints from individuals or communities recorded Target: # of complaints from women and/or vulnerable population groups who trust the platform and feel safe filling any complaints, especially related to GBV.	
Output 4.1.1: Increase awareness and outreach in the areas about conservation and the REDD+ program	Activity 4.1.1.7. Design a comprehensive restoration and logging control plan, with community participation.	Provide environmental workshops and training to youth and adults incorporating the gender perspective	Baseline: 0 Indicator: # outreach and training meetings, # participants (#women) Target: % of trained participants- women including youth and heads of households.	Number of female community members who are expected to have improved skills and/or knowledge resulting from training as part of project activities
			Baseline: 0 Indicator: # of environmental conservation sessions, # conservation clubs created, # of participants (# women, # youth and adults recorded with dates) Target: % of trained participants- women including youth and heads of households.	
Output 4.1.2: Organized and strengthened communities	Activity 4.1.2.1. Establish Community nurseries for	Implement strategies to promote equal opportunities and eradicate gender-based violence and support women	Baseline: 0 Indicator: # forest protection community patrols established (# women), # of patrols per	Number of women expected to be employed as a result of project activities,

Output	Activities	Gender Specific action	Gender Verifiable Indicator (From workplan)	Gender Verifiable Indicator (CCB Standardized)
implement restoration, monitoring, and sustainable management actions for the territory	the production of plant material of native species, as needed for the different ecosystem restoration activities.	organizations and communities Differentiated training and capacity building activities for men and women, to ensure the participation of women Promote the substantive participation of women and women organizations in the implementation of the community forest monitoring system. Promote gender parity in decision-making bodies	month, # findings from forest law enforcement reports conducted Target: % of staff-patrolling are women. Baseline: 0 Indicator: # training sessions organized for zone conservation leaders and community monitors, # participants (# women) Target: All staff responsible for the forest management system attended the gender training activities.	expressed as number of full-time employees Number of female community members who are expected to have improved skills and/or knowledge resulting from training as part of project activities
		Activity 4.1.2.2. Develop A training module on Reduced Impact Forest Management practices (directed logging, on-site sawing with a chainsaw, and safety regulations) to reduce waste and promote sustainable forest management practices.	Differentiated training and capacity building activities for men and women, according to the local context Involve women groups in implementing forest patrolling activities and development of gender sensitive guidelines for community forest patrolling Build capacity of the staff responsible for forest patrolling on how to incorporate a gender perspective in their work	Baseline: 0 Indicator: # of training sessions organized, # of participants patrolling (# of women) Target: % of the participants are female heads of household/ youth. The % in each case/defined category, will be established at the beginning of the project and taking account the base line updated.
Output 5.1.1: Restoration and recovery activities carried out in the areas most impacted by mining	Activity 5.1.1.3. Update the internal community regulation to align it with the objectives of reducing deforestation due to mining	Involve women and women groups in implementing restoration and recovery activities Activities differentiated to ensure the participation of women and female-headed households in the design of restoration and recovery activities Differentiated training and capacity building activities for men and women, according to the local context	Baseline: 0 Indicator: # ha restored from mining activities, # participants (# women) Target: % of the participants are female heads of household / youth. Baseline: 0 Indicator: # Training logs developed including # of training sessions per year, # of participants (# women) recorded Target: % of the participants are female heads of household/ youth.	Number of female community members who are expected to have improved skills and/or knowledge resulting from training as part of project activities
		Promote participation of women in workshops and foster their adoption of trainings	Baseline: 0 Indicator: # outreach and training meetings, # participants (#women)	Number of female community members who are expected to have improved skills

Output	Activities	Gender Specific action	Gender Verifiable Indicator (From workplan)	Gender Verifiable Indicator (CCB Standardized)
and mitigation of the impacts developed.	programs on the impact of illicit crops on communities, as well as good agricultural practices, processing and marketing of products.		Target: % of trained participants- women including youth and heads of households.	and/or knowledge resulting from training as part of project activities
	Activity 6.1.1.4: Carry out signing of substitution agreements with a gender perspective	Support participation of women in agreements and their involvement in agreements		
	Activity 6.1.1.5: Identify Volunteer families who want to be part of the replacement plan	Foster participation of family with women head of household	Baseline: 0 Indicator: # participants, (# family with women head of households) Target: % of participants-family head of households	
Output 7.1.1: Communities receive training in good agricultural practices and demonstration plots are established to promote the adoption of sustainable agricultural practices	Activity 7.1.1.3. Ease Training of farmer leaders who will provide technical assistance and rural extension to other farmers (training of trainers)	Promote the equal participation of women and men in the design and implementation of activities supporting sustainable agricultural production and crop diversification Support commercial strategies of women's production initiatives associated to sustainable agriculture and crop diversification	Baseline: 0 Indicator: # of diversified crops identified, # training sessions provided on soil fertility management and sustainable agriculture management, # participants (# women) Target: % of initiatives included as part of sustainable agriculture and crop diversification strategies are led by women.	
			Baseline: 0 Indicator: # women implemented agricultural practices, # training sessions held, # participants, (# women) Target: % of participants-women implemented sustainable agriculture and crop diversification	Number of female community members who are expected to have improved skills and/or knowledge resulting from training as part of project activities
Output 8.1.1: Expanded access to local, regional, and specialty markets for sustainable community products.	Activity 8.1.1.4: Support the creation, formalization and strengthening of high-impact community associations,	Promote creation of women-led cooperatives, community associations, or business.	Baseline: 0 Indicator: # women-led business, cooperatives or community associations Target: % of women-led business, cooperatives or community associations	Number of women expected to have improved livelihoods or income generated as a result of project activities

Output	Activities	Gender Specific action	Gender Verifiable Indicator (From workplan)	Gender Verifiable Indicator (CCB Standardized)
	cooperatives or businesses.			
Output 8.1.2: Greater added value to local products by improving post-harvest and processing processes	Activity 8.1.2.1: Train families in harvesting, post-harvest and storage techniques to reduce losses.	Promote participation of women in workshops and foster their adoption of trainings	Baseline: 0 Indicator: # training sessions held, # participants, (# women) Target: % of participants-women implementing storage, harvesting and post-harvest techniques	Number of female community members who are expected to have improved skills and/or knowledge resulting from training as part of project activities
	Activity 8.1.2.4: Strengthen Community initiatives for the transformation of products and raw materials (e.g. jams, flours, oils, artisanal products), in terms of organizational, legal, operational and commercial aspects.	Promote creation of women-led initiatives for the transformation of raw materials	Baseline: 0 Indicator: # women-led initiatives Target: % of women-led initiatives	Number of women expected to have improved livelihoods or income generated as a result of project activities
Output 9.1.2: Strengthened community capacities in good practices for managing, collecting, and transforming NTFPs.	Activity 9.1.2.1: Strengthen the capacities (equipment, training, post-harvest processes, logistical arrangements, etc.) of the identified community initiatives in the areas of organization, processing, transformation and marketing of NTFPs.	Promote the substantive participation of women and young people and women's organizations in the workshops for NTFP	Baseline: 0 Indicator: # training sessions held on data collection methods, # of participants (# women) Target: % of the participants-female	Number of female community members who are expected to have improved skills and/or knowledge resulting from training as part of project activities
Output 10.1.1: Develop local capacity for continuous data collection over time	Activity 10.1.1.3. Provide training tools for use with communities and zones	Promote equal distribution of training materials to women and men	Baseline: 0 Indicator: # training sessions held on data collection methods, # of participants (# women) Target: % of the participants-female	Number of female community members who are expected to have improved skills and/or knowledge resulting from training as part of project activities

Output	Activities	Gender Specific action	Gender Verifiable Indicator (From workplan)	Gender Verifiable Indicator (CCB Standardized)
			Baseline: 0 Indicator: # tools distributed, # training sessions organized, # participants (# women) Target: % of the participants-female	
	Activity 10.1.1.9. Select, train and prepare local community representatives for community monitoring	Assessments and participatory activities to identify women's roles and opportunities in the implementation of community monitoring systems Incorporate gender perspective in long-term community monitoring systems Promote the substantive participation of women and young people and women's organizations in the design and implementation of community monitoring systems	Baseline: 0 Indicator: # local community representatives (# women) selected and integrated to the monitoring program Target: % of the participants-female (heads of household/youth).	
Output 10.1.2: Conduct an inventory of forest biomass plots and analyze satellite images of carbon stocks	Activity 10.1.2.3: Conduct training on biomass inventory data collection	Promote substantive participation of women and young people and in the collection of data for verification and validation	Baseline: 0 Indicator: # people (# women) in trainings Target: % of the participants-female (heads of household/youth).	Number of female community members who are expected to have improved skills and/or knowledge resulting from training as part of project activities
Output 13.1.2: Implement Additional livelihood programs	Output 13.1.2: Implement Additional livelihood programs	Development of local assessments to identify women's priorities, needs and risks associated to the implementation of additional livelihood activities Develop methodologies for designing gender-sensitive livelihood programs that take into account the differential needs of men and women Develop strategies and incentive systems to encourage women to get involved in additional livelihood programs/productive activities Promote financial mechanisms and incentives for additional livelihood activities aimed at women	Baseline: 0 Indicator: # programs by zone, #participants (# women) Target: % of initiatives included as part of additional livelihood programs are led by women.	Number of women expected to have improved livelihoods or income generated as a result of project activities

Output	Activities	Gender Specific action	Gender Verifiable Indicator (From workplan)	Gender Verifiable Indicator (CCB Standardized)
		with an emphasis on women heads of household Ensure the substantive participation of women in the design and implementation of market strategies, product value chains, commercialization of new products to ensure equitable distribution of benefits		
	Activity 13.1.2.2. Provide training on productive activities such as breeding minor species (fish farming, poultry, pig farming, beekeeping)	Promote the equal participation of women and men in the training programs Assessment of financial needs of women for productive activities and development of new businesses Support commercial strategies of women involved on productive activities	Baseline: 0 Indicator: # of trainings held on productive activities such as breeding minor species (fish farming, poultry, pig farming, beekeeping)/ # of participants (# of women in attendance recorded) Target: % of the participants are female heads of household/ youth.	Number of women and girls for whom access to, or quality of, education is expected to improve as result of project activities, measured against the without-project scenario
	Activity 13.1.2.2. Provide ecotourism training (bird watching, gastronomy) and related activities (tourist lodges and tourist guides)	Assessment of financial needs of women interested in getting involved in the ecotourism sector and development of related businesses Design strategies for women's substantive participation in access to incentives and financial instruments to promote ecotourism development	Baseline: 0 Indicator: # of ecotourism trainings conducted /# of participants (# women in attendance recorded) Target: % of the participants are female heads of household/ youth.	Number of women and girls for whom access to, or quality of, education is expected to improve as result of project activities, measured against the without-project scenario
	Activity 13.1.2.4. Train communities interested in establishing a communication system (call center) that allows income generation and permanence in the territory	Assessment of financial needs of women interested in the establishment of a communication system	Baseline: 0 Indicator: # of trainings on communication systems for the community/ # participants (# of women in attendance recorded) Target: % of the participants are female heads of household/ youth.	Number of women and girls for whom access to, or quality of, education is expected to improve as result of project activities, measured against the without-project scenario

4.5.6 Benefit Sharing Mechanisms (CCB, GL2.6)

Benefit Sharing is described in Section 2.5.8.2.

4.5.7 Benefits, Costs, and Risks Communication (VCS, 3.18; CCB, GL2.7)

COCOMACIA has engaged communities in the Project Zone Instance from the beginning of the Program design. The Household survey and Participatory Rural Appraisal (PRA) asked community members about their interest and engagement. During the PRA, people were asked to map solutions to solve the issues they face. Community members were asked to share Program Activities, as well as identify risks for the activities. Showing that they understand the design of the Program and associated risks. Community engagement and communication about the Program's design is described in detail in Section 2.3.10. During the dissemination process, the summary of the PD was translated to Spanish and given to communities, which included a detailed description of benefits and risks.

