JOINT VALIDATION & VERIFICATION REPORT

CO2Bio P2-2

Document prepared by

AENOR
Confía

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Validation & Verification Report
PROJECT ID

Project Title	*CO2Bio P2-2*
Project ID	*BCR-CO-635-14-005 BCR-CO-635-14-005*
Project holder	*The Cataruben Foundation.*
Project Type/Project activity	*AFOLU (REDD+ and WETLANDS)*
Grouped project	*It is not a grouped project.*
Version number of the Project Document to which this report applies	*BCR_DdP_CO2BioP2-2 Version 2.1.*
Applied methodology	*Methodological Document AFOLU Sector / BCR0002 Quantification of GHG Emission Reductions from REDD+ Projects. Version 3.1. 15 September 2022.* *Methodological Document AFOLU Sector / BCR0004 Quantification of GHG Emission Reductions and Removals - Activities that avoid land use change in inland wetlands. Version 2.0 23 June 2022.*
Project location	*Colombia, Orinoco region:* *Department of Arauca: Arauca, Cravo Norte, Puerto Rondón and Tame.* *Department of Casanare: Hato Corozal, Paz de Ariporo, Orocué, Pore, San Luis de Palenque, Trinidad and Yopal.*
Project starting date	*Start date of the project activities.* *(15/01/2018)*

Quantification period of GHG emissions reductions/removals	*Programmed period of quantification of GHG emissions reductions/removals.* *(15/01/2018 a 14/01/2038)*
Estimated total and mean annual amount of GHG emission reductions/removals	*Total estimated GHG reductions:* ***2,752,176 tCO2e*** *Average annual GHG reductions:* ***131,056 tCO /year$_{2e}$***
Monitoring period	*15/01/2018 - 31/12/2021*
Total amount of GHG emission reductions/removals	*Total reductions:* ***804,951 tCO2e*** *Annual average:* ***201,238 tCO2e/year***
Contribution to Sustainable Development Goals	*SDG 6: Water and Sanitation* *SDG 13: Climate action* *SDG 15: Terrestrial Ecosystem Life*
Special category, related to co-benefits	*Orchid*
Version and date of issue	*Version 3.1 of 15/12/2023.*
Work carried out by	*Chief Auditor: Juan Camilo Serna* *Auditor: Daniel Bermejo* *Technical Reviewer: José Luis Fuentes*
Approved by	*José Luis Fuentes*

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1   Executive summary

CO2Bio P 2-2 is a biodiversity conservation project that is a climate change mitigation project that reduces CO2 emissions to mitigate the threat of habitat loss associated with natural ecosystems in private properties in the Colombian Orinoquia (Arauca and Casanare).

The Cataruben Foundation is the responsible entity, which seeks to develop actions to prevent deforestation and the transformation of natural ecosystems through the implementation of conservation and climate change mitigation activities, guarantee the provision of ecosystem services, and reduce the factors and threats to these ecosystems.

The project aims to conserve biodiversity within the areas comprising the project areas, through actions that comprehensively address the landscape, considering the change in land use and the implementation of more sustainable practices in forest and wetland ecosystems. The Project area is made up of 124 private properties, which make up a total area of 102,863 hectares, whose accounting areas are distributed in 10,532.3 hectares of forest and 50,352.8 hectares of wetlands.

The CO2Bio P2-2 project start date is January 15, 2018 for wetland conservation activities and REDD+ activities with a 20-year crediting period (January 15, 2018, through January 14, 2038).

The environmental authority with jurisdiction in the project area is the Orinoquia Regional Autonomous Corporation (CORPORINOQUIA), which exercises functions established in Article 31 of Law 99.

The validation confirms that the ex ante analysis of the project's GHG reductions has been carried out in an accurate, transparent and conservative manner, being estimated at a total of 2,752,176 tCO2e (2,080,480 tCO2e for forests and 671,696 tCO2e for wetlands), for the 20-year GHG reduction quantification period.

At verification the total ex post net greenhouse gas emissions and removals for the monitoring period (01/15/2018 - 12/31/2021) is 804,951 tons CO2e (683,935 tCO2e for forests and 121,016 tCO2e for Wetlands).

The project description and monitoring was designed to comply with the BioCarbon Standard v3.2 of September 2023, specifically as an AFOLU project with two Project activities: REDD+ Activities and Activities in the AFOLU sector, other than REDD+. The project applied the approved methodologies: "Methodological Document AFOLU Sector / BCR0002. Quantification of GHG Emission Reductions from REDD+ Projects. Version 3.1. 15 September 2022" and "Methodological Document AFOLU Sector / BCR0004 Quantification of GHG Emission Reductions and Removals - Activities that avoid land use change in Continental Wetlands. Version 2.0 23 June 2022".

The purpose and scope of the validation/verification involves document review, in situ visit, interviews and consultation of secondary information sources, statement of findings, feedback with the project owner, preparation of the final report, monitoring of project activities and its annexes. The Validation and Verification Manual v2.2 of October 26, 2023 and the BioCarbon Standard v3.2 of September 2023 were used for validation and verification.

During validation and verification, the AENOR team identified 11 findings (4 Clarification Requests and 7 Corrective Action Requests) that were satisfactorily addressed by the project proponent during the validation and verification process to ensure that the Project Description complies with the BCR program requirements and the Monitoring Report with the Monitoring Plan.

Finally, the validation and verification process results in a conclusion by AENOR, after gathering sufficient evidence to fully evaluate the validation/verification criteria and determine that the project is implemented in accordance with the BCR program requirements, which is reflected in the Project Description (BCR_DdP_CO2BioP2-2 Version 2.1) and the Monitoring Report (ReporteMonitoreo_CO2BioP2-2 Version 2.1). The reductions were calculated correctly, based on the methodologies applied for the entire project and monitoring period.

2   Objective, scope and criteria

2.1   Objective

The objective of the validation and verification audit was to conduct an independent assessment of the project to determine:

-That the project, its activities, methods and procedures, as described in the Project Description (PD) document and its corresponding annexes, including the monitoring plan, meet the criteria established for this validation.

-        That the activities, methods and procedures, included in the Monitoring Report (MR), have been implemented in accordance with the PD and the monitoring plan; and - That the activities, methods and procedures, included in the Monitoring Report (MR), have been implemented in accordance with the PD and the monitoring plan.

-That greenhouse gas (GHG) emissions reductions and/or removals reported for the monitoring period are materially accurate.

2.2 Scope and validation criteria

The scope of the validation audit of the CO2Bio P2-2 Climate Change Mitigation Project was:

1) Validate the project activities, its monitoring plan, its GHG sources, sinks and/or reservoirs, its GHG emission reductions quantification period, its baseline scenario, its legal and information requirements management processes, maximum mitigation potential and the Biocarbon Registry BCR0002 and BCR0004 guidelines and methodological documents.

2)Verify GHG emission reductions and/or removals, implementation of activities and their reported impact for the monitoring period:

- January 15, 2018 - December 31, 2021 for project activities: Wetland Conservation and Management and REDD+ Activities.

Specifically, the criteria of the following documents were used to evaluate this project:

- Methodological Document AFOLU Sector "BCR0002 Quantification of Emission Reductions and GHG Removals REDD+ Projects. Version 3.1, September 15, 2022".

- Methodology Document AFOLU Sector "BCR0004 Quantification of GHG Emissions Reduction and Removals - Activities that avoid land use change in Continental Wetlands. Version 2.0 23 June 2022.".

- BioCarbon Registry v3.2, September 23, 2023.

- Validation and Verification Manual. Version 2.2 of October 19, 2023.

Tools and guidelines:

- Tool for the determination of contributions to the achievement of the Sustainable Development Goals (SDGs) of Greenhouse Gas (GHG) projects. v 1. July 13, 2023.

- REDD+ Safeguards. v 1.1. January 26, 2023.

- Avoidance of double counting. v 1. March 09, 2023

- Monitoring, Reporting and Verification Tool. v 1. February 13, 2023.

- Tool "Avoidance of Harm" and environmental and social safeguards. V 1. March 07, 2023.

- Baseline and additionality tool. v 1.1. July 27, 2023.

- Permanence and risk management. v 1. Mallet 7 of 2023.

Certification and registration of GHG mitigation initiatives are established under the Biocarbon Registry program, if such initiatives or projects have been previously validated and verified by accredited conformity assessment bodies (CABs), as in the case of the CO2Bio P2-2 climate change mitigation project.

In addition, the following documents were used as reference during the audit process:

- IPCC 2006 Guidelines for National GHG Inventories.

- Good Practice Guidance for Land Use Land-Use Change and Forestry (2003).

- Annex of national circumstances NERF V.8. Colombia.

- ISO   14064:2019:

  oPart 2: Specification with guidance, at the project level for quantification, monitoring and reporting of emission reductions or enhancements in greenhouse gas removals (2019).

  o   Part 3: Specification with guidance for the verification and validation of greenhouse gas declarations (2019).

- ISO   14065:2020 (EN) Greenhouse gasses - General principles and requirements for bodies performing validation and verification of environmental information.

3   Validation and verification planning

The audit was conducted to provide a reasonable level of assurance of compliance with the criteria defined within the scope. Based on the audit findings, a positive assessment statement provides reasonable assurance that the project complies with the criteria set out in Section 2.2 and the GHG statement is materially correct and credible.

The nature and extent of the validation activities have been shaped according to sections 11 a) - e) of the BCR validation and verification manual. For all cases, the following criteria have been taken into account:

a)   The level of assurance of validation and verification of the GHG mitigation Sector Project should not be less than 95%. The errors that were found in the spreadsheets were corrected, those errors never exceeded 5% error, with respect to the previous emission reduction. Therefore, it is assured that the level of assurance is not less than 95%.

b)   The material discrepancy of the data supporting the baseline of the GHG mitigation Sector Project and the estimated GHG emission reductions or removals may be up to +- 5%. The calculations were evaluated and errors in the calculations were corrected, those errors were never greater than 5%, compared to the previous emission reductions, so AENOR assured that there was no material discrepancy in the calculation data.

c) The consistency of the baseline of the GHG mitigation Sector Project in accordance with current national regulations and/or the methodology applied as appropriate. The values evaluated for the Reductions Activity are consistent with the national reports and for the REDD+ Activity with the NREF.

d) The quantification of the mitigation results compared to the validated baseline, in accordance with the provisions of the national regulations in force and/or the methodology applied, as appropriate.

e) Co-benefits assessment and indicators related to the sustainable development objectives.

Qualitatively, issues related to the document management and control system were also resolved during the audit, and errors in the reporting of current information in the PD were corrected, ensuring that the information presented in the PD is accurate, as required by the BCR Standard.

The validation process through document review and the in situ audit ensured that there were no quantitative and qualitative discrepancies in a material way that would affect the emission reduction calculation, in the sense of overestimating the calculation data.

3.1 Validation and verification plan

The validation process was carried out between 06/01/2023 and 10/21/2023.

Activity	Location	Date	Duration (estimated hours)
Documentary Review	N/A	01/06/2023 - 25/06/2023	N/A
Initial meeting	Project Offices (Yopal)	10/07/2023	0,5h
Baseline Determination: Methods and Scope.	Project areas - GIS analysis	2023-07-10 - 2023-07-14	4h
Reservoirs, GHGs.	Documentary review and field plots	2023-07-10 - 2023-07-14	2h
Comments and feedback on the Project	Documentary review	14/07/2023	1h
Characteristics of the project	Documentary review and eligible areas	2023-07-10 - 2023-07-14	4h

Activity	Location	Date	Duration (estimated hours)
Stakeholder consultation	Documentary review	14/07/2023	1h
Additionality	Documentary review and eligible areas	2023-07-10 - 2023-07-14	4h
Final meeting	Project Offices (Yopal)	14/07/2023	0,5h
Review of findings and action plan	N/A	15/07/2023 - 01/10/2023	N/A
Audit report writing	N/A	15/10/2023 - 25/10/2023	N/A

3.2 Audit team

Program applied to the validation/verification of the project: BIOCARBON REGISTRY (BCR)

Validation: Assessment of the project design document with particular attention to the baseline, monitoring plan and ex ante calculations of emissions and/or removals and compliance of the report delivered by the client with ISO 14064-2:2019 and the requirements of the selected GHG program, if applicable, in addition to host country requirements, to confirm that such documentation is sound and reasonable and meets the identified criteria.

The project validation and verification process shall be performed in accordance with the requirements set out in ISO 14064-3: 2019 "Greenhouse Gases. Part 3: Specification with guidance for validation and verification on GHG.

The validation team consists of the personnel described in Taba 1.

Table 1. Validation Team

Role/Qualification	Last Name	First Name	Country	Type of involvement		
				Desk review	Site visit/Interviews	Reporting
Lead Auditor Sectoral Expert	Serna	Juan Camilo	Colombia	X	X	X
Sectoral Expert Auditor	Bermejo	Daniel	Spain	X	-	X
Technical reviewer	Sources	José Luis	Spain	-	-	X

The audit team is qualified according to the AENOR qualification scheme for validation and verification of BCRs. They have extensive experience in forestry projects, relevant social and ecological knowledge and biodiversity expertise.

Annex 1, shows that the team meets the required compliance for validation and verification, and lists the documentation supporting the competencies of the validation and verification team required in the BCR Validation and Verification Manual.

In addition, according to the OEC contract and the validation/verification team, the requirements of the BCR Anti-Bribery policy detailed in section 8.2.4 of the BCR Validation and Verification Manual are met.

3.3   Level of assurance and materiality

The audit was conducted to provide a reasonable level of assurance of compliance with the criteria defined within the scope. Based on the audit findings, a positive assessment statement provides reasonable assurance that the project complies with the criteria set out in Section 2.2 and the GHG statement is materially correct and credible.

The nature and extent of validation and verification activities have been shaped according to sections 11 a) - e) of the BCR validation and verification manual. For all cases, the following criteria have been taken into account:

a) The level of assurance of the validation and verification of the GHG mitigation Sector Project should not be less than 95%. The errors that were found in the spreadsheets were corrected; these errors never exceeded 5% error, with respect to the previous emission reductions. Therefore, it is assured that the level of assurance is not less than 95%.

b) The material discrepancy of the data supporting the GHG mitigation Sector Project baseline and the estimated GHG emission reductions or removals may be up to +- 5%. The calculations were evaluated and errors in the calculations were corrected, those errors were never greater than 5%, compared to the previous emission reductions, so AENOR assured that there was no material discrepancy in the calculation data.

c) The consistency of the Sector Project baselines for GHG mitigation in accordance with current national regulations and/or the methodology applied as appropriate. The values assessed for REDD+ Activities and Continental Wetlands conservation are consistent with national reports.

d) The quantification of the mitigation results compared to the validated baseline, in accordance with the provisions of current national regulations and/or the methodology applied, as appropriate.

e) Co-benefits assessment and indicators related to the Sustainable Development Goals.

Qualitatively, issues related to the document management and control system were also resolved during the audit, and errors in the reporting of current information in the PD were corrected, ensuring that the information presented in the PD and RM is accurate, as required by the BCR Standard.

The validation and verification process through document review and in situ audit ensured that there were no quantitative and qualitative discrepancies in a material way that would affect the calculation of emission reductions, in the sense of overestimating the calculation data or due to errors of omission of information.

3.4 Sampling plan

The validation and verification audit was conducted through a combination of document review, interviews and communications with the project proponent's staff, and interviews with property owners at the in situ visit. The project was assessed for compliance with the criteria described in Section 2.2 of this report.

Accordingly, the sampling plan should ensure that the level of assurance of validation and verification of the GHG mitigation Sector Project should not be less than 95%. The errors that were found in the spreadsheets were corrected, those errors never exceeded 5% error, with respect to the previous emission reduction. Therefore, it is assured that the level of assurance is not less than 95%.

In addition to the review of compliance with the requirements of ISO 14064-2: 2019, the validation/verification development includes strategic and risk analysis, with the audit team assessing the issues outlined in ISO 14064-3: 2019.

Based on these analyses and taking into account the requirements of the GHG program being used, the following sampling plan will be carried out.

1. The sampling of GHG data and information was carried out taking into account the provisions of the "Standard for Sampling and Surveys for CDM Project Activities and Programmes of Activities" and the "Guidelines for sampling and surveys for CDM project activities and programmes of activities". Where the plots established for the determination of the carbon contents of the main reservoirs considered within the BCR002 and BCR004 methodologies are assumed as the total sample. The following table shows the size of the population and sample selected for the audit.

Item	No Plots by	Sample Field Audit	Sampling Intensity (%)
Forest	34	2	6%
Dense grassland	7	2	28%
Herbazal	13	4	31%
Soil	23	4	17%
Cartography	N/A	100%	100%
PD&RM Documentation	N/A	100%	100%
Sampling Intensity Project (%) Site Visit			47%

It should be clarified that this review of plots includes the site visit, but with the documentary analysis, 100% of the plots are reviewed.

2. *Based on these analyses and considering the requirements of the GHG program used, the following sampling will be performed with the review of 100% of the information. For validation and verification, the following criteria presented by the PP as documentary support will be taken into account:*

AENOR reproduced and verified 100% of the spreadsheets in Excel file Calculations/24/ of the CultivO2 - P1 Climate Change Mitigation Project for the ex ante estimates during the period of quantification of GHG emission reductions and the ex post estimates for the period the monitoring period of the two project activities.

Project boundaries of established and expansion areas for Cacao and Cashew, as well as deforested and degraded areas in the project area and reference area were 100% validated and verified using the GIS database.

Changes in carbon pools in the baseline and project scenario; as well as leakage were 100% validated and verified. For the data provided for the estimates in the two AR and REDD+ activities of the project. AENOR performed a reasonable sampling of the data.

AENOR considers that the project holder and other technical collaborators are very knowledgeable in forestry projects, monitoring activities and the requirements in the BCR program for AFOLU projects, so the risks are minimal and assumable. However, AENOR performed the following sampling:

The activities in which the risks were assessed were the evaluations of the monitoring system (data flow, data control procedures, etc.) but mainly the quality of the raw data, as well as the sources and calculations of the spreadsheets. AENOR reproduced and verified 100% of the sheets attached to the PD/1/ and the other spreadsheets/24/ for the monitoring periods for the project area.

Project boundaries and land cover changes in the project area were also 100% verified using the GIS database.

Carbon stock changes and land use classes in the project area were also 100% verified using the sources cited in PD/1/.

100% of the sample plots for the AR component were reviewed with field and desktop activities.

The data provided for the reference region and emission factors were checked against the most updated official national documents.

AENOR performed a thorough and meticulous review of the spreadsheets to verify the correct application of the methodologies (formulas, equations, spreadsheets) and verified that the data required for the calculation of GHG removals and reductions were adequately provided. Based on the assessment performed, AENOR confirms with a reasonable level of assurance that the claimed emission reductions are free from material errors, omissions or inaccuracies.

4   *Validation and verification procedures and means*

4.1   *Preliminary assessment*

According to the audit scope presented in section 2.2, the project validation and verification process took into account the project documentation and its development in accordance with BCR002 and BCR004 methodologies, standard rules and applicable tools for design and implementations.

The detailed review of the project information and its assurance of the requirements to proceed with the development of the audit process and allowed the audit planning to be carried out based on the established criteria.

The desk review was conducted from June 19 to June 30, 2023, based on information provided by the Project Holder prior to the in situ visit. The auditor reviewed all project documentation, ensured consistency with the project type, validated completeness, and identified possible deviations from BCR's program or methodologies.

For the validation and verification of the project, the following tool was also taken into account: BioCarbon Registry. 2023. BCR TOOL. MONITORING, REPORTING AND VERIFICATION (MRV). BCR carbon credits are quantified, monitored, reported and verified. Version 1.0 February 13, 2023 and that is established in numeral 7 where it is established that the quantification period for REDD+ projects must be a minimum of 20 years and a maximum of 40 years and that projects can have annual verifications and a maximum period of 5 years.

These conditions were evaluated and are complied with by the project for the validation/verification process, as presented in the PD and the RM.

4.2 Document review

The desk review included an evaluation of project details, data and parameters, and quantification of GHG removals.

The validation/verification team conducted a documentary review that included the following:

- A review of the Project Document, the methodology applied, including applicable tools, modules, monitoring plan and quality assurance and control procedures.

- A review of the Monitoring Report and project implementation.

- A review of the data and information submitted to validate its completeness.

- An assessment of compliance with applicable regulations to validate the regularity of the activity.

- An evaluation of documents evidencing land tenure and/or carbon rights for the project.

- An assessment of the controls in place to ensure the quality of information and documentary control of the project.

- Other supporting documents (maps, spreadsheets, etc.).

As part of the desk review, an office audit was carried out on the main points of the project requiring attention (Annex 2, present evaluations of findings).

A list of the documentation reviewed during validation is presented in Annex 3.

4.3   Interviews

All interviews with relevant stakeholders took place during the site visit, the objective of the interviews was to identify the participants and their process of enrollment in the project, in addition to corroborate the boundaries of the project, compliance with the conditions of applicability of the methodologies and identify compatibility of the project with the conditions of the area, as well as potential environmental and social impacts.

The interviews yielded comments of compliance with the project, adequate owner enrollled with the information presented, and applicability and quantification based on the methodologies used.

The following table lists the parties consulted and the issues addressed during the validation and verification process.

Consulted party	Subjects covered
The Cataruben Foundation	*Several meetings and constant communication were held throughout the process with The Cataruben Foundation team (kick-off meeting, meeting to review the Monitoring Report, follow-up and closure, etc.):* - *Project objectives and expectations.* - *Clarifications related to monitoring procedures and carbon calculations.* - *Estimates and assumptions for determining GHG data.* - *Controls in place to detect and correct any errors or omissions in monitoring parameters.* - *Financial issues, financial sustainability.* - *Internal benefit distribution mechanism and investment plan for project activities.* - *Analysis of operation and measurement records* - *Land ownership and tenure rights and legal requirements* - *Carbon and biodiversity monitoring* - *Soil analysis for wetland ecosystem properties.* - *Socio-environmental effects for wetland ecosystems.* - *Biodiversity baseline.* - *REDD+ Safeguards Compliance* - *Communication and grievance mechanism*
Owners	*A sample of 11 properties was contacted and interviews were conducted with the owners in order to consult them about:* - *Project objectives and expectations.* - *Socialization process and role of stakeholders* - *Owners' participation in project activities* - *Participation in decision making and structure for governance (administration, communication, transparency).* - *Stakeholder relationship with the project development team* - *Drivers of deforestation and land use* - *Carbon and biodiversity monitoring* - *Participation social and environmental monitoring* - *Benefit sharing mechanism.*

| | - *Definition of project activities and long-term commitment.* |
| | - *Project challenges and opportunities.* |

4.4   On-site visit

As part of the validation verification of the project, an in situ inspection was carried out through visits to the localities of the project area in the municipalities of Cravo Norte and Puerto Rondón (department of Arauca) and Hatocorzal, Orocue, Paz de Ariporo, San Luis de Palenque and Trinidad (department of Casanare) during the days of July 9 to 14, 2023. The objective of the in situ visit focused on the following elements:

- *Ensure that the geographical area of the project, as reported in the Project Design document and its consistency with the annexes (GIS).*

- *Observe project status and forest and wetland conservation activities.*

- *Conduct a risk-based review of the project area to cover the project boundaries.*

- *Verify possible substantial discrepancies between the activities described in the monitoring plan and those carried out on site.*

- *Aboveground biomass validation in the proposed planting packages.*

- *Conduct a risk-based review of the project area to ensure that the project meets the eligibility requirements of the BCR requirements and the applicability conditions of the methodology.*

- *Confirmation of the quality control and quality assurance procedures designed.*

- *Validation of data and parameters used for ex ante estimates and verification of these to determine ex post calculations.*

The project boundary was visited, with respect to the baseline conditions and the stratification of the project. The areas considered for the visit where information was obtained with the accompaniment of the professionals who are part of the project.

AENOR defined the number based on the project area sampled for the sites visited. These sites were randomly selected and were identified in the field by using a GPS with an accuracy of <10 m.
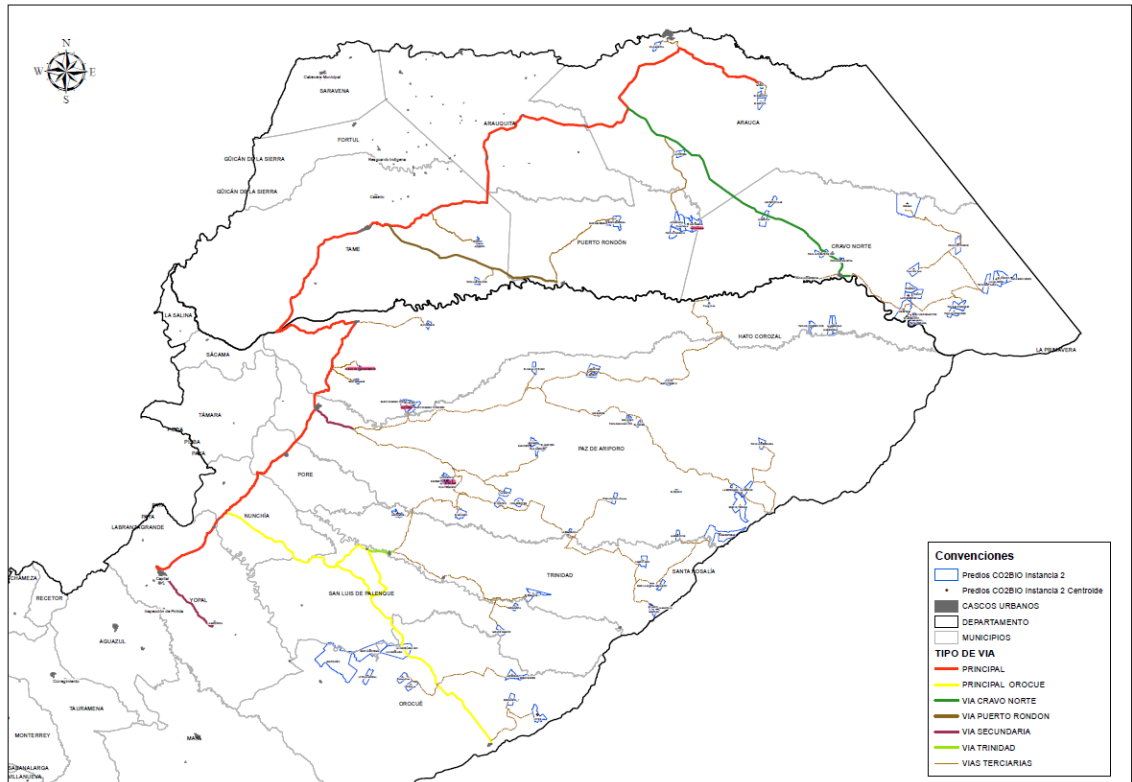
Figure 1. Audit visit tours in the Project area

4.5 Clarification, corrective and forward actions request

No FARs were identified as a validation/verification process; all findings were closed.

4.5.1 Clarification requests (CLs)

As a result of this evaluation, four (4) Clarification Requests (CL) were found. In the validation process. The CLs were closed based on adequate responses from the project proponent, which comply with the applicable requirements; the findings were re-evaluated prior to formal acceptance and closure. All required changes can be seen in the PD, MR and relevant annexes.

4.5.2 Corrective actions request (CARs)

Findings established during validation may be viewed as a non-compliance with the validation criteria or an identified risk to the achievement of project objectives. A Corrective Action Request (CAR) should be submitted if one of the following occurs:

- Non-compliance with program requirements or applied methodology is found in the project description and/or has not been sufficiently documented by project participants, or if the evidence provided to demonstrate compliance is insufficient;

- Errors have been made in applying assumptions, data or calculations of emission reductions that will affect the number of emission reductions;

As a result of this evaluation, seven (7) Corrective Action Requests (CARS) were found. In the validation process. The CARs were closed based on adequate responses from the project proponent, which comply with applicable requirements; the findings were re-evaluated prior to formal acceptance and closure. All required changes can be seen in the PD and relevant annexes.

Upon resolution of the findings, the AENOR auditor concluded that the PD, MR and spreadsheets are accurate and complete and provide an understanding of the nature of the project and the project's climate benefits. In addition, the project proponent demonstrates how GHG emission reductions are achieved and monitored.

4.5.3   Forward action request (FARs)

No FARs were identified as a validation/verification process; all findings were closed.

In Annex 2, below, provide a summary of any CLs, CARs and FARs raised, including the response provided by the project holder, any resulting changes to the project documents and, the final conclusion.

5   Validation findings

As demonstrated below in each of the following sections, AENOR has assessed all issues relevant to the detail of the project. It has been the cross-checking of the evidence, the literature provided, the interviews and the PD information that allows AENOR to confirm that the project description is accurate, complete and provides insight into the nature of the project.