4.5.8 Governance and Implementation Structures (CCB, GL2.8)

The governance structure of COCOMACIA is explained in section 2.4.1. The Board of Directors is elected every 3 years at the General Assembly. Each of the entities (NGOs, cooperation agencies, government entities, among others) that implements a project in COCOMACIA has defined from its structuring how many people can execute it or work on it, the requirements, or minimum qualifications are determined by the entity that will develop the project.

4.5.9 Smallholders/Community Members Capacity Development (CCB, GL2.9)

The Program will be implemented and monitored in coordination with a local team of professionals which are part of the participating communities. In order to do this, they will receive training and continued technical support to develop their operational and fiscal management capacities. Additionally, this team will identify local leaders in each of the community councils who will provide feedback on the design and lead implementation of activities in the ground.

5 BIODIVERSITY

5.1 Without-Project Biodiversity Scenario

5.1.1 Existing Conditions (VCS, 3.19; CCB, B1.1)

The Colombian biogeographic Chocó region is characterized by its high rainfall, being one of the rainiest places in the world, with annual values of up to 13,670 mm, an average annual temperature of 26 °C and a relative humidity of 80 % (Valois-Cuesta & Martinez-Ruiz, 2016).

The department of Chocó is considered an ecoregional complex, as it covers four regions of rich humid and tropical ecosystems. It is recognized worldwide for its high natural diversity and high degree of endemism. In addition, this territory is part of one of the 25 prioritized areas globally for biodiversity conservation, since its biota is threatened by activities such as mining, illegal logging timber, production of illicit crops, shifting agriculture as detailed in Section 2.2.1.3.

A variety of ecosystems ranging from dense forests, riparian forests, swamps, freshwater swamp forests, and cropland can be found throughout the nine zones of the Project Activity Instance. Further, it is a region isolated from the rest of the lowlands of South America due to the Andes Mountain range. This natural barrier generates a large number of endemism, in species of plants, butterflies and birds, and perhaps the greatest endemism in the world, approximately 25% of the species that live there are not found anywhere else on the planet. This makes it a particularly vulnerable region to the different threats that endanger its diversity (Sekercioglu, 2011). The following are species found in the Project Activity Instance including some endangered or threatened species and endemic species (Biodiversity Study Ingeobosque, 2022).



Image 3. Punta Ocaido Landscape

5.1.1.1 Birds

The Project Activity Instance is an important bird habitat due to various ecological factors. Geographic and climatic conditions ensure high primary productivity and create microclimates that support bird populations endemic to the Choco region. Plant biodiversity also ensures the availability of nesting sites for many bird species. Common species of interest of this region include:

- Tawny-Crested tanager (*Tachyphonus delatrii*),
- Collared aracari (*Pteroglossus torquatus*),
- Yellow-throated toucan (*Ramphastos ambiguus*) and
- Yed-capped manakin (*Ceratopipra mentalis*).

Threatened bird species include:

- Great curassow (*Crax rubra*) and
- Tacarcuna wood quail (*Odontophorus dialeucos*).

A baseline biodiversity survey for the Project Activity Instance, reported the presence of these species and others. The area also serves as an important stop-over point for Migratory bird species traveling between North and South America. Migratory bird species in the area include summer tanager (*Piranga rubra*), Northern waterthrush (*Seiurus noveboracensis*), and the olive-sided flycatcher (*Contopus cooperi*).

5.1.1.2 Mammals

One of the most threatened mammal species in this region is the brown-headed spider monkey (*Ateles fusciceps*). These monkeys are arboreal, and habitat loss due to deforestation for agricultural expansion, logging, and mining has led to a significant decline in their population. Illegal pet trade is also an essential contributor to their population decline, which was reported in the baseline biodiversity survey. The cotton-top tamarin (*Saguinus Oedipus*), one of the world's smallest primates, is another endangered species found in the region. Carnivore species of interest in the area include the jaguar (*Panthera onca*), an apex predator that plays a critical role in maintaining the region's ecological balance.

5.1.1.3 Reptiles

The Choco region hosts a variety of lizard, snake, and turtle species. The Chocoan river turtle (*Rhinemys rupifex*), butterfly-head coral snake (*Micrurus spurrelli*) and Rueda's anole lizard (*Anolis maculigula*) are some of the listed threatened endemic reptile species found in the Choco region.

5.1.1.4 Amphibians

Some endemic and threatened amphibian species in the area include the harlequin poison frog (*Oophaga histrionica*), Colombian glass frog (*Centrolene geckoidea*), and the golden poison frog (*Phyllobates terribilis*). Apart from habitat loss through agricultural expansion and deforestation, amphibians also face additional pressure from climate change through increased disease occurrence that cause changes in breeding.

5.1.1.5 Flora

The Program lies within the Chocó biogeographic region, one of the world’s wettest and most diverse rainforest areas and part of the Tumbes–Chocó–Magdalena biodiversity hotspot ((Myers, N. et al., 2000); (Rangel-Ch., J. O., 2015)). Vegetation includes very humid evergreen forests, palm and swamp forests, riverine levees, and mangrove systems that sustain exceptional tree diversity and high endemism ((Instituto Humboldt, 2018); (Forero, E., & Gentry, A. H., 1989))

Dominant formations are terra firme forests with Lauraceae, Fabaceae, and Moraceae; swamp and palm forests dominated by *Prioria copaifera* (catico), *Euterpe oleracea*, *Oenocarpus bataua*, and *Manicaria saccifera* ((CONABIO, 2018); (Sánchez-Páez, H., Álvarez-León, R., & Polanía, J., 2004)). The biomass inventory confirmed these assemblages, recording 160 tree species from 38 families, including *Trattinnickia aspera*, *Couratari guianensis*, *Protium amplum*, and *Brosimum utile*, typical of the Chocó-Darién flora (Correa, D. F., & Álvarez, E, 2018).

Of these, 35 species are listed on the IUCN Red List, including six threatened taxa (CR/EN/VU) and several Colombian endemics (MADS, 2017) such as *Cariniana pyriformis* (Endangered), *Huberodendron patinoi* (Critically Endangered), *Dussia lehmannii* (Endangered), and *Orphanodendron bernalii* (Endangered) ((García, N., et al., 2016); (IUCN, 2024)). Historic selective logging of *Prioria copaifera* and mangrove clearing for timber and charcoal have been major pressures in the region ((Etter, A. et al., 2006); (Instituto Humboldt, 2022)).

By reducing deforestation and maintaining riparian and mangrove buffers, the Program conserves floristic communities of global importance for endemism, carbon storage, and landscape connectivity between the Chocó lowlands and the western Andes (IPBES, 2019). Ongoing biodiversity monitoring will document species composition and trends of key indicator species to demonstrate measurable co-benefits.

Species and habitat	Demonstrate that the project will not adversely impact habitats for rare, threatened, or endangered species.
Choco Biogeographic and neotropical ecosystems	<p>Demonstrate that the project will not adversely impact any areas needed for habitat connectivity</p> <p>The Program is located within the Chocó Biogeographic region, one of the world’s most biodiverse and ecologically significant ecosystems. Characterized by tropical rainforests, abundant rainfall, and high levels of endemism, this neotropical ecosystem is increasingly under pressure from illegal logging, mining, agricultural expansion, forest conversion to pasture, and climate change. Program activities, including forest conservation, community patrolling, and alternative sustainable livelihood initiatives, are designed to alleviate these pressures to the biodiversity in the area. By reducing deforestation and forest degradation, the program will help maintain critical ecological corridors, ensure habitat connectivity, and secure ecosystem services that are essential for both biodiversity conservation and local communities. Importantly, the program will not adversely impact these areas; instead, it actively contributes to safeguarding the ecological integrity of the Chocó through participatory conservation and forest protection measures that mitigate key threats, prevent habitat fragmentation, and enhance ecosystem resilience (Biodiversity Study Ingeobosque, 2022).</p>
RTE Species	The Program area harbors several rare, threatened, and endangered species that are at risk from deforestation, hunting, illegal mining, and pet trade. Key RTE species

within the project boundaries include *Chauna chavaria*, *Crax rubra*, *Penelope ortonii*, *Psarocolius cassini*, *Rhinella acrolopha*, *Oophaga lehmani*, *Colostethus imbricolus*, *Oophaga andresi*, *Oophaga solanensis*, *Strabomantis bufoniformes*, *Ateles fusciceps*, and *Cebus capucinus*; and flora such as *Cariniana pyriformis*, *Huberodendron patinoi*, *Dussia lehmannii*, *Orphanodendron bernalii* and *Prioria copaifera*. The REDD+ project incorporates targeted conservation actions such as patrolling to reduce illegal activities (e.g., hunting, logging, and wildlife trafficking) and implementing sustainable livelihood programs that reduce dependence on forest exploitation. These measures will help improve gene flow, population health, and species survival, particularly for amphibians vulnerable to mining contamination and for mammals and birds under pressure from hunting and habitat loss. By maintaining natural forest cover and reducing human-wildlife conflict, the project ensures that no adverse impacts occur to these critical habitats; rather, it provides a protective framework that fosters recovery and resilience for these at-risk species.

5.1.2 High Conservation Values (CCB, B1.2)

High conservation value	HCV 1. Species diversity
Qualifying attribute	<p>The Project Activity Instance presents important species such as the yellow-billed curassow (<i>Crax rubra</i>), Baudó’s guan (<i>Penelope ortonii</i>), Baudó oriole (<i>Psarocolius Cassini</i>), marmoset (<i>Saguinus geoffroyi</i>), deer (<i>Mazama temama</i>), spider monkey (<i>Ateles fusciceps</i>) and poison dart frog (<i>Oophaga andresii</i>). The brown-headed spider monkey is an endangered specie that is a highly specialized arboreal primate that prefers high canopy. These species require large areas of continuous forests to survive. The other species mentioned are also largely dependent on continuous primary forests (HCV Biodiversity Report Ingeobosque, 2022).</p> <p>Six Rare RTE plant species were identified in the Project Activity Instance, including <i>Prioria copaifera</i> (EN), <i>Cariniana pyriformis</i>, <i>Dussia lehmannii</i>, <i>Orphanodendron bernalii</i> (EN), and <i>Huberodendron patinoi</i> (CR). These tree and mangrove species are listed under the IUCN Red List (2024) and the Colombian national list (MADS 1912/2017). Their protection through avoided deforestation and forest conservation actions contributes directly to the maintenance of Program’s area threatened flora and enhances regional biodiversity resilience.</p>
Focal area	Species will need continued protection in the protected areas and corridors between human landscapes to ensure safe corridors between fragmented forested habitats within the Project Activity Instance

High conservation value	HCV 3. Ecosystems and habitats: Choco Biogeographic and neotropical ecosystems
Qualifying attribute	The ecosystems present in the area represent a high value for the region because they provide habitat for a variety of species and, if not protected, their conservation status could be altered and with it their ecological functions.
Focal area	The forest constituting the HCV area will be preserved.

5.1.3 Without-project Scenario: Biodiversity (CCB, B1.3)

The Chocó territory is part of one of the 25 globally prioritized areas (biodiversity hotspots) for the conservation of biodiversity (Myers et al., 2010; Primack et al, 2004), because in addition to being a rich region in biodiversity and endemic species (Gentry, 1986; Aguilar-Garavito et al, 2015); its biota is threatened by activities such as mining (Andrade C., 2011). However, the Colombian state has not defined a policy for its conservation, management, and well-being for the wildlife species most affected by this activity. The policies in place for the environmental management of the national territory, are not enforced or complied with (Contraloría General de la Nación, 2020). Below are other threats to biodiversity that are common in the Choco region:

Illegal Logging: The Choco region has one of the highest rates of deforestation in Colombia. The main driver of deforestation in this region is illegal logging which is mainly carried out by armed and illegal groups.