5.1   Project description

The CO2Bio P2-2 Project is a climate change mitigation project that reduces CO2 emissions by developing activities that reduce deforestation and forest degradation, as well as the transformation of natural wetlands in 124 private properties located in the departments of Arauca and Casanare.

The CO2Bio P2-2 Project is not a grouped project, therefore, it does not consider the inclusion of areas after validation. The environmental, social and economic impact of the CO2Bio P2-2 Project is aimed at 102,863 total hectares, whose accounting areas are distributed in 10,532.3 hectares of forest and 50,352.8 hectares of wetlands. The project area

includes private rural properties, whose ownership corresponds to 113 properties in Property, 2 properties with Tenancy and 9 properties in Possession, in a landscape of predominantly gallery forests and flood plains.

The start date of the CO2Bio P2-2 Project is January 15, 2018 for activities and REDD+ and Wetland conservation. And it contemplates a duration of 20 years counted from this start date (January 15, 2018 - January 14, 2038).

The monitoring period for REDD+ and Wetland conservation project activities is: January 15, 2018 to December 31, 2021. In consideration of the Monitoring Plan and the BCR Standard guidelines and methodological documents BCR0004 and BCR0002.

The calculation of avoided emissions from REDD+ considered the baseline projection in the project area, minus project emissions from deforestation, minus leakage from deforestation in the leakage belt). Avoided emissions from wetland conservation considered the baseline projection in the project area, minus project emissions (from wetland conversion) minus leakage. A reserve of 20% (where 10% is in reserve and 10% in the standard) of the total GHG reductions quantified for the verified period was deducted from the total estimates and maintained as a reserve for uncertainty and risk of non-permanence.

The above steps are detailed in greater detail in the corresponding sections of this report.

AENOR has validated that the PD document, which includes the monitoring plan, accurately reflects the proposed project, which consists of the implementation of activities to avoid deforestation as well as to conserve the Continental Wetlands to promote sustainable livelihoods among landowners. Through interviews with key project staff and stakeholders, the auditor's team confirmed the main objectives of the project activity.

Regarding the Monitoring Report (MR), AENOR can confirm that the project implementation has been carried out in accordance with the PD and in line with the monitoring plan. There are no material discrepancies between the project implementation and the PD.

The estimated project costs, project start date, project duration and the environmental and social conditions of the project were validated and verified during the validation and first verification of this project.

AENOR, after the review of the supporting documents and the information gathered in the in situ visit process, considers that the implementation of the project has been correct with respect to the PD. And during this validation and first verification the activities carried out by the project were implemented.

After review of the evidence provided, consultations with stakeholders and communications with the project proponent, AENOR confirms that the monitoring arrangements described in the monitoring plan are feasible within the project design and that the means considered for implementation, including data management and quality control and assurance control

processes are sufficient (the corresponding annexes with The Cataruben Foundation Documentary Procedure and The Cataruben Foundation Archive Policy were reviewed). The details of information flow control were verified, with defined delivery, review and approval responsibilities and the key aspects for document management and control, as well as the structuring of files and documentation.

This information was cross-checked during the audit process in discussions with the project development team to ensure that ex post GHG reductions as a result of the project activity can be reported and verified in accordance with the principles of the MRV System and the accounting rules set out in the BioCarbon Registry Standard v3.2, September 23, 2023 and methodologies: BCR0002 and BCR0004.

In conclusion, the project description was developed by the TP in accordance with the requirements and validation rules of the BCR standard and the applicable methodologies.

5.2   Project type and eligibility

The sectoral scope of this project is Agriculture, Forestry and Other Land Use (AFOLU). The project applies to two project activities within the categories: i) Activities in the AFOLU sector, other than REDD+ and ii) REDD+ activities.

Sufficiently reliable information was used for the eligibility mapping analysis, such as the most recent data available from the analysis of the land use history of the project area through satellite imagery and project mapping. In addition, through the survey and field verification, the results of the digital processing and project applicability conditions were ratified.

Based on the evidence provided, meetings with clients to replicate approaches and assumptions, as well as cross-checks with applicable methodologies and tools, AENOR considers that the type of project, technology, measures implemented, assessment of project eligibility is detailed in a transparent manner in the PD and provide a clear overview of the project in its two project activities.

Table 2. Project type and eligibility

Eligibility criteria	Evaluation by validation body
Scope of the BCR Standard	*Agriculture, Forestry and Other Land Uses (AFOLU)*
Project type	- *Activities in the AFOLU sector, other than REDD+* - *REDD+ Activities*
Project activity(ies)	- *GHG Emission Reductions from REDD+ Projects* - *GHG Emissions Reduction and Removals - Activities that avoid land use change in inland wetlands.*
Project scale (if applicable)	*N/A*

5.3   Grouped project (if applicable)

The CO2Bio P2-2 project does not consider the inclusion of areas after validation, therefore, the areas corresponding to the Forest and Wetland ecosystems presented in this validation/verification audit will be validated.

5.4   Other GHG program

The audit team has found no evidence that the project has been registered, nor is it applying for registration under another GHG program, nor has it been rejected by another GHG program.

5.5   Quantification of GHG emission reductions and removals

The design of the project activities was carried out following the guidelines and guidelines established in the methodological documents of the AFOLU sector, specifically the methodologies BCR0002 Version 3.1. Quantification of GHG Emission Reductions from REDD+ Projects and BCR0004 Version 2.0. Quanfication of GHG Emission Reductions and Removals - Activities that avoid land use change in Continental Wetlands.

Project activities designed to reduce and remove GHG emissions while conserving biodiversity and meeting the present and future needs of the rural communities involved are described below.

Section 3 of the PD includes information on the methodological conditions for calculating the project's emission reductions in accordance with the activities contemplated. For this purpose, the Project Owner relied on the selected methodologies, which describe each of the conditions, parameters, assumptions and methodological development for the properties that are part of the project.

AENOR reviewed the information contained in this section and considers the information presented to be credible and sufficient in the scenario of formulating and quantifying ex ante reductions.

5.5.1 Start date and quantification period

The duration of the CO2Bio P2-2 project is 20 years, with a start date of January 15, 2018 for activities and REDD+ and Wetland conservation; and an end date of January 14, 2038.

The project start date is the date on which conservation and mitigation activities that will result in effective GHG emission reductions in the case of REDD+ activities begin to be designed and implemented, and the date on which actions to avoid wetland transformation begin to be implemented, that is, from the date on which conservation actions begin to be effective in the project areas.

AENOR checked this date with the letters of intent signed by the property owners for the two ecosystems in question (forests and Wetlands) and the project's incorporation agreement. The Cataruben Foundation also attached the field logs of REDD+ activities and wetlands, as well as the attendance records of the REDD+ and Continental Wetlands Conservation training activities.

AENOR checked that the project start date considers the retroactivity of the actions carried out by the Project Holder in each of the contracts signed with the Project Holders for their inclusion within the project areas.

Additionally, AENOR checked that the project start date is within the 5 years prior to the start of the validation, in consideration of the BCR v3.2 Standard rules.

The activities were driven for the Forest and Wetland ecosystem in terms of reducing emissions from deforestation and wetland transformation, starting in 2018, taking into account the multi-temporality analysis regarding changes in cover, the conservation status of forested areas and wetlands, and finally, the implementation of activities by the project holders.

In summary, documentary evidence was provided by the project proponent (letters of intent from owners, legal documents and start date).

AENOR, after reviewing the supporting documents and the information gathered in the audit process, considers that the project start date and duration of the project is adequate.

5.5.2 Application of the selected methodology and tools

5.5.2.1 Title and Reference

For the development of the CO2Bio P2-2 project, the BCR Standard v3.2 of 2023 was used as a basis, which provides the requirements applicable to the project, as well as the following methodologies:

-Methodology Document AFOLU Sector / BCR0004 Quantification of GHG Emission Reductions and Removals - Activities that avoid land use change in inland wetlands. Version 2.0 23 June 2022.

-Methodological Document Sector AFOLU / BCR0002 Quantification of GHG Emission Reductions from REDD+ Projects. Version 3.1. September 15, 2022.

In addition, the Project Owner took into account the following tools and guidelines that apply to project activities:

- *Tool for determining contributions to the Sustainable Development Goals (SDGs) of Greenhouse Gas (GHG) projects. v 1. July 13, 2023.*

- *REDD+ Safeguards . v 1.1. January 26, 2023.*

- *Avoidance of double counting. v 1. March 09, 2023*

- *Monitoring, Reporting and Verification Tool . v 1. February 13, 2023.*

- *-Tool "Avoidance of Harm" and environmental and social safeguards. V 1. March 07, 2023.*

- *Baseline and additionality tool . v 1.1. July 27, 2023.*

- *Permanence and risk management. v 1. Mallet 7 of 2023.*

5.5.2.2   Applicability

The Project Holder addresses each of these applicability conditions, correctly and including consistency between the requirements and the project activity. The applicability criteria of the methodologies have been assessed as presented in the following tables.

Table 3. Conditions for applicability of the BCR0002 - REDD+ methodology.

CONDITION OF APPLICABILITY	ASSURANCE/CONCLUSION
a) The areas in the geographic boundaries of the project correspond to the forest category (according to the national forest definitions for the Clean Development Mechanism) at the start of project activities and ten years prior to the project start date;	AENOR was able to review the "Non-forest Forest" analyses carried out by the TP and obtained from the Forest and Carbon Monitoring System - SMByC -IDEAM portal. AENOR verified that the areas in the geographical boundaries of the project correspond to the forest category at the beginning of the project activities and ten years before the project start date and confirmed through the Geodatabase that the project boundaries are correctly determined.

CONDITION OF APPLICABILITY	ASSURANCE/CONCLUSION
b) The identified causes of deforestation may include, among others: expansion of the agricultural frontier, mining, timber extraction and infrastructure expansion;	The causes of degradation and deforestation identified for the baseline of the project consigned in the PD, correspond to: expansion of the agricultural frontier, mainly by industrial crops (rice, oil palm, soybeans and bananas)[12] , increase in livestock[34] . And finally, the oil industry in the departments of Casanare and Arauca)[5] .
c) The causes of forest degradation identified may include, among others: selective logging, firewood extraction, forest fires, forest grazing and expansion of the agricultural frontier - illicit crops.	AENOR was able to confirm that the causes of deforestation correspond with the 9 direct causes related to deforestation and forest degradation identified by IDEAM et al. (2018)[6] .
d) No reduction in deforestation or degradation is expected to occur in the absence of the Project.	According to the Baseline and Additionality analysis, the implementation of REDD+ activities and monitoring of GHG reductions for the period 2018-2021 with respect to the project time window, deforestation and degradation are not expected to occur in the absence of the project.

AENOR was able to confirm that the REDD+ activities proposed by the Project Holder are effective in preventing further deforestation. This was evidenced by the historical deforestation calculated by the Project based on GIS analysis. |

[1] Portocarrero & Lee, 2021. Towards a new sustainable development model for the Orinoco region in Colombia. World Bank Blogs. Retrieved May 5, 2023, from https://blogs.worldbank.org/es/latinamerica/hacia-un-nuevo-modelo-de-desarrollo-sostenible-para-la-orinoquia-en-colombia

[2] CALERO, 2018. Characterization Of The Technological Infrastructure, Organizations And Institutional Support In The Agroindustry Of The Municipalities. Repositorio Universidad de los Llanos. Retrieved May 8, 2023, from https://repositorio.unillanos.edu.co/bitstream/handle/001/1342/Caracterizaci%C3%B3n%20de%20la%20Infraestructura%20Tecnologica....pdf?sequence=1&isAllowed=y

[3] SIOC, 2016. Citrus Chain Indicators and Instruments. Minagricultura. Retrieved May 3, 2023, from https://sioc.minagricultura.gov.co/Citricos/Documentos/2016-10-30%20Cifras%20Sectoriales.pdf

[4] AGROSAVIA, 2018. Product two: analysis and conclusions on human capital gaps. Colombia Aprende. Retrieved May 2, 2023, from https://www.colombiaaprende.edu.co/sites/default/files/files_public/2021-08/analisis-brechas-sector-agropecuario.pdf

[5] Cárdenas, D., & Dueñas, C. C. (2021, 04 13). Caño limón: oil bonanza, economy and institutions in the department of Arauca. Faculty of Economic Sciences. Retrieved May 06, 2023, from http://www.fce.unal.edu.co/centro-editorial/docs/econografos-escuela-economia/163-cano-limon-bonanza-petrolera-economia-e-instituciones-en-el-departamento-de-arauca.

[6] González, J. Cubillos, A., Chadid, M., Arias, M., Zúñiga, E., Cubillos, M., Joubert, F. Pérez, I. Conceptual and methodological guidelines for the characterization of causes and agents of deforestation in Colombia. Institute of Hydrology, Meteorology and Environmental Studies - IDEAM-. Ministry of Environment and Sustainable Development. UN-REDD Colombia Program. Bogotá, 2018.

CONDITION OF APPLICABILITY	ASSURANCE/CONCLUSION
e) It is possible that, in areas within the Project boundaries, carbon stocks in soil organic matter, litter and Deadwood may decrease, or remain stable.	According to the PD, the traditional use of the Project areas are agricultural, livestock and oil exploitation activities, which generate deforested areas that diminish the reserves of these reservoirs. According to the carbon reservoirs associated with forests, carbon stocks in soil organic matter, litter and Deadwood are higher in these coverages. Therefore, the project activities will promote their conservation and increase carbon content.
f) The quantification of GHGs other than CO_2 should be included in the quantification of emissions caused by forest fires (if applicable) during the monitoring period.	The project will quantify the presence of other gases only in the event of forest fires, which will be verified during monitoring periods. AENOR reviewed that areas affected by fires are considered in the monitoring and quantification of these events.

Table 4. Conditions of applicability of the methodology BCR0004 - Continental Wetlands Conservation.

CONDITION OF APPLICABILITY	ASSURANCE/CONCLUSION
a) Project boundaries correspond to the category of Wetland;	To comply with the applicability condition, the geographical limits of the project are superimposed with the map of inland wetlands in Colombia. In effect, the project areas correspond to the categories of Continental Wetlands. According to Prada et al. (2009)[7], the wetlands of the project are immersed in 4 different types of wetlands: Morichales, Saladillales, Esteros and Caños. The audit team reviewed the layer of Continental, Coastal and Marine Ecosystems of Colombia of IDEAM[8] and the correspondence with these areas, and the site visit confirmed the presence of these four types of wetlands.

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[7] Prada, N., Montes, M. A., Moná, Y., & Caicedo, D. (2009, 6 19). CorelDRAW X1.CDR Omacha Foundation. Retrieved May 18, 2023, from http://omacha.org/wp-ontent/uploads/2019/06/cambio-climatico-efecto-humedales.pdf.

[8] http://www.ideam.gov.co/web/ecosistemas/mapa-ecosistemas-continentales-costeros-marinos

CONDITION OF APPLICABILITY	ASSURANCE/CONCLUSION
b) The project activities prevent land use change in Continental Wetlands in the Orinoquia.	The activities designed and monitored for the project avoid land use change, which are framed within the framework of strengthening knowledge in wetland conservation and sustainability to prevent the expansion of the agricultural frontier, the characterization and implementation of sustainable production practices, the strengthening of governance structures in the territory and the recognition of conservation areas and figures for the sustainable management of biodiversity; a condition that allows demonstrating GHG reductions during the accreditation period of the project, which can be reviewed in paragraph 18 of the PD. AENOR was able to confirm that the Wetland Conservation activities proposed by the Project Owner are effective in preventing the transformation and drainage of these ecosystems from occurring. This could be evidenced in the historical analysis to calculate the transformation of these ecosystems calculated by the Project based on GIS analysis.
c) Project activities include biodiversity conservation actions that integrate preservation, restoration and/or management efforts and sustainable use of the Continental Wetlands.	Project activities include real biodiversity conservation actions, based on the recognition of areas and conservation and environmental management figures for biodiversity conservation in the project area, highlighting the declaration of AICAS, RHRAP, RNSC and RESNATUR, actions that demonstrate effectiveness in the sustainable management of wetlands and their biodiversity. Additionally, the declaration of 15 properties as Civil Society Nature Reserves implies a greater strengthening of land management in the project area. These activities can be seen in numeral 14.1 of the PD. AENOR was able to confirm with the sources presented that the Project includes 15 properties as Civil Society Natural Reserves and the areas of high conservation value that are the Wetlands for the Orinoco region.
d) The causes of land use changes include: expansion of the agricultural/livestock frontier, mining activity, extraction or loss of natural vegetation cover, infrastructure (road and urban) and tourist exploitation	The main causes of land use changes identified in the baseline for the Wetland ecosystem are mainly due to the expansion of the agricultural frontier and extensive cattle ranching[9] . This information can be reviewed in section 2.3.2 of the PD.

[9] UNLP (2023, February 9). Wetlands: reserves of life in danger of extinction " UNLP. National University of La Plata. Retrieved May 16, 2023, from https://unlp.edu.ar/investiga/especiales/humedales-17562-22562/

CONDITION OF APPLICABILITY	ASSURANCE/CONCLUSION
(tourist activities that exceed the carrying capacity of the ecosystem).	AENOR had access to the project information and to the analysis of causes and agents that generate changes in wetland land use and confirmed this.
e) Project activities do not lead to the alteration of the water regime of the project area or hydrologically connected areas due to anthropogenic interventions (e.g. irrigation and/or drainage systems, etc.).	From the execution of the activities previously arranged with the owners through the firma of contractual agreements (Annex Binding Documents). During the on-site visit, the audit team was able to verify the absence of drainage systems in the Wetlands, as well as the implementation of productive systems, which means that the project avoids altering the hydrological regime of the wetlands.
f) Soil disturbance attributable to project activities does not cover more than 10% of the surface area within the project boundaries.	None of the planned activities involve soil disturbance. During the on-site visit, the audit team was able to verify the absence of drainage systems in the Wetlands, as well as the implementation of productive systems, which means that the project avoids altering the hydrological regime of the wetlands.
g) The areas within the geographic boundaries of the project correspond to the categories of Continental Wetlands.	The project took as a basis the categories of Continental Wetlands determined in the delimitation exercise of wetlands in Colombia prepared by the Alexander Von Humboldt Biological Resources Research Institute scale 1:100,000 (Flórez,C., et al 2016)[10] .

Section 3.1.1 and 3.1.2 of the PD, present the applicability conditions derived from the methodological tools used by the project. AENOR reviewed the baseline scenario, site eligibility, leakage assessment, project preconditions and supporting information provided to justify the applicability of the project and concluded that the project proponent addresses each of these applicability conditions correctly and including consistency between the requirements and the project activity, in the project description.

Through an exhaustive review and cross-checking, AENOR corroborated that the selected methodologies and methodological tools involved are applicable to the project activity and were correctly justified and applied with respect to the following: Project boundaries, baseline identification, formulas for determining emission reductions, additionality, methodologies employed and monitoring.

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[10] https://www.redalyc.org/journal/491/49148413004/html/

5.5.2.3   Methodology deviations (if applicable)

The Project and the project monitoring plan comply with all requirements of the applied methodologies and do not deviate from the baseline scenario, the additionality determination or the inclusion of project GHG sources, sinks and reservoirs.

5.5.3   *Project boundary, sources and GHGs*

REDD+ Activity

In the following table are the carbon pools used to account for carbon stocks in the CO2Bio P2-2 project, in line with the BCR Methodology "Quantification of GHG Emission Reductions from REDD+ Projects BCR0002. Version 3.1. 15 September 2022", in its most recent version in accordance with the BCR standard guidelines.

Compartment	Deposit	Justification of the choice
Live biomass	Aboveground biomass Arboreal vegetation	The change in carbon content in this reservoir is significant.
	Belowground biomass	The change in carbon content in this deposit is significant.
Soils	Soil organic carbon	The change in carbon content in this deposit is significant.

Dead organic matter (dead wood debris and leaf litter) was excluded from the project, since its total value is not representative of carbon stocks.

In the validation and first verification of the project, the sources of information and data used to estimate the emission factors were evaluated and approved for the estimation of project reductions.

AENOR considers that the methodological rigor and consistency in terms of the national GHG inventory and the national reference level, as well as the inventory through permanent plots, are covered by the source of information used by the project developer for the calculation of the baseline the most updated and under the conditions of official sources, therefore, it considers that the biomass data are consistent for use in the ex ante estimates of the REDD+ Activity.

Continental Wetlands Conservation Activity

In the following table are the carbon pools used to account for carbon stocks in the CO2Bio P2-2 project, in line with BCR0004 Methodology. Quantification of GHG Emission Reductions and Removals - Activities that avoid land use change in Continental Wetlands. Version 2.0 23 June 2022.

Compartment	Deposit	Justification of the choice
Soil	Soil organic carbon - SOC or Total soil carbon - CTS	Wetland soils have a large carbon storage capacity and the change in this reservoir is significant.
Total Biomass - BT	Aboveground biomass Belowground biomass	Living biomass, both aboveground and belowground, are significant carbon reservoirs. Therefore, the variation in the content of these pools must be quantified.

AENOR considers that the values used for these reservoirs, coming from significant sampling of these components and results endorsed by accredited laboratories, are valid for the calculation of the updated baseline and being comparable with official sources, therefore, the ex ante estimates of the Wetland Conservation Activity comply with the stipulations of the BCR Standard and methodology.

In conclusion, the audit team can conclude that the Project boundaries, selected sources and deposits were duly justified by the project owner.

5.5.3.1   Eligible areas in the GHG project boundaries (for AFOLU projects)

The CO2Bio P2-2 project is located in the Orinoquia biome (eastern Colombia) and consists of 124 properties with a total area of 102,863 hectares in the departments of Arauca and Casanare.

The Wetlands component comprises 97 properties with a total area of 82,306 hectares, of which 61% (50,352.8 ha) are eligible wetlands. The wetland areas meet the methodological conditions for the quantification of GHG emission reductions and removals from activities that avoid land use change in inland wetlands (BCR0004).

The REDD+ component comprises 102 properties with a total area of 91,270 hectares, of which 12% (10,532.3 ha) are forest category areas. These areas comply with the methodological conditions for the quantification of GHG emissions reductions and removals, REDD+ Activities (BCR0002).

<u>REDD+ Activity</u>

According to the methodology, the eligible areas for an emission reduction project due to REDD+ activities are the areas covered by forests for at least ten years prior to the start of the project.

AENOR verified that the areas in the geographical boundaries of the project for the REDD+ activity correspond to the forest category at the beginning of the project activities and ten years prior to the project start date and confirmed through the Geodatabase that the project boundaries are correctly determined.

AENOR checked the forest and non-forest maps reported by the Forest and Carbon Monitoring System (SMByC) for the years 2010 and 2018, these maps categorize the national territory into three classes, forest, non-forest and without information, the latter correspond to areas that due to cloud cover or shadows effects could not be classified.

These maps were processed with the support of geographic information system software, through the comparative analysis between them we searched for the areas that preserve the forest class during the reference period, these correspond to eligible areas. The analyses were carried out using QGIS software and identified a total of 10,532.6 hectares of stable forest within the project.

ELIGIBILITY REDD+	REDD+ PROJECT AREA	
	Area (ha)	Percentage (%)
Eligible	10.532,6	100%

Continental Wetlands Conservation Activity

Based on Flórez et al (2016)[11] wetlands were identified for the year 2018, the date on which CO2BIO P2-2 initiates conservation activities. To determine the eligibility of the areas, a multi-temporal analysis is performed between the Corine Land Cover of 2018 (project start date) and the CLC of 2012, both reliable national inputs generated by IDEAM.

AENOR verified that the areas in the geographical boundaries of the project for the Continental Wetlands activity correspond to this category at the beginning of the project activities and ten years prior to the project start date and confirmed through the Geodatabase that the project boundaries are correctly determined.

AENOR had access to the Wetlands Procedure Annex and was able to corroborate that the eligibility analysis was performed based on a multi-temporal analysis between the 2018 Corine Land Cover (project start date) and the 2012 CLC both reliable national inputs generated by IDEAM.

These maps were processed with the support of geographic information system software, through the comparative analysis between them we searched for the areas that conserve the wetland class for the reference period, these correspond to eligible areas. The analyses were

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[11] Flórez, C., L. M. Estupiñán-Suárez, S. Rojas, C. Aponte, M. Quiñones, O, Acevedo, S. Vilardy and U. Jaramillo. 2016. Spatial identification of Continental Wetlands systems in Colombia. Biota Colombiana 17 (Supplement 1 - Wetlands): 44-62. DOI: 10.21068/c2016s01a03.

carried out using QGIS software and identified a total of 50,352.60 hectares of stable Continental Wetlands within the project.

CATEGORY	WETLANDS	
	AREA (HA)	PERCENTAGE (%)
Eligible	50.352,60	100%

5.5.4   Baseline or reference scenario

The reference region is known as the geographic space where the agents involved in the transformation of natural vegetation cover interact, as well as other factors that contribute to the generation and loss of ecosystem services.

The document "SPACE ANALYSIS AND SIMILARITY OF THE REFERENCE REGION.pdf" presents a description of the cartographic information used to delimit the reference region and its similarity with the project areas for the BCR0002 -BCR0004 methodology, Biocarbon Registry Standard.

The similarity analysis presented by the CP took into account different sources of official information, where the macro relationship of the Orinoco region with the reference area is presented, the information took into account the following layers: Continental, Marine and Coastal Ecosystems from IDEAM; Property Informality Index, Beef Aptitude and Bovine Milk Aptitude, Oryza sativa - Rice Cultivation Aptitude from SIPRA; Vocation of use, Forest susceptible to deforestation from IGAC, Threatened Ecosystems according to Etter 2017, Oil Platform Density from ANH.

And finally, the analysis concludes with the argument that the reference region and the project areas are strategically located in a zone for the fight against deforestation, since it is located in the connectivity corridors prioritized by the "Main Ecological Structure of the Colombian Orinoquia3 ", the project areas are prioritized on the connectivity routes, which allows establishing a mechanism for the protection of forest, water and biodiversity resources.

REDD+ Activity

The selection of the reference region was made taking into account the guidelines set forth in the AFOLU Sector Methodological Document "BCR0002. Quantification of GHG Emission Reductions from REDD+ Projects. Version 3.1. 15 September 2022". For the construction of the national reference level (NREF) the values submitted by Colombia to the UNFCCC in 2019 were taken into account, the Orinoquia biome was selected, excluding the areas defined in Annex 2 of the NREF "Adjustment for national circumstances".

It is important to note that the reference region is located in the Orinoquia biome and shares political divisions with the departments of Casanare and Meta. The main drivers of

deforestation identified are extensive cattle ranching, promising agricultural crops such as oil palm and rice monoculture.

To validate the reference region had access to the Spatial analysis of the reference region (Annex 1 / 1.3.REDD +/5.Geospatial/5.1.Geodatabase REDD+_v3) provided by the Project Holder. the fulfillment of the criteria to delimit the reference region for the BCR0002 methodology, item 8.2 "Reference region for baseline estimation". The analysis is presented in Table 5.

Table 5. Criteria for the establishment of the reference region

Methodology	Criteria	OEC Assurance
BCR 0002	a) The reference region may include all or part of the project area.	**Compliant.** The reference region includes 41% of the project area.
	b) The agents and drivers of deforestation/degradation identified in the reference region can access the project area.	**Compliant.** Given that the project areas, as well as the reference region, include private property owners with similar interests in generating subsistence economic resources within regulated markets.
	c) The project area is of interest to the agents identified in the previous criterion.	**Compliant.** Land tenure conditions are similar in the reference region and in the project areas, which makes it easy for agents to carry out deforestation/degradation actions in the forest. In addition, soil, climate and land cover conditions are similar throughout the territory.
	d) Land tenure and land use rights must be characterized in the region of reference.	**Compliant**. The reference region only includes areas of private properties where the owners have the right to use the land. It does not include areas of collective tenure (Indigenous Reserves, Black Community Councils, Farmer Reserves).
	e) Exclude areas of restricted access to agents and drivers of deforestation and degradation.	**Complies.** Areas in which agents have restricted access are excluded, especially those related to Article 329 of Decree Law 2811 of 1974 "National Code of Renewable Natural Resources and Environmental Protection". Collective tenure territories are also excluded.

In this way, the reference region was established, the extension is 1,930,472.95 hectares for the Orinoco region. The historical period of deforestation was established by the method of historical average in the reference region and the area of leakage, was performed for the

period 2010 - 2018, this taking into account the information of forest cover available in national databases.

The audit team reviewed the methodology proposed in the PD to define the boundaries of the reference area and validated it with the data from the GDB of the REDD+ activity provided by the project developer, verified that the reference scenario is correctly determined and complies with the guidelines of the BCR0002 methodology used for the project.