Mining: Illegal gold, platinum, and other minerals mining operations often use heavy machinery, which destroys large areas of forest and damages the forest floor, inhibiting animal movement. It has also led to the loss of freshwater habitats through chemical contamination of the waterways and soil contamination. Amphibians are particularly susceptible to diseases because of chemical pollution from mining activities. Though mining is a main driver of biodiversity loss, activities addressing small-scale mining will be implemented in the future.

Shifting Agriculture: Common crops in the region include cocoa, banana, palm oil trees, as well as illegal coca plantations. These crops are often grown on previously forested areas which leads to further deforestation. Pesticide use also harms the health of wildlife.

Conversion of forest to pasture: This driver is very prevalent in the Choco region, and the loss of forest habitat reduces food availability and increases competition, limits daily movements, home range size, etc. Furthermore, conversion to pastureland can increase incidences of human wildlife conflict.

Hunting: Animals are hunted for their meat and for use in traditional medicine. Communities and poachers alike engage in this practice. Some of the most commonly hunted species include the birds *Penelope ortoni* (pava del Baudo common name in Spanish), *Crax rubra* (known as pavon), *Cuniculus paca* (known as guagua) and the mammals *Mazama temama* (known as venado), *Dasyprocta punctata* (guambe) and *Dasyprocta novemcinctus* (known as armadillo).

Climate change: Rising temperatures and changing weather patterns alter the distribution of plant species, making it difficult for animals to find food. Climate change can also lead to more frequent and severe natural disasters, which can destroy animal habitats.

Human-wildlife conflict: As the natural habitats of animal species become increasingly destroyed by fragmentation, the animals are more likely to encounter humans and, as a result, more likely to be hunted or killed.

Illegal pet trade: According to the United Nations Organization (UN), animal trade is the third most profitable illegal business on the planet, with profits that could reach 26,000 million dollars a year. It is second only to drug trafficking and human trafficking. The most common species that are threaten for this illegal activity

are: *Oophaga lehmani*, *Iguana iguana*, *Panthera onca*, *Potus flavus*, *Ateles fusciceps*, *Aotus zonalis*, *Cebus capucinus*, *Saguinus geoffroyi*, *Cuniculus paca*, *Didelphis marsupialis* and *Dasyprocta punctata*.

In the absence of the Program, these activities would continue to occur in the Project Activity Instance and result in the extirpation of several endangered species, most notably the species that are used in hunting and the illegal pet trade. Deforestation being on the main drivers of biodiversity loss would continue to occur in the without project scenario, and necessary natural corridors in the mosaic landscape of the Choco region would be destroyed, restricting the movement, ranges, dispersal, and food availability for many wildlife and flora species.

5.2 Net Positive Biodiversity Impacts

5.2.1 Expected Biodiversity Changes (VCS, 3.19; CCB, B2.1)

Per the eligibility requirements of the methodology, the Project Activity Instance was analyzed for the last 10 years of the Project start date to identify forest cover. Through this analysis, it was confirmed that the existing native ecosystem forest cover has been maintained for this period (2011- 2021).

The anticipated changes in biodiversity resulting from Program activities under the with-project scenario in the project zone and over the project lifetime are the following.

Outcome 4: Increased participation on community based forest conservation

Biodiversity element	Communities engaged with REDD+ Program conducting community-based patrolling
Estimated change	<p>Specific data for this indicator includes:</p> <ul style="list-style-type: none"> • # of community members actively engaged in sustainable forest management (Operational, Outcome 4) • species richness of wildlife species (Monitoring data, Outcome 4) <p>Specific data for the Intermediate Outcome 4.1, Communities supportive of the REDD+ project and activity engaged in project planning and implementation, includes:</p> <ul style="list-style-type: none"> • # communities involved in the REDD+ project's planning and implementation (Operational, Intermediate Outcome 4.1) • # outreach and training meetings, # participants (#women) (Operational, Output 4.1.1) • # of informative Zonal meetings held on the REDD+ project (Operational, Activity 4.1.1.4) • # of annual COCOMACIA Assembly meetings that all community councils and Terra participated (Operational, Activity 4.1.1.5) • # of meetings with other stakeholders (Operational, Activity 4.1.1.6) • # of educators, trained teachers, # of students, young and adult people (incl. women), trained in conservation, # of training sessions/workshops organized and topics discussed (Operational, Activity 4.1.1.7) <p>Specific data for the output Improved Forest protection through increased patrolling, anti-corruption, and enforcement efforts within the COCOMACIA territory (Output 4.1.2)</p> <ul style="list-style-type: none"> • # forest protection community patrols established (per month) (Operational, Output 4.1.2) • # ha of forest areas under community-based patrolling, (Operational, Output 4.1.2)

Justification of change	<ul style="list-style-type: none"> • # findings from forest law enforcement reports conducted (Operational, Output 4.1.2) • Project developed (Operational, Activity 4.1.2.2) • # Training and equipment provided to patrollers, # of people and # of women (Operational, Activity 4.1.2.2) <p>The patrolling events will increase through the Program's implementation, this should help reduce illegal activities such as mining, logging, and hunting. Conducting community-based patrolling activities will also increase conservation-based mindsets in the local community councils.</p>
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5.2.2 Mitigation Measures (VCS, 3.19; CCB, B2.3)

There are no expected negative impacts on biodiversity due to the implementation of the Program Activities. Through implemented activities, such as reducing areas used for mining, gazetted protected areas in the Project Activity Instance, and increased patrols that should deter illegal activities like logging, mining, and hunting, will result in a net positive impact on biodiversity. Furthermore, Program Activities that are planned to increase food security and productivity of food crops will also mitigate the need for forest resources, which reduces negative impacts on forest cover and protects wildlife.

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

In the absence of this Program, the forests of the Project Activity Instance would continue to experience high levels of deforestation and degradation, which would put extreme pressure on the biodiversity of the area through reduced or fragmented habitats, low food availability, increased competition, and higher risks of hunting and illegal trading. The wildlife and flora species most at risk of extinction would be at an even higher risk of extinction. The activities implemented through the Program that maintain the forest cover and promote conservation through community participation will ensure that impacts are positive as compared to the without program scenario.

5.2.4 High Conservation Values Protected (CCB, B2.4)

The COCOMACIA REDD+ Program is designed to achieve three main general objectives: mitigate climate change through the capture of greenhouse gases, improve the social conditions of local communities by providing alternative livelihoods and conserving the inherent biodiversity found in the forested landscapes of the Project Activity Instance. The Choco Darien Ecoregion is a Key Biodiversity Area (KBA) due to the presence of threatened and endangered species and the ecological niche they provide. The execution of monitoring and the prioritization of areas for this is essential to conserve biological diversity in the region and will provide future tools for the sustainable management of its resources.

The Program Zone also has high species diversity and several RTE species and species under the Red List by the IUCN. These species constitute the first category of the HCV and their presence in the baseline biodiversity assessment was confirmed Table 63. With the implementation of Program Activities, it will ensure the ongoing protection and maintenance of the populations of these threatened species.

Table 63. RTE species and Species threatened under IUCN Red List that have been observed in the Project Activity Instance.

Family	Scientific Name	IUCN Status	Observed in Project Activity Instance
Anhimidae	<i>Chauna Chavaria</i>	Near Threatened	Yes
Cracidae	<i>Crax rubra</i>	Vulnerable	Yes
Cracidae	<i>Penelope ortonii</i>	Endangered	Yes
Icteridae	<i>Psarocolius cassini</i>	Endangered	Yes
Bufonidae	<i>Rhinella acrolopha</i>	Endangered	Yes
Dendrobatidae	<i>Oophaga lehmani</i>	Critically endangered	Yes
Dendrobatidae	<i>Colostethus imbricolus</i>	Endangered	Yes
Dendrobatidae	<i>Oophaga andresi</i>	Endangered	Yes
Dendrobatidae	<i>Oophaga solanensis</i>	Vulnerable	Yes
Strabomantidae	<i>Strabomantis bufoniformes</i>	Endangered	Yes
Atelidae	<i>Ateles fusciceps</i>	Endangered	Yes
Cebidae	<i>Cebus capucinus</i>	Vulnerable	Yes
Malvacea	<i>Huberodendron patinoi</i>	Critically endangered	Yes
Lecythidaceae	<i>Cariniana pyriformis</i>	Endangered	Yes
Fabaceae	<i>Dussia lehmannii</i>	Endangered	Yes
Fabaceae	<i>Orphanodendron bernalii</i>	Endangered	Yes
Fabaceae	<i>Prioria copaifera</i>	Endangered	Yes

5.2.5 Species Used (VCS, 3.19; CCB, B2.5, B2.6)

Program Activities that are planned to be implemented include planting of agroforestry systems as a livelihood income opportunity including crops like: Hartón banana, Bromiche banana and bananilla, Filipita, platano popocho, yucas, Achín, yams, Chococito rice, bran rice, lemon, Borojó, Avocado, Zapote, Guava, star fruit, Achiote, Cacao, pineapple, and lulo. And reforestation activities to recover mining areas using native tree species.

Species to be used	Classification	Justification for use	Adverse effects and mitigation
Cacao (Theobroma cacao)	Native	Agroforestry System	<ul style="list-style-type: none"> • Cacao integrates well in agroforestry and supports biodiversity (Clough, Y., Faust, H., and Tschardtke, T., 2009). • No known adverse effects in the area. • Managed with sustainable practices.
Plátano Harton (<i>Musa paradisiaca</i>)	Non-native	Temporary shade and food crop	<ul style="list-style-type: none"> • Non-invasive and beneficial for shade and organic matter (Robinson, J.C. and Galán Saúco, 2010). • Managed to prevent monoculture.
Bromiche banana (<i>Musa spp.</i>)	Non-native	Food crop, traditional use	<ul style="list-style-type: none"> • <i>Musa spp.</i> is not invasive in Colombia and is a food source (INIBAP, 2003). • Risks of disease are managed through crop rotation and integrated pest management.
Bananilla (<i>Musa spp.</i>)	Non-native	Shade and fruit in agroforestry	<ul style="list-style-type: none"> • Cultivated across Colombia with no known invasive tendencies. • Monitor for pests like banana weevils; managed under IPM (Ortiz, R. et al., 2013).