Continental Wetlands Conservation Activity

The reference region, located in the Orinoco biome and includes in its entirety the Casanare and Arauca Helobiome, according to the map of ecosystems ecosystem scale 1:100,000 version 2.1. 2017[12] . The helobiomes correspond to places with poor drainage, dissected, permanent waterlogging or with prolonged periods of flooding, corresponding to the edaphic-climatic and hydrological characteristics of the eligible areas corresponding to wetland categories.

Compliance with the criteria to be met by the reference region for the BCR0004 methodology, item 10.2 "Reference region for baseline estimation". The analysis of these criteria is presented in Table 6.

Table 6. Criteria for the establishment of the reference region

Methodology	Criteria	Description Compliance
BCR 0004	a) The reference region and the project area are part of the same ecoregion.	**Compliant.** The reference region and the project areas are located within the same ecoregion and share the same Biome, which is the Orinoquia biome.
	b) The reference region may include all or part of the project.	**Compliant.** The reference region includes 41% of the project area.
	c) The causes and agents identified in the reference region, which generate changes in land use, can access the project area.	**Compliant.** The project areas correspond to private areas with the same land tenure conditions in the reference region as in the project areas, which makes it easy for agents to carry out deforestation/degradation actions in the forest. In addition, the soil, climate and land cover conditions are similar throughout the

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[12] Institute of Hydrology, Meteorology and Environmental Studies (IDEAM) (2017). Map of continental, marine and coastal ecosystems v2.1. Retrieved from: http://bart.ideam.gov.co/cneideam/Capasgeo/Mapa_ecosistemas_Continentales_Marinos_Costeros_100K_V 2.1_2017.zip

Methodology	Criteria	Description Compliance
		territory.

In this way, the reference region was established, with an extension of 1,930,472.95 hectares for the Orinoco region. AENOR reviewed the methodology proposed in the PD to define the limits of the reference area and validated with the vector shape layers data provided by the project developer, in annex GIS - 2. Geodatabase_v.3. AENOR verified that the reference scenario is correctly determined and complies with the guidelines of the methodology of section 8.2 of the BCR002 methodology and section 10.2 of the BCR004 methodology used for the project.

The baseline scenario is established taking into account the changes in carbon stocks at the project boundaries, identifying the most likely land use at the start of the project, according to the guidelines established in the AFOLU Sector Methodological Documents / BCR0004 Quantification of GHG Emission Reductions and Removals - Activities that Avoid Land Use Change in Continental Wetlands. Version 2.0 23 June 2022 and BCR0002 Quantification of GHG Emission Reductions from REDD+ Projects. Version 3.1. 15 September 2022.

In the project's area of influence (Orinoco region, departments of Arauca and Casanare), a significant impact has been observed in terms of biodiversity loss and greenhouse gas (GHG) emissions due to deforestation and the transformation of natural ecosystems. These effects are directly related to activities, including the expansion of the agricultural frontier, industrialization, and the extraction of fossil fuels and minerals in the areas of interest.

According to the TP's analysis of the baseline, the livestock and agricultural sector continues to play a crucial role and continues to be the main source of income for landowners; there are also regional and national regulations and development plans that promote agricultural development in the Orinoquia region, which allows determining that these uses are the most plausible and prevailing scenarios, making up the project's baseline scenario.

5.5.5 Additionality

AENOR considers that the project complies with the additionality criteria[13] for REDD+ and Continental Wetlands Conservation projects established in the BioCarbon Registry standard and methodologies.

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[13] *BioCarbon Registry. 2023. BIOCARBON GUIDELINES. BASELINE AND ADDITIONALITY. BCR projects generate verified carbon credits (VCC) that represent emissions reductions, avoidance, or removals that are additional. Version 1.2 September 27, 2023*

The evidence presented by the project holder was witnessed by the audit team according to each step of the development of the tool. For this purpose, each of the sources provided in the PD and the documents related to the sources provided in the PD and documents related to regulations and analysis of the impact of credits on the project were reviewed.

The Project Holder submits a complete list of realistic and credible baseline scenarios in the areas where it will carry out the REDD Activity and the Continental Wetlands Conservation Activity, and where it specifies the most reasonable baseline scenario of what would occur in the absence of the proposed project activity, for which it selected the criteria in section C (changes in carbon stocks in the project boundaries, identifying the most likely land use, at the start of the project) of the baseline and additionality tool. v 1.1. July 27, 2023. In which the following steps were followed:

- Preliminary selection based on the start date of the project activity.

The start date for the CO2Bio P2-2 Climate Change Mitigation Project is January 15, 2018 for REDD+ activities and for the Continental Wetlands Conservation activity, consistent with the evidence evaluated in numeral 5.5.1 of this report.

- Step 1 Identification of alternative scenarios

Livestock activities comprise one of the main land uses for the Orinoco region, where according to data from DANE (2014)[14] , this activity increased by up to 50% in the departments of Casanare and Arauca. Similarly, the agricultural sector stands out in a second line, which covers approximately 11.3% of the total area of the region, which corresponds to about 2.8 million hectares for agricultural activities, where the main ones are rice, banana and Cacao[15] . The extraction of crude oil and natural gas was identified as another important economic sector for the region, with the departments of Arauca and Casanare contributing 7% and 28%, respectively, at the national level[16] . Finally, illicit crops stand out as hidden marginal uses in forest areas that contribute to deforestation and degradation.

As a result of the most favorable and encouraged productive practices in the Orinoco region, the significant impact on biodiversity loss and Greenhouse Gas (GHG) emissions due to deforestation, degradation and transformation of natural ecosystems is evident. Livestock and agricultural systems are the most widespread, with unsustainable practices.

In addition to these scenarios, the Project Owner identifies potential environmental and conservation projects and participants in carbon markets. These are very unlikely to happen in the project's reference region, due to the lack of knowledge on the part of

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[14] National Planning Department (DNP) (2016). Orinoco Master Plan for the years between 2014 and 2018. Link: http://cccasanare.co/wp-content/uploads/2017/02/Plan-

[15] IGAC. (2016, August 4). Areas suitable for production in the Orinoquia. AGUSTÍN CODAZZI GEOGRAPHIC INSTITUTE. Retrieved April 27, 2023, from https://igac.gov.co/es/noticias/el-159-de-la-orinoquia-tiene-suelos-aptos-para-soportar-la-presencia-del-ganado

[16] Viloria de La Hoz, 2019. Reflections on the training of economists and economic research in Colombia. Economía & Región. 1, 1 (Jul. 2019), 54-63.

territorial and private entities about the operation of climate change mitigation projects and the steps necessary to certify greenhouse gas (GHG) reductions and/or removals.

Based on evidence from project documentation and field interviews, inappropriate practices affecting conservation and deforestation, it is possible to determine that the baseline scenarios identified are the most likely and realistic for the project area. Therefore, the baseline scenario for the project activity corresponds to these activities, the evidence and justifications for which are expected to continue in the area in the absence of the project activity.

- Sub-step 1b. Consistency of credible alternative land use scenarios with applicable mandatory laws and regulations.

All but one of the identified scenarios (Wetland Conservation and REDD+ scenario) and its alternatives are subsistence farming activities for local farmers and comply with all applicable mandatory legal and regulatory requirements. With the exception of illicit crops, this scenario does not correspond to the subsequent analysis.

The alternatives presented include all plausible scenarios taking into account local and sectoral circumstances and the application of national laws and regulations. Therefore, the list of alternatives is considered complete.

- Barrier analysis

This step consists of identifying the barriers that would prevent the implementation of at least one alternative land use scenario, and is divided into three parts, the first is the Identification of barriers that would prevent the implementation of at least one alternative land use scenario, in this case the proponent identified the following barriers: barriers to investment, technological barriers, barriers related to local tradition, barriers due to local ecological conditions, barriers due to social conditions and other barriers. The TP also analyzed each barrier against each scenario based on secondary information, and provided documented and transparent evidence, and offered conservative interpretations of this documented evidence, in terms of how it demonstrates the existence and significance of all identified barriers.

In addition to the barrier analysis, the TP presents the financial analysis (Annex 11.9 Financial Model) where the model for REDD and Wetland Conservation activities is presented together, which includes the project areas. Given that this is a predominantly social project that involves protection zones of these ecosystems, it is not feasible to carry out a separate financial analysis for REDD+ and Continental Wetlands Conservation activities.

The results of the model show that the certification and registration of the project, and the associated benefits and incentives derived from this, diminish the impact of the identified barriers and thus, it is demonstrated that the project is carried out for the estimated crediting period, therefore, the project is additional to the REDD+ and Continental Wetlands Conservation activity.

The approach used in the PD to demonstrate additionality in the two project activities (REDD+ and Continental Wetlands Conservation) was assessed based on a document

review, as well as through on-site discussions with the project team, key project proponents and landowners, as well as consultants involved in the PD. Interviews on this topic were also conducted with stakeholders during the in situ visit. The data, rationale, assumptions, justifications and documentation provided were verified using local knowledge and sector experience. In essence, the project is considered additional to the extent that, if traditional baseline uses prevail, activities that eventually differ from a forestry or agroforestry use.

AENOR considers that the project complies with these guidelines in relation to carbon stock changes within the project boundaries by identifying the most likely land use at the beginning of the project and correctly applying the steps of the tool designed by BCR.

Additionally, AENOR has been able to verify through documentary evidence and testimonies obtained from interested parties that the project is not the result of environmental license compensation activities, concessions or timber harvesting requests or requests for subtraction of national forest reserves; nor is it the result of preservation and restoration activities in strategic areas and ecosystems for which payments for environmental services for the reduction and capture of GHGs are available.

5.5.6   Conservative approach and uncertainty management

The uncertainty for the calculation of GHG reductions took into account the considerations of the document: "Guidelines for the selection of equations, parameters and data for calculating GHG removals from forestry activities. Version 1.1, September 17, 2020"[17]

Additionally, the guidelines of the tool BioCarbon Registry 2023 were followed. BCR TOOL. MONITORING, REPORTING AND VERIFICATION (MRV). BCR carbon credits are quantified, monitored, reported and verified. Version 1.0 February 13, 2023, which establishes the management of uncertainty and the conservative approach to quantifications. For this purpose, the project presents within the spreadsheets the information used with a conservative approach, national references and the calculation of the uncertainty of the quantifications and cartographic information.

Uncertainty is determined by the accuracy of the maps used to estimate the emissions calculations and the use of field-reported information.

Thus, for the 2012 and 2018 land cover maps it was not necessary to perform the uncertainty analysis because they are national maps, generated by IDEAM that meet this requirement. The non-forest forest maps used for the REDD+ component analyses are reliable inputs, generated by a state entity (IDEAM through the SMByC).

The TP, on the other hand, estimated the uncertainty of the emission factors for the REDD+ activity and the Continental Wetlands Conservation activity using formula 15 of the tool "Estimation of carbon stocks and change in carbon stocks of trees and shrubs in A/R CDM project activities"[18] .

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[17] Guidelines for the selection of equations, parameters and data for calculating GHG removals from forestry activities. Version 1.1, September 17, 2020.

[18] https://cdm.unfccc.int/methodologies/ARmethodologies/tools/ar-am-tool-14-v4.2.pdf

Thus, the uncertainty analysis to the emission factors for Continental Wetlands yielded values of 16.38% and 19.58% for total biomass and soil organic carbon pools according to the values presented in Tables 27 and 28 of the PD. Under the guidelines of methodology BCR0004, section 15, it is acceptable to use data with an uncertainty of less than 20%; however, in the case that the uncertainty exceeds 10%, the lower value of the 95% confidence interval should be applied.

The uncertainty analysis of the emission factor for forests yielded a value of 7.98%. Thus, the average biomass value is accepted under the uncertainty management guidelines of the BCR0002 methodology, since it is below 10%, as presented in Table 29 of the PD.

AENOR, based on the documentary review and the review of the plots in the field, was able to confirm the application by the TP of the following measurement protocols: FC- GOP-15. Forest Plot Survey Procedure for Woody, Shrub and Herbaceous Vegetation and FC-GPP-23 Inventory Design Procedure for Biomass Growth Monitoring, which were designed based on the Colombian National Forest Inventory (Olarte et al. 2021[19]). Additionally, the audit team had access to the calculations for wetland and forest sampling (Calculation of sampling points - Wetlands and Calculation of sampling points - Forests), where the information of the sampling plots and field measurements are reported.

In consideration of the above, AENOR can conclude that the primary information, the protocols for collecting and measuring the information and the uncertainty estimates for the emission factors were correctly applied and calculated.

5.5.6.1   Quantification of GHG Emissions Reductions - REDD+ Activity

Identification of deforestation and/or degradation causes and agents

Section 2.3.1 of the PD presents the steps for the identification of agents and drivers of deforestation, for its identification was made from recognized secondary sources (among which stands out the document Conceptual and Methodological Guidelines for the Characterization of Causes and Agents of Deforestation in Colombia published by IDEAM), where support information is available for agricultural and livestock planning, These are characterized to determine which is the transforming effect on the territory, therefore, it was the base input for the determination of the mobilization of agents, at the same time, the validation was carried out through an analysis of cover transformation, where the land uses were associated with the previously identified agents.

To determine compliance with the estimation of activity data, the corresponding information in the REDD_V3 Geodatabase is verified, especially the feature dataset "Reference region", feature class "IDEAM 2010 Forest" and "IDEAM 2010-2018 Forest" and the information concerning leakage and project areas.

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[19] *Olarte-Villanueva, C. P., Merchán-López, O. F., Linares-Prieto, R., Quintero-Cardozo, F., León-Cruz, R., Rodríguez-León, A. and Montealegre J. O. (2021). Guiding framework for the implementation of the National Forest Inventory. Bogotá: Instituto de Hidrología, Meteorología y Estudios Ambientales (IDEAM). 226 pp. 226 pp.IDEAM Publications*

In conclusion, deforestation is the result of a combination of both natural and anthropogenic factors. Although poverty is often mentioned as an underlying cause of deforestation, there are other elements, such as industrial pollution and inappropriate land use. Human activities that have the greatest impact and are responsible for the majority of deforestation in the project area include cattle ranching, oil palm and rice cultivation, as well as the exploitation of timber products, these being the main direct causes that motivate agents to carry out the transformation of natural land covers such as forests.

Description of REDD+ activities

Based on the analysis of the agents and causes of deforestation, the project owner establishes the main activities for its management and control in the project areas. Six (6) REDD+ activities are presented. These activities represent measures aimed at mitigating deforestation and degradation, as well as monitoring and conserving flora and fauna, and reducing water consumption for conservation. The proposed activities are as follows:

1. <u>Strengthen knowledge for the sustainable management of ecosystems and biodiversity conservation through virtual and/or in-person training.</u>

Indicator: Training conducted on ecosystem services and conservation of strategic ecosystems.

2. <u>Promote forest governance in the project area.</u>

Indicator: Progress in the implementation of the governance strategy.

3. <u>Promote sustainable forest management</u>

Indicator: Progress in the implementation of the governance strategy.

4. <u>Promote the delimitation and/or signage of conservation areas.</u>

Indicator: Property delimited and/or marked out

5. <u>Promote and improve agricultural production, livestock (on existing lands) and tourism, through the implementation of good sustainable practices.</u>

Indicator: Properties implementing sustainable productive activities.

6. <u>Generate alerts of changes due to deforestation, degradation and/or transformation of ecosystems in the project area and its surroundings</u>.

Indicator: Satellite analysis of properties to identify changes due to deforestation, degradation and/or transformation of eligible areas.

The project owner has ensured adherence to the requirements stipulated in section 11 of BCR002, focusing primarily on meeting the conditions established in items b, e, f, and g of

the methodology. Project activities are formulated based on the work carried out with private property owners and the analysis of the causes and agents of degradation and deforestation in the project's area of influence. These activities seek to reduce emissions due to deforestation and forest degradation by addressing the direct or underlying causes identified.

Similarly, this has been achieved through relevant adjustments and updates to the monitoring plan, which now reflects a more precise articulation with the demands of the standard. Leaving traceability between activities and direct or underlying causes.

AENOR was able to verify the Agents of deforestation and degradation matrix and the description of REDD+ Activities, which shows a relationship between the activities and the causes of deforestation and degradation in the project area. Additionally, the description of the indicators for monitoring is clearly presented for each activity, which is framed within the monitoring plan of the project activities.

Emission factor Deforestation

Emission factors for deforestation were constructed according to the estimated biomass content by non-destructive random sampling, where measurement plots were established in the forest cover of the eligible areas of the project, located in the Orinoquia biome.

The calculation of the sample size and selection of sampling points was carried out according to FC-GPP-23 Inventory design procedure for biomass growth monitoring, while the field methodology was implemented according to FC-GPP-15. Forest Plot Survey Procedure for woody, shrub and herbaceous vegetation, which was designed based on the National Forest Inventory of Colombia (Olarte et al. 2021[20]) (Section 3.7.3.2.2.1 of the PD).

In total, 34 plots were measured for forest sampling, which were circular plots of 15 m2 radius with a total area of 707 m2, with nested subplots according to size category: Forest (r = 7 m) and Large Forest (r = 15 m). During the sampling, all the trees were measured, except for the Latizal category (10 cm > DBH ≥ 2.5 cm), taking into account that the allometric equations defined for biomass estimation are applicable for DBH greater than 10 cm (Section 3.7.3.2.2.2 of the PD; Appendix 1.)

Aboveground biomass and belowground biomass contents were estimated using data collected in the field and allometric equations applied according to the type of individual sampled. To calculate Aboveground biomass of dicotyledonous species, the equation of Álvarez et al. (2012) was applied for tropical rainforest (bht), which relates DBH values and wood density. For the calculation of biomass in palms, dasometric variables of stem height and total height were taken into account, and the allometric equation proposed by

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[20] *Olarte-Villanueva, C. P., Merchán-López, O. F., Linares-Prieto, R., Quintero-Cardozo, F., León-Cruz, R., Rodríguez-León, A. and Montealegre J. O. (2021). Guiding framework for the implementation of the National Forest Inventory. Bogotá: Instituto de Hidrología, Meteorología y Estudios Ambientales (IDEAM). 226 pp. 226 pp.IDEAM Publications*

Rodríguez & Soriano (2018) for Attalea butyracea was used. As for Euterpe precatoria, the equation of Restrepo (2003) was used and for lianas or lianas or lianas Zapata et al. (2003) recommended by IDEAM 2011[21] . Finally, the Cairns, Brown & Baumgardner (1997) equation was used to estimate Belowground biomass. The equations used by the project were the following.

Equation	Type of individual	Source
$BA_2 = 65{,}233*Hest + 253{,}849$	Attalea butyracea	Rodriguez & Soriano (2018)
$BA = \exp(0.360 + 1.218 \ln(H))$	Palms	Restrepo et al. (2003)
$\ln(BA) = 2.406 + (-1.289 \ln(D)) + 1.169 (\ln(D))^2 + (-0.122)(\ln(D))^3 + 0.445 \ln(\rho)$	Fustales and Gran fustales	Álvarez et al. (2012)
$BA = 0.028 + 1.841 \ln D$	Lianas	Zapata et al. 2003
$BS = -1.0587 + 0.8836 \ln(BA)$	Belowground biomass	Cairns, Brown & Baumgardner(1997)

Source: The Cataruben Foundation, 2023.

Considering that the selected equations include wood density (ρ) as an independent variable, the TP identified the sampled individuals and based on secondary sources established the applicable density values, these values are presented in Table 39 of the PD, which were reviewed by the audit team.

AENOR, during the on-site visit, conducted the remeasurement of 3 plots in the forest cover, where it was possible to validate the location of the sampling points on the forest cover, the training of the field team, the suitability of the equipment and tools used for the measurement, the correct demarcation and delimitation of the plot, and the measurement of each of the individuals according to the protocols FC-GP-15. Procedure for Surveying Forest Plots for Woody, Shrub and Herbaceous Vegetation and FC-GPP-23 Inventory Design Procedure for Biomass Growth Monitoring, established by the TP. Thus, the result of the remeasurements in the audit was consistent with the values reported in each of the plots.

In the field verification of the differences in the TP measurements and the measurements of the plots in the audit was less than 10%, which is considered appropriate and allows determining that the procedure established for the measurements was carried out in accordance with valid procedures and methods that are in line with the national forest inventory of Colombia.

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Likewise, the audit team reviewed each of the sources provided by the TP for the equations and density values, and can conclude that these apply to the project area and are appropriate to the bioclimatic conditions of the Orinoco region, where the project is located (Tables 38 and 39 of the PD).

Conversion of Aboveground biomass to carbon and CO_2 equivalent

According to IPCC (2006) and IDEAM (NREFF Colombia), 0.47 is used as the carbon fraction of dry matter.

To convert the amount of carbon (stored or emitted) by forest ecosystems, the IPCC (2003 - 2006) recommends using the factor of 44/12 = 3.67. This factor results from dividing the atomic weight of a carbon dioxide molecule by the specific weight of carbon). In other words, the amount of tons of carbon stored by forests is multiplied by 3.67.

Total biomass (BT) is estimated from the sum of Aboveground biomass (BA) and Belowground biomass (BS). The carbon content of total biomass (CBF) is the product of the BT and the carbon fraction of dry matter (FC). The estimation of CBFeq is calculated according to the equation:

$$CBFeq = BT \; x \; FC \; x \; 44/12$$

Where:

CBFeq =Carbon dioxide equivalent contained in the total biomass; tCO2e

ha-1

BT   =Total biomass ; t ha-1

FC   =Carbon fraction   of dry matter (0.47).

Based on the data analysis and application of the related equations, a total biomass (BT) content of 327.22 t/ha was determined for the REDD+ component of the project. Thus, the emission factor for total biomass corresponds to 563.91 tCO2e/ha. AENOR, after reviewing the spreadsheets and equations (Annex 2. Data analysis) can conclude that this is a value applicable to the project areas, since, according to the analysis of different studies reported for this type of forests biomass values between 128.74 - 287 t/ha are reported (González A, 2015; Álvarez et al., 2016; Aldana, Villanueva & Stevenson, 2017; IDEAM, 2018) (See CAR 5), where the great variability depends on the inventory characteristics applied. However, the procedures and data sources applied by the TP were adequate and aligned with established national procedures to arrive at biomass estimates under a conservative scenario.

On the other hand, for the definition of the emission factor of the Soil Organic Carbon (SOC) deposit in forests, the value established in the most recent NREF for the Orinoco biome (IDEAM, 2019)[22] was taken as a reference.

Biome	SOC (tC/ha)	COS20 $_{YEARS}$ (tC/ha)	SOC$_{eq}$ (tCO2e/ha)
Orinoco	64,51	3,23	11,83

Source: IDEAM, 2019.

The total carbon emission factor corresponds to the sum of the values established for the total biomass and soil carbon pool, and represents the emission of carbon dioxide equivalent for each hectare deforested. Thus, Table 43 of PD lists the value applicable to the project.

Stratum	CBFeq (tCO2e /ha)	COSeq (tCO2e /ha)	CTeq (tCO2e/ha)
Orinoco Forest	563,91	11,83	575,74

Source: The Cataruben Foundation, 2023.

Estimation of ex ante reductions and removals

The validation and verification team conducted an intensive review of all input data, parameters, formulas, calculations, conversions, resulting uncertainties and output data to ensure consistency with the criteria established in Section 3.7 of the PD and the calculation methodology employed.

The project manager provided conversion factors, formulas and calculations in spreadsheet format (1. Emissions_REDD+ V3.xls) to ensure that all formulas were accessible for review. The project manager also provided a step-by-step description of the calculations to ensure that the audit team understood the approach and could confirm consistency with the methodologies. Where applicable, references for analysis methods or default values were verified with the appropriate source.

The following table summarizes the data and parameters used by the project proponent to calculate the ex ante GHG emission reductions over the GHG emission reduction quantification period and which have been evaluated by AENOR:

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[22] Ministry of Environment and Sustainable Development; IDEAM. (December 2019). Proposal of reference level of forest emissions from deforestation in Colombia for payment for REDD+ results under the UNFCCC. Bogotá D.C. Retrieved from https://redd.unfccc.int/ files/02012019_nref_colombia_v8.pdf

Data/Parameter available for validation	Value	Purpose of the data/parameter	Evaluation procedure
Reference region forest area in 2010	Orinoco 245,504 ha	Estimated change in area covered by forest in the project area in the without-project scenario	• Value consistent with GIS database. • Correctly entered in the spreadsheet.
Reference region forest area in 2018	Orinoco 205,730 ha	Estimated change in area covered by forest in the project area in the without-project scenario	• Value consistent with GIS database. • Correctly entered in the spreadsheet.
CSBYear (ha) + %CN the reference region between 2010 and 2018.	Orinoco 4,972 ha	Annual historic deforestation in the reference region	• Calculation of the change in the area covered by forest in the baseline. • Correctly entered in the spreadsheet.
Project area (forest) 2018.	Orinoco 10,523.6 ha	Estimated emissions in the baseline scenario.	• Value consistent with the GIS database. • Correctly entered in the spreadsheet.
Projected annual deforested area under the REDD+ project scenario	Multiple values	Estimated emissions in the baseline scenario.	• Calculation of the reproduced value.
Total biomass in the project area:	Orinoco 327.22 t/ha	Estimated emission reductions	• Values Forest Inventory The Cataruben Foundation 2023. • Correctly entered in the spreadsheet.
Soil carbon content	Orinoco 11.83 t/ha	Estimated emission reductions	• Proposed Reference Level of Forest Emissions from Deforestation in Colombia for REDD+ Payment for Results under the UNFCCC in 2019. • Correctly entered in the spreadsheet.

Data/Parameter available for validation	Value	Purpose of the data/parameter	Evaluation procedure
Percentage increase in emissions in the Leakage area due to the implementation of REDD+ activities, %Ef.	10%	Estimated avoided deforestation and degradation emission reductions.	● The use of a value for 10% defect is accepted in the BCR002 methodology. ● Correctly entered in the spreadsheet.
Carbon fraction of dry matter (CF)	0.47	Estimation of carbon content in biomass	● NREFF Colombia and BCR002 methodology. ● Correctly entered in the spreadsheet.

All values in the table above can be checked against the Deforestation spreadsheet. In the calculations of emissions from deforestation, the emission factors for the Orinoquia Biome established in the forest inventory for biomass and NREF submitted by Colombia to the UNFCCC in 2019 are included for the SOC, that value was taken for carbon. Based on the data analysis and application of the aforementioned equation, in the BCR002 methodology, the emission factor for the forest in the project area (Total Emission Factor) was determined. Likewise, the adjustment for national circumstances established by the NREF was included in the projection of the Baseline scenario.

The calculation procedure used by the project proponent for the ex-ante quantification of GHG reductions as a consequence of project implementation during the GHG emission reduction quantification period and its outcome is summarized below.

– *Estimated annual historical deforestation in the reference region*

The estimation of annual historical deforestation in the reference region is estimated by applying the equation:

$$CSBaño = (1/(t_2 - t1)) \; x \; (A_1 - A_2)$$

Where:
$CSBaño$ = Annual change in area covered by forest in the reference region; ha.
$t2$ = Final year of the reporting period; year.
$t1$ = Initial year of the reference period; year.
$A1$ = Area of forest in the reference region, at the initial moment; ha
$A2$ = Area of forest in the reference region, at the final moment; ha

To the BSC estimated from the historical average, an adjustment for national circumstances is applied as established in the national reference levels (NREF), applying the most conservative scenario, defined from the logistic model developed by IDEAM for the period 2018-2022.

– Projected annual deforestation in the scenario with REDD+ project

Projected annual deforestation in the REDD+ project scenario is calculated using the equation:

$$CSB_{proy,año} = CSB_{lb,año} \; x \; (1 - \%DD)$$

Where:

$_{,año}$ = CSBproyAnnual change in area covered by forest in the with-project scenario; ha
$_{lb,año}$ = CSBAnnual change in area covered by forest in the without project scenario; ha
%DDD = Projected decrease in deforestation due to implementation of REDD+ activities._

– Historical annual deforestation in the leakage area

The annual historical deforestation in the leakage area is calculated with the equation:

$$_{f,año} = CSB(1/(t_2 - t_1)) \; x \; (A_{1,f} - A_{2,f})$$

Where:

$_f$ CSB,año=Annual change in the area covered by forest in the leakage area, in the without-project scenario; ha
t2=End year of reference period; year.
t1=Initial year of the reference period; year.
A1,f=Forested area of the leakage area at the initial time of the reference period; ha
A2,f=Forested area of the leakage area at the end of the reference period; ha_

– Projected annual deforestation in the leakage area in the scenario with project

Projected annual deforestation in the leakage area in the REDD+ project scenario is estimated using the equation:

$$CSBREDD+proy,f\,año = CSB_{f,lb} \; x \; (1 + \%E_f)$$

Where:

$_{+ CSBREDDprooy,f,año}$ =Annual change in area covered by forest in the leakage area, in the scenario with project; ha
$_{f,lb}$ CSB=Annual change in the area covered by forest in the leakage area, in the without-project scenario; ha_

%E f =Percentage increase in emissions in the leakage area due to the implementation of REDD+ activities.

In accordance with the BCR002 methodology, the default value of 10% has been used.

–   Projected annual deforestation in the scenario with REDD+ project

Projected annual deforestation in the REDD+ project scenario is estimated with the equation:

$$_{+\ CSBREDDproy,año}=CSB_{año}\ x\ (1\text{-}\%DD)$$

Where:

$_{CSBREDD+prooy,año}$ *=Change in area covered by forest in the project area in the project scenario; ha*
$CSBaño$*=Change in area covered by forest in the project area in the without-project scenario; ha*
%DDD = Projected decrease in deforestation due to implementation of REDD+ activities.

–   Projected annual deforestation in the area of leakage in the scenario with project

Projected annual deforestation in the leakage area in the REDD+ project scenario is estimated using the equation:

$$_{f,\ CSBproy,año}=CSBlb,año\ x\ (1\text{+}\%E\,f)$$

Where:
$_{f,\ CSBproy,año}$ *= Annual change in area covered by forest in the leakage area, in the scenario with project; ha*
$_{f,lb}=CSB$*Annual change in area covered by forest in the area of leakage, in the baseline scenario; ha*
%E f = Percentage increase in emissions in the leakage area due to the implementation of REDD activities.

In accordance with the BCR002 methodology, the default value of 10% has been used.

Emission reductions from avoided deforestation in the project scenario are estimated according to the equation:

$$_{REDEF,\ REDD+\ proy=}(t_2 \text{ - } t_1)\ x\ _{(EADEF,lb,año \text{ - } EADE}F,\ REDD_+\ proy\ _{proy,año}.EADEF,\ )_{f,año}$$

Where:

$_{REDEF,REDDD+\ proy=}$ *avoided deforestation emissions reduction in the scenario with project; tCO2e*

$_2t$ = *Final year of reference period; year.*

$_1t$ = *Initial year of the reference period; year.*

EADEEF, $_{lb,año}$ =*Annual emission from deforestation in the baseline scenario; tCO2e.*

$_{EADEF,REDDD+}$ *proy,* $_{año}$ =*Annual emission of deforestation in the project area; tCO2e*

$_{,f,año}$ *EADEF*=*Annual emission from deforestation in the leakage area; tCO2e.*

After applying the above formulas from the BCR002 methodology, the GHG emission reductions from deforestation as a result of the project's REDD+ activities were quantified ex ante at **2,080,480 tCO$_2$ e** for the GHG emission reduction quantification period (2018-2038).

Table 7. Ex-ante estimates of GHG emission reductions from deforestation in REDD+ activities.

Year	GHG emissions in the baseline scenario (tCO2e)	GHG emissions in the scenario with project (tCO2e)	GHG emissions attributable to Leakage (tCO2e)	Estimated net GHG reduction (tCO2e)
2018	155.075,36	15.507,54	15.476,50	124.091
2019	170.180,67	17.018,07	16.149,39	137.013
2020	177.087,32	17.708,73	16.149,39	143.229
2021	182.732,19	18.273,22	16.149,39	148.310
2022	186.981,27	18.698,13	16.149,39	152.134
2023	121.402,18	12.140,22	16.149,39	93.113
2024	121.023,52	12.102,35	16.149,39	92.772
2025	120.777,67	12.077,77	16.149,39	92.551
2026	120.532,58	12.053,26	16.149,39	92.330
2027	120.287,99	12.028,80	16.149,39	92.110
2028	120.043,90	12.004,39	16.149,39	91.890
2029	119.800,30	11.980,03	16.149,39	91.671
2030	119.557,20	11.955,72	16.149,39	91.452
2031	119.314,59	11.931,46	16.149,39	91.234
2032	119.072,47	11.907,25	16.149,39	91.016
2033	118.830,84	11.883,08	16.149,39	90.798

Year	GHG emissions in the baseline scenario (tCO2e)	GHG emissions in the scenario with project (tCO2e)	GHG emissions attributable to Leakage (tCO2e)	Estimated net GHG reduction (tCO2e)
2034	118.589,71	11.858,97	16.149,39	90.581
2035	118.349,06	11.834,91	16.149,39	90.365
2036	118.108,90	11.810,89	16.149,39	90.149
2037	117.869,23	11.786,92	16.149,39	89.933
2038	4.901,25	490,13	672,89	3.738
Total	**2.670.518,17**	**267.051,82**	**322.987,88**	**2.080.480**
Estimated annual average	**127.167,53**	**12.716,75**	**15.380,38**	**99.070**

5.5.6.2   Quantification of GHG Emission Reductions - Continental Wetlands Conservation Activity

Identification of causes and agents that generate changes in wetland land use.

The analysis carried out by the TP to identify the causes and agents of changes in these ecosystems was based on the guidelines established in the most updated version of the methodological document BCR0004 Version 2.0. Quanfication of GHG Emission Reductions and Removals - Activities that prevent land use change in Continental Wetlands.

According to UNLP, (2023)[23] One of the main causes of land use change in Wetlands is agricultural and livestock production, which may involve the conversion of wetland areas to cropland or pasture. Additionally, climate change and biodiversity loss, including the proliferation of invasive species, can also alter Wetlands due to rising temperatures, leading to risks such as fires, desertification, and water scarcity, especially during times of drought.

The underlying causes are deeper factors that motivate the agents to transform the wetlands, within the project three main agents were identified which are: Private sector (companies, industry), Civil society (Agricultural producer) and the State (Governors, mayor's offices, military forces). In this sense we find that the underlying causes are: Wastewater, urbanization processes, solid waste, economic factors, invasive species, environmental education, water supply, cultural factors, agricultural activities and livestock activities, and population growth.

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[23] *UNLP (2023, February 9). Wetlands: reserves of life in danger of extinction " UNLP. National University of La Plata. Retrieved May 16, 2023, from https://unlp.edu.ar/investiga/especiales/humedales-17562-22562/*

The wetlands in the reference region of the project are immersed in 4 different types of wetlands: Morichales (Ecosystems that are formed in areas of the savannah where water springs continuously), Saladillales (We find them in the headwaters of the pipes where flood water accumulates to a depth of 20 to 30 cm), Esteros (They are flat and wide bodies of water, present vegetation such as Bora and Buchones. They are home to a great diversity of herons, curlews, peccaries, peccaries, chigüires and tapirs) and Caños (tributaries of lagoons and rivers that are connected to watercourses within the floodplain. They generally present nutrient-poor sewage) (Prada et al., 2009)[24] .

In conclusion, wetland transformation is the result of a combination of both natural and anthropogenic factors. The high demand for land use change in wetlands for agriculture is a key anthropogenic factor contributing to the loss and degradation of these crucial ecosystems. The Orinoquia region is home to 48% of the country's Continental Wetlands and is responsible for more than 30% of Colombia's freshwater supply, 28% of agricultural production and 20% of the country's livestock herd (WWF, 2021)[25] . Therefore, these are the main direct causes that motivate the agents to carry out the transformation of natural land covers such as the Continental Wetlands of the Orinoco.

Description of the activities Continental Wetlands Conservation

The design of project activities by the TP is based on the results obtained from the analysis of the causes and agents that generate changes in land use in the Continental Wetlands. As a result of the analysis, four (4) activities are designed to conserve the Wetlands and impact the indicators that benefit biodiversity and the supply of ecosystem services for the project area.

1. *Strengthening knowledge on wetland conservation and sustainability to prevent the expansion of the agricultural frontier.*

Indicator 1: People trained in wetland conservation and sustainability.

Indicator 2: Training in wetland conservation and sustainability.

2. Characterization and implementation of sustainable production and conservation practices.

Indicator: Progress in the implementation of productive, sustainable and conservation practices.

3. Strengthening of governance structures in the territory.

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[24] *Prada, N., Montes, M. A., Moná, Y., & Caicedo, D. (2009, 6 19). CorelDRAW X1.CDR. Omacha Foundation. Retrieved May 18, 2023, from http://omacha.org/wp-content/uploads/2019/06/cambio-climatico-efecto-humedales.pdf*

[25] *WWF. (2021, September 4). A bet to conserve the Orinoquia | WWF. WWF Colombia. Retrieved May 19, 2023, from https://www.wwf.org.co/?369450/Una-apuesta-por-conservar-la-Orinoquia*

Indicator: Progress in the implementation of the governance strategy.

4. Recognition of conservation areas and figures for the sustainable management of biodiversity.

Indicator: Properties declared under some form of conservation.

Emission factors

Considering methodology BCR0004, item 10.5 historical period of land use change in Continental Wetlands. The result of the analysis determines that the natural vegetation cover belonging to the aquatic stratum (4.1.1. Marshlands, 4.1.2. Peatlands, 4.1.3. The opposite situation for the herbaceous strata (3.2.1.1.2. Dense flooded grassland and its variants) and dispersed (3.2.2.1.1.Dense shrubland, 3.2.2.2.2.2.Open shrubland, 3.2.1.1.2.3.

Taking into account these vegetation covers, a sampling was performed by the TP, in order to estimate the emission factors for the sparse woody and grassy (dense and open) grasslands. For the sampling in Wetland areas, seven (7) points were defined in the Dispersed stratum and 16 points in the Herbaceous stratum.

The plots for dispersed wooded grasslands were established according to the biomass contents by non-destructive random sampling, similar to the plots for forest measurement, in these plots were measured all the trees of the plot taking into account the methodology established in the FC-GPP-23 Inventory design procedure for biomass growth monitoring, which was designed based on the National Forest Inventory of Colombia (Olarte et al. 2021[26]). Aboveground biomass and belowground biomass contents were estimated using the same procedure and allometric equations applied according to the type of individual sampled.

For herbaceous vegetation, 4 quadrants of 1m² were used, arranged at 7.5 m from the central point at angles of 0º, 90º, 180º and 270º, where all live plant material was collected at ground level; each collected sample was weighed fresh and its value recorded in the digital form. From each composite sample, a subsample of 200 g was taken to be sent to the laboratory, which was duly labeled, to be sent to the laboratory to determine the dry weight and moisture content.

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[26] *Olarte-Villanueva, C. P., Merchán-López, O. F., Linares-Prieto, R., Quintero-Cardozo, F., León-Cruz, R., Rodríguez-León, A. and Montealegre J. O. (2021). Guiding framework for the implementation of the National Forest Inventory. Bogotá: Instituto de Hidrología, Meteorología y Estudios Ambientales (IDEAM). 226 pp. 226 pp.IDEAM Publications*

The herbaceous vegetation and soil samples collected were sent to the CIAT Analytical Services Laboratory[27] , for their respective preparation and analysis, taking into account the type of sample type. For the estimation of biomass in the herbaceous stratum, the equation proposed by IDEAM (2011) was used:

$$BS = \left(\frac{PS_{muestra}}{PH_{muestra}}\right) * BH$$

Where:

BS	Dry biomass of material harvested in the field
$PS_{muestra}$	Dry weight of the sample taken to the laboratory
$PH_{muestra}$	Wet weight of the sample taken to the laboratory
BH	Biomass or wet weight of all material harvested in the field

In addition to the plant component, soil samples were taken to determine the organic carbon content, which were sent to the laboratory to determine the bulk density and %C contents.

Soil samples were taken in the dispersed and herbaceous strata of the Wetland component, at a distance of 2 m and an azimuth of 45°, from the central point of the circular plot. At each sampling point, two soil samples were collected at depths of 30 cm, 50 cm and 100 cm. These samples were duly labeled according to the code generated by the ODK format and sent to the laboratory for analysis.

For the soil samples, the bulk density analysis was applied based on the cylinder method of known volume and under the gravimetry technique. On the other hand, for the determination of the carbon percentage (%C), the CHN analysis by combustion was used, under the dry combustion method and the Pyrolysis technique using the Perkin Elmer 2400 elemental analyzer.

Based on the field monitoring and after applying the corresponding analyses, the biomass stored in each stratum was determined from the lower value of the 95% confidence interval. Thus, a total biomass of 0.56 t/ha and 75.80 t/ha was estimated for the Herbaceous and Dispersed strata, respectively. The carbon content of the total biomass (CBF) is the product of the BT and the carbon fraction of the dry matter (FC).

Thus, for the Herbaceous stratum an emission factor of 0.96 tCO2e/ha is established, while for the Dispersed stratum its value is 130.63 tCO2e/ha.

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[27] Laboratory with current certification. The laboratory performs under the NTC/IEC 17025 Standard, actively participates in the international interlaboratory comparison programs of WEPAL (Wageningen Evaluating Programmes for Analytical Laboratories) of the Netherlands. http://ciat.cgiar.org/labs/laboratorio-de-servicios-analiticos/?lang=es

The lists the emission factors for the SOC applicable to the Wetland component; these values were established based on the lower limit of the 95% confidence interval. These values are presented in Table 41 of the PD.

Stratum	SOC (tC/ha) Adjusted	COS20 (tC/ha)	tCO2e/ha
Herbaceous	110,85	5,54	20,32
Dispersed	114,5	5,73	20,99

Source: The Cataruben Foundation, 2023

AENOR, during the site visit, conducted the remeasurement of 2 plots in the arboreal grassland cover and 3 plots in dense grassland, where it was possible to validate the location of the plots in the grassland cover, the correct demarcation of the plot, and the measurement of each of the individuals according to the protocols FC- GOP-15. Procedure for Surveying Forest Plots for Woody, Shrub and Herbaceous Vegetation and FC-GPP-23 Inventory Design Procedure for Biomass Growth Monitoring, established by the TP. The result of the remeasurements in the audit was consistent with the values reported in each of the plots and the equations were adequately used to arrive at the biomass estimates.

AENOR, after reviewing the spreadsheets, equations and field plots can conclude that this is a value applicable to the project areas.

Estimation of ex ante reductions and removals

The wetlands of the project's reference region are immersed in two large strata: herbaceous and dispersed, within which there are different coverages that undergo transformations that affect the ecosystemic development of the wetland.

To determine that the activity data meet the criteria described in section 16.3 BCR0004 methodology, the information corresponding to the Wetland V3 Geodatabase is verified and the information is compared with the national data and the stratification present in Table 33.

AENOR was able to verify the incorporation of the detailed data in the spreadsheet "1. Emisiones_Humedales V3.xlsx".

The following table summarizes the data and parameters used by the project proponent to calculate the ex ante GHG emission reductions over the GHG emission reduction quantification period and which have been evaluated by AENOR.

Data/Parameter available for validation	Value	Purpose of the data/parameter	Evaluation procedure
Wetland area of reference region in 2009	Herbaceous: 1,421,101 ha Scattered: 2,248 ha	Estimated change in area covered by wetland in the project area in the without-project scenario.	• Value consistent with the GIS database. • Correctly entered in the spreadsheet.
Wetland area of reference region in 2018.	Herbaceous: 1,040,473 ha Scattered: 1,187 ha	Estimated change in area covered by wetland in the project area in the without-project scenario.	• Value consistent with the GIS database. • Correctly entered in the spreadsheet.
CSCNlb,ha, the reference region between 2009 and 2018.	Herbaceous: 1,722.3 ha Scattered: 44.8 ha	Historical annual change in the reference region	• Calculation of Change in Wetland Area Covered by Wetland in the Baseline • Correctly entered in the spreadsheet.
Project Area (Wetland) 2012, Herbaceous Stratum	49,721.6 ha	Estimated emissions in the baseline scenario	• Value consistent with the GIS database. • Correctly entered in the spreadsheet.
Project area (Wetland) 2018, Dispersed Stratum.	631 ha	Estimated emissions in the baseline scenario	• Value consistent with the GIS database. • Correctly entered in the spreadsheet.
Biomass in the dispersed stratum	137 t/ha	Estimated emission reductions	• Data Validated - Laboratory data analysis and plot biomass calculation Correctly entered in the spreadsheet.
Biomass in the herbaceous and aquatic stratum	25 t/ha	Estimated emission reductions	• Validated Data - Analysis of laboratory data and calculation of biomass of the plots. • Correctly entered in the spreadsheet.
Soil carbon content in the herbaceous layer	271,2 t/ha	Estimated emission reductions	• Validated Data - Analysis of laboratory data and

Data/Parameter available for validation	Value	Purpose of the data/parameter	Evaluation procedure
			calculation of biomass of the plots. ● Correctly entered in the spreadsheet.
Soil carbon content in the herbaceous layer	763.2 SOC t/ha	Estimated emission reductions	● Validated Data - Analysis of laboratory data and calculation of biomass of the plots. ● Correctly entered in the spreadsheet.
Soil carbon content in the sparse stratum	344,1 t/ha	Estimated emission reductions	● Validated Data - Analysis of laboratory data and calculation of biomass of the plots. ● Correctly entered in the spreadsheet.
Carbon fraction of dry matter (CF)	0.47	Estimation of carbon content in biomass	● Validated Data - NREFF Colombia and methodology of BCR0004 - Version 2.0 June 23, 2022 of BioCarbon Registry. ● Correctly entered in the spreadsheet.
Percentage increase in emissions in the leakage area due to implementation of activities, %Ef.	10%	Estimated emission reductions due to change of cover, in the 3 different wetland strata.	● According to the 2015-2020 monitoring, the values entered indicate that the Leakage area presented a decrease in coverage change due to project activities. ● Correctly entered in the spreadsheet.

All values in the table above can be checked against the Wetlands spreadsheet and its annexes. In the emissions calculations for this activity, the emission factors for the Orinoquia Biome established in the forest inventory for the tree herbaceous biomass and the herbaceous and soil sampling in these coverages are included. Based on the data analysis and application of the aforementioned equation in the BCR004 methodology, the emission factors were determined. They were also included in the projection of the baseline scenario for the duration of the project.

AENOR was able to verify the data according to the calculations and formulas of the PD and the calculation sheet "1. Emissions_Wetlands_Nov". The calculation procedure used by the project proponent for the ex-ante quantification of GHG reductions as a consequence of the project implementation during the GHG emission reduction quantification period and its result is summarized below.

The estimation of GHG emissions from land use change in Wetlands is carried out according to the guidelines of the BCR0004 methodology, section 16.5. Thus, the following equation is used to calculate annual emissions in the baseline scenario:

$$EA_{lb} = CSCN_{lb} \; x \left(CBF_{eq} + COS_{eq} \right)$$

Where:

EA_{lb} Annual emission in baseline scenario; tCO_{2e}/ha/year

$CSCN_{lb}$ Historical changes in the baseline scenario; ha/yr.

CBF_{eq} Carbon dioxide equivalent contained in total biomass; tCO_{2e}/ha

COS_{eq} Carbon dioxide equivalent contained in soils; tCO_{2e}/ha

The following equation is used to calculate annual emissions in the project scenario:

$$EA_{P} = CSCN_{P} \; x \left(CBF_{eq} + COS_{eq} \right)$$

Where:

EA_{P} Annual emission in the scenario with project; tCO_{2e}/ha/year

$CSCN_{P}$ Change in land use in the scenario with project; ha/year

CBF_{eq} Carbon dioxide equivalent contained in total biomass; tCO_{2e}/ha

COS_{eq} Carbon dioxide equivalent contained in soils; tCO_{2e}/ha

Finally, the following equation is used to calculate the annual emission in the leakage area:

$$EA_{F} = CSCN_{F} \; x \left(CBF_{eq} + COS_{eq} \right)$$

Where:

EA_{P} Annual emission in the leakage area; tCO_{2e}/ha/year

$CSCN_{P}$ Change in land use in the area of leakage; ha/year

CBF_{eq} Carbon dioxide equivalent contained in total biomass; tCO_{2e}/ha

COS_{eq} Carbon dioxide equivalent contained in soils; tCO_2e /ha

*After applying the above formulas from the BCR004 methodology, the GHG emission reductions from deforestation as a result of the project's Continental Wetlands Conservation activities were quantified ex ante at **671,696 tCO₂ e** for the GHG emission reduction quantification period (2018-2038).*

Table 9. Ex-ante estimates for GHG emission reductions in the Wetlands Conservation activity Continental Wetlands

Year	GHG emissions in the baseline scenario (tCO2e)	GHG emissions in the scenario with project (tCO2e)	GHG emissions attributable to Leakage (tCO2e)	Estimated net GHG reduction (tCO2e)
2.018	41.411,53	5.383,50	3.070,53	32.958
2.019	42.985,68	5.588,14	3.065,22	34.332
2.020	42.760,65	5.558,88	2.933,01	34.269
2.021	42.536,92	5.529,80	2.807,04	34.200
2.022	42.314,48	5.500,88	2.686,97	34.127
2.023	42.093,33	5.472,13	2.572,51	34.049
2.024	41.873,46	5.443,55	2.463,35	33.967
2.025	41.654,86	5.415,13	2.359,22	33.881
2.026	41.437,52	5.386,88	2.259,85	33.791
2.027	41.221,43	5.358,79	2.165,02	33.698
2.028	41.006,59	5.330,86	2.074,47	33.601
2.029	40.792,99	5.303,09	1.988,01	33.502
2.030	40.580,61	5.275,48	1.905,42	33.400
2.031	40.369,46	5.248,03	1.826,51	33.295
2.032	40.159,52	5.220,74	1.751,10	33.188
2.033	39.950,78	5.193,60	1.679,02	33.078
2.034	39.743,24	5.166,62	1.610,10	32.967
2.035	39.536,89	5.139,80	1.544,19	32.853
2.036	39.331,72	5.113,12	1.481,15	32.737
2.037	39.127,73	5.086,60	1.420,84	32.620
2.038	1.421,70	184,82	53,85	1.183
Total	**822.311,09**	**106.900,44**	43.717,37	**671.696**
Estimated annual average	**39.157,67**	**5.090,50**	**2.081,78**	**31.986**

GHG emission reductions from the project's Continental Wetlands Conservation activities were quantified ex ante at **671,696 tCO$_2$ e** for the GHG emission reduction quantification period (2018-2038).

AENOR reproduced the calculations and obtained the same results, and therefore considers that they are clearly and correctly represented in the spreadsheets provided. The formulas used comply with the monitoring plan and as reflected in the PD, and the methodologies and default values used are appropriate. Therefore, the net amount of GHG emission reductions estimated ex ante is considered accurate and realistic.

AENOR checked the parameters available in the validation and the references to documents where they are used or explained, by reviewing, reproducing and cross-checking the evidence provided by the project proponent. AENOR verified that the values of these parameters are appropriate and used correctly in the equations, according to the spreadsheets in the Excel workbook (1. Emisiones_REDD+ V3.xls and 1. Emisiones_Humedales V3.xls).

AENOR found no inconsistencies between the information in the PD, the technical annexes and the spreadsheets.

After a thorough and exhaustive review and reproduction of the calculations, AENOR considers that the parameters available in the validation are correct, credible and consistent and that the estimates are consistent with the emission factors and activity data from the national inventories. The quantification complies with what is expressed in the PD, the calculations provided and the methodology applied. Therefore, AENOR estimates that the estimation results are credible, consistent and accurate and the ex ante quantity for the whole project is **2,752,176 tCO2e** for the period (2018 - 2038).

5.5.7   *Leakage and non- permanence*

The estimation of emissions from leakage due to project activities will be performed according to the guidelines of methodologies BCR0002 (section 14.5) and BCR0004 (section 13.1.4).

For the application of the formulas described in this leakage section, it is necessary to review the identification of the area through the spatial proximity analysis to the nearest neighbor, described in section 3.2.1. The main objective of the proximity analysis is to identify the optimal region in which the deforestation or wetland transformation events take place. This process is carried out by taking into consideration both the geographic boundaries of the project areas and those of deforestation and wetland transformation in the baseline. After establishing the leakage belt, the areas of forest or wetlands that may generate leakage are quantified.

AENOR validated that the values of these parameters for the quantification of leakage are appropriate and used correctly in the equations, according to the spreadsheets in the Excel workbook (1. Emisiones_REDD+ V3.xls and 1. Emisiones_Humedales V3.xls).

According to the latest BioCarbon Registry v3.1 standard, July 25, 2023, a reserve of 20% of the total quantified GHG reductions for each verified period is deducted and maintained. This reserve is made in order to ensure that if events occur that require the replenishment of credits placed in the market, these will be covered with this 20%[28] .

Project permanence monitoring will be developed at each periodic verification previously stipulated by the project owner, under the indicators and procedures established within the PD.

5.6   Monitoring plan

The monitoring plans are submitted by the project holder in compliance with methodologies BCR0002 and BCR004, in addition to the guidelines of the tool: BioCarbon Registry. 2023. BCR TOOL. MONITORING, REPORTING AND VERIFICATION (MRV). BCR carbon credits are quantified, monitored, reported and verified. Version 1.0 February 13, 2023. Evidence of the monitoring plans can be found in the description of variables, methods, frequencies and procedures described in the PD and its annexes.

In section 16 of the PD, the CO2Bio P2-2 Project has been designed to provide scope for recording and evaluating changes in the proposed indicators for monitoring REDD+ activities and Continental Wetlands Conservation.

The monitoring plan for the REDD+ activity includes follow-up on Project boundaries, REDD+ project activities, REDD+ Safeguards and project emissions, based on the established methodological guidelines, in accordance with the BCR002 methodology.

The monitoring plan for the Conservation of Continental Wetlands includes monitoring of Project boundaries, project activities, socio-environmental effects, emissions and changes in the biodiversity of the project, based on the established methodological guidelines, in accordance with the BCR004 methodology.

A series of activities with their respective indicators are part of the monitoring of compliance with the project's objectives. The monitoring plan with the projection of the indicators to be measured for each activity was described in detail considering the monitoring periods, records and goals for the duration of the project.

After the documentary review and the on-site audit process, by the audit team, AENOR considers that the information expressed in relation to the monitoring plans contemplates an adequate follow-up of the project activities and the reporting of the GHG mitigation goals translated into avoiding deforestation (REDD+ Activities.xls; Safeguards Monitoring Plan and Report (CO2Bio P2-2).xls) and the conservation of Continental Wetlands for the project area (Wetlands Project Activities Monitoring Plan.xls and Wetlands Project Activities Monitoring Plan.xls).

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[28] *BCR Tool "Permanence and Risk Management".*

In accordance with the applicable validation requirements related to the monitoring plan the compliance assessment process was evaluated with the following items:

a) data and information necessary to estimate GHG reductions or removals during the quantification period;

The monitoring for the estimation of emissions is carried out according to the verification periods stipulated by the project and under the guidelines of the BCR0002 methodology. In each verification period the activity data must be monitored. The emission factors to be taken into account correspond to those initially validated and presented in section 5.5.6 of this report.

To estimate the reductions, the values to be monitored in the REDD+ component are:

Data	Description	Monitoring	Data source
$A_{REDD+proy,1}$	Area of forest in the project area at the beginning of the monitoring period; ha	Monitoring in the Project areas each verification	GIS Analysis
$A_{REDD+proy,2}$	Area under forest, in the project area at the end of the monitoring period; ha	Monitoring in the Project areas each verification	GIS Analysis
$DEF_{f,año}$		Monitoring in the Project areas each verification	GIS Analysis
	Annual deforestation in the area of leakage; ha		

The monitoring of the variables for the estimates in Wetlands corresponds to the measurements in the eligible areas in each verification. The emission factors are set from the validation and are presented in numeral 5.5.6 of this document.

Data	Description	Monitoring	Data source
A_1	Area in natural vegetation cover in the project area at the beginning of the monitoring period; ha	Monitoring in the Project areas each verification	GIS Analysis

A_2	Area in natural vegetation cover in the project area at the end of the monitoring period; ha.	Monitoring in the Project areas each verification	GIS Analysis
$CSCN_F$	Change in natural vegetation cover area in the leakage area; ha/yr.	Monitoring in the Project areas each verification	GIS Analysis

b) supplementary data and information to determine the baseline or reference scenario;

The reference scenario as established by the standard BCR should be considered under the following criteria:

Criteria	Project Compliance	Monitoring
Include all or part of the project	The project covers part of the Orinoco region and partially includes the departments of Arauca and Casanare.	It is established in validation and revision when the baseline is revalidated.
Identify the agents of deforestation/degradation and wetland transformation.	The CP in paragraphs 2.3.1 and 2.3.2 identifies the agents and causes of deforestation/degradation and transformation of wetlands.	It is established in validation and revision when the baseline is revalidated.
The Project area is of interest for agents of deforestation/degradation and wetland transformation.	The PP was able to demonstrate that the agents and causes of deforestation/degradation and wetland transformation can affect the Project areas.	It is established in validation and revision when the baseline is revalidated.
Identify land tenure and land use rights.	The PP presents in section 5 of the DD the tenure figures in accordance with Colombian legislation and the region of reference.	It is established in validation and revision when the baseline is revalidated.
Exclusion of restricted access areas	The PP identified the different protection figures and land use limitations and excluded them from the reference region.	It is established in validation and revision when the baseline is revalidated.