Species to be used	Classification	Justification for use	Adverse effects and mitigation
Felipita (Musa spp.)	Non-native	Traditional food crop	<ul style="list-style-type: none"> No reported invasiveness. Managed cultivation avoids overuse and encourages mixed cropping.
Platana popocho (Musa spp.)	Non-native	Traditional subsistence crop	<ul style="list-style-type: none"> Provides dietary diversity. Risk of soil nutrient depletion mitigated through composting and mixed planting (FAO, 2017).
Yuca (Manihot esculenta)	Native	Staple root crop	<ul style="list-style-type: none"> Common in agroforestry; poses no known ecological threat. Soil degradation risk mitigated with intercropping and organic soil amendments (Howeler, R.H., 2002).
Achin (Colocasia esculenta)	Non-native	Root crop used for food security	<ul style="list-style-type: none"> Widely cultivated in tropical regions, low invasiveness (Liu, Y. et al., 2016). Managed cultivation and rotation mitigate water demand and pests.
Yam (Dioscorea spp.)	Native	High nutritional value root crop	<ul style="list-style-type: none"> Mixed species in agroforestry; no adverse impact noted (Coursey, 1976). Prevent monoculture through intercropping.
Chococito rice (Oryza sativa – local variety)	Non-native	Local food staple	<ul style="list-style-type: none"> Common upland rice variety used in traditional systems. Risk of soil nutrient depletion managed by fallow cycles and cover crops.
Bran rice (Oryza sativa)	Non-native	Staple grain crop	<ul style="list-style-type: none"> Similar profile to upland rice; no invasive behavior. Mitigated by avoiding intensive monoculture.
Lemon (Citrus limon)	Non-native	Fruit crop for consumption and sale	<ul style="list-style-type: none"> No known adverse impact in agroforestry systems (FAO, 2010). Monitored for citrus greening; managed through pruning and organic treatments.
Borojo (Borojoa patinoi)	Native	Indigenous fruit, used in food and medicine	<ul style="list-style-type: none"> Valuable for cultural heritage and biodiversity. No known adverse effects; planted within traditional agroecological methods.
Avocado (Persea americana)	Native	High-value fruit tree	<ul style="list-style-type: none"> Grown traditionally with low risk. Monitor for disease and manage water use to avoid runoff (Schaffer, B., Wolstenholme, B.N., and Whiley, A.W., 2013).
Zapote (Pouteria sapota)	Native	Fruit tree for household and local markets	<ul style="list-style-type: none"> No known ecological risks. Grown in polyculture systems to maintain biodiversity.
Guava (Psidium guajava)	Native	Nutrient-rich fruit, commonly cultivated	<ul style="list-style-type: none"> Not invasive in managed systems. Monitor for fruit fly pests; managed through sanitation and biocontrols (Aluja, M., et al., 2003).
Star fruit (Averrhoa carambola)	Non-native	Fruit crop	<ul style="list-style-type: none"> Low invasive risk when planted in managed plots. Risk of overgrowth managed with pruning and density control.

Species to be used	Classification	Justification for use	Adverse effects and mitigation
Achiote (Bixa orellana)	Native	Natural dye and cultural crop	<ul style="list-style-type: none"> • <i>Culturally significant with no known adverse impact.</i> • <i>Fits well in polyculture systems.</i>
Pineapple (Ananas comosus)	Non-native	Commercial fruit	<ul style="list-style-type: none"> • <i>Requires nutrient input; mitigated with composting and mulching to retain soil health (Bartholomew, D.P., et al., 2003).</i>
Lulo (Solanum quitoense)	Native	Traditional fruit crop	<ul style="list-style-type: none"> • <i>May be susceptible to pests; managed via sustainable pest control and organic inputs (Castaño, A. et al., 2005)</i>

5.2.6 Invasive Species (VCS, 3.19; CCB, B2.5)

The Program supports protection of native forests. Any replanting would be of native species that are not invasive. Further, no invasive species were identified during the baseline biodiversity assessment or was determined as a negative impact on the Project Activity Instance. Future monitoring periods will identify any potential invasive species introductions outside of Program Activities and create mitigation measures to combat harmful presence on biodiversity.

5.2.7 GMO Exclusion (CCB, B2.7)

No genetically modified organisms are included in this Program design and future implementation. No genetically modified trees will be planted.

5.2.8 Inputs Justification (VCS, 3.19; CCB, B2.8)

In the baseline scenario, current agricultural practices in the communities do involve the use of organic fertilizers, and sustainable agricultural practices are planned Project Activities that will help reduce the use of these chemicals. Planned Project Activities that involve planting of crops and NTFP's will be maintained through sustainable practices, and fertilizers and pesticides will be used minimally.

The following organic fertilizer will be used:

Name	Limed compost
Justification of Use	Organic fertilizer: Used to enrich soil with organic matter, improve nutrient availability, and buffer soil pH through the addition of lime (<i>encalado</i>). It enhances soil fertility and supports long-term productivity in agroforestry systems.
Adverse Effect	No known adverse effects when properly composted and applied at recommended rates. Risk of minor nutrient leaching if over-applied; this is mitigated by split applications and buffer strips around waterways (Smith, M. A., Brown, P., and Nguyen, T. H., 2014).

Name	Traditional Asrodema substrate (leaf litter, ash, soil)
Justification of Use	Organic fertilizer: Locally sourced organic substrate rich in micronutrients and beneficial soil microorganisms. Ash provides potassium and helps adjust pH; termite soil is aerated and nutrient-rich.
Adverse Effect	No significant adverse effects documented. Natural substrate components support soil biota. Potential pH shifts from ash content are managed by pre-mix testing and only using within safe pH ranges (Jones, R., and Acosta, L. , 2016).

Name	Agroferro organic fertilizer
Justification of Use	Organic fertilizer: Commercially available organic fertilizer formulated to supply essential nutrients (NPK and micronutrients) derived from natural sources. Supports plant growth in nutrient-depleted soils.
Adverse Effect	No known adverse effects; high organic matter improves soil structure. Overuse could temporarily immobilize nitrogen; prevented by following manufacturer’s dosing and timing guidelines (López-Ridaura, S., et al., 2021).

Name	Liquid humus
Justification of Use	Organic soil amendment used to improve soil fertility, stimulate microbial activity, and enhance nutrient uptake in agroforestry systems.
Adverse Effect	No known adverse effects when applied in recommended doses. Over-application may cause temporary nutrient imbalance; mitigated through proper dilution and dosing schedules (Canellas, L. P., and Olivares, F. L., 2014). Regular monitoring of soil pH and organic matter levels ensures balanced application.

Name	Biopreparations (homemade preparations based on beneficial microorganisms, plant extracts, ashes, manure, etc.)
Justification of Use	Used as organic inputs to strengthen plants, naturally control pests and diseases, and enrich the soil. They are based on traditional knowledge and agroecology.
Adverse Effect	No significant adverse effects are known when applied correctly. Minimal risk of microbial imbalance if overapplied or used without complete fermentation; mitigated through training and agroecological practices (Altieri, M. A., and Nicholls, C. I. , 2008).

Name	Organic Matter and Compost
Justification of Use	Applied to improve soil fertility, increase organic carbon content, enhance microbial activity, and support plant health in agroforestry systems. Compost is produced using locally available biomass (e.g., crop residues, manure, ash).

Adverse Effect	No known adverse effects when properly composted and applied in appropriate amounts. Risk of nutrient leaching or temporary nitrogen immobilization if over-applied; mitigated by compost maturation, soil testing, and responsible application (López-Ridaura, S., et al., 2021)
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5.2.9 Waste Products (VCS, 3.19; CCB, B2.9)

The program will develop a Solid and Liquid Waste Management Plan aligned with the principles of Judgment T-622 of 2016, ensuring the sustainable management of the Atrato River Basin. This plan will define procedures for identifying, classifying, and managing waste products generated by program activities, including solid and liquid waste. It will promote reduction, reuse, and safe disposal practices adapted to local conditions, in coordination with local authorities and in compliance with national environmental regulations. Training will be provided to participants to ensure proper implementation and long-term sustainability of the plan.

5.3 Offsite Biodiversity Impacts

5.3.1 Negative Offsite Biodiversity Impacts (CCB, B3.1) and Mitigation Measures (CCB, B3.2)

Negative offsite impact	Mitigation measure(s)
Leakage outside of the Project Activity Instances related to hunting of species in forest areas.	The implementation of activities such as community patrolling efforts and activities that reduce the reliance of the communities on forest and wildlife resources will work to mitigate any unexpected negative biodiversity impacts. In the future monitoring periods, biodiversity assessments will also evaluate potential negative impacts and adapt with different mitigation measures.

5.3.2 Net Offsite Biodiversity Benefits (VCS, 3.19; CCB, B3.3)

Although the Program does not foresee negative impacts on biodiversity outside of the project zone, there may be some unmitigated impacts that we have not predicted. Nevertheless, the positive impacts of our Program Activities like the community forest patrolling, that will reduce illegal activities like logging, poaching, illegal wildlife trade, etc. in the project zone, and activities that uplift communities and reduce their necessity for forest resources will bring about positive change for biodiversity. These positive impacts will be higher than any negative impacts that might occur outside of the program zone.

Table 64 describes the potential negative impacts outside of the program zone that may not be mitigated and is compared to the Program’s overall positive biodiversity benefits in the project zone. The Program will provide net positive biodiversity benefits over the Program lifetime, as positive benefits within the project zone will outweigh or negate the potential offsite negative impacts.

Table 64. Net Offsite Biodiversity Benefits

Unmitigated negative impacts on biodiversity outside the project zone	Program’s potential biodiversity benefits within the project zone
Logging – fragmentation and habitat loss	The people will benefit from the Project by having economic incomes and can reduce their field activities that have a direct impact on natural resources.
Poaching	The main benefit between communities is the change of mind young people about their vision of the rainforest and the biodiversity and new labor opportunities in life.
Wildlife Trade	People will be more responsible for natural resources and biodiversity. The main change will be to recognize that biodiversity has a social cost.
Land-use change by livestock and agriculture	People will not do contribute to land-use change in the forestry extension because they will recognize the environmental value of the forest. Agricultural and livestock activities will continue to happen in areas assigned for this purpose/land use.
Introduction of exotics species and diseases	People will be more responsible for natural resources and biodiversity.

5.4 Biodiversity Impact Monitoring

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

Over time the Project will monitor impacts to ensure positive net impacts on biodiversity in the Project Activity Instance. Biodiversity surveys of the five locations in the department of Chocó will be conducted every verification period and these results will be reported following each of these monitoring periods. The sampling methods of the biodiversity surveys include line transects, point counts, point counts in areas of HCV, and the use of camera traps for each taxonomic group of wildlife. An initial biodiversity survey was conducted to assess the baseline conditions for the Project Activity Instance and found the presence of several species that are classified as Near Threatened, Vulnerable or Endangered by the IUCN. For instance, the main goal of the Biodiversity Assessment Project was to gather data on the presence of wildlife species (birds, mammals, reptiles, and amphibians), especially of IUCN important ones, mainly with the use of camera traps and wildlife surveys as well. These biodiversity assessments each verification period will help establish the impacts of Project Activities on biodiversity within the Project Activity Instance (as the entire Project Activity Instance is considered an area of HCV).

5.4.2 Biodiversity Monitoring Plan Dissemination (CCB, B4.3)

Biodiversity monitoring is described in the Monitoring Plan, which follows adaptive management. The Monitoring Plan is created in parallel with this PD and will be disseminated with the PD, in both languages, English and Spanish.

This monitoring plan will be socialized with the communities with the draft VCS/CCB Project Document. Community members will be asked to comment on the monitoring plan, along with the summarized PD. A

public comment period of 30 days will be open on the CCB website. In addition, the Monitoring Plan will be made publicly available on the internet.

In the future monitoring data and implementation activities will be in the combined VCS/CCB Monitoring Report. This document will be made available to stakeholders and communities following the dissemination process listed in Section 0. The report will be freely available on the public website <https://registry.verra.org/app/projectDetail/VCS/2071>

5.5 Optional Criterion: Exceptional Biodiversity Benefits

Gold Level exceptional biodiversity benefits is applicable to this Program.

5.5.1 High Biodiversity Conservation Priority Status (CCB, GL3.1)

A biodiversity study conducted by a local subcontractor, Ingeobosque, was conducted to establish the baseline for the Project (2022). It found the presence of *Ateles fusciceps* as captured via observation during transects or point counts in the Project Activity Instance between the monitoring period of 2022 from July 8 and 31 and September 29 and October 24, 2022. *Ateles fusciceps* is an endangered species on the IUCN Red List, presence of the IUCN Endangered *Penelope orton* (EN) and *Psarocolius cassini* (VU) were also reported using point counts during the monitoring period. This area is also known for the high biodiversity and endemism of amphibian species, where two endangered species were identified in the biodiversity baseline, *Oophaga lehmanni*, *Oophaga andresi*, and *Oophaga solanensis* (VU). Although the Project Activity Instance is not globally recognized as a Key Biodiversity Area, KBA, it does meet some of the requirements of KBA and thus meets the criterion for high biodiversity conservation priority status because of its capacity to protect habitat for endangered species that were observed during the baseline monitoring period. Further, the Project Activity Instance is located in a very important biodiversity hotspot that acts as a biological corridor for many wildlife species.