Based on the information presented and the cartographic analysis, AENOR can conclude that the reference scenario and the baseline were correctly delimited and quantified as evidenced in the GIS supports and spreadsheets.

On the other hand, baseline scenario monitoring does not apply periodically unless a revalidation of the baseline is required.

c) specification of all potential emissions occurring outside the Project boundaries attributable to Project GHG activities (Leakage);

The CP within the methodological development identifies the leakage areas for the REDD+ activity and the Continental Wetlands Conservation, the variables for monitoring correspond to the area changes for each activity. The emission factors correspond to those set in the validation and evaluated in section 5.5.6 of this report.

REDD+ Activity

Data	Description	Monitoring	Data source
A_{1f}	Area in forest, in the leakage area at the beginning of the monitoring period; ha.	Monitoring in the Project areas each verification	GIS Analysis
A_2f	Area in forest, in the leakage area at the end of the monitoring period; ha.	Monitoring in the Project areas each verification	GIS Analysis

Activity Continental Wetlands

Data	Description	Monitoring	Data source
$A_{f,1}$	Superficiency in natural vegetation cover in the leakage area at the beginning of the monitoring period; ha	Monitoring in the Project areas each verification	GIS Analysis
$A_{f,2}$	Surface area in natural vegetation cover in the leakage area at the end of the monitoring period; ha	Monitoring in the Project areas each verification	GIS Analysis

d) information related to the assessment of the environmental and social impacts of project activities;

To assess the environmental and social impacts of project activities, the PB used the tool "Avoidance of Harm and Environmental and Social Safeguards. V 1. March 07, 2023", in which an analysis of associated socioeconomic impacts was made.

For monitoring purposes, the CO2Bio P2-2 Environmental Assessment Matrix and the CO2Bio P2-2 Socioeconomic Assessment Matrix must be updated each time the tool is used.

e) procedures established for the management of GHG reductions or removals and related quality control for monitoring activities;

The Quality Control and Quality Assurance Procedures for the CO2Bio P2-2 project are presented in Section 17 of the PD.

Through the implementation of the necessary manuals, procedures, guidelines and formats, it is ensured that the requirements and expectations indicated in the methodologies for Quantifying GHG Emission Reductions from REDD+ Projects and methodology for Quantifying GHG Emission Reductions and Removals-Activities that Avoid Land Use Change in Wetlands, the requirements of ISO 9001/2015, ISO 14001/2015, as well as legal and regulatory requirements and those of The Cataruben Foundation's own Integrated Management System are met.

AENOR was able to review the quality controls of the information and the chain of custody of the data from formulation and monitoring to traceability in order to arrive at an adequate distribution of the benefits of the project.

f) description of the methods defined for the periodic calculation of GHG reductions or removals and leakage;

The PD, in section 17, defines the measures to be considered for the implementation of the methodologies, which have as a fundamental basis the geographic, social, economic, environmental information that characterizes CO2Bio P2-2; the quality assurance and control actions of this aspect. Compliance with the following attributes is established throughout the data collection and processing process:

- *Accuracy: Accuracy means that the data are free of errors (arithmetic and grammatical), are clear, unbiased, and reflect the significance of the data on which they are based.*
- *Completeness: Data must be complete and meet all your needs. Incomplete or partial information may result in erroneous decisions and financial and social cost overruns.*
- *Timeliness: Timeliness means that the data must reach its intended recipients within a predefined time frame, allowing them to decide on appropriate actions based on the information received.*

- *Relevance: Data is said to be relevant if it answers stakeholders' questions and enables them to make decisions. At this point it is important that the information is communicated to the right people.*
- *Ease of use: The data must be understandable. Thus, reports should be constructed in such a way that no additional time is spent in processing the report and the required information can be extracted directly.*

g) the assignment of roles and responsibilities for monitoring and reporting the relevant variables for the calculation of reductions or eliminations;

Table 74 of the PD establishes the information review processes and details the following criteria: Information Management Stages, Responsible and Controls. Table 75 establishes the control over the documents obtained in the different phases of the project.

In this way it is possible to identify the quality control in the monitoring and to identify the roles and responsible parties in order to have the quantification in accordance with the methodology and the latest versions of the documentation of the standard.

h) procedures related to the assessment of the project's contribution to the Sustainable Development Goals (SDGs);

The CO2Bio P2-2 project correctly applied the "Tool for the determination of contributions to the fulfillment of the Sustainable Development Goals (SDGs) of Greenhouse Gas (GHG) mitigation projects", in accordance with the provisions provided by the BioCarbon Registry standard. Under this premise and taking into account the project typology (REDD+ and Wetlands).

AENOR had access to this document and was able to corroborate that the SDGs identified and selected by the project are in line with those applicable to REDD+ activities and Wetlands.

The Monitoring Plan established by the CP establishes a clear mechanism to identify for each SDG, the associated activities, requirements, responsible party, indicators and monitoring frequency, among others. This is considered by the audit team as adequate in terms of the established procedure for the evaluation of each monitoring.

i) criteria and indicators related to the project's contribution to sustainable development objectives;

According to the SDG Tool, it was identified that some SDGs were indicated by default, which implies that they are mandatory. Accordingly, the CP identified those indicators and targets applicable by SDG, as listed below.

SDGS	INDICATOR	META
CLEAN WATER AND SANITATION	6.4.1 Increasing change in water use efficiency over time	Increase the change in water use efficiency over time.
CLIMATE ACTION	13.2.2 Reduce total greenhouse gas emissions per year	Reduce total greenhouse gas emissions per year.
LIFE OF TERRESTRIAL ECOSYSTEMS	15.1.1 Forested area as a proportion of total area	Increase forest area as a proportion of total area.
	15.1.2. Proportion of important sites for terrestrial and freshwater biodiversity that are part of protected areas, by ecosystem type.	Increase the proportion of sites important for terrestrial and freshwater biodiversity that are part of protected areas, broken down by ecosystem type.

Source: The Cataruben Foundation, 2023

j) procedures associated with the follow-up of Co-benefits of the special category, as applicable;

The CO2Bio P2-2 Project is applying for benefits distinction under the Orchid category for which it must demonstrate project contribution under the following criteria: Biodiversity Conservation, Community Benefit and Gender Equity.

The "No Net Harm" tool states in the "Monitoring Plan" section that the project owner will design and implement a monitoring plan, and according to item "k", the application of the defined criteria and indicators to demonstrate co-benefits and the measurement of co-benefits and special category, when applicable, must be related.

Under this requirement, the PP prepared the Co-benefits Monitoring Plan - Co2Bio P2-2, which establishes the activities to be developed for the identification of indicators, responsible parties and follow-up period during the life of the project.

k) defined criteria and indicators to demonstrate the additional benefits and the measurement of Co-benefits and the specific category, as applicable.

Considering the criteria established by the Orchid category, the CP developed the indicators for each condition in order to be able to monitor the reporting and progress in meeting the proposed goals in the improvement of the components: Biodiversity conservation, Benefit on communities and Gender equity.

Category	Component	Co-benefit(s)	Indicator
Orchid	Biodiversity conservation	Develops effective actions and measures to halt the loss of biological diversity, favoring that ecosystems continue to provide essential services.	# of Properties declared as RNSC (Civil Society Nature Reserve) # of assessments of the status of areas of importance for biological diversity
		Due to project activities, no invasive species have been introduced.	# of invasive species presence assessments conducted in the project area
	Benefits on communities	Identifies and strengthens mechanisms for social and community participation at the local and regional levels.	# of people participating in training, decision-making and advocacy spaces in the territory.
		The project generates short and long-term benefits to small-scale productive projects with members of the communities in the project area.	# of sustainable activities monitored and implemented
		The activities included in the GHG mitigation project produce an average net increase in the income of local producers.	Increase (%) in producer's income
	Gender equality	It considers determinants set forth in the normative framework related to gender.	Number of women trained for the promotion and strengthening of gender equality and women's empowerment.

Source: The Cataruben Foundation, 2023

AENOR was able to confirm that the monitoring plan presented by the CP has the correct components required by the Orquídea category. It is also possible to identify that the project has the capacity to generate the benefits described in the table above, since the project activities are directly related to the sustainable management of the properties, strengthening governance in the territory and promoting the enrolled landowners to private protection figures such as the RNSC. On the other hand, it is evident that the incorporation of women in the projects and strengthening their role in rural areas are part of the project's goals.

In accordance with section 8 of the Biocarbon Registry Standard, the following criteria were evaluated:

a) National circumstances and the context of the GHG Project

The TP, using the most conservative scenario defined from the logistic model developed by IDEAM for the period 2018-2022 (MinAmbiente & IDEAM, 2018), applied the adjustments for national circumstances for the estimation of the Annual change in the area covered by forest in the reference region ($CSB_{año}$), as established in the National Reference Levels (NREF)[29] .

b) Monitoring good practices, adequate for the follow-up, and control of the activities of the GHG mitigation effort.

Aenor can confirm that all indicators of importance for project performance monitoring and reporting have been incorporated into the project monitoring plan. The frequency, responsibility and authority for recording, monitoring, measuring and reporting of project activities have been clearly developed with a "best practice" management system, which has also established effective training measures, as well as stipulations explained within the methods and protocols being used.

c) Procedures to ensure data quality under ISO 14064-2.

The reported parameters, including their source, monitoring frequency and review criteria for measurements and equipment management, as stated in the PD, were verified as correct. The required management system procedures, including responsibility and authority for monitoring activities, were verified to be consistent with the PD. The audit team found that the knowledge of personnel associated with project monitoring activities was satisfactory.

5.6.1   REDD+ monitoring plan

This plan was designed in accordance with the BCR002 methodology and includes the monitoring of the following elements.

<u>Monitoring of project boundaries</u>

Defines the actions for monitoring the geographic boundaries of the project at each verification, the monitoring takes into account the Geographic Information System (GIS) procedures, where the georeferencing of the total project areas and including the reference region and the leakage area is established. The monitoring will be performed for the eligible areas and the leakage belt, the reference region is not monitored until the baseline update, the monitoring will be performed with the non-forest forest inputs or other similar adopted by the republic of Colombia.

The audit team considers that the defined actions are adequate to ensure the Project boundaries adjustments at each verification.

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[29] https://REDD+.unfccc.int/files/31122019_anexo_circumstances_nref_nal_v7.pdf.

Monitoring of REDD+ activities

The REDD+ activities designed based on the analysis of causes and agents of degradation and deforestation are set out in the REDD+ activities monitoring plan, which clearly establishes for the six project activities: each indicator per activity, type of indicator, indicator target, indicator unit of measurement, methodology and monitoring frequency of the indicator, person responsible for execution and person responsible for measurement, indicator results for each period, documents to support the information and observations.

The design of the indicators allows the evaluation of the performance of each Property with respect to forest management and conservation, TP clearly specifies how the indicator and property goals are fed.

REDD+ Safeguards Monitoring

Section 18 of the BCR Standard (version 3.2) stipulates that the REDD+ project holder must demonstrate compliance with the Safeguards, considering the national context and including the definition of indicators for monitoring, reporting and verification. The Cataruben Foundation - as the project developer - takes this into account and, to this end, makes use of the "Avoidance of Harm Tool" and environmental and social safeguards. V 1. March 07, 2023".

The monitoring plan with the projection of the indicators to be measured for each Safeguards is presented. There are 7 Safeguards in the context of the Co2Bio P2-2 Project and the Project Description evaluates the progress of the targets in the period 2018-2038 according to the established safeguards monitoring plan. According to correspondence with national legislation, international agreements and national policies. The project takes as its regulatory framework the national and international legislation that covers REDD+ projects in Colombia.

After the documentary review and the on-site audit process, AENOR considers that the information expressed in relation to the Safeguards is credible and correct and that the project complies with the safeguards for REDD+ submitted by Colombia to the UNFCCC.

Project emissions monitoring

Monitoring for emissions estimation is carried out according to the verification periods stipulated by the project and under the guidelines of the BCR0002 methodology, Section 14.5.

In this sense, in each verification period the activity data must be monitored; in turn, the emission factors to be taken into account will correspond to those initially validated.

Annual deforestation in the project area

$CSBf,año =1(t2-t1) \; x \; (AREDD+proy,1 - AREDD+proy,2)$

Annual deforestation in the leakage area

$CSBf,año = 1(t2-t1)x(Af,1 - Af,2)$

_The formulas used by the project comply with BCR002 methodology and were checked by AENOR in the Excel calculation (1. Emisiones_REDD+ V3.xls)._

5.6.2   Wetland Ecosystem Monitoring Plan

The plan was designed based on the BCR004 methodology and includes the monitoring of the following elements.

Monitoring of project boundaries

Defines the actions for monitoring the geographic boundaries of the project at each verification, the monitoring takes into account the Geographic Information System (GIS) procedures, where the georeferencing of the total project areas and including the reference region and the leakage area is established. The monitoring will be performed for the eligible areas and the leakage belt, the reference region is not monitored until the baseline update, the monitoring will be performed with the non-forest forest inputs or other similar adopted by the republic of Colombia.

The audit team considers that the defined actions are adequate to ensure the Project boundaries adjustments at each verification.

Monitoring of Wetland Ecosystem Activities

The activities for the Conservation of Continental Wetlands designed based on the analysis of causes and agents of wetland transformation are set out in the Wetlands activities monitoring plan, which clearly establishes for the 4 project activities: each indicator per activity, type of indicator, indicator goal, indicator unit of measurement, methodology and monitoring frequency of the indicator, person responsible for execution and person responsible for measurement, indicator result in each period, documents to support the information and observations.

The design of the indicators allows the evaluation of the performance of each Property with respect to the management and conservation of wetlands, TP clearly specifies how the indicator and the property goals are fed.

Project emissions monitoring

The monitoring for the estimation of emissions is carried out according to the verification periods stipulated by the project and under the guidelines of the BCR0004 methodology.

In this sense, in each verification period the activity data must be monitored; in turn, the emission factors to be taken into account will correspond to those initially validated.

Activity data

Changes in natural wetland cover in the project area during the monitoring period.

$$CSCN_P = \left(\frac{1}{t_2 - t_1}\right) x \left(A_1 - A_2\right)$$

GHG emissions in the period of analysis

Annual emission from changes in natural wetland cover in the project area.

$$EA_P = CSCN_P \, x \left(CBF_{eq} + cos_{eq}\right)$$

Annual emission in the leakage area

$$EA_F = \left[CSCN_F \, x \left(CBF_{eq} + cos_{eq}\right)\right] - EA_{F,LB}$$

The formulas used by the project comply with BCR002 methodology and were checked by AENOR in the Excel calculation (1. Emisiones_Humedales V3.xls).

The monitoring plans submitted comply with the requirements established in the BCR standard and the BCR002 and BCR004 methodologies used to calculate REDD+ and Continental Wetlands Conservation Project activities. The procedures set out for monitoring project activities, compliance with Safeguards and GHG emission reductions in the project area were verified. It was also verified how the monitoring plans are sufficient to effect the collection of all data necessary to meet the applicability conditions of each BCR methodology used; that they give sufficient information on carbon stock changes in the selected reservoirs; and sufficient information to estimate project emissions and leakage.

The audit team compared all parameters and indicators presented in the monitoring plan with the requirements of the methodology. For monitoring carbon stock changes, the requirements and list of parameters were followed according to BCR002 methodology and BCR004 methodology.

All activities to be implemented by the project were recorded and the relevant indicators will be monitored to verify that the objectives for the implementation of the activities have been

met, to verify changes in forest and wetland areas and changes in carbon stocks in selected reservoirs, and to verify project emissions and leakage.

5.7   Compliance with applicable legislation

To ensure compliance with applicable legislation within the framework of the Document Management System, the project owner follows the policies and methodologies established for the development of projects related to climate change. These policies are designed to identify and follow up on the legal requirements established on issues related to the project, its participants, areas of impact and compliance activities, this approach allows mitigating future legal risks given that its actions in the development of a project are carried out within the established legal limits.

AENOR considers that the project proponent has procedures in place to periodically evaluate compliance with legal requirements. Consistent with the above, the project complies with each of the regulations identified and presents, in the project document, a summary of how it complies with current regulations.

STANDARD OR LAW	CHARACTERISTICS	COMPLIANCE
Law 2 of 1959 - Forest Reserves	By means of which the development of the forestry economy and the protection of soils, water and wildlife are regulated, "Protective Forest Zones" and "forests of General Interest" are established, and issues related to vacant lands are addressed.	The project carries out activities on private properties with the purpose of promoting the conservation and sustainability of natural resources.
Decree 2811 of 1974 - Protection of the environment	Whereby the National Code of Renewable Natural Resources and Environmental Protection is enacted.	The project aims to comply with national regulatory guidelines to contribute to climate change mitigation and reduce deforestation and the transformation of natural ecosystems.
Law 57 of 1887 - Colombian Civil Code	It comprises the substantive legal provisions that especially determine the rights of individuals, by reason of the status of persons, their property, obligations, contracts and civil actions.	The project is developed in ecosystems that are located in private properties, which present documentation in accordance with national legislation that allows to prove the tenure in front of it.

STANDARD OR LAW	CHARACTERISTICS	COMPLIANCE
Political Constitution of Colombia of 1991	*Articles 2, 8, 38, 38, 79, 80 and 95 state the duty of each member of society to protect the cultural and natural wealth of the Nation and guarantee the conservation of a healthy environment.*	*The project promotes and develops activities for the conservation of forest and wetland ecosystems, in this sense, it aims to comply with the legal requirement.*
Law 164 of 1994 - Climate Change	*United Nations Framework Convention on Climate Change Whereby the commitment to adopt measures to reduce GHG emissions into the atmosphere is ratified.*	
National Policy for Integrated Biodiversity Management of 1996.	*To prevent and control the accelerated loss and transformation of biodiversity, as well as to reduce and mitigate the negative effects this generates on the quality of life.*	*The projects led by The Cataruben Foundation are aimed at contributing to the mitigation of climate change through strategies that include the conservation of forests, wetlands and the biodiversity identified there, in private properties that are formally enrolled with the entity.*
Conpes 2834 of 1996 - Forestry Policy	*Its general objective is to achieve the sustainable use of forests in order to conserve them, consolidate the incorporation of the forestry sector into the national economy and contribute to improving the quality of life of the population.*	*The project aims to comply with national regulatory guidelines to contribute to climate change mitigation and reduce deforestation.*
Law 357 of 1997 - Convention on Wetlands	*Convention on Wetlands of International Importance especially as Waterfowl Habitat", signed at Ramsar on February 2, 1971.*	*The project aims to contribute to the mitigation of climate change through strategies that include the conservation of forests, wetlands and the biodiversity identified therein, on private properties that are formally enrolled with the entity.*
1998 Green Plan	*Generate the basis for involving ecological restoration, reforestation for environmental and commercial purposes, and agroforestry in environmental land use planning.*	*The development of the Green Plan is a process that involves the implementation of activities in the short, medium and long term, thus generating a commitment between the environmental actors of the State, civil society and the private sector, where Cataruben, through its carbon project, contributes to the development of this guideline.*
Decree 1320 of 1998 - Prior Consultation	*Whereby prior consultation with indigenous and black communities for the exploitation of natural resources within their territory is regulated.*	*In the development of the project to comply with the guidelines established in this decree, the Ministry of the Interior was consulted to verify if there were any overlaps in the areas to be included in the project with indigenous communities, so this regulation was complied with.*

STANDARD OR LAW	CHARACTERISTICS	COMPLIANCE
Law 629 of 2000 - Approval of the Kyoto Protocol in Colombia.	Greenhouse gas quantification and reduction, climate change mitigation strategies	The reduction of greenhouse gas emissions in the areas to be conserved within the project contributes to the fulfillment of Colombia's commitments under the Kyoto Protocol on Climate Change.
1998 Ramsar Convention	By which the sustainable use, conservation and management of wetlands is regulated, and aspects related to them are developed in application of the RAMSAR convention.	The reduction of greenhouse gas emissions in the areas to be conserved within the project contributes to the fulfillment of the commitments acquired by Colombia in the Ramsar Convention.
Decree 3570 of 2011 - Ministry of the Environment	Whereby the objectives and structure of the Ministry of Environment and Sustainable Development are modified and the Administrative Sector of Environment and Sustainable Development is integrated.	The project must adopt the requirements and regulations issued by the Ministry of the Environment and Sustainable Development as the entity responsible for overseeing these activities; in this sense, the project aims to comply with the legal requirement.
Law 1753 of 2015 - National Plan for Social Development 2015-2018	The main objective is to build a peaceful, equitable and educated Colombia, in harmony with the purposes of the national government, with international best practices and standards, and with the long-term planning vision envisaged by the sustainable development objectives.	Under this law, the National Government establishes goals for the reduction of deforestation, encouraging the active participation of producers and committing to establish sustainability agreements.
Law 1819 of 2016 - Structural Tax Reform	Whereby a structural tax reform is adopted, the mechanisms to fight tax evasion and avoidance are strengthened, and other provisions are enacted.	The project implements Forest and Wetland conservation activities and therefore leverages the development of this activity to contribute to climate change mitigation.
2016 National Climate Change Policy	Strategies and actions to manage knowledge about climate change and its potential consequences on communities, biodiversity, ecosystem services and the country's economy.	The project is aimed at contributing to the mitigation of climate change through strategies that include the leadership of projects that enable training and the development of carbon footprint offsetting strategies and conservation activities.
Decree 298 of 2016 - National Climate Change System.	Whereby the organization and operation of the National Climate Change System is established and other provisions are enacted.	The Cataruben Foundation formulates carbon projects that seek or are aimed at contributing to the mitigation of climate change for which the policies, regulations and strategies dictated by the National Government are foreseen, thus joining efforts to the same end.

STANDARD OR LAW	CHARACTERISTICS	COMPLIANCE
Decree 926 of 2017 - Carbon Tax.	*It establishes the mechanism and/or regulation of the non-chargeability of the carbon tax, as well as the definition of the agencies that will be in charge of verifying the reductions in carbon emissions, among others, and aims to regulate the procedure to make effective the non-chargeability of the national carbon tax.*	*This Decree regulates the non-causation of the carbon tax, which means an exemption to the payment of the tax, generating guidelines to calculate its carbon footprint due to the consumption of fossil fuels and how it can be certified as carbon neutral.*
Law 1844 of 2017- Paris Agreement	*Adopts the Paris agreement in Colombia for all countries that are party to it.*	*The Cataruben Foundation formulates carbon projects that seek or are aimed at contributing to the mitigation of climate change for which the policies, regulations and strategies dictated by the National Government are foreseen, thus joining efforts to the same end.*
Resolution 1447 of 2018 - Monitoring system, GHG emissions reporting.	*Its purpose is to regulate the System for Monitoring, Reporting and Verification 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 (GHG) Emissions, which includes the National Registry of Programs and Projects of actions for the Reduction of Emissions from Deforestation and Forest Degradation in Colombia (REDD+).*	*This Resolution establishes the deadlines for registration of climate change mitigation projects before RENARE and the Monitoring System for Reporting and Verification of mitigation actions at the national level, in relation to the GHG emissions removal accounting system. The project is registered in the RENARE platform in the feasibility phase.*
Law 1931 of 2018 - Climate Change Guidelines	*Establishes guidelines, mainly on climate change adaptation actions, as well as on greenhouse gas mitigation, with the objective of reducing the vulnerability of the country's population and ecosystems to the effects of climate change and promoting the transition to a competitive, sustainable economy and low-carbon development.*	*The project adheres to these guidelines, given that it constitutes a strategy to mitigate climate change and reduce deforestation, degradation and transformation of forests and wetlands. Once the platform is operational, the necessary updates will be made to continue to the formulation phase.*
Conpes 4021 of 2020 - Deforestation Control and Sustainable Management of Forests	*Provides policy guidelines to counteract deforestation and promote sustainable forest management; the goal is to achieve zero deforestation by 2030. This policy will have a follow-up, physical and budgetary execution for the fulfillment of its objectives through the Action and Follow-up Plan (PAS), during an implementation period of 10 years.*	*The project complies with national regulatory guidelines, thus contributing to climate change mitigation and reducing deforestation in the country's forests.*

STANDARD OR LAW	CHARACTERISTICS	COMPLIANCE
Decree 446 of 2020 - Verification Body for GHG reductions and removals.	*Whereby Article 2.2.11 .1.2 of Chapter 1 of Title 11 of Title 11 of Part 2 of Book 2 of Decree 1076 of 2015 is amended, and an article is added to Chapter 1 of Title 11 of Part 2 of Book 2 of Book 2 of Decree 1076 of 2015, in relation to the accreditation of verification bodies for greenhouse gas emission reductions and removals.*	*Projects led by The Cataruben Foundation meet the requirements set forth in the methodologies for planning and implementing greenhouse gas (GHG) mitigation projects. This process follows a step-by-step approach, which involves submitting project to a verifying entity to validate its development, thus ensuring compliance with the pertinent legal requirements.*
Resolution 831 of 2020 - Amends Resolution 1447 of 2018.	*Whereby Resolution 1447 of 2018 is modified and other determinations are made, regarding the regulation of the Monitoring, Reporting and Validation (MRV) system of GHG mitigation actions at the national level. It modifies and clarifies the methodological procedure of GHG projects, regarding registration and certification.*	*It establishes guidelines for maintaining and demonstrating the methodological consistency of project baselines, which is why the CO2Bio project is aligned with this regulation.*
Law 2169 of 2021 - Carbon Neutrality	*This regulation establishes minimum goals and measures to achieve carbon neutrality, climate resilience and low carbon development in the country in the short, medium and long term, and establishes other provisions.*	*The projects led by Cataruben are aimed at contributing to the mitigation of climate change, through strategies that include the leadership of projects that allow for training and advancing processes for the generation of carbon footprint offsetting strategies.*
Resolution 849 of 2022 - Integral Territorial Climate Change Management Plans - PIGCCT	*Establish the "Guide for the formulation and implementation of the Integrated Territorial Climate Change Management Plans - PIGCCT", hereinafter the Guide, which is an integral part of this resolution together with its annexed documents.*	*Cataruben-led projects are primarily aimed at contributing to climate change mitigation through strategies that encompass the conservation of forests, wetlands and biodiversity on private properties formally enrolled with the entity. It is essential to familiarize oneself with all guidelines and agreements related to climate change mitigation in order to join efforts towards a common goal.*
Compliance with regional and local regulations	*Municipal Development Plans and the Regional Autonomous Corporation's Action Plan.*	*The project proposes, for the first monitoring period 2018 - 2021, the implementation of activities in accordance with the special figures of protection and land management.*

Source: *The Cataruben Foundation, 2023*

AENOR did not detect any non-compliance with laws and regulations during the in situ audit or documentary review.

The Wetland Conservation component follows the methodological guidelines of the BCR0004 methodology, which is framed within the policies and strategies for water management and governance and biodiversity protection policy. On the other hand, the project includes the values of the emissions estimation following the methodologies and protocols of IDEAM and in line with the NREF "Proposed reference level of forest emissions from deforestation in Colombia for payment for REDD+ results under the UNFCCC" submitted by Colombia in December 2019. Also present in the Methodological Document BCR0002.

A request was made (File No. 2023E1023051 of March 2023) for the preliminary identification of overlaps with areas belonging to ethnic communities, as evidenced in Safeguards 3, where the rights of indigenous peoples and members of local communities are related and mapped. Cartographic information generated by the National Land Agency is used as input, specifically Legalized and Intended Indigenous Reserves, and the conclusion is that there are no overlaps with the communities mentioned[30] .

The CO2Bio P2-2 project is registered in the RENARE platform under the REDD+ Project category in its initial feasibility phase (Feasibility Phase). By being registered in this official platform, the project demonstrates its alignment with national climate change policies and its effective contribution to environmental protection and sustainability in the Colombian Orinoquia region. However, due to current problems with the platform it is not possible to update its status to the next phases.

In order to avoid possible overlapping of areas, a review of projects registered in different GHG project certification standards such as BioCarbon Registry, Colcx, Cercarbono and Verra was carried out, taking as reference the projects located in the departments of Arauca and Casanare, finding that there is no overlapping and/or double counting with the areas of intervention of the CO2Bio P2-2 project. AENOR's audit team also consulted these registration platforms and found that the support sent by the TP (see the following table) does not overlap and/or double-counting with the intervention areas of the CO2Bio P2-2 project.Review of projects registered in other GHG certification platforms (.xls), identifies 11 projects in the BCR, Colcx and Verra registries, of which 4 are from Cataruben and the rest from other developers, however, there are no overlaps.

It should also be noted that for the entire Orinoco region of Colombia there is a program aimed at promoting sustainable low-carbon landscapes, which seeks to identify and develop alternatives to contribute to the improvement of conditions for sustainable agricultural planning and production, in order to ensure a reduction in GHG emissions. However, although the program includes the departments of Arauca and Casanare, it is not registered as a project and has a different scope than a GHG mitigation project.

The audit team verified 100% of the legal information provided by the project proponent and contrasted the information with the Geodatabase, confirming that the sources of information used for its construction were the official ones. Therefore, it considers that the

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[30] As a result of this action, the Ministry of the Interior issued <u>Resolution Number ST-1449 of October 4, 2023</u>, which resolved that the prior consultation was not appropriate.

information provided allows concluding that the project is in compliance with the legal requirements.

5.8 Carbon ownership and rights

The project is being developed on 124 private rural properties located in the departments of Arauca and Casanare, whose ownership is correctly demonstrated in accordance with the requirements of the BCR standard and the methodologies used.

The property rights based on the legal analysis and supported by the documents provided in the process (Agreements, letters of intent, confidentiality agreement, contract of engagement and tenure documents) are analyzed for this purpose, from this analysis it is established that 124 properties complied with the necessary documents to determine the type of tenure, classified as owners, possessors and/or holders of the same, which were enrolled formally with the organization accepting the commitment to develop climate change mitigation activities in each of their properties.

The owners, who presented their citizenship card, public deed, INCODER (Colombian Institute for Rural Development) resolution, certificate of tradition and freedom, cadastral certificate and the title study of each property with its enrolled contract with the CO2Bio P2-2 Project, prove that they are the legitimate owners of the properties, in addition to the ownership of the carbon rights. It was demonstrated that none of the properties has any claims processes for boundary limits, seizure processes, inheritance processes, easement processes, expropriations, or any other figure that alters the stability of the project, the good management of the forests or the commercialization of the certificates.

The agreement and rights over the carbon is duly concluded through a contract signed by the interested parties, which establishes their obligations, eligible areas of the project's ecosystems that are located in the legally feasible property, duration of the contract and of the project, among other provisions. Among the obligations established in the contract, it is established that the Ecosystem Manager must demonstrate ownership or tenure of the land during the execution of the contract and the governance of such property.

AENOR was able to corroborate the legal quality of the land tenure and land use rights and the area within the Project boundaries and the totality of the contracts signed between the parties, thus concluding that the process was carried out properly.

5.9 Risk management

The TP (project holder), according to the BioCarbon Registry tool. 2023. BCR TOOL. PERMANENCE AND RISK MANAGEMENT. BCR project holders take actions to ensure the project benefits are maintained over time. Version 1.0 March 7, 2023, elaborates the permanence and risk management analysis.

The evidence presented by TP corresponds to the risk identification matrix (Table 49 of the PD) and the monitoring plan for risk management. The risk matrix identifies and presents

measures to mitigate the risks associated with conservation projects, taking into account environmental, financial and social risks related to the execution of project activities. The risk analysis through the evaluation of the potential impact and the probability of occurrence obtained ratings for each of the risks, the vast majority were within the medium and low level, and no high level risks were identified.

DIMENSION	RISK	IRRIGATION LEVEL	MITIGATION AND MONITORING
Environmental	Fire	Medium	1. Disposal of biomass that can function as fuel in a fire. 2. Establishment of firewalls 3. Implementation of guardrails 4. Avoid burning during critical summer periods.
	Flooding	Under	Maintain the natural cover of the ecosystem
	Leakage emissions	Medium	Maintain control in leakage areas and quantify emissions due to ecosystem losses.
Financial	Liquidity	Medium	Efficiency in resource management
	Market	Medium	Update of national and international regulations
	Offer	Medium	Update of national and international regulations
	Country risk	Medium	Effects of national policies
Social	Land tenure dispute	Medium	Strengthening of the relationship between the owners and their environment in general, covering each of the areas that have an impact on the obligations of the enrolled project owner regarding the conservation and sustainable use of the environment.
	Little stakeholder involvement	Under	Consult constant communication channels

Source: Risk management monitoring plan and report.xls

AENOR was able to verify through the documentary review and the in situ visit that the risk is analyzed in a detailed and consistent manner, and did not detect during the review process any non-compliance with regulations or inconsistencies reported in the project.

On the other hand, the Project considers the guidelines of the Biocarbon Registry standard[31] , which establishes that as a guarantee, during the accreditation and verification periods, as the case may be, a reserve of 20% of the verified carbon credits is deducted, a process carried out by the project certifying entity in an account of the project, In addition, the TP in the enrolled contract clarifies that the parties may only dispose of 10% of the total retained in reserve by the certifying entity once the verification period under which they were granted has passed.

In accordance with the above, AENOR can conclude that the evidence presented allows it to address the provisions of the tool: BioCarbon Registry. 2023. BCR TOOL. PERMANENCE AND RISK MANAGEMENT. The BCR project holder takes actions to ensure that the benefits of the project are sustained over time. Version 1.0 March 7, 2023.

5.10 Environmental aspects

Colombian legislation does not require the development of an environmental impact study for conservation projects, such as REDD+ type activities and Continental Wetlands Conservation. However, within the environmental performance of The Cataruben Foundation and in compliance with the requirements of the BioCarbon Standard and the "Avoidance of Harm" tool and environmental and social safeguards. V 1. March 07, 2023, an analysis of associated environmental impacts was made.

The project's environmental impact matrix (2. CO2Bio Environmental Assessment Matrix P2-2.xls) did not identify any major negative impacts, and many of these correspond to potential impacts that could result from the project as implementation progresses. Most of the impacts identified were positive.

AENOR in the site visit and according to the documentary review was able to conclude that the implementation and development of the project does not cause any severe potential environmental impact, the Project Holder provides support to highlight the benefits related to the recovery and conservation of wetland and forest ecosystems, associated with the activities of the project implementation. compared to the initial conditions.

5.11 Socioeconomic aspects

Colombian legislation does not require the development of an environmental impact study for conservation projects, such as REDD+ type activities and Continental Wetlands Conservation. However, within the environmental performance of The Cataruben Foundation and in compliance with the requirements of the BioCarbon Standard and the "Avoidance of Harm" tool and environmental and social safeguards. V 1. March 07, 2023, an analysis of associated socioeconomic impacts was made.

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[31] BioCarbon Registry. 2023. BCR TOOL. PERMANENCE AND RISK MANAGEMENT. BCR project holder take actions to ensure the project benefits are maintained over time. Version 1.0 March 7, 2023.

For the implementation of the project, an Economic Impact Assessment was conducted (3. CO2Bio P2-2 Socioeconomic Assessment Matrix.xls), taking into account the project activities, safeguards, SDGs and co-benefits proposed for the project, and the impact that these could cause within the social elements of study such as: gender equity, education and training, communication with stakeholders and forest governance in the territories; and the economic elements of study such as: access to goods and financial services, economic benefits of the project, formalization of environmental services as an economic activity and implementation of sustainable production practices.

AENOR in the site visit and according to the documentary review was able to conclude that the implementation and development of the project does not cause any severe potential socio-economic impact, the project holder provides support to highlight the benefits related to the recovery of cover and conservation of forest and forest ecosystems, associated with the activities of the project implementation. compared to the initial conditions.

6   Verification findings

6.1   Project and monitoring plan implementation

6.1.1   Project activities implementation

The verification corresponds to the following monitoring period with respect to the quantification of GHG reductions for the CO2Bio P2-2 Project:

- January 15, 2018 to December 31, 2021, for REDD+ and Continental Wetlands Conservation activities.

REDD+ Activity

Section 13.3 of the RM presents the progress in meeting the proposed goals for this project verification period. Compliance with REDD+ activities for this verification period has had a positive balance. The six indicators proposed for the implementation of project activities have increased and contributed to the overall project goals:

For the first activity: Training on ecosystem services and conservation of strategic ecosystems. During the monitoring period, a total of 2 training cycles were carried out between 2018, 2019, 2020 and 2021; (Training cycle.xls and attendance reports.pdf). These cycles promoted comprehensive training, addressing various topics, including: Climate change, forests and carbon cycle; Strengthening sustainable management of ecosystems and biodiversity conservation; and Conservation of forest biodiversity.

The activity, Promoting forest governance in the project area, began with the formulation of the governance strategy, which starts with the initial plan for the first 5 years and then moves on to the implementation phases. As a result of this first phase the TP attached the document: Governance Strategy.pdf, with the design of the strategy.

For the training activity on sustainable forest management, a cycle of 10 training sessions was carried out to promote the administration of forest resources in order to ensure their responsible and sustainable use. The topics included: Planning and sustainable forest management and the copaiba oil extraction workshop. The supports for these trainings include: Training Cycle.xls, attendance reports.pdf and Training Protocol - Act 3 - Forests.pdf.

For the fourth activity, Promote the delimitation and/or signage of conservation areas. Within the document: Report of conservation practices.docx, the results for this indicator are presented where for this period 22% of properties with signage 10 RNSC that are part of the project with conservation registration are reported.

The fifth activity, Promote and improve agricultural production, livestock (on existing land) and tourism, through the implementation of good sustainable practices, reports for the monitoring period the sustainable practices identified were: sustainable livestock, horticulture, poultry farming and traditional cooking, where the first was the most frequent with 42, followed by the others with: 4, 4 and 3 properties respectively (Sustainable Practices Implemented Report.docx).

Finally, activity six, satellite monitoring of hot spots, aims to provide satellite monitoring of properties to identify changes due to deforestation, degradation and/or transformation of eligible areas; which consists of establishing a monitoring system that detects and provides early notification of any negative changes in ecosystems. The hotspot report (CO2Bio_P2-2.pdf Hotspot Monitoring) provides a summary of the data collected during the monitoring period between 2018 and 2021.

During the 2018-2021 temporality, a total of 2458 thermal anomalies were reported for the 4 components (REDD+, Wetland, REDD+ leakage area and wetland leakage) covered by the CO2Bio P2-2 project. The low water months (March, February and January) were identified as months of low water (March, February and January) since they present a greater amount of thermal variations. It was observed that the highest percentage of hotspots occurred within the Wetland Leakage Area and Wetland Eligible Areas component, 1347 and 1036 respectively. However, of the 31 properties where fires were reported, only La Arenosa Farm 3 was the one that presented fires in the 2018 to 2019 season. Although these fires were not generated in the eligible areas of forest and wetlands of the project.

Continental Wetlands Conservation Activity

Section 13.2 of the RM, presents the progress in meeting the proposed goals for this verification period of the project. Compliance with the Continental Wetlands Conservation Activities for this verification period has had a positive balance. The five indicators proposed for the implementation of the project activities have increased and contributed to the overall project goals:

The first activity, Strengthening knowledge in wetland conservation and sustainability to prevent the expansion of the agricultural frontier. In the monitoring period, a total of 2

training cycles were carried out between 2018, 2019, 2020 and 2021; (Training cycles.xls and attendance reports.pdf). These cycles promoted comprehensive training, addressing various topics, including: Strengthening knowledge in wetland conservation and sustainable agricultural and livestock practices and land planning, which are considered for the 2 indicators defined for this activity.

The activity, Manage the implementation of sustainable production and conservation practices, including both sustainable production practices and conservation activities, which help identify environmental challenges and promote responsible economic development, minimizing negative impacts on the environment. The document: Sustainable practices report.pdf, presents the results for the monitoring period in a total of 25% of the properties.

The activity, Promote governance in the project area, began with the formulation of the governance strategy, which starts with the initial plan for the first 5 years and then moves on to the implementation phases. As a result of this first phase the TP attached the document: Governance Strategy.pdf, with the design of the strategy.

The activity, Properties declared under some form of conservation, reports a total of 10 properties under conservation figures for Wetlands within the monitoring period, the TP, attached the registration resolutions and mapping.

And finally, the activity of changes in biodiversity associated with Wetlands, which includes three sub-activities.

– High Conservation Value (HCV) monitoring

HCV1-Species diversity and HCV3-Ecosystems and habitats were characterized and monitored. With the information available in the different reports on biodiversity and ecosystems present in the project region, this component was able to have a zoning to measure the impacts on changes in biodiversity and ecosystem quality for these two HCVs.

– Participatory Biodiversity Monitoring.

For the CO2Bio P2-2 project, the points were chosen according to the criteria proposed within the 124 properties. The monitoring consisted of an evaluation by means of a device called AudioMoth, which allows the bioacoustic recording of the fauna in the most conserved ecosystems. For this purpose, 12 devices were located in forests and 27 in Wetland ecosystems to evaluate the soundscape and assess the acoustic footprint of approximately 31% of the properties in the project.

– Biodiversity monitoring in Wetlands.

During this monitoring period, the PP formulated the methodology for monitoring the groups of birds and medium and large mammals in the case of fauna and macrophytes

associated with the Wetlands where the aim is to estimate the richness and diversity of species and their threat status.

During the verification visit it was possible to verify that the landowners are very committed to the project, so they have actively participated in the different actions proposed to promote conservation and mitigation activities for REDD+ activities and Continental Wetlands Conservation.

AENOR was able to check the progress in meeting the goals with the documents presented in the matrix for monitoring project activities and its reference documents.

The main activities that support compliance with the conservation and emissions mitigation activities for the period 2018-2021 in the CO2Bio P2-2 project properties were demonstrated with different supporting documents.

6.1.2   Monitoring plan implementation and monitoring report

AENOR reviewed and was able to confirm the monitoring report was performed in consistency with the Monitoring Plan submitted by the TP. The monitoring plan is intended to facilitate the monitoring, recording, reporting and verification activities necessary to assess project performance and determine the emission reductions achieved in accordance with the applied methodology.

The auditor has verified all the parameters presented in the monitoring plan with the requirements of the methodologies. In this regard, the Monitoring Plan contains all the required parameters, with adequate descriptions regarding: Data source, measurement procedures, monitoring frequency and QA/QC procedures to be applied.

6.1.2.1   Data and parameters

The auditor verified the relevant assumptions by reviewing regional and international documents to confirm the applicability of the parameters and estimates. The documents were fully reviewed, and the auditor concluded that the source and accuracy of the parameters were good enough to be included as part of the project calculations. In this sense, the evaluation confirmed the sufficiency of the quantity and adequacy of the quality of the evidence.

The procedure performed to estimate the net GHG removals is clear and the explanation of the procedure carried out for the estimation has been provided in the MR. The auditor considers that TP has correctly identified and applied the relevant methodology and tools to calculate the project's net GHG removals. Furthermore, it concluded that the assumptions and data sources were conservative and well selected after reviewing the supporting documents provided by the proponent.

The list of parameters available for monitoring was presented in the RM, being these parameters the most relevant to obtain consistency in the calculations and assumptions considered.

Parameter	Value	Source	QA/QC
Total biomass in forest (Bt)	327,22	Own sampling -Definition of carbon emission factor in total biomass (REDD+ Activities)	Sampling was conducted according to nationally validated methodologies and was carried out in eligible project areas. The statistical and technical aspects that were taken into account for its development are described in section 3.7.3.2 of the DD. Apply uncertainty calculation if greater than 10%.
Soil organic carbon in forests (SOC)	64,51	National Reference Level (IDEAM, 2019)	The value is taken from the NREF
Total biomass in Wetlands	Herbaceous stratum = 0.56 Dispersed stratum = 75.80	Own sampling -Definition of carbon emission factor in total biomass (Continental Wetlands Conservation Activities)	Sampling was conducted according to nationally validated methodologies and was carried out in eligible project areas. The statistical and technical aspects that were taken into account for its development are described in section 3.7.3.2 of the DD. Apply uncertainty calculation if greater than 10%.
Soil organic carbon (SOC) in Wetlands	Herbaceous stratum = 110.85 Dispersed stratum = 114.5	Sampling was conducted according to nationally validated methodologies and was carried out in eligible areas of the Project.	Sampling was conducted according to nationally validated methodologies and was carried out in eligible project areas. The statistical and technical aspects that were taken into account for its development are described in section 3.7.3.2 of the DD. Apply uncertainty calculation if greater than 10%.

The AENOR audit team considers that the TP presented all the necessary parameters required by the selected methodologies are contained in the monitoring plan. These values are clearly described and the monitoring means detailed in the plan meet the requirements of presenting traceable and sufficient information to determine their calculation and the quality procedures required by the methodologies.

The parameters for monitoring reductions by REDD+ activity are presented in the following table.

Data/Parameter available for verification	Value	Purpose of the data/parameter	Evaluation procedure
Area deforested annually under the project scenario in the monitoring period. CSBproy.	0.5 ha	Estimated emissions in the project scenario.	• Values consistent with GIS database. • Correctly entered in the spreadsheet.
Deforested area in the leakage belt under the project scenario in the CSB monitoring period f,year (ha/year).	1.5 ha	Estimated emissions in the project scenario.	• Values consistent with GIS database. • Correctly entered in the spreadsheet.

The parameters for monitoring reductions by activity Continental Wetlands Conservation are presented in the following table.

Data/Parameter available for verification	Value	Purpose of the data/parameter	Evaluation procedure
$CSCN_P$: change in area with natural vegetation cover in the project area (ha/year), herbaceous stratum	223.9 ha	Estimated emissions in the project scenario.	• Values consistent with GIS database. • Correctly entered in the spreadsheet.
$CSCN_P$: change in the area with natural vegetation cover in the project area (ha/year), sparse stratum.	5.8 ha	Estimated emissions in the project scenario.	• Values consistent with GIS database. • Correctly entered in the spreadsheet.
$CSCN_F$: change in area with natural vegetation cover in the leakage area (ha/year), herbaceous layer	1,360.8 ha	Estimated emissions in the leakage area.	• Values consistent with GIS database. • Correctly entered in the spreadsheet.

Data/Parameter available for verification	Value	Purpose of the data/parameter	Evaluation procedure
$CSCN_F$: change in area with natural vegetation cover in the leakage area (ha/year), aquatic stratum	29.9 ha	Estimated emissions in the leakage area.	● Values consistent with GIS database. ● Correctly entered in the spreadsheet.

The monitoring plan includes monitoring of project implementation, monitoring of carbon pool changes from project activities, and estimation of ex-post changes from project activities. The description of the monitoring plan in the project documents shall include the following for each of these monitoring tasks:

- Technical description of the monitoring task;

- List of data and parameters to be collected;

- General description of data collection procedures;

- Quality control and quality assurance procedure;

- Data archiving; and

- Organization and responsibilities of the parties involved in all of the above.

Data related to the variables/parameters listed in the joint PD and RM will be collected during monitoring.

All data collected as part of the monitoring will be archived magnetically. Data archiving will take both electronic and paper forms.

AENOR has verified that the monitoring teams implemented the monitoring plan as set out in the joint PD and MR. AENOR could also evidence during audits that key workers or the responsible person are fully involved in event monitoring (training, measurement, archiving, reporting, quality control, etc.). QA/QC procedures are considered stringent to identify, review and manage inconsistencies found.

The validation and verification team performed a review of all input data, parameters, formulas, calculations, conversions, resulting uncertainties and output data to ensure consistency with the criteria established in the calculation methodologies used and the RM.

The verification team reproduced the calculations to ensure the accuracy of the results. Where appropriate, references for methods of analysis or default values were verified with the corresponding source.

6.1.2.2   Environmental and social effects of the project activities

For the monitoring period, the TP, considered the evaluation of environmental and social impacts for this provided the matrices (.xls CO2Bio Environmental Impact Matrix P2-2).xls and Socioeconomic Evaluation Matrix.xls) based on the tool "Avoidance of Harm" and environmental and social safeguards. V 1. March 07, 2023.

No negative impacts were identified in these evaluations; on the contrary, the impacts for the conservation of forests and wetlands highlight positive impacts. AENOR was able to purchase these refinements based on the site visit and the review of the matrices used by the TP.

6.1.2.3   Procedures for the management of GHG reductions or removals and related quality control for monitoring activities

AENOR can attest that all indicators relevant to project performance monitoring and reporting have indeed been incorporated into the project monitoring plan. The frequency, responsibility and authority for recording, monitoring, measuring and reporting of project activities have been clearly developed with a "best practice" management system in mind, which has also established effective and necessary quality control measures and procedures in the collection of monitoring data, as well as the stipulations of the methodologies being used.

6.1.2.4   Description of the methods defined for the periodic calculation of GHG reductions or removals, and leakage

To identify the leakage area, the TP conducted a spatial proximity analysis with respect to the deforestation foci in the baseline, with the objective of determining the optimal region where deforestation (BCR0002) and natural cover transformation (BCR0004) events occur, where it is possible that emissions are displaced by the presence of the project. It should be noted that the analysis considers the environmental drivers/detriment factors in the generation of emissions displacement, also excluding areas of restricted access to the agents of deforestation/forest degradation and transformation of natural vegetation cover. The Map Package (Geodatabase) and GIS procedures documents identify the area of leakage and the respective procedures.

The Leakage area corresponds to forest areas where deforestation or degradation activity may be displaced as a consequence of the project's conservation activities, these areas are outside the control of the REDD+ project holder.

For the BCR0002 methodology, a leakage belt is defined with a buffer of 250 meters from the edge of the Property, this belt has an area of 28,090 hectares, within which all forest areas are quantified for the temporal limits of the baseline and the monitoring period. The REDD +V3 geodatabase, leakage area and map package document with the cartographic layers used to determine the leakage area are attached.

The leakage area delimited by the project in the REDD+ activity complies with the requirements of section 8.3 of the methodology document BCR0002. That is, the leakage

area includes all forest areas within the range of mobility of the identified deforestation agents and excludes areas with restricted access of the deforestation agents.

The Leakage area for Continental Wetlands activities, corresponds to eligible areas with natural vegetation cover to which a displacement of activities that generate changes in land use and are beyond the control of the project holder can be generated.

According to BCR0004 methodology, a leakage belt is delimited with a buffer of 600 meters from the edge of the Property, this belt has an area of 66.081 hectares, within which all natural vegetation cover is quantified according to the methodology item 10.3 that meet the eligibility criteria, for the temporal limits of the baseline and the monitoring period. WetlandsV3 geodatabase, leakage area and map package document with the cartographic layers used to determine the leakage area are attached.

In accordance with the requirements of Section 10.3 methodology BCR0004, it is concluded that the area of leakage includes areas of natural cover that are within the range of mobility of wetland transformation agents.

According to the information presented by the TP and the quality control performed by the audit team to the outputs and shapefile layers of the project areas and leakage areas, it is possible to ensure that these areas are in accordance with the methodological guidelines established in each methodology applied. Additionally, during the site visit, the audit team took control points of these areas to validate the coverage and quality of the interpretation.

6.1.2.5   Assignment of roles and responsibilities for monitoring and reporting the variables relevant to the calculation of reductions or removals

The Cataruben Foundation has foreseen measures to ensure and control quality during the implementation of the AFOLU Sector Methodological Document / BCR0002 and AFOLU Sector Methodological Document / BCR0004, for each of the phases of the CO2Bio P 2-2 project, taking into account the applicable legal and technical requirements and thus comply with the following aspects: Ensure the correct development and management of the project; Identify and control the resources to carry out the activities during all project stages; implement of the necessary manuals, procedures, guides and formats and apply the methodologies for Quantification of GHG Emission Reductions.

All this in accordance with the requirements of ISO 9001/2015, ISO 14001/2015, as well as legal and regulatory requirements and those of The Cataruben Foundation's own Integrated Management System.

Table 74 of PD establishes the activities, responsibilities and controls for the correct implementation of the project and Table 75 establishes the documents obtained in the different phases of the project and the responsibilities.

In this sense and under the quality control system the project and the TP can guarantee clear roles with responsible parties for the formulation, implementation and monitoring of the CO2Bio P2-2 project activities.

6.1.2.6   Procedures related with the assessment of the project contribution with the Sustainable Development Goals (SDGs)

SDG 6 (Clean Water and Sanitation) aims to meet target 6.4.1: "Increase the change in water use efficiency over time". Considering the monitoring report covers the period 2018 - 2021, it presents the following results:

Through a survey, the TP developed the Water Efficient Use and Saving Plans (PUEAA's), whose purpose is to raise awareness and promote the transfer of knowledge to the community on issues such as the importance of sustainable management of water resources and the promotion of practices that strengthen their efficient use and saving.

Of the 74 properties characterized, 2 do not have housing. Because of this, no human consumption of water resources is generated in this area and therefore, there are no records of improvement in the use and management of the resource in these properties. In this regard, of the 124 properties enrolled in the CO2Bio P2-2 project, a total of 74 diagnoses (6%) and 74 PUEAA's (9%) have been carried out to date.

AENOR has access to the PUEAAs and to the characterizations of the properties and can confirm that the needs and data of the indicators reported for the current monitoring period are adequate.

Sustainable Development Goal (SDG) 13 focuses on achieving a specific indicator that seeks to reduce total greenhouse gas emissions per year. From the monitoring of GHG emissions carried out for the analysis period, a value of 12,709.6 tCO2e was recorded as being released into the atmosphere each year; of which 96.7% were the result of the transformation of wetland ecosystems and the remaining 3.3% due to deforestation and forest degradation in the project areas.

Annual GHG emissions monitoring was conducted for the period 2018-2021, for the Wetlands and REDD+ components, under which compliance with the objective was evaluated in terms of GHG emissions reduction with respect to the baseline value the estimated value is 19.4%.

The audit team reviewed the quantification presented for the monitoring period in the spreadsheets: 1. Emisiones_REDD+ V3.xls and 1. Emisiones_Humedales V3.xls, and found that for the monitoring period the results presented are in accordance with the estimates.

SDG 15 targets the achievement of two indicators that aim to: (i) increase forest area as a proportion of total area (SDG 15 > Target 15.1 > Indicator 15.1.1) and (ii) increase the proportion of sites important for terrestrial and freshwater biodiversity that are part of protected areas, disaggregated by ecosystem type (SDG 15 > Target 15.1 > Indicator 15.1.2).

Indicator 15.1.1 for the monitoring period shows a 0.03% increase in forest cover compared to the total project areas.

Indicator 15.1.2 1 for the monitoring period has managed to identify 21 properties that are high priority for marking areas of importance for biological diversity among the 124 properties.

AENOR had access to the information reported for these indicators and can confirm that it complies with the values reported for this verification.

6.1.2.7   Procedures associated with the monitoring of co-benefits of the special category, as applicable

The "Biodiversity conservation" component comprises two co-benefits: (i) it develops effective actions and measures to halt the loss of biological diversity, allowing ecosystems to continue providing essential services, and (ii) due to project activities, no invasive species have been introduced.

Indicator	Approach and/or compliance	Revised Evidence - OEC
# of Properties declared as RNSC (Civil Society Nature Reserve)	Fifteen (15) civil society nature reserves have been declared, which support national objectives for biodiversity conservation and the availability of ecosystem services in the project area.	The TP presents the resolutions that provide evidence of the registration of the 15 RNSC. AENOR considers that the evidence is relevant for this indicator.
# of assessments of the status of areas of importance for biological diversity	Of the 124 properties enrolled in the project, an analysis of areas of importance for biological diversity, 21 properties were identified in a high category, because they are important ecosystems for ecological processes and integrate habitats of great importance for conservation, 97 properties were located in the medium category and 8 properties in the low category.	Socio-ecological characterization of the 124 Properties. AENOR considers that the evidence is relevant for this indicator.
# of invasive species presence assessments conducted in the project area	It is verified that no exotic species have been used in any activity carried out during the project and the possible presence of these species will continue to be evaluated in the future.	The Project does not use invasive species in its activities. The main activities are conservation activities. AENOR considers that the evidence is relevant for this indicator.

The "Community Benefits" component comprises three co-benefits: (i) it identifies and strengthens mechanisms for social and community participation at the local and regional level, (ii) the project generates short- and long-term benefits for small-scale productive projects with members of the communities in the project area, and (iii) the GHG mitigation project activities produce an average net increase in the income of local producers.

Indicator	Approach and/or compliance	Revised Evidence - OEC
# of people participating in training, decision-making and advocacy spaces in the territory.	A total of 347 people have been trained out of a projected 1,000, involving different groups in strengthening the sustainable management and conservation of the strategic ecosystems enrolled in the project.	The TP, presents the trainings, photos and attendance lists. AENOR considers that the evidence is relevant for this indicator.
# of sustainable activities monitored and implemented	In accordance with the sustainable activities promoted in the macro operation of the project, good practices are designed and implemented for agricultural production, livestock and tourism in the project area.	The document Sustainable Practices Implemented Report.docx is presented. AENOR considers that the evidence is relevant for this indicator.
Increase (%) in producers' income.	According to the characterization of the ecosystem managers and the projection of economic benefits from the sale of carbon credits, it is evident that there is a percentage increase in their income.	The Project presents the economic and financial model (MF CO2Bio P2-2 UPDATE June/2023.xls) with favorable results for the Project. AENOR considers that the evidence is relevant for this indicator.