5.5.2 Trigger Species Population Trends (CCB, GL3.2, GL3.3)

Activities that are expected to reduce the threats to the trigger species include the community forest patrolling that will grow to inhibit discriminant hunting, poaching, habitat loss from tree felling, and illegal wildlife trade. The Program will help limit the net rate of land use change for prioritized natural ecosystems/areas. Based on habitat requirements of these species, a complete loss of these populations is expected in the baseline scenario since there is almost no overlap between the species of animals associated with mature forest habitats and agricultural plantations. Conserving and protecting the forest should maintain these trigger species populations and ensure the protection of their habitat.

Indicators of population trends for each trigger species are considered a combination of habitat availability and presence as indicated by detections during surveys. Maintenance of these species is considered achieved when the habitat is protected, and the species is still detected within the site. The following species are trigger species as a means to monitor the maintenance and protection of the high biodiversity conservation priority area. Next is the description of each species.

Trigger species	Baudo guan (<i>Penelope ortoni</i>)
Population trend at start of project	This species has a decreasing population trend in the Project Activity Instance.
Without-project scenario	Buado guan has a decreasing population trend in the Project Activity Instance. Without Project Activities, this endangered species would likely be threatened with extinction as the main threats to their population are habitat loss and fragmentation due to use change (i.e., urbanization, agriculture, mining, increased infrastructure) and hunting, trapping, and logging. The species is very sensitive to changes in habitat and hunting (Jahn, 2001) and without proper protection of its habitats, they will be under extreme pressure
With-project scenario	Project Activities that include protecting areas of HCV, which includes their habitat and stopping the conversion of forested land for agriculture and developmental purposes will create a buffer for these species to successfully reproduce and live. Other activities that will help to improve biological conditions of these habitats will also ensure this species survival. Patrolling of the Project Activity Instance will also reduce the pressures of hunting and increasing conservation mindset in the surrounding communities, including educational awareness programs in schools, etc.

Trigger species	Great Curassow (<i>Crax rubra</i>)
Population trend at start of project	This species has a decreasing population trend in the Project Activity Instance.
Without-project scenario	The main threats to these species are agriculture, infrastructure development (e.g., roads and railroads), hunting and trapping, and logging. Climate change and invasive diseases also put these species at risk. This species is also captured in the wild for exotic wildlife pet trade and is used as a source of food for some communities. These pressures without Project Activities would continue.
With-project scenario	Project Activities that include protecting areas of HCV, which includes their habitat and stopping the conversion of forested land for agriculture and developmental purposes will create a buffer for these species to successfully reproduce and live. Other activities that will help to improve biological conditions of these habitats will also ensure this species survival. Patrolling of

	the Project Activity Instance will also reduce the pressures of hunting and increasing conservation mindset in the surrounding communities, including educational awareness programs in schools, etc.
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Trigger species	Baudó Oropendola (<i>Psarocolius Cassini</i>),
Population trend at start of project	The Baudó Oropendola has a decreasing population in the Project Activity Instance.
Without-project scenario	The Baudó Oropendola is endemic to the Choco region of Colombia and has a highly restricted range. According to the IUCN red list, little is known about the species, but their populations are declining mainly due to habitat degradation within its small range. The loss of riparian forests, their main habitat, due to agricultural conversion, road construction, and other development puts this species at a high risk of extinction. Without Project Activities that help protect their habitats, it is expected they will most likely go extinct due to their high endemism and restricted range.
With-project scenario	Project Activities that include protecting areas of HCV, which includes their habitat and stopping the conversion of forested land for agriculture and developmental purposes will create a buffer for these species to successfully reproduce and live. Other activities that will help to improve biological conditions of these habitats will also ensure this species survival. Patrolling of the Project Activity Instance will also reduce the pressures of hunting and increasing conservation mindset in the surrounding communities, including educational awareness programs in schools, etc.

Trigger species	Brown-headed spider monkey (<i>Ateles fusciceps</i>)
Population trend at start of project	The brown-headed spider monkey is an endangered species that has a decreasing population in the Project Activity Instance.
Without-project scenario	The main threats to these species are infrastructure development (e.g., roads and railroads), hunting and trapping, and logging. Climate change and invasive diseases also put these species at risk. This species is also captured in the wild for exotic wildlife pet trade and subsistence hunting (IUCN, 2023). This species is very rare, and the population level is very low in the Choco region

	largely due to unregulated hunting of the species. Without Project activities their forested habitat will be reduced by 20% and a population reduction of at least 50% over the next generations (IUCN, 2023).
With-project scenario	Project activities that include protecting areas of HCV, which includes their habitat and stopping the conversion of forested land for agriculture and developmental purposes will create a buffer for these species to successfully reproduce and live. Other activities that will help to improve biological conditions of these habitats will also ensure this species survival. Patrolling of the Project Activity Instance will also reduce the pressures of hunting and trapping by increasing conservation mindset in the surrounding communities, including educational awareness programs in schools, etc.

Trigger species	Cocorro (<i>Oophaga andresi</i>)
Population trend at start of project	This endangered species has a declining population in the Project Activity Instance.
Without-project scenario	The main drivers of the population decline of this species are illegal wildlife trafficking for the pet trade and the rapid destruction of its forest habitat for land conversion. Another threat to this species is chytridiomycosis, a mortal fungal disease. Without Project Activities that regulate the use of these species in the pet trade, the destruction of habitat, and the spread of invasive diseases could lead to the extirpation or extinction of these species (IUCN, 2023).
With-project scenario	Project Activities that include protecting areas of HCV, which includes their habitat and stopping the conversion of forested land for agriculture and developmental purposes will create a buffer for these species to successfully reproduce and live. Other activities that will help to improve biological conditions of these habitats will also ensure this species survival. Patrolling of the Project Activity Instance will also reduce the pressures of hunting and trapping by increasing conservation mindset in the surrounding communities, including educational awareness programs in schools, etc.

Trigger species	Koe-Koe (<i>Oophaga solanensis</i>)
Population trend at start of project	This vulnerable species has a declining population in the Project Activity Instance.
Without-project scenario	The main drivers of the population decline of this species are illegal wildlife trafficking for the pet trade and the rapid destruction of its forest habitat for land conversion. Another threat to the use of herbicides and pesticides in agricultural practices, leads to a disease that kills this species. Without Project Activities that regulate the use of these species in the pet trade, the destruction of habitat, and decreased health of the ecosystem could lead to the extirpation or extinction of these species (IUCN, 2023)
With-project scenario	Project Activities that include protecting areas of HCV, which includes their habitat and stopping the conversion of forested land for agriculture and developmental purposes will create a buffer for these species to successfully reproduce and live. Other activities that will help to improve biological conditions of these habitats will also ensure this species survival. Patrolling of the Project Activity Instance will also reduce the pressures of hunting and trapping by increasing conservation mindset in the surrounding communities, including educational awareness programs in schools, etc.

Trigger species	Lehmann's poison dart frog (<i>Oophaga lehmanni</i>)
Population trend at start of project	This critically endangered species has a declining population in the Project Activity Instance.
Without-project scenario	The main drivers of the population decline of this species are illegal wildlife trafficking for the pet trade and the rapid destruction of its forest habitat for land conversion. This species breeds in bromeliads which are becoming severely threatened from land conversion and illegal logging, mining, and crops (IUCN, 2023). The species has a highly restricted range which makes them at higher risk of extinction. Without Project Activities that regulate the use of these species in the pet trade, the destruction of habitat, and decreased health of the ecosystem could lead to the extinction of these species (IUCN, 2023).
With-project scenario	Project Activities that will help to maintain the population of this critically endangered species include protecting areas of HCV patrolling the forest areas

for illegal activities (i.e., mining, logging, hunting), controlling mining in the Project Activity Instance to create more sustainable practices, and restoring old mining areas. Activities like these that serve to protect this species habitat will help to create a buffer for these species to successfully reproduce and live.

Trigger species	Prioria copaifera (Cativo)
Population trend at start of project	This endangered species has a declining population in the Project Activity Instance.
Without-project scenario	Without Project Activities, <i>P. copaifera</i> would continue to decline from habitat loss, hydrological alteration, and overharvesting. The species is listed as Endangered (EN) on both the IUCN Red List (2024) and the Colombian national list (MADS 1912/2017). Describe the most likely changes under the without-project land use scenario
With-project scenario	<p>Describe measures needed and designed to maintain or enhance the population status of each trigger species in the project zone, and to reduce the threats to them. If possible, estimate the number of this species that will be in the project zone at the end of the project</p> <p>Protection of high-conservation-value (HCV) swamp forests, enforcement against illegal logging, and community awareness actions will promote regeneration and ensure the persistence of <i>P. copaifera</i> populations within the Program Area.</p>

Trigger species	Dussia lehmannii
Population trend at start of project	This endangered species has a declining population in the Project Activity Instance.
Without-project scenario	Ongoing deforestation and fragmentation would likely lead to local extinction. The species is Endangered (EN) under IUCN (2024) and MADS (2017).

With-project scenario	By conserving intact forest cover and promoting community-based forest stewardship, the Project safeguards critical habitat and connectivity for <i>D. lehmannii</i> .
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Trigger species	Orphanodendron bernalii
Population trend at start of project	This rare Fabaceae tree has a declining population, limited to Antioquia–Chocó foothill forests.
Without-project scenario	Habitat loss from agriculture and infrastructure would continue to threaten survival. The species is Endangered (EN) (IUCN 2024; MADS 2017).
With-project scenario	Forest-protection actions and enrichment planting within degraded areas will facilitate recovery and maintain this endemic species as part of the region’s ecological integrity.

Trigger species	Cariniana pyriformis (Abarco)
Population trend at start of project	National assessments show a severe population decline caused by unsustainable timber extraction.
Without-project scenario	In the absence of Program protection, <i>C. pyriformis</i> would remain highly threatened by selective logging and agricultural expansion. It is listed as Endangered (EN) by IUCN (2024) and CR/EN nationally (MADS 2017).
With-project scenario	Forest-protection and regeneration measures within the Project Area reduce exploitation pressure and secure habitat for natural recruitment of this commercially valuable hardwood.

Trigger species	Huberodendron patinoi
Population trend at start of project	This endemic tree shows an extremely small and declining population, restricted to the Region

Without-project scenario	Continued habitat conversion and selective logging would likely cause local extinction. <i>H. patinoi</i> is listed as Critically Endangered (CR) by IUCN (2024) and MADS (2017).
With-project scenario	Program protection of lowland rainforest and wetland mosaics, combined with monitoring and environmental education, will prevent further loss and support species recovery.

APPENDIX 1: STAKEHOLDER DESCRIPTION TABLE

Organization	Level	Identification Method	Description and Relevance
1) COCOMACIA, made up of 124 local community councils	Direct	Local knowledge	<p>The territory is located in the Atrato basin, in the municipalities of Atrato, Quibdó, Medio Atrato and Bojayá, in the department of Chocó and the municipalities of Murindó, Urrao and Vigía del Fuerte in the department of Antioquia.</p> <p>The main decision-making body is the General Assembly and then the Board of Directors. The members of the latter are elected every 3 years at the General Assembly.</p> <p>COCOMACIA shares the experience of black communities in environmental governance and conservation, since its territory covers part of the Colombian Pacific rainforest.</p> <p>All the communities that make up the territory of COCOMACIA have great interest and will benefit from the activities of the REDD+ Project.</p> <p>The members of the community will actively participate in the Project, assuming roles as Patrollers, forming zonal conservation committees and the REDD+ Team that guides the activities in the field, in coordination with the Board of Directors and its Legal Representative, which include informing, advocating and participating in various activities. Through their active participation, community members will help shape the Project's outcomes and ensure its success by sharing their knowledge, experiences, and expertise.</p>
2) Farmers' Associations (Asprodema)	Other	Local knowledge and interviews	Will implement key Project Activities related to agricultural production and food security.
3) Neighboring Communities to the COCOMACIA territory. Indigenous Reservations Rio Icho y la quebrada Daratudo, Rio Negua, Rio Bebara, Rio Bebarama, La Cristalina, La Fiera, Rio La Playa, Elveinte, Playalta Y El Noventa, La Lomita, Miasa De Partado, Caimanero De Jampapa, Ríos Jurubida-Chori Y Alto Baudo, Alto Del Río Munguidó, Paso Del Río Salado, Quebrada Chicue Río Tanguí, Paina, Río Amé, Bete-Aurobete Y Auro Del Buey, Alto	Other	Local knowledge and secondary data research	The indigenous reservations located on the borders of the COCOMACIA territory share some of the productive activities, in addition to having a socioeconomic relationship, their uses and customs are different, and the communities understand and respect their cultural differences.

Organization	Level	Identification Method	Description and Relevance
Río Buey, Alto Río Tagachi, Gegenadó, Tungina Y Apartado, Buchadó Amparradó, Ríos Uva Y Pogue-Quebrada Taparal., Pichicora, Chicue, Puerto Alegre, Napipí, Opogadó – Doguadó, Río Chajeradó, Río Jarapetó, Jengado Apartadó, El Salado, Guaguandó, Andabú, Paina,			
4) Artisanal gold miner association (ASOBAMINARMEA – Asociación de Barequeros de Minería Artesanal del Medio Atrato)	Other	Local knowledge, interviews, and secondary data research	Small scale mining activities with high environmental, economic, and public health impacts. Activities occur in different parts of the territory generating forest degradation.
5) Regional Autonomous Corporations (Corporación Autónoma Regional, CAR) such as CODECHOCÓ (Corporación Autónoma Regional para el Desarrollo Sostenible del Chocó - Chocó Regional Autonomous Authority for Sustainable Development) and CORPOURABA (Corporación para el Desarrollo Sostenible del Urabá)	Other	Local knowledge and secondary data research	<p>CODECHOCÓ is the environmental authority in the Choco region. It oversees the development and execution of plans, programs, and projects within its jurisdiction, which aim to manage the environment and natural resources in a sustainable manner and to improve livelihoods taking into account community participation and collaboration with local authorities.</p> <p>Advises municipalities in the process of environmental planning and regulation of land use and in the issuance of the necessary regulations for the control, conservation and defense of the ecological and cultural heritage of territorial entities.</p> <p>Promotes the integration of the indigenous and Black communities that have traditionally inhabited the region, to the process of conservation, protection and sustainable use of resources and encourages cooperation and help from the international community to compensate the efforts of the local community in defense of that unique ecosystem (Art.39 of Law 99 of 1993).</p>
6) Instituto de Investigaciones Ambientales del Pacífico (IIAP), Universidad Tecnológica del Chocó (UTCH).	Other	Local knowledge and secondary data research	<p>Entities in charge of knowledge generation, preservation, and dissemination as well as innovation. They are fundamental to support the development of local enterprises.</p> <p>They are important actors because the type of impact of the COCOMACIA REDD+ Project will serve as a reference for similar initiatives in the area and the information collected from these institutions will be used for data analysis and decision making.</p>

APPENDIX 2: PROJECT ACTIVITIES AND THEORY OF CHANGE TABLE.

Expected Climate, Community, and Biodiversity				
Project Objectives	Project Outcomes	Project Outputs	#	Project Activities
1 Robust administrative and fiscal management of the REDD+ program led by COCOMACIA	1.1 Empowering the ongoing management of the REDD+ COCOMACIA program with fiscal, operational independence and governance capacity	1.1.1 REDD+ Program has trained staff and established policies	1.1.1.1	Finalize operational and governance agreements to manage the REDD+ Program within COCOMACIA
			1.1.1.2	Ensure necessary office space and basic services
			1.1.1.3	Hire and train Program staff
			1.1.1.4	Develop and implement fiscal management policies and processes for the funds
			1.1.1.5	Make the payment of outstanding salaries for Cocomacia staff and its Board (Retroactive Salaries)
			1.1.1.6	Support the ongoing management and governance of the program by the REDD+ Team
			1.1.1.7	Support the management of the REDD+ Team in the development of the Program
			1.1.1.8	Prepare, review, update, and disseminate the operations manual with a zero-tolerance approach to discrimination and harassment.
			1.1.1.9	Ensure that COCOMACIA's REDD+ procurement policy is developed and implemented
		1.1.2 Complete funder requirements and secure initial program implementation funds	1.1.2.1	Design the long-term implementation plan that defines related activities to be funded by the investment
			1.1.2.2	Prepare and approve the long-term budget for costs associated with the execution of activities in the implementation plan and overall investment management
			1.1.2.3	Make the payment of outstanding salaries to the Boards prior to the start of the REDD+ Project, in compliance with the commitment assumed by Terra
			1.1.2.4	Develop Community Participation Plan
			1.1.2.5	Develop and monitor the Complaints and Redress Mechanism
			1.1.2.6	Develop and present a final Benefit Sharing Plan with participation and input from the Board and REDD team
1.1.2.7	Prepare and deliver no-action letters from CODECHOCO and CORPOURABA in support of the program			

Expected Climate, Community, and Biodiversity				
Project Objectives	Project Outcomes	Project Outputs	#	Project Activities
			1.1.2.8	Register the REDD+ Cocomacia program in the Verra registry under VCS/CCB certification
			1.1.2.9	Complete funder due diligence
			1.1.2.10	Review and negotiate the detailed investment term sheet for financing
			1.1.2.11	Finalize mutual agreement on financing terms
			1.1.2.12	Manage the signing of the financing agreement
		1.1.3. Develop operational, financial and supervisory capacities in REDD+ Program Staff	1.1.3.1	Provide financial management training to local staff and community councils
			1.1.3.2	Develop and implement a fiscal process to channel funds to COCOMACIA and prepare quarterly financial reports.
			1.1.3.3	Conduct annual external audits of financial management
			1.1.3.4	Train fund managers at the zone level in fiscal management
2. The Program area has clear boundaries and land tenure secured with internal management plans and use rights recognized and applied by local communities.	2.1 Program boundaries (coordinates) verified		2.1.1.1	Review official boundary files and identify areas of conflict with neighbors
			2.1.1.2	Monitor the agreements defining boundaries through interethnic roundtables.
			2.1.1.3	Record boundaries agreed upon with government officials
3. Strengthened governance, planning and zoning capacity for conservation of the Program Area	3.1 Updated management plans and governance system for the conservation of the Program Area	3.1.1 Interinstitutional management for the designation of Protected Areas (Aps)	3.1.1.1	Conduct feasibility studies for the declaration of protected areas in the program area
			3.1.1.2	Formulate financial sustainability strategies for protected areas and identify additional sources of financing
			3.1.1.3	Develop formal agreements between the Program and CODECHOCO to support the implementation of protected areas (with or without protected area status)
			3.1.1.4	Implementation of the Route for the Declaration of Overlapping Protected Areas (Subject to approval by Cocomacia)
			3.1.1.5	Hold meetings to coordinate REDD+ activities with other relevant government ministries

Expected Climate, Community, and Biodiversity				
Project Objectives	Project Outcomes	Project Outputs	#	Project Activities
		3.1.2 Land use and management plans formulated and adopted by the Program communities	3.1.1.6	Ensure that the complaints and claims mechanism is adopted by the 124 local communities in the Program
			3.1.2.1	Review and strengthen, with community participation and technical support, natural resource management plans, defining and delimiting the areas of agricultural use and forestry use approved by the General Assembly and the CCL.
			3.1.2.2	Formulate a management plan for forest areas at high risk of deforestation and degradation according to the program's risk maps.
			3.1.2.3	Updated management plans, handling, and utilization of resources in Protected Areas
4 Communities participating in the REDD+ program are committed to the conservation of forest areas.	4.1 Communities actively participate in the planning and implementation of conservation activities	4.1.1 Increase awareness and outreach on conservation and the REDD+ program in the Program areas	4.1.1.1	Facilitate community coordination with institutional actors at the local (mayoral), regional (CAR, governorships), and national (Ministries, IIAP, universities, SENA) levels, in order to inform, coordinate, and implement actions.
			4.1.1.2	Communicate the progress of the Program at the annual Cocomacia General Assembly and regional meetings
			4.1.1.3	Formulate and implement the communication strategy through local media, including social networks, local radio, WhatsApp groups, and a website to make the Program visible.
			4.1.1.4	Conduct environmental education activities in primary schools, create youth conservation clubs, and develop a curriculum for primary education.
			4.1.1.5	Sign Community Participation Agreements to formalize commitment to the REDD+ program
			4.1.1.6	Carry out periodic dissemination of the program in the different areas
			4.1.1.7	Facilitate community coordination with institutional actors at the local (mayoral), regional (CAR, governorships), and national (Ministries, IIAP, universities, SENA) levels, in order to inform, coordinate, and implement actions.
			4.1.2.1	Identify the app (SMART), delimit the conservation area and design a survey according to the needs and context of the Program.
			4.1.2.2	Design and facilitate an environmental monitoring training program (SMART) for environmental managers
			4.1.2.3	Provide necessary equipment for monitoring tours of forest areas
		4.1.2 Participating communities in the Program implement actions to monitor forest areas.		

Expected Climate, Community, and Biodiversity				
Project Objectives	Project Outcomes	Project Outputs	#	Project Activities
			4.1.2.4	Define conservation activities at the zonal level (annual) in accordance with the Program's Long-Term Work Plan
			4.1.2.5	Conduct community monitoring of the Program's forest and biodiversity areas
			4.1.2.6	Manage support (training, co-financing) from local, regional and national government entities to environmental managers and Zonal Conservation Committees
			4.1.2.7	Facilitate the formation of Zonal Conservation Committees that lead environmental governance at the zonal and community levels.
			4.1.2.8	Facilitate the formulation and annual review of Conservation Action Plans in Conservation Zone Committees (recording community comments and programmatic changes generated)
			4.1.2.9	Define deforestation reduction goals at the Local Community Council level, based on participation agreements.
			4.1.2.10	Continuously review, at the Board level, the Internal Regulations of the High Council and the Local Community Councils, ensuring that they are aligned with each other and that they respond to the environmental and natural resource management objectives of the Program.
			4.1.3.1	Conduct a participatory assessment of areas affected by deforestation and illegal logging (identification of degraded areas, actors involved (legal and illegal) and the direct and indirect causes of logging)
			4.1.3.2	Accompany the formulation and annual review of Conservation Action Plans in the Zonal Conservation Committees, recording community comments and the programmatic changes generated.
			4.1.3.3	Define deforestation reduction goals at the Local Community Council level, based on participation agreements
		4.1.3.4	Map priority areas for reforestation and ecological restoration at the community level, based on the management plan for high-risk forest areas and according to the program's risk maps.	
		4.1.3.5	Design a comprehensive participatory plan for restoration and logging control	
		4.1.3.6	Carry out restoration, reforestation and forest enrichment activities with a participatory (including loggers) and technical approach	
		4.1.3.7	Establish community nurseries for the production of plant material of native species	
		4.1.3 Program communities implement restoration actions		