The "Gender Equity" component comprises two co-benefits: (i) it considers determinants set forth in the normative framework related to gender, and (ii) it ensures women's full and effective participation and equal leadership opportunities at all levels of decision-making at the project level.

Indicator	Approach and/or compliance	Revised Evidence - OEC
Number of women trained for the promotion and strengthening of gender equality and women's empowerment.	For the 2018-2021 period, 347 people were trained, of which 160 (46%) were women.	The TP, presents the trainings, photos and attendance lists. AENOR considers that the evidence is relevant for this indicator.

6.2 Quantification of GHG emission reductions and removals

6.2.1 Methodology deviations (if applicable)

For this monitoring period, there were no deviations for either of the two methodologies: BCR002 and BCR004.

6.2.2 Baseline or reference scenario

The calculation procedure used by the Project Holder to quantify the GHG reductions in the baseline scenario as a result of project implementation during the monitoring period and its outcome is summarized below.

GHG Emissions in REDD+ - Deforestation

According to the formulas presented in section 5.5.6 of this report, the TP calculated the baseline as follows.

The total biomass emission factor was established based on our own data, obtained by surveying plots in eligible areas. The value reported by the reference levels for the Orinoco biome was used to define the value of carbon dioxide equivalent contained in the soils. Thus, an emission factor of 575.74 tCO2e/ha was used for total carbon.

On the other hand, for the estimation of the annual change in forest areas in the reference scenario, a deforestation rate of 2% was estimated based on the historical average recorded for the area. In addition, the BSC was adjusted for national conditions, according to the values estimated in the most recent version of the NREF.

Year	Adjustment for national circumstances (%CN)	CSCNlb + %CNN (ha)	CTeq (tCO2e/ha)	GHG emissions in the baseline scenario (tCO2e/year)
2018	31,77%	269,35		155.075,36
2019	38,58%	295,59	575,74	170.180,67
2020	44,59%	307,58		177.087,32
2021	49,62%	317,39		182.732,19

GHG Emissions from the Conservation of Continental Wetlands

According to the formulas presented in section 5.5.6 of this report, the TP calculated the baseline as follows.

The emission factors were established based on data obtained from the survey of plots in eligible areas, according to the strata identified. Thus, the values defined for carbon dioxide

equivalent contained in total carbon correspond to 21.28 tCO2e and 151.63 tCO2e for the Herbaceous and Dispersed strata, respectively.

Based on the historical average of land use changes in wetlands, a transformation rate of 3.4% was calculated for the Herbaceous stratum and 0.7% for Dispersed. The baseline results for the Continental Wetlands Conservation are as follows.

Stratum	Year	CSCNlb (ha)	CTeq (tCO2e/ha)	GHG emissions in the baseline scenario (tCO2e/year)
Herbaceous	2.018	1.643,14	21,28	34.966
	2.019	1.706,86		36.321
	2.020	1.699,17		36.158
	2.021	1.691,52		35.995
Dispersed	2.018	42,51	151,63	6.446
	2.019	43,95		6.664
	2.020	43,55		6.603
	2.021	43,14		6.542

The audit team verified all calculations of greenhouse gas removals calculated for the monitoring period for baseline emissions. No errors were discovered that materially affect the emissions reported by the project during the monitoring period. The spreadsheet formulas (1. Emissions_REDD+ V3.xls and 1. Emissions_Wetlands V3.xls), conversions and aggregations, and the consistent use of data and parameters have been carefully reviewed by the AENOR audit team.

6.2.3 Mitigation results

For monitoring to the year 2021, satellite images from Landsat 8 OLI-TIRS sensor were used, which provides satellite images with a temporal resolution of 16 days, spatial resolution - pixel size 30*30 meters (compatible with scales 1:100,000). By means of which the interpretation of coverages was carried out.

After interpreting the land coverages, quality control of the reported information is performed through the FC-GOF-09 format Quality control of land cover interpretation. The accuracy evaluation (GOG-26. AcATAMA Instructions) (Annex 1>AcATAMA accuracy results) is performed through the Qgis plugin called "AcATAMA v23.4". It was validated with field views and with satellite images of better resolution than those used for the interpretation, in this case the Sentinel 2A-B satellite was used, spatial resolution of 10*10 meters and high resolution images of sensors such as WorldView 2 and WorldView 3 from the Maxar constellation. The accuracy result for the land cover map year 2021 was 98% (Image 14, accuracy result), which indicates compliance with the methodological requirement that establishes accuracy higher than 90%.

6.2.3.1   GHG emissions reduction/removal in the baseline scenario

Section 6.2.2 presents the GHG emissions in the baseline scenario.

6.2.3.2   GHG emissions reduction/removal in the project scenario

The calculation procedure used by the Project Holder to quantify the GHG reductions in the project scenario as a consequence of the project implementation during the monitoring period and its result is summarized below.

GHG Emissions in REDD+ - Deforestation

According to the formulas presented in section 5.5.6 of this report, the TP calculated the baseline as follows.

An average of 0.50 ha of forest deforested annually was recorded in the project areas during the period 2018-2021. This corresponds to 287.87 tCO2e/ha emitted each year into the atmosphere. The summary of emissions is presented in the following table.

Year	CSBproy,year (ha/year)	CTeq (tCO2e/ha)	Project GHG emissions (tCO2e/year)
2.018	0,48*		275,87
2.019	0,50		287,87
2.020	0,50	575,74	287,87
2.021	0,50		287,87

* Adjustments based on start date.

GHG Emissions from the Conservation of Continental Wetlands

According to the formulas presented in section 5.5.6 of this report, the TP calculated the baseline as follows.

For the monitoring period (2018-2021) changes in land use recorded an annual average of 187.6 ha and 54.8 ha for the Herbaceous and Dispersed strata, respectively. This corresponds to 3,992.6 tCO2e/year emitted in Herbaceous stratum coverages, and 8,305.4 tCO2e/year in the Dispersed stratum.

Stratum	Year	CSCNp (ha)	CTeq (tCO2e/ha)	Project GHG emissions (tCO2e/year)
Herbaceous	2.018	180,43		3.826,2
	2.019	187,63	21,28	3.992,6
	2.020	187,63		3.992,6
	2.021	187,63		3.992,6

Stratum	Year	CSCNp (ha)	CTeq (tCO2e/ha)	Project GHG emissions (tCO2e/year)
Dispersed	2.018	52,67		7.959,3
	2.019	54,78	151,63	8.305,4
	2.020	54,78		8.305,4
	2.021	54,78		8.305,4

The audit team verified all calculations of greenhouse gas removals calculated for the monitoring period for the project's emissions. No errors were discovered that materially affect the project's reported emissions during the monitoring period. The spreadsheet formulas (1. Emissions_REDD+ V3.xls and 1. Emissions_Wetlands V3.xls), conversions and aggregations, and the consistent use of data and parameters have been carefully reviewed by the AENOR audit team.

6.2.3.3   GHG emissions reduction/removal by leakage

GHG Emissions in REDD+ - Deforestation

For the 2018-2021 period in the leakage area, an average annual forest deforestation of 1.50 ha was recorded, representing 864 tCO2e emitted annually. However, this scenario does not represent an increase in GHG emissions due to the implementation of REDD+ activities, since it does not exceed the values presented in baseline for leakage.

GHG Emissions from the Conservation of Continental Wetlands

As a result, for the monitoring period, changes in wetland land use were recorded only in the herbaceous stratum. With an average of 426.75 ha transformed annually, representing 9,081.10 tCO2e emitted to the atmosphere; however, when compared to baseline values, they do not represent an increase in GHG emissions in the leakage area. The following table shows the results.

Stratum	Year	CSCNf (ha/year)	CTeq (tCO2e/ha)	EAf,lb (tCO2e)	GHG emissions in Leakage (tCO2e/year)
Herbaceous	2.018	410,38		26.785,98	-18.083
	2.019	426,75	21,28	26.793,01	-17.712
	2.020	426,75		25.772,10	-16.691
	2.021	426,75		24.790,09	-15.709
Dispersed	2.018	-45,20		4.025,35	-10.855
	2.019	-47,00	151,63	3.859,19	-10.986
	2.020	-47,00		3.557,97	-10.684
	2.021	-47,00		3.280,26	-10.407

The audit team verified all calculations of greenhouse gas removals calculated for the monitoring period estimated for the leakage area. No errors were discovered that would materially affect the project's reporting during the monitoring period. The spreadsheet formulas (1. Emissions_REDD+ V3.xls and 1. Emissions_Wetlands V3.xls), conversions and aggregations, and the consistent use of data and parameters have been carefully reviewed by the AENOR audit team.

6.2.3.4   Net GHG emissions reduction/removal

The net emissions reduction calculation is estimated from the ratio between baseline GHG emissions, project emissions and emissions due to leakage, taking into account the following equation:

$$RE = (t_2 - t_1) \, x \, (EA_{lb,año} - EA_{proy,año} - EA_{f,año})$$

Where:

RE	*Net reduction in GHG emissions; tCO_{2e}*
t_2	*Final year of the monitoring period; year*
t_1	*Initial year of the monitoring period; year*
$EA_{lb,año}$	*Annual emission in the baseline scenario; tCO_{2e}*
$EA_{proy,año}$	*Annual emission in the project area for the monitored period; tCO_{2e}*
$EA_{f,año}$	*Annual emissions in the leakage area for the period monitored; tCO_{2e}*

For the monitoring period, there was no significant increase in GHG emissions in the leakage area, so the values recorded as negative were taken as zero (0) in the final calculations to avoid overestimations at the time of applying the equation. Also, given that the start date of the monitoring period was 01/15/2023, an adjustment was made in the calculation of net GHG reductions to 11.5 months during the first year of quantification.

*Emission reductions for the first monitoring period of the Project report the following in total and by activity: **121,016 tCO2e** from avoided transformation of inland wetlands, **683,935 tCO2e** reduced from avoided forest deforestation. For a total of **804,951 tCO2e** as a result of the implementation of the Project activities in the period 2018 - 2021.*

Table 10. Ex post estimates (2018 - 2021) for GHG emission reductions from the implementation of REDD+ and Continental Wetlands Conservation activities.

Year	Wetland Transformation	Forest Deforestation (REDD+)	TOTAL
	Net reduction of GHGs (tCO₂e)	Net reduction of GHG (tCO₂e)	Net reduction of GHG (tCO₂e)
2.018	29.626	154.799	184.425
2.019	30.688	169.893	200.581
2.020	30.463	176.799	207.262
2.021	30.239	182.444	212.683
TOTAL	121.016	683.935	804.951

After a thorough and exhaustive review and reproduction of the calculations (1. Emisiones_REDD+ V3.xls and 1. Emisiones_Humedales V3.xls) and the corresponding cross-checks of these spreadsheets, AENOR considers that the monitored parameters are correct, reliable and consistent. The information in the Monitoring Report complies with the PD, the calculations provided and the applicable methodologies. Therefore, the results shown in the MR are reliable, consistent and accurate.

AENOR verified that the list of parameters to be monitored was complete and consistent with the information contained in the PD monitoring plan.

6.3   Environmental and social effects of the project activities and no net harm

For the monitoring period, the TP considered the evaluation of environmental and social impacts by providing the matrices (Environmental Impact Matrix CO2Bio P2-2.xls and Socioeconomic Evaluation Matrix.xls) based on the BioCarbon Registry 2023 tool. BCR TOOL. NO NET HARM ENVIRONMENTAL AND SOCIAL SAFEGUARDS (NNH). BCR project activities do not cause any net-harm to the environment or to local communities and society in general. Version 1.0 March 7, 2023.

No negative impacts were identified in these assessments; on the contrary, the impacts for the conservation of forests and wetlands highlight positive impacts. AENOR was able to purchase these refinements based on the site visit and the review of the matrices used by the TP.

The audit team, in consideration of numeral 6 (Validation and verification) of the tool, BCR TOOL. NO NET HARM ENVIRONMENTAL AND SOCIAL SAFEGUARDS (NNH), took into

account the evidences that allow to reach an assurance of conformity according to the rules of the BCR standard:

(a) GHG mitigation results and targets.

The project presents mitigation goals associated with the implementation of actions that allow avoiding the emission of 2,752,176 tCO2e and results associated with the implementation that allow avoiding the emission of 804,951 tCO2e between 15/01/2018 and 31/12/2021. The evidence can be seen in the spreadsheets and reports of the activities that favor the reduction of emissions from deforestation and transformation of inland wetlands.

b) Adequate and appropriate methodologies.

The TP made use of the following methodological documents:

- *Methodological Document AFOLU Sector "BCR0002 Quantification of GHG Emission Reductions and Removals REDD+ Projects. Version 3.1, September 15, 2022".*
- *Methodological Document AFOLU Sector "BCR0004 Quantification of GHG Emission Reductions and Removals - Activities avoiding land use change in inland wetlands. Version 2.0 23 June 2022.".*

The evidence of the application of the methodology and its development is presented in paragraphs 5.5 and 5.6 of this document.

c) Uncertainty and conservative approach.

In section 5.5.6 of this report the evidence for the estimation of uncertainty is presented.

d) Baseline scenario

The baseline analysis was guided by the requirements of BCR002 and BCR004 methodologies, which is presented in section 5.5.4 of this report.

e) Mitigation results

The results associated with the implementation allow avoiding the emission of 804,951 tCO2e between 15/01/2018 and 31/12/2021. The evidence can be seen in the spreadsheets and reports of the activities that favor the reduction of emissions from deforestation and transformation of inland wetlands.

f) Compliance with the additionality of the project

In section 5.5.5 of this report, the additionality analysis is presented in accordance with the tool: BioCarbon Registry. 2023. BIOCARBON GUIDELINES. BASELINE AND ADDITIONALITY. BCR projects generate verified carbon credits (VCC) that represent

emissions reductions, avoidance, or removals that are additional. Version 1.2 September 27, 2023.

g) Carbon rights and ownership.

The review of all agreements by the audit team leads to the conclusion that the project adequately supports carbon rights and ownership.

h) Assurance of environmental and social impact management and no net harm.

As mentioned above, the TOP identified the risks in the matrices (Environmental Impact Matrix CO2Bio P2-2.xls and Socioeconomic Assessment Matrix.xls) and the management of these, however, the identified effects are positive.

i) Co-benefit indicators.

The project appropriately presents the co-benefit indicators and demonstrates compliance with them in the monitoring, evidence is presented in section 6.6 of this report.

j) Contribution to SDGs.

The identification of applicable SDGs was carried out according to the tool: BioCarbon Registry. 2023. TOOL. SUSTAINABLE DEVELOPMENT GOALS (SDG). Version 1.0. June, 2023.

Monitoring indicators and evidence are presented in section 6.4 of this report.

k) Stakeholder consultation.

The TP presents the emails and lists of stakeholder consultations that support the evidence of the process.

l) Compliance with national legislation.

Section 5.7 of this report presents the main regulations that apply to this type of project and how they are complied with.

As there are no negative environmental and social effects, it is not considered necessary to present an action plan for their management.

m) Grouped project

The project is not grouped.

n) Compliance of the monitoring and quantification plan with the methodology.

As presented in items 5.5 and 5.6, the development of the monitoring and quantification plan complies with the stipulations of methodologies BCR002 and BCR004.

6.4 Sustainable Development Goals (SDGs)

As part of the CO2Bio p2-2 climate change mitigation project, the BioCarbon Registry's TOOL ODS tool[32] was used to identify the Sustainable Development Goals (SDGs) applicable to the project.

Climate change mitigation project Co2Bio P2-2 contributes to the fulfillment of the Sustainable Development Goals, which are adopted by the Colombian state as a member of the United Nations, and as part of the 2030 Agenda. From the adoption of the BCR tool for the AFOLU sector type REDD+ and Continental Wetlands Conservation Activities, it was identified that the project must demonstrate impact with the targets of goals: 6 (Water and Sanitation: Ensure availability and sustainable management of water and sanitation for all), 13 (Climate Action: Take urgent action to combat climate change and its impacts) and SDG 15 (Life of terrestrial ecosystems: Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, halt and reverse land degradation and halt biodiversity loss).

SDGs Monitoring Plan

The Monitoring Plan establishes the indicators and activities for each of the identified SDGs and the frequency of follow-up and reporting. The following activities were identified within the plan and how they are reported:

- (6) Water and sanitation: (6.4.1) Change in water use efficiency over time.

-(13): Climate action: (13.2.2) Reduce total greenhouse gas emissions per year.

- (15) Terrestrial Ecosystem Life: (15.1.1) Increase forest area as a proportion of total area and (15.1.2) Increase the proportion of sites important for terrestrial and freshwater biodiversity that are part of protected areas, broken down by ecosystem type.

AENOR was able to verify through the documentary review and the in situ visit that the SDGs identified correspond with the BCR tool and are reported in accordance with the selected project activities (REDD+ and Continental Wetlands Conservation), additionally, the sub-activities, indicators and monitoring frequency are in accordance with the requirements of the BCR standard.

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[32] *Tool for determining contributions to the Sustainable Development Goals (SDGs) of Greenhouse Gas (GHG) projects. v 1. July 13, 2023.*

6.5 Climate change adaptation

In consideration of the National Climate Change Policy, which focuses on the "Management and conservation of ecosystems and their ecosystem services for low-carbon and climate-resilient development", action line "e" specifies the importance of ecosystems associated with water supply, flooding and drought areas. In this sense, the objective of the CO2Bio project is framed within the national objectives for climate change mitigation and adaptation. The project's lines of work are as follows:

1. Improve the conditions for the conservation of biodiversity and its ecosystem services in the areas of influence, outside the Project boundaries (natural coverage in areas of special environmental interest, biological corridors, water management in watersheds, among others).

The project's objective is to improve the conditions for biodiversity conservation and ecosystem services. The project aims to contribute to the conservation of forest and Wetland areas by providing vital spaces for flora and fauna, which play a fundamental role in the maintenance of ecosystem services.

2. Implements activities that generate sustainable and low-carbon productive landscapes.

Training and technical assistance is provided to ecosystem managers. These activities are aimed at sharing knowledge and developing specific competencies for each productive activity they wish to implement.

3. Designs and implements adaptation strategies based on an ecosystem approach.

The project owner believes that landowners can adopt conservation practices and sustainable production practices such as the implementation of silvopastoral systems, water harvesting, recovery of water sources and gallery forests, landscape connectivity, promotion of civil society nature reserves, among others, to expand the lines of adaptation in the properties.

4. Strengthens the local capacities of institutions and/or communities to make informed decisions that allow them to anticipate negative effects derived from climate change (recognition of vulnerability conditions); as well as to take advantage of opportunities derived from the foreseen or evidenced changes.

Given the strategic importance of forests and wetlands for the country today, in a context of modernization and promotion of productive sectors, climate change and land use planning, the aim is to integrate different forest governance inputs that have been developed and others that are being developed within the framework of national policies and the project.

5. For activities in the AFOLU sector

- The project will promote the implementation of agricultural and forestry production systems adapted to high temperatures, droughts and floods.

- The contract clearly establishes the obligations and commitments of the parties, creating a mutually beneficial framework of cooperation and collaboration. The Ecosystem Managers commit to implement good conservation practices in the designated areas, such as proper management of natural resources, protection of wildlife, and promotion of sustainable practices and The Cataruben Foundation will provide the necessary support to facilitate the implementation of these good practices.

- The project owner will establish within its activities actions directly related to climate change adaptation measures, such as: silvopastoral systems, landscape connectivity through biological corridors, renewal of introduced or improved pastures, natural regeneration, promotion of the use of clean energy, the incorporation of trees in agricultural systems and farm implementation plans, which promote sustainable activities.

AENOR considers that within the framework of the National Climate Change Policy, the project's activities and actions, which promote the conservation of strategic ecosystems such as forests and wetlands, and the strengthening of sustainable practices, have a high impact on adaptation measures in the region, as these actions directly impact the ecosystem services most threatened by climate change, such as water regulation, water quality, biodiversity conservation, nutrient cycle regulation, and the conservation of cultural elements associated with the Orinoco landscape, among others.

6.6   Co-benefits (if applicable)

The approach and compliance with the Co-benefits (Orchid Category), the BCR standard, in its version 3.2, states that: "The project holder that intends to achieve one of these categories must comply with the conditions defined for each of the three components that constitute the additional benefits (biodiversity conservation, community benefits and gender equity)". In this sense, the TP establishes the following indicators to achieve the additional benefits for this category.

Biodiversity conservation

1. Develops effective actions and measures to halt the loss of biological diversity, favoring that ecosystems continue to provide essential services.

Indicator 1: # of Properties declared as RNSC (Civil Society Nature Reserve).

Indicator 2: # of assessments of the status of areas of biodiversity importance.

2. Due to project activities, no invasive species have been introduced.

Indicator: # of invasive species presence assessments conducted in the project area.

<u>*Conservation Community Benefits*</u>

1. Identifies and strengthens mechanisms for social and community participation at the local and regional levels.

Indicator: # of people participating in training, decision making and advocacy spaces in the territory.

2. The project generates short- and long-term benefits to small-scale productive projects with members of the communities in the project area.

Indicator: # of sustainable activities monitored and implemented.

3. The activities framed in the GHG mitigation project produce an average net increase in the income of local producers.

Indicator: Increase (%) in producers' income.

<u>*Conservation Community Benefits - Gender equity*</u>

1. Consider determinants set forth in the normative framework related to gender.

Indicator: Number of women educated and/or trained for the promotion and strengthening of gender equality and women's empowerment.

The project presents the procedures related to the monitoring of the Co-benefits in section 13 of the PD and the special category Orchid, as well as the criteria and indicators defined to demonstrate the additional benefits and the measurement of the co-benefits of the Orchid category.

AENOR considers that the information expressed in relation to the Co-benefits is credible and correct and that the project complies with the development of the Co-benefits.

6.7 REDD+ safeguards (if applicable)

In accordance with the interpretation of the safeguards of the BCR standard, the project presented the evidence to comply with the requirements of the tool proposed by BRIGARD & URRUTIA, BIOCARBON REGISTRY. 2023. TOOL TO DEMONSTRATE COMPLIANCE WITH THE REDD+ SAFEGUARDS. Version 1.1. 26 January 2023.

In point 12. of the PD, the CO2BioP2-2 Project has designed a series of activities with their respective indicators to monitor compliance with the REDD+ social and environmental safeguards that have been defined for Colombia. The monitoring plan with the projection of the indicators to be measured for each Safeguards is presented.

There are 7 safeguards in the context of the Co2Bio P2-2 Project and the Project Description evaluates the progress of the targets in the period 2018-2038 according to the safeguards monitoring plan established in consistency with the REDD+ Safeguards tool. v 1.1. January 26, 2023.

According to the correspondence with national legislation, international agreements and national policies. The project takes as its normative framework the national and international legislation that covers REDD+ projects in Colombia.

The project will share public information related to the project in a transparent manner; AENOR was able to check the web page where the legality of the project and of the Foundation in general is evidenced. On the other hand, the project is being monitored annually on the RENARE platform, once it is back in operation or the mechanism established by the government for this purpose.

AENOR verified that a strategy will be created to disseminate information about the project through the website, social networks and WhatsApp communication, to disclose the socio-environmental benefits for the owners and their properties.

The full and effective participation of the owners was verified through an interview, in addition to evidence of the socialization process. To comply with the reversal and leakage risk management safeguards, the project establishes 20% discounted emission displacement measures (where 10% remains in reserve and 10% in the standard), according to BCR guidelines.

Therefore, after the documentary review and the on-site audit process by the audit team, AENOR considers that the information expressed in relation to the Safeguards is credible and correct and that the project complies with the safeguards for REDD+ submitted by Colombia to the UNFCCC.

<u>REDD+ Safeguards Monitoring</u>

The monitoring of REDD+ Safeguards reviews the compatibility of project activities with forestry programs and international agreements, the compilation of the different means of communication established to guarantee the transparency and effectiveness of governance structures, respect for ethnic communities with a presence in the territory, the absence of environmental infractions, the adoption of measures to address reversal risk management, as well as the follow-up of measures to reduce the displacement of emissions.

The report of the 7 Safeguards is presented within the RM with the applicability and analysis of the tool provided below the monitoring results are presented.

Safeguards	Item	Indicator(s)	Evaluated Report OEC
Safeguards 1	The complementarity or compatibility of the measures with the objectives of national forestry programs and international conventions	1. # of compatibility reports performed	A report was prepared showing the analysis of the compatibility of project activities with (i) international agreements and (ii) national policies,

Safeguards	Item	Indicator(s)	Evaluated Report OEC
	and agreements on the subject.		strategies, plans and programs. - 1.1 REDD+ Safeguards Report (CO2Bio P2-2 -Legal Compatibility Matrix - CO2Bio P2-2
Safeguards 2	Transparency and effectiveness of national forest governance structures, taking into account national legislation and sovereignty. Provide transparent and consistent information that is accessible to all stakeholders and regularly updated. Be transparent and flexible to allow for improvements over time. Build on existing systems, if any.	1. # of radio spots and/or audios produced and broadcasted within the framework of the project. 2. # of digital documents produced and disseminated within the framework of the project (brochures, posters, illustrative documents, guides, etc.). 3. # of communications sent via e-mail for the dissemination of information within the project. 4. # of virtual and/or face-to-face socializations for property acquisition 5. # workshops and/or training to show how information is	Document entitled "Safeguards Report REDD+ (Co2Bio P2-2) / Safeguard 2". National Registry for the Reduction of Greenhouse Gas Emissions (RENARE). Forest Governance Standard Identification - CO2Bio P2-2.

Safeguards	Item	Indicator(s)	Evaluated Report OEC
		socialized with stakeholders.	
		6. # of activities or documents carried out with organizations, associations, community action boards or interest groups (report with attached and/or linked evidence).	
		7. # of project registrations in RENARE	
		8. # of reports on the recognition of forest governance structures	
		9. # of workshops and/or training developed within the framework of the project (attendance records, photographic record, supporting documents, video recordings).	
Safeguards 3	*Respect for the knowledge and rights of indigenous peoples and members of local communities, taking into consideration relevant international obligations and national circumstances and legislation, and bearing in mind the United Nations Declaration on the Rights of Indigenous Peoples.*	*1. # of working groups held with the communities.* *2. # of contracts and/or conservation agreements subscribed* *3. # of community*	*A report was prepared showing the implementation of working groups with the Project's communities. The analysis is contained in the document entitled "Safeguards Report REDD+ (Co2Bio P2-2) / Safeguard 3".*

Safeguards	Item	Indicator(s)	Evaluated Report OEC
		mapping analysis developed	*Digital folder Proceeding of prior consultation - Resolution Number ST-1449 of October 04, 2023, which resolves the non-proceeding of the prior consultation.*
Safeguards 4	*Full and effective participation of stakeholders, in particular indigenous peoples and local communities.*	*1. # of reports of communication and outreach mechanisms employed to ensure full and effective stakeholder participation.* *2. # of PQRS reports showing the way in which the comments made by the communities were addressed.*	*The analysis is contained in the document entitled "Safeguards Report REDD+ (Co2Bio P2-2) / Safeguard 4".* *Digital folder with PQR'S screenshots*
Safeguards 5	*The compatibility of the measures with the conservation of natural forests and biological diversity, ensuring that the measures identified in paragraph 70 of this decision are not used for the conversion of natural forests, but instead serve to incentivize the protection and conservation of these forests and their ecosystem services and to enhance other social and environmental benefits.*	*1. # of training cycles provided to the community.* *2. # of vulnerable species of biodiversity in the study area.* *3. # of hot spot alerts identified in the project area.* *4. # analysis of No forest conversion.* *5. # of certifications from environmental authorities evidencing the*	*Document entitled "Safeguards Report REDD+ (Co2Bio P2-2) / Safeguard 5".* *Digital folder with evidence of information on endangered species.* *Digital folder with certifications from environmental authorities evidencing the NON-incurrence of infractions and/or environmental investigations.*

Safeguards	Item	Indicator(s)	Evaluated Report OEC
		NON-incurrence of environmental infractions and/or investigations.	
Safeguards 6	Adoption of measures to address reversal risk management.	1. # of reversal risk management analyses performed. 2. # of reports on actions implemented to guarantee the permanence in time of the owners within the framework of the project.	Document entitled "REDD+ Safeguards Report (CO2BioP2-2) / Safeguard 6". Digital folder containing the reversal risk management analysis supports. Project risk identification and management matrix.
Safeguards 7	Adopting measures to reduce the displacement of emissions	1. # of reports with identification of leaks and their causes. 2. # of response protocols implemented to minimize leakage.	Report showing the identification of leaks and their causes, monitoring methods and actions to minimize them, as well as (ii) a report on the implementation of the protocol to respond to leaks that occur within the framework of the project.