Expected Climate, Community, and Biodiversity						
Project Objectives	Project Outcomes	Project Outputs	#	Project Activities		
5 Artisanal and traditional mining areas are carried out in accordance with agreements, zoning and protocols established by the Local Community Councils	5.1 Development and implementation of a system for the management, restoration and regulation of traditional and artisanal mining	5.1.1 Restoration and recovery activities carried out in areas degraded by mining	4.1.3.8	Direct purchase of seeds from community members (including loggers) for nurseries with the aim of preserving germplasm		
			4.1.3.9	Develop and facilitate a training module on Reduced Impact Forest Management practices (directed logging, on-site sawing with chainsaws, and safety standards) to reduce waste and promote sustainable forest harvesting practices.		
			4.1.3.10	Train local authorities and communities (with emphasis on loggers) in technical issues, environmental regulations, territorial rights and environmental impacts		
		5.1.2 Existing artisanal miners reduce their expansion and the environmental impact of mining operations in the Program area.	5.1.2 Existing artisanal miners reduce their expansion and the environmental impact of mining operations in the Program area.	5.1.2 Existing artisanal miners reduce their expansion and the environmental impact of mining operations in the Program area.	5.1.1.1	Identify and measure areas abandoned or degraded by mining (soil condition, degree of impact, species to be used in restoration)
					5.1.1.2	Select areas for restoration and conservation, after consultation with the community, to stop mining in those areas.
					5.1.1.3	Update the EU internal regulations to align them with the objectives of reducing deforestation due to mining. Plant native forest species in areas affected by mining and designated for restoration
					5.1.2.1	Conduct a census of artisanal miners in the territory to be involved in the activities
					5.1.2.2	Integrate artisanal miners into the formulation of land use and natural resource management plans
					5.1.2.3	To train and strengthen artisanal miners, communities, and social leaders on responsible mining, restoration, and environmental control.
					5.1.2.4	Design and implement productive projects as economic alternatives (agroforestry, cocoa, among others) for mining families
5.1.2.5	Involve miners in active restoration programs for degraded areas					
5.1.3.1	Draft and validate the Small-Scale Artisanal Mining Plan (maps, guidelines, and sustainable management criteria)					
5.1.3.2	Carry out surveying and analysis of spatial and environmental information (cartography, current land use, mining impacts, prioritized conservation areas) to technically define the use and restriction zones.					
5.1.3.3	Conduct participatory workshops with communities and local stakeholders to identify current and potential artisanal mining areas and to disseminate the guidelines of the internal regulations and the POTA.					

Expected Climate, Community, and Biodiversity				
Project Objectives	Project Outcomes	Project Outputs	#	Project Activities
6. Reduction of the expansion of illicit crops in the program area	6.1. Design and implementation of the illicit crop substitution plan in the Program area		6.1.1.1	Conduct a participatory assessment (areas and census of community members) linked to illicit crops
			6.1.1.2	Enlist volunteer farmers to be part of the substitution plan
			6.1.1.3	Sign substitution agreements with a gender perspective
			6.1.1.4	Identify and execute productive projects
			6.1.1.5	Provide ongoing technical assistance to productive projects
			6.1.1.6	Conduct educational workshops on the impact of illicit crops on communities, as well as good agricultural practices, processing and marketing.
7. Diversified agricultural production (legal crops) to facilitate communities' access to food	7.1 Increased agricultural productivity through crop diversification	7.1.1 Promote the adoption of sustainable agricultural practices through pilot projects, technical assistance, and training.	7.1.1.1	Carry out a diagnosis of agricultural soils
			7.1.1.2	Formulation of an Agricultural Plan in the territory
			7.1.1.3	Coordinate efforts with public and private entities that share the common goal of strengthening sustainable production by introducing technologies adapted to the territory (IIAP, UMATAS, Agrosavia, etc.)
			7.1.1.4	Develop a technical assistance plan to strengthen capacities in integrated pest and disease management using agroecological methods, as well as soil and biodiversity conservation practices.
			7.1.1.5	Identify and establish community demonstration plots (PPC and ZPC)
			7.1.1.6	Distribute inputs (organic fertilizers, basic tools, biopreparations, etc.) and agricultural material (native seeds and minor species)
			7.1.1.7	Train farmers and the REDD Team in sustainable practices (training of trainers)
			7.1.1.8	Provide comprehensive technical assistance for species selection, the design, establishment, and management of agroforestry systems (AFS), as well as for strengthening and optimizing existing AFS in the region -
8. Increased income of participants from Program communities (crops and NTFPs)	8.1 Strengthened and competitive local farmers and NTFP value chains, with greater management, processing	8.1.1 Facilitate access to markets for agricultural products and NTFP initiatives	8.1.1.1	Develop and/or strengthen the territorial brand and promotional strategies based on cultural identity and sustainability
			8.1.1.2	Provide technical assistance to local productive initiatives at trade fairs and negotiations with potential buyers
			8.1.1.3	Support the development of logistics schemes that facilitate the transportation of products and supplies, reducing operating costs.
			8.1.1.4	Support the creation, formalization and strengthening of associations, cooperatives or community businesses
			8.1.1.5	Facilitate alliances with cooperation entities and agencies, as well as cooperatives, associations and responsible marketers operating in the territory

Expected Climate, Community, and Biodiversity				
Project Objectives	Project Outcomes	Project Outputs	#	Project Activities
	and market access capacities.	8.1.2 Greater added value to local products by improving post-harvest and processing processes	8.1.2.1	Conduct participatory mapping and analysis of value chains to identify organizations, NTFPs, and products with the greatest productive, commercial, and sustainability potential.
			8.1.2.2	Training on good harvesting, post-harvest, processing, and sustainable marketing practices for NTFPs and valuable crops
			8.1.2.3	Acquire/repair basic equipment and/or infrastructure for processing agricultural products (dryers, pulpers, packaging)
			8.1.2.4	Develop community-based quality control protocols and presentation standards for prioritized processed products.
			8.1.2.5	Train organized groups on organizational, legal, operational, and commercial topics for value-added products (e.g., jams, flours, oils).
9. Continuous monitoring of the Program Activities and Outcomes	9.1 Data collection and monitoring system of the established Program	9.1.1 Develop local capacity for long-term, continuous data collection of the Program	9.1.1.1	Design an ongoing training plan for COCOMACIA REDD+ staff and communities
			9.1.1.2	Collaboratively review and update the community monitoring plan.
			9.1.1.3	Support the development of templates and tools to capture community and area data.
			9.1.1.4	Provide training tools for use with communities and areas.
			9.1.1.5	Provide training to Rural REDD+ Community Monitoring Units.
			9.1.1.6	Review tracking data, add to it, and provide feedback to improve collection
			9.1.1.7	Integrate community monitoring data into VCS = CCB monitoring reports
			9.1.1.8	Conduct two local training workshops each year on Monitoring, Reporting, and General Verification and Project Management.
			9.1.1.9	Select, train and prepare local community representatives for community monitoring.
			9.1.1.10	Conduct annual capacity-building training with COCOMACIA, zones and local government
		9.1.2.1	Develop Standard Operating Procedures and identify local technical entities to perform biomass sampling.	
		9.1.2.2	Develop the Standard Operating Procedure and identify local technical entities to conduct social assessments.	
		9.1.2.3	Conduct training on biomass inventory data collection	
		9.1.2.4	Acquire and process satellite imagery	
		9.1.2.5	Conduct forest inventory for plots	
9.1.2.6	Perform QA/QC on biomass inventory stocks and incorporate into monitoring report			

Expected Climate, Community, and Biodiversity						
Project Objectives	Project Outcomes	Project Outputs	#	Project Activities		
		9.1.3 Conduct social appraisals per VCS/CCB requirements	9.1.3.1	Conduct training for subcontractor on social appraisals (HHS/PRA)		
			9.1.3.2	Conduct social surveys		
			9.1.3.3	Perform QA/QC and incorporate into monitoring report		
		9.1.4 Conduct biodiversity monitoring per VCS/CCB requirements			9.1.4.1	Develop SOPs and identify local technical entities to conduct biodiversity surveys
					9.1.4.2	Conduct training for subcontractor on biodiversity
					9.1.4.3	Conduct biodiversity assessment
					9.1.4.4	Perform QA/QC and incorporate into monitoring report
10 Validation of Emission Reductions and Social and Biodiversity benefits	10.1 Validation conducted in participatory manner to support management and achieve a Validated REDD+ Project Document	10.1.1 Prepare for VCS Validation requirements for VCS/CCB	10.1.1.1	Compile data for regular reports and scan all hard copies of monitoring data		
			10.1.1.2	Review and finalize the draft monitoring plan		
			10.1.1.3	Write non-carbon Sections of VCS/CCB PDD (in accordance with the VCS/CCB template assignment – Section 4)		
			10.1.1.4	Perform carbon calculations for VCS/CCB PDD; Historical land-use change in reference region		
			10.1.1.5	Perform carbon calculations for VCS/CCB PDD: Create emissions factors		
			10.1.1.6	Perform carbon calculations for VCS/CCB PDD: Land-use Change Modeling to Create Forward Baseline		
			10.1.1.7	Perform carbon calculations for VCS/CCB PDD: Ex-ante calculation of carbon under the project scenario		
			10.1.1.8	Perform carbon calculations for VCS/CCB PDD: Calculation of the non-biomass related emissions		
			10.1.1.9	Perform carbon calculations for VCS/CCB PDD: Estimation of leakage potential		
			10.1.1.10	Translate draft Combined Project Document into Spanish		
			10.1.1.11	Prepare the draft of the Project Description for VCS / CCB		
			10.1.1.12	Finalize VCS/CCB Combined Project Design Document		
		10.1.2 Conduct VCS/CCB Validation			10.1.2.1	Disseminate the draft Combined Project Description to appropriate stakeholders using the appropriate means
					10.1.2.2	Gather Stakeholder Comments on the Draft Combined Project Description
10.1.2.3	Incorporate stakeholder comments into the combined PD					
10.1.2.4	Communities activity engage with VVB					
			10.1.2.5	Activity engage with VVB and assist with Field visit logistics		
			10.1.2.6	Conduct field visit with VVB		

Expected Climate, Community, and Biodiversity				
Project Objectives	Project Outcomes	Project Outputs	#	Project Activities
			10.1.2.7	1st Round of findings CARs for VVB (corrective Actions Request), forward actions request, non compliance
			10.1.2.8	2nd Round of CARs for VVB
11 On-going Verification of Emission Reductions and Social and Biodiversity benefits	11.1 Verification conducted in participatory manner to support management and achieve VCUs	11.1.1 Prepare for VCS Verification requirements for VCS/CCB	11.1.1.1	Compile data for regular reports and scan all hard copies of monitoring data
			11.1.1.2	Write non-carbon Sections of VCS/CCB MIR
			11.1.1.3	Perform carbon calculations for VCS/CCB MIR: actual land-use change in reference region
			11.1.1.4	Perform carbon calculations for VCS/CCB MIR: Create emissions factors
			11.1.1.5	Perform carbon calculations for VCS/CCB MIR: Update Ex-ante calculation of carbon under the project scenario
			11.1.1.6	Perform carbon calculations for VCS/CCB MIR: Calculation of the non-biomass related emissions
			11.1.1.7	Perform carbon calculations for VCS/CCB MIR: Estimation of leakage potential
			11.1.1.8	Translate draft Monitoring and Implementation Report into Spanish
			11.1.1.9	Review and finalize the CCB monitoring plan, make any necessary update
			11.1.1.10	Finalize VCS/CCB Monitoring and Implementation Report
		11.1.2 Conduct VCS/CCB Verification	11.1.2.1	Disseminate the combined draft of the Monitoring and Implementation Report (MIR) to the appropriate stakeholders using the appropriate means
			11.1.2.2	Gather stakeholder comments on draft MIR
			11.1.2.3	Incorporate stakeholder comments into the MIR
			11.1.2.4	Activity engage with VVB and assist with Field visit logistics
			11.1.2.5	Communities activity engage with VVB
			11.1.2.6	Conduct field visit with VVB
11.1.2.7	1st Round of findings CARs for VVB			
11.1.2.8	2nd Round of CARs for VVB			
12 Climate Finance repaid and program revenue generated through monetization of	12.1 Commercialization and Operationalization of REDD+ Carbon Assets	12.1.1 Implement requirements for accessing multiple forms of Carbon and other Finance	12.1.1.1	Establish legal entities (if required) to manage carbon finance
			12.1.1.2	Develop marketing materials for sale of emission reductions
			12.1.1.3	Attract and secure long-term buyers of emission reductions
			12.1.1.4	Support COCOMACIA in the engagement and participation in emission reduction sales.

Expected Climate, Community, and Biodiversity				
Project Objectives	Project Outcomes	Project Outputs	#	Project Activities
emission reductions				
13Additional Environmental and Livelihood Programs	13.1 Build other environmental programs and livelihood program (subject to available cash flow)	13.1.1 Implement additional environmental programs	13.1.1.1	Design a solid and liquid waste management plan that adjusts to the conditions of the territory, which is sustainable in the time frame in judgment T622 of 2016.
			13.1.1.2	Selection of a pilot community for the application of the management plan through the development of sustainable practices that encourage the comprehensive management of solid waste in homes, commercial establishments and educational institutions. (Changes in consumption patterns, separation at source, recycling, reuse)
			13.1.1.3	Review and evaluation of compliance with the Integrated Management Plan for the Low and Medium Atrato Wetlands (2006) "Recovery of degraded wetlands in the low and medium Atrato"
			13.1.1.4	Conduct monitoring and evaluation of recovery actions
		13.1.2 Implement Additional livelihood programs	13.1.2.1	Programs that empower the community through increased skills, knowledge about productive activities
			13.1.2.2	Training in productive activities such as breeding minor species (fish farming, poultry, pig farming, beekeeping)
			13.1.2.3	Ecotourism training (bird watching, gastronomy) and related activities (tourist lodges and tourist guides)
			13.1.2.4	Train communities interested in establishing a communication system (call center) that allows income generation and permanence in the territory

APPENDIX 3: PROJECT RISK TABLE

Identified Risk(s)	Potential impact of risk on stakeholders, ecosystem health, and biodiversity	Mitigation or preventative measure(s) taken	Identified risk(s)
Natural and human induced risks to stakeholders' wellbeing	Extreme weather events such as floods and droughts, as well as human activities such as illegal mining and indiscriminate logging, can affect the health of ecosystems and local communities.	Loss of biodiversity, soil degradation, decreased water quality, and impacts on community health and livelihoods.	Implementation of environmental management plans, strengthening community monitoring, and implementing sustainable practices.
Risks to stakeholder participation	Lack of information, exclusion of vulnerable groups, and non-inclusive decision-making processes.	Distrust of the project, social conflicts, and lack of ownership of the initiatives.	Development of effective information processes, joint coordination of activities that involve everyone, and strengthening of local capacities for effective participation.
Working conditions	Precarious employment, lack of job security, and absence of social benefits.	Workers' economic vulnerability and disincentive to participate in the project.	Offering decent jobs, training, and fair labor agreements.
Safety of women and girls	Gender-based violence, discrimination, and lack of access to opportunities in both internal and external processes that allow for personal and professional development.	Increased inequality and limited women's participation in the project. Lack of interest in governance processes.	Development and implementation of the gender equity plan, safe engagement in decision-making spaces, and development of women's empowerment activities.
Safety of minority and marginalized groups, including children	Social exclusion, lack of access to basic services, lack of job opportunities, disregarded opinions, and vulnerability to exploitation. Environmental pollution from unregulated activities.	Increased poverty and marginalization. Greater exposure to abuse and segregation.	Design of inclusive programs, protection of rights, and equitable access to project benefits.
Pollutants (air, noise, discharges to water, generation of waste, and release of hazardous materials and chemical pesticides and fertilizers)	Environmental pollution from unregulated activities. Lack of implementation of corrective measures.	Impacts on human health and ecosystem degradation.	Implementation of agroecological practices, proper waste management, and continuous environmental monitoring.
Discrimination	Exclusion based on ethnicity, gender, and socioeconomic status. Unsafe work environments. Wage gaps based on gender or social status.	Inequality in the distribution of benefits and community tensions.	Inclusion policies, awareness-raising, and diversity promotion.
Sexual harassment	Unsafe work environments.	Psychological impacts and reduced female participation in project activities.	Prevention protocols, training, and anonymous reporting channels.
Equal pay for equal work	Wage gaps based on gender or social status.	Economic inequality and job demotivation.	Implementation of equitable salary policies.
Gender equity in labor and work	Lack of female representation in leadership and decision-making roles.	Limited perspectives on the actions and decisions taken in the territory, and	Programs for women's leadership and the underrepresented population and establishing participation quotas.

CCB Version 3.0, VCS Version 4.4

Identified Risk(s)	Potential impact of risk on stakeholders, ecosystem health, and biodiversity	Mitigation or preventative measure(s) taken	Identified risk(s)
		decisions that could reduce non-inclusive gaps.	
Forced labor	Labor exploitation and degrading working conditions	Human rights violations and a negative reputation for the project.	labor supervision, regulatory compliance, and sanctions for abusive practices.
Child labor	Participation of minors in hazardous work activities.	lack of formal education and impacts on child development.	Educational programs, awareness-raising, and community monitoring.
Human trafficking	Exploitation and trafficking of persons in vulnerable contexts.	Serious rights violations and social destabilization.	prevention campaigns.
Recognition of, respect of, and promotion of the rights to IPs, LCs and customary rights holders	Disregard for territorial and cultural rights.	Territorial conflicts and loss of cultural heritage.	Legal recognition of territories, prior consultations, and respect for traditional practices.
Preserving and protecting cultural heritage	Destruction or alteration of cultural sites and practices.	Loss of identity and community cohesion.	Cultural inventories, legal protection, and promotion of local culture.
Protecting and preserving property rights, customary rights, or protecting legal or customary tenure/access rights to territories, property, and resources, including collective and/or conflicting rights	Disputes over land tenure and access to different types of resources.	Gaps in legal regulations and conflicts between communities.	Clarity of rights in general, mediation, and strengthening of local governance.
Impacts on biodiversity and ecosystems	Species loss, habitat fragmentation, and ecological imbalances.	Reduction of ecosystem services and environmental resilience.	Conservation of key areas, biological corridors, and biodiversity monitoring.
	Inappropriate agricultural practices and deforestation.	Endangered species.	Environmental education.
Soil degradation and soil erosion	Inappropriate agricultural practices and deforestation.	Decreased soil fertility and agricultural productivity.	Decreased soil fertility and agricultural productivity.
Water consumption and stress	Expansion of agricultural activities and deforestation can alter the hydrological cycle, reducing water availability and affecting both ecosystems and local communities.	Decreased quality and quantity of water resources, affecting aquatic biodiversity and human health.	Implementation of agroecological practices that conserve soil and water.
			Restoration of degraded areas to improve water infiltration and retention.
Habitats (and areas needed for habitat connectivity) for rare, threatened, and endangered species	Habitat fragmentation due to deforestation	Loss of biodiversity and ecological imbalances.	Community monitoring of water sources to detect and prevent pollution.
	Medium- and large-scale mining		Establishment of biological corridors to facilitate species mobility.
			Protection of critical areas through conservation agreements with local communities.

Identified Risk(s)	Potential impact of risk on stakeholders, ecosystem health, and biodiversity	Mitigation or preventative measure(s) taken	Identified risk(s)
			Monitoring of key species populations to evaluate the effectiveness of conservation measures.
Areas needed for habitat connectivity	The expansion of human activities, such as agriculture and infrastructure, can divide ecosystems.	Local extinction of species and a general decline in biological diversity.	Creation and maintenance of areas that connect habitat fragments.
	The disruption of natural routes used by wildlife impedes the movement and migration of species.	Disruption of processes such as pollination, seed dispersal, and nutrient cycling.	Ecological restoration, sustainable territorial planning.
	The decline in habitat quality due to unsustainable activities can reduce ecosystem capacity.	Fragmented ecosystems	Monitoring and evaluation: Implementation of monitoring systems to evaluate the effectiveness of measures and adapt them as needed.
Invasive species	The introduction and expansion of invasive alien species.	Loss of biodiversity, changes in ecosystem structure and function, and impacts on productive activities.	Implementation of invasive species monitoring and control programs. Community education and awareness about the risks associated with exotic species. Promotion of the use of native species in reforestation and restoration activities.
Ecosystem conversion	Transformation of forests into agricultural, urban, or	Decreased carbon sequestration, habitat loss, and increased vulnerability to natural disasters.	Implementation of land use policies that prioritize the conservation of key ecosystems. Economic incentives for sustainable practices that prevent the conversion of natural ecosystems. Strengthening environmental governance and community participation in land use decision-making.

APPENDIX 4: COMMERCIALY SENSITIVE INFORMATION

Section	Information	Justification
2.4.1.3	The Patrimonio Autonomo trust contract	This is commercially sensitive information as it contains the detailed functions of the trust for COCOMACIA, and the roles of each party in managing that trust. It was developed over several years under the specific requirements of investors, Terra Global, the trust bank and COCOMACIA. This as defines the internal process of operation of Program assets.
2.1.10	REDD+ Agreement	This is the long-term implementation and carbon developing agreement that details roles and responsibilities and detailed economic terms between the parties, which is commercially sensitive and covers many internal requirements for policies and processes between the parties.
2.4.5	Investment Agreement – Payment in Kind Loan Agreement (first investor)	This is the investment agreement for the first investment which is a highly innovative investment structure that was developed by Terra Global for this project investment and it is financial sensitive. The disclosure would provide others access to this proprietary investment structure and the agreement also includes commercially sensitive investment terms where disclosure would undermine the pricing and investment structures offered by Terra Global.
2.4.5	Project Investment Agreement (from TB-NBS Pool, follow-on investment)	This is the investment agreement for follow-on investment which was provided for bridge funding during the verification delay. Disclosure of these commercially sensitive investment terms would undermine the pricing and investment structures offered by Terra Global
2.4.6	Terra Global Anti-corruption, Anti-trafficking, and Ethics Policies	These are Terra Global internal policies which are not made publicly available as they are policy decisions

APPENDIX 5: ADDITIONAL INFORMATION

The following data and information are made available:

Section	Information
4.4.1	CCB Monitoring Plan
3.3.3	VCS Monitoring Plan
2.1.17.2	Long-Term Implementation Plan
4.5.4	Gender Action Plan
4.4.1	Participatory Rural Appraisals (PRAs)
4.4.1	Household Surveys (HHS)
3.1.5.2.4	Investment Model
2.5.10	Operations Manual – COCOMACIA REDD+ Program
2.3.14	
2.3.19	
2.3.15	Feedback and Grievance Redress Procedure
2.3.16	
2.3.6	
2.5.3	
2.4.6.1	COCOMACIA's Code of Ethics
2.4.6.1	COCOMACIA'S Policy on Conflict of Interest and Anti-Corruption
2.1.20	Opportunity Costs Assessment
3.2.1.1	<i>Allocation Report</i>

APPENDIX 6: UDEF AD ALLOCATION REPORT

(appended to the end of this document)

APPENDIX 7: VCS MONITORING PLAN

(appended to the end of this document)

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