AENOR was able to check the progress in meeting the targets with the documents presented in the M with respect to REDD+ Safeguards.

6.8   Double counting avoidance

In accordance with the tool for Avoiding Double Accounting. v 1. March 09, 2023[33], the REDD+ and Continental Wetlands Conservation project area was verified, along with the leakage belt to identify possible overlaps, consulting databases such as RENARE.

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[33] BioCarbon Registry. 2023. BCR TOOL. AVOIDING DOUBLE COUNTING (ADC). BCR avoid double counting of emissions reductions/removals. Version 1.0 March 9, 2023.

March 09, 2023, the verification of the REDD+ and Inland Wetlands Conservation project area, together with the leakage belt was performed to identify possible overlaps, consulting databases such as RENARE.

According to the BCR standard the Avoid Double Counting tool is defined as the accounting of GHG mitigation results in tCOe2 , in the following scenarios:

a) A ton CO2e is counted more than once to demonstrate compliance with the same GHG mitigation target.
b) One ton CO2e is counted to demonstrate compliance with the GHG mitigation objective.
c) A ton CO2e is counted more than once to obtain remuneration, benefits or incentives.
d) A ton CO2e is verified, certified or credited and assigned more than one serial for a single mitigation outcome.

To avoid double counting the TP submitted the following evidence in compliance with numeral No 8.1 of the double counting avoidance tool:

● Project and project holder information, this information is clear in the PD.
● GHG registration authorization[34]The evidence is presented on the page with the project registration in the following Link: https://biocarbonregistry.com/es_es/proyecto/?id=57.
● Project Description Document (PD), the PD version 2.2 is presented.
● Monitoring Report (MR), the MR version 2.2 is presented.
● Additional information is the result of the validation and verification process of the project.

On the other hand, regarding the requirements of numeral 8.3 on TP, the letter for the declaration in the host country[35] (8.3.1) and compliance with the provisions of the tradable emissions system (8.3.2) were presented, given that the BCR program has mechanisms to avoid double counting.

In addition, the audit team was able to corroborate the information presented in the project documentation and in the cartography that delimits the project areas, for which the following information was analyzed.

Section 4, "Compliance with applicable legislation" of the PD, details the exhaustive review of the different standards such as BioCarbon Registry, Colcx, Cercarbon and Verra. The main purpose of this review was to contrast and collate the shapefiles of the different projects registered in the area of influence of the CO2Bio P2-2 project, with the explicit purpose of confirming the absence of overlaps and ensuring the absence of double counting. The analysis identified 16 projects located in the same departments where the CO2Bio P2-2

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[34] F-PC-R_Reconocimiento_y_aceptacion_del_riesgo_CO2Bio_P2-2
[35] F-PC-HC_Declaracion Host Country

project has operations. However, it is essential to highlight that, after matching and comparative analysis, no overlap or crossover was identified with the areas designated for CO2Bio P2-2.

In addition, the project developer provided geographic documentary evidence that justifies the non-overlap with natural parks or other indigenous reserves or with other REDD+ projects.

It should also be noted that for the entire Orinoco region of Colombia there is a program aimed at promoting sustainable low-carbon landscapes, which seeks to identify and develop alternatives to contribute to the improvement of conditions for sustainable agricultural planning and production, in order to ensure a reduction in GHG emissions. However, although the program includes the departments of Arauca and Casanare, it is not registered as a project and has a different scope than a GHG mitigation project.

The audit team verified 100% of the legal information provided by the project proponent and contrasted the information with the Geodatabase, confirming that the sources of information used for its construction were the official ones. Therefore, it considers that the information provided allows concluding that the project is in compliance with the legal requirements.

6.9 Stakeholders' Consultation

The Cataruben Foundation carried out the respective consultation on the implementation of the project, in accordance with the provisions of Section 16 of the Standard for the voluntary carbon market, version 3.2; notifying the representatives of the territorial, governmental and non-governmental entities of the departments of Arauca and Casanare, resulting in twenty-nine (29) units notified for the two (2) departments mentioned above and eleven (11) responses issued in accordance with the requests made in the framework of the consultation.

The Cataruben Foundation has received responses from the notified entities through different communication channels, such as email, phone calls and WhatsApp, with the purpose of coordinating the socialization of the project. Meetings have been planned with the various units and support has been provided both by telephone and WhatsApp to address specific questions related to the project.

In addition, personalized communication was carried out for each entity present in the project area through emails and interviews. During virtual and/or face-to-face meetings with stakeholders, relevant information was shared and potential areas for the project were evaluated.

The owner of the project presented the evidence of the emails, meetings and presentations sent, however, no complaints or claims were received from stakeholders. The audit team had access to the evidence and was able to verify that the feedback to this information did not generate comments that would lead to its inclusion or changes in the design.

6.9.1   Public Consultation

The CO2Bio P2-2 Climate Change Mitigation Project, was submitted for public comment on the BCR registration page for one month (16/06/2023/ until 16/07/2023)[36] , at this date no comments were received.

7   Internal quality control

AENOR reviewed the monitoring documentation, as part of the PD, in addition to the GIS database and considered that they are in accordance with the procedures described in the validated monitoring plan and the monitoring plan and checked if there were any differences that could cause an increase in the estimates of GHG emission reductions in the current monitoring periods.

AENOR has confirmed that there are no significant material discrepancies between the actual monitoring system and the monitoring plan established in the PD and the methodologies applied, so there is no overestimation of the requested reductions. In addition, the project proponent effectively monitors the parameters required to determine the project reductions as required by the monitoring plan and applicable methodology.

The reported parameters, including their source, monitoring frequency and review criteria, as indicated in the PD, were verified as correct. The necessary management system procedures, including responsibility and authority for monitoring activities, were verified to be consistent with the PD. The knowledge of personnel associated with the project monitoring activities was found to be satisfactory by the audit team.

Finally, in AENOR's quality management process, there is an internal review of the audit process, in which an assurance is made of the scope, the program rules and how the validation and verification report manages to gather this evidence and its adequate management to present the final statement.

8   Validation and verification opinion

AENOR has validated and verified that the CO2Bio P2-2 Climate Change Mitigation Project complies with BioCarbon Registry Standard v3.2, September 23, 2023. The project has been implemented in accordance with the Project Description and the applicable national information included.

The validation and verification process was performed based on all BioCarbon Registry requirements. The findings of this report show that the project, as described in the project documentation, is in line with all applicable criteria for validation and verification.

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[36]

https://biocarbonregistry.com/es_es/consulta-publica-form/?project=CO2Bio%20P2-2&date=16/06/2023/

The validation and verification consisted of the following three phases: i) desk review of the project design, monitoring plan and ex ante and ex post estimation of GHG removals and reductions; ii) in situ audit and stakeholder interviews; iii) resolution of outstanding issues and issuance of the final validation and verification report and opinion. During the course of the validation and verification process, clarifying and corrective actions were raised; all have been successfully closed as explained in the validation and verification protocol attached to this report (Annex 2).

The review of the Project Description documentation and additional documents related to the ex ante estimation and monitoring methodologies; and subsequent background research, follow-up interviews and review of comments from the parties have provided AENOR with sufficient evidence to validate compliance with the established criteria.

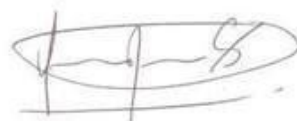*In detail, the validation findings can be summarized as follows:*

- *The project is in line with all criteria of the BioCarbon Registry v3.2 Standard, September 23, 2023.*

- *The additionality of the project is sufficiently justified in the PD.*

- *Methodological Document AFOLU Sector "BCR0002 Quantification of Emission Reductions and GHG Removals REDD+ Projects. Version 3.1, September 15, 2022".*

- *Methodological Document AFOLU Sector "BCR0004 Quantification of GHG Emission and Removal Reductions - Activities that avoid land use change in inland wetlands. Version 2.0 23 June 2022".*

- *The Monitoring Plan is transparent and adequate.*

- *The ex ante analysis of the project's GHG reductions has been carried out in an accurate, transparent and conservative manner, being estimated at a total of **2,752,176 tCO$_2$ e** (REDD+: **2,080,480** tCO$_2$ e and Wetlands Conservation: **671,696 tCO$_2$ e**) for a GHG emission reduction quantification period of 20 years for the REDD+ activity and 20 years for the Wetlands Conservation activity.*

AENOR considers that the project manager performs the monitoring and reporting of its GHG mitigation actions in accordance with the principles of the MRV System and the accounting rules established in the Biocarbon Registry standard and that the results of the quantification of emission reductions are verifiable in the framework of ISO 14064-3:2019.

*AENOR can issue a positive verification opinion for verified GHG emission reductions of **804,951 tCO$_2$ e** (REDD+: **683,935 tCO$_2$ e** and Continental Wetlands Conservation: **121,016 tCO2e**) for the monitoring period (01/15/2018 - 12/31/2021).*

AENOR has verified a reasonable level of assurance that these reductions have been achieved.

Bogotá, December 15, 2023.

Juan Camilo Serna

Chief Auditor

9   *Validation statement*

The validation statement is attached to this document.

10   *Verification statement*

Attached to this document is the verification statement.

11 Annexes

Annex 1. Competence of team members and technical reviewers

The audit team consisted of the following members:

Name	Post
Juan Camilo Serna	Chief Auditor
Daniel Bermejo	Auditor
José Luis Fuentes	Technical reviewer

The audit team is qualified in accordance with the AENOR qualification scheme for validation and verification projects for voluntary and regulated schemes applicable in Colombia.

The Leader auditor is a forestry engineer, Specialist in International Cooperation with extensive experience in forestry projects, and relevant experience in social, ecological and economic aspects of local and regional environmental projects. He is currently working in AENOR as a centralized auditor in AFOLU projects.

Daniel Bermejo is a Forestry Engineer with a Master in sustainable finance. He started his career in private consulting working on topics such as climate risk analysis and TCFD risks, EU taxonomy, development of sustainable banking standards (agriculture, biodiversity and forestry) and environmental footprint and sustainability reporting projects. He currently works in AENOR as a centralized auditor in AFOLU projects.

José Luis Fuentes is the director of AENOR's Climate Change Unit. He is a Forestry Engineer and holds a Master's Degree in Business Administration and a Postgraduate Degree in Environmental Management. He has more than 15 years of experience in auditing, consulting and training activities related to environmental and carbon management projects. Jose Luis has been actively involved in auditing international sustainable development projects in several carbon schemes, such as Clean Development Mechanisms (CDM), Verified Carbon Standard (VCS), Climate, Community and Biodiversity Standards (CCB), Gold Standard (GS) and carbon footprints (ISO 14067 and ISO 14064). Jose Luis has extensive technical knowledge on the regulatory framework, policies and technical provisions emanating from the Paris Agreement, the Kyoto Protocol and the Conferences of the Parties.

Annex 2. Clarification requests, corrective action requests and forward action requests

Non-Conformities (NCs)/Corrective Action Requests (CARs)

NC/CAR id.	01	Date: 07/17/2023
Description of NC/CAR		
The Project Holder must submit evidence to support the start date for the activities: i) Avoidance of land use change in Wetlands and ii) Reducing Degradation and Deforestation (REDD+). (BCR Standard 10.4). *Although letters of intent are presented as support, clear evidence must be presented to demonstrate how the project has begun activities that translate into effective GHG emission reductions (initiation of management strategies, conservation plans, agreements or contracts) for the project.* *The evidence must show the start date of the activities in accordance with the methodologies:* *1. Activities that prevent land use change in wetlands: January 15, 2018.* * Reducing Degradation and Deforestation (REDD+): January 15, 2018.* *Note: It is important to clarify and justify the enrolled date (contracts and other support) for the activity (REDD+ and Wetland Conservation), as this date is outside the monitoring period (2022).*		
Response from project proponent		**Date:** 04/08/2023

Taking into account the BioCarbon Registry's methodologies for the quantification and reduction of GHG emissions and removals, the following evidence is presented to support the start date of project activities independently for:

- *Activities that prevent land use change in Wetlands*

  Start date: January 15, 2018

  1. On January 15, 2018, the implementation of the project activity "Strengthening knowledge in wetland conservation and sustainability to prevent the expansion of the agricultural frontier" began, which aims to provide landowners with the knowledge and tools for the conservation of wetlands and prevent their transformation.

     As evidence, the <u>protocol of the training cycles</u> implemented, the <u>schedule of the training</u> carried out with their respective supports and the <u>training plan</u> proposed for this purpose are presented.

  2. On February 16, 2017 began the recognition and characterization of the properties enrolled in the project in relation to their eligible areas, within the framework of the activity "Characterization and implementation of sustainable productive and conservation practices".

     As evidence, the <u>schedule of visit logs</u> and their respective supports are listed.

- *Reducing Degradation and Deforestation (REDD+)*

  Start date: January 15, 2018

  1. On January 15, 2018, the implementation of the project activity "Strengthening knowledge for the sustainable management of ecosystems and biodiversity conservation" begins, which is a fundamental part of the strategy for forest management in the properties enrolled in the project, whose objective is to avoid GHG emissions due to forest degradation and deforestation.

     As evidence, there is a <u>protocol of the training cycles</u> implemented, a detailed <u>schedule</u> of the training carried out with their respective supports and the proposed <u>training plan.</u>

  2. On February 16, 2017, visits to the Properties began for the implementation of the following activities: "Promote the delimitation and/or signage of conservation areas" and "Promote and improve agricultural production, livestock (on existing land) and tourism through the implementation of good sustainable practices.

     <u>The schedule of visit logs</u> and their respective supports are listed.

Under the above context, although the legal package is signed by each landowner in the year 2022 (truthfulness of information act, confidentiality agreement, enrolled contract, title study, legal and technical feasibility letters), it covers the monitoring time (2018-2021) for the two ecosystems; and is the legal guarantee for CATARUBEN of the momentum, credibility and commitment of the owners without future effects on the project.

Documentation provided by project proponent	
Training plan for both components: REDD+ and Wetlands: <u>*CO2Bio P2-2 Training Plan.*</u> *Training Schedule - Wetlands:* <u>*Wetlands Training - CO2Bio P2-2 - V1.xlsx*</u> *Training protocol - Wetlands:* <u>*Training protocol - act. 1 - wetlands - CO2Bio P2-2 - V1.docx.pdf*</u> *Field log schedule - Wetlands:* <u>*Property technical support - wetlands.xlsx*</u> *Training Schedule - REDD+:* <u>*REDD+ TRAINING REPORT.xlsx*</u> *Training Protocol - REDD+:* <u>*REDD+ TRAINING REPORT.docx.pdf*</u> *Timeline of Field Logs - REDD+:* <u>*REDD+ Characterizations*</u>	

Evaluation of OVV	Date: 09/30/2023
The information and documentation adjustment is sufficient for closure of the finding. **Closed**	

| NC/CAR id.	02	Date: 07/17/2023
Description of NC/CAR		
Complement the GIS information in the project activities in accordance with the requirements of the methodologies (BCR002 - BCR004) and BCR reference documents with the following information: *Justify the use of inputs versus other available sources of information in consideration of the start date and monitoring period of the project activities: Wetland conservation and REDD+.* *2. Justify the minimum mapping unit, considering the scale of the inputs used for Wetland conservation and REDD+ activities.* *Justify the criteria for the delimitation of leakage areas for wetland conservation and REDD+ in relation to the distances considered to delimit the established buffers, along with the possible agents of change, coverage and deforestation.*		
Response from project proponent		*Date: DD/MM/YYYYYYY*

1. **BCR0002:** *In Colombia, forest monitoring at the national level is carried out by the Ecosystems Subdirectorate of IDEAM, through the Forest and Carbon Monitoring System - SMByC, which has established the definitions and procedures required for all reports and changes in the forest area elaborated at the national level. In this order, the non-forest forest maps for 2010 - 2018 are used to generate eligibility and 2021 is used for monitoring. The SMByC maps are annexed.*

    BCR0004: *The official cartography on land cover, CORINE Land Cover methodology (2012 - 2018 generate eligibility) adapted for Colombia, scale 1:100,000, prepared by the IDEAM, is used; this information can be downloaded in shapefile format from the web page of the Environmental Information System of Colombia - SIAC or from the IDEAM Institutional geoportal. In addition, to identify and determine the wetlands, the national map of wetlands of Colombia developed under inter-administrative agreement No. 005 (13 - 014) <<Spatial identification of the Continental Wetlands systems of Colombia>> is used. For the monitoring of eligible areas for the year 2021, the land cover map is prepared following the methodological guidelines of the methodology adapted for Colombia.*

2. **BCR0002:** *The scale of the inputs used is 1:100,000. However, the SMByC must comply with the definition of forest according to the UNFCCC and IPCC defined as <<territory covered mainly by tree cover with a minimum canopy cover of 30%, a minimum canopy height "in situ" of 5 meters at the time of identification and a minimum area of 1.0 hectare. The inputs with which the non-forest forest map is created are raster images with 30*30 meter pixels, which indicates that each pixel maps (900 m2) of the territory through satellite image processing techniques - PDI.*

    *The protocol of digital image processing for the quantification of deforestation in Colombia version 2.0 (Galindo et al. IDEAM 2014), establishes the methodological process for the generation of the **national non-forest forest map**, in it is mentioned textually << in the quality control of the map of change per scene, polygons of change smaller than one hectare must be removed for both deforestation and regeneration, according to the minimum mappable areas and the definition of Forest, page 36>>. The document also describes the "Diagram of the methodological process, page 28", in support of which a document by Cabrera et al 2019, Colombian Forest Monitoring System: Assessing Deforestation in an Environmental Complex Country is attached, which also describes the robustness of the SMByC methodological process to generate the non-forest forest map together with the definition of forest that must be met in its elaboration.*

    Figure 1. *Diagram of the methodological process*
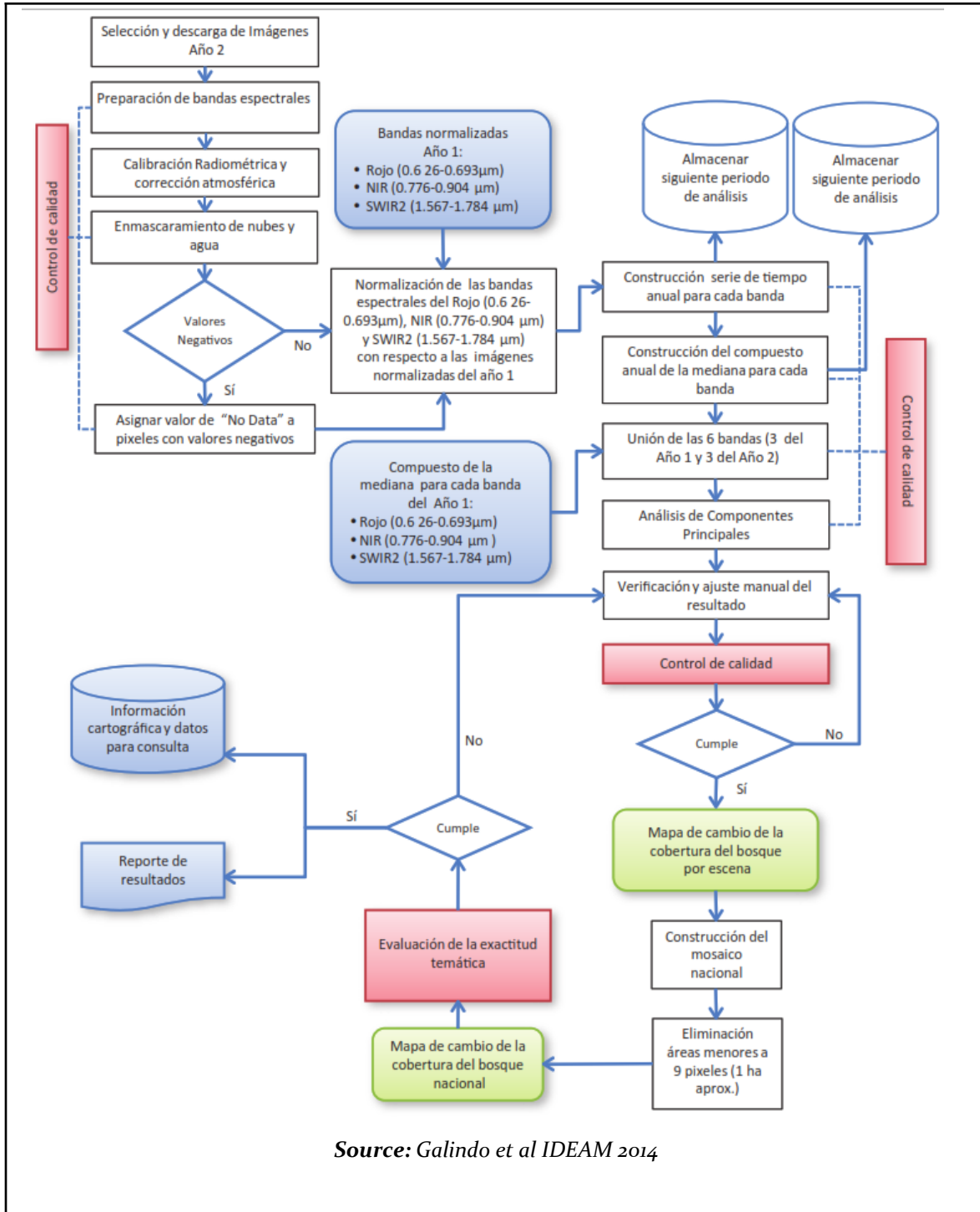
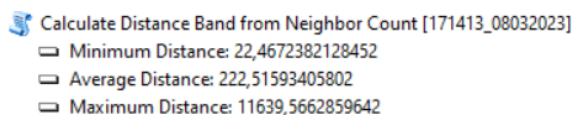**Source:** *Galindo et al IDEAM 2014*

BCR0004: *There is a direct relationship between the working scale and the resolution of the images that are suitable for use as input in a land cover interpretation. For the case of land cover, from the CORINE Land Cover methodology, the measure of 5 mm2 has been used at the output scale, which translates into 25 hectares for a scale of 1:100,000 (PNN,2021-5.1.1.Selección Insumos), images from the Landsat 8 and 9 constellation are used, and Sentinel 2 is also used. It is different from **BCR0002** because it uses PDI, while the Corine Land Cover methodology uses the PIAO method (PhotoInterpretation Assisté par Ordinateur) or visual interpretation to define from the texture and color, the type of cover recorded and identified in the field.*

3. **BCR0002: The** *leakage area for the REDD+ component was updated, after exclusion of overlap with REDD+ project areas and leakage in the Wetlands component. PDD_V2, Monitoring Report_v2 and REDD+ emissions reduction v2 are updated. Information supported in the REDD_CO2BioP2-2_V2.0 geodatabase. Route gdb: REDD Leakage Area > Forest FY 2010, REDD Leakage Belt.*

   BCR0004: *Update of leakage areas for the Wetlands component after exclusion of overlap with wetland project areas and leakage from the REDD+ component. Updated PDD_V2, Monitoring Report_v2 and Wetland emissions reduction v2. Information supported in the Wetlands_CO2Bio P2-2_V2.0 geodatabase. Route gdb: Wetlands Leakage area > Wetlands leakage belt.*

4. **BCR0002:** *The leakage area for REDD is made up of a total of 28,090 ha, where 5,163 hectares of forest are distributed, this area is a buffer of 250 m around the Property and was determined from analyzing deforestation in the period 2010:2018 using data from Global Forest Change V1.10(2000-2022), followed by a near neighbor analysis in ArcGIS using the algorithm "Average Nearest Neighbor - Calculate Distance Band From Neighbor", this allowed us to know that the loss of forest present between 2010 and 2018, has an average range of mobility of 222.5 meters around the project areas. A .mpk format file (Map Package) called Área_fugas.mpk is attached; in the **dataframe Fugas_REDD + CO2BioP2-2**, you can find the supporting cartographic files.*

   Figure 2. *Algorithm Calculate Distance Band from Neighbor, ArcGIS*

   Calculate Distance Band from Neighbor Count [171413_08032023]
   - Minimum Distance: 22,4672382128452
   - Average Distance: 222,51593405802
   - Maximum Distance: 11639,5662859642

   Data source: *Global Forest Change 2000 - 2022*
   Elaboration: *The Cataruben Foundation*

   BCR0004: *The leakage area for Wetlands is made up of a total of 66,756 ha, where 39.707 hectares of vegetation cover belonging to Wetlands, this area is a buffer of 600 m around the Property and was determined by analyzing the transformation changes of natural vegetation cover, proximity to population centers, access to roads, livestock, agriculture, oil platforms, suitability for expansion of the agricultural frontier, suitability for dual purpose livestock were the cartographic layers used after an overlay analysis to determine the average distance to the project areas where cover changes occur. A .mpk format file (Map Package) called Área_fugas.mpk is attached; in the **dataframe Fugas_Humedales CO2BioP2-2**, the supporting cartographic files are found.*

Documentation provided by project proponent

1. Non-forest Forest - SMB&C. _1.3REDD+>5.Geospatial>5.6.Maps of the SMByC._

   SIAC in Maps or _IDEAM Institutional geoportal_

   Spatial identification of Colombia's Continental Wetlands Systems

2. **BCR0002:** _Digital image processing protocol for the quantification of deforestation in Colombia, V2.0._

   Colombian Forest Monitoring System: Assessing Deforestation in an Environmental Complex County

   BCR0004_: Land cover monitoring in national natural park areas, 2021._

3. . **BCR0002:** _Global Forest Change 2000-2022 Data Download_

   Attached is a .mpk (Map Package) file called _Área_fugas.mpk_, in the **dataframe Fugas_REDD + CO2Bio P2-2**, the supporting cartographic files can be found.

   BCR0004: _Area_leakage.mpk_, in the **dataframe Leakage_Wetlands CO2Bio P2-2**, the supporting map files are located.

Evaluation of OVV	Date: 09/30/2023

The information and documentation adjustment is sufficient for closure of the finding.

Closed

NC/CAR id.	03	Date: 07/17/2023
Description of NC/CAR		

In accordance with BCR002 methodology for the quantification of GHG emission reductions, take into account the following criteria for ex ante and ex post quantification:

Adjust the spreadsheet "1. Emissions_REDD+.xls" considering emissions as of the January 2018 start date and annual accounting for the crediting period (30 years) and the monitoring period (2018-2021).

2. In the calculation of the degradation in the monitoring period, present the values for the estimation of the annual primary and secondary degradation in the leakage area ($A_{nucleo-par,lb}$ y $A_{perf-par,lb}$);

according to the formula established in the methodology.

Response from project proponent	Date: 03/08/2021

1. The CO2BIO P2-2 project establishes an accreditation period from 01/15/2018 to 12/31/2037 (20 years). The first monitoring period is from 15/01/2018 to 31/12/2021 (4 years). The input that justifies the monitoring to 2021, is the non-forest forest map, which according to the SMByC is a map prepared by processing and interpretation of satellite images-PDI where Landsat images taken between 01 January and 31 December of the respective year are used (http://www.siac.gov.co/smbyc). The dates are adjusted in the PD and Monitoring Report respectively.

   Thus, the estimation of GHG emissions and reductions in the baseline scenario is projected on an annual basis, for a period of 20 years (Sheets 1. Deforestation_LB and Sheet 2. Degradation_LB). Whereas, for the monitoring period the analysis is performed for the first four years (Sheet 4. R_Monitoring_2021).

   Given the start date of project activities (January 15), the projected and monitored emission reductions in year 1 (11.5 months) are adjusted.

2. The BCR0002 methodology establishes the following equations for the estimation of primary and secondary degradation:

$$DFP_{f,año} = (\frac{1}{t_2 - t_1}) \: x \: (A_{núcleo,f} - A_{núcleo-parche,f})$$

$$DFS_{f,año} = (\frac{1}{t_2 - t_1}) \: x \: (A_{perforado,f} - A_{perforado-parche,f})$$

Where:

$DFP_{f,año}$	Annual primary degradation in the leakage area; ha/year
$DFS_{REDD+proy,año}$	Annual secondary degradation in the leakage area; ha/year
t_1	Initial year of the monitoring period; year
t_2	Final year of the monitoring period; year
$A_{núcleo}$	Leakage area in core class, in the Initial year of the monitoring period; ha
$A_{perforado}$	Leakage area in perforated class, in the year of the beginning of the monitoring period; ha
$A_{núcleo-parche}$	Area of leakage changing from core to patch, in the final year of the monitoring period; ha
$A_{perforado-parche}$	Leakage area changing from perforated to patch, in the final year of the monitoring period; ha

In this sense, to define the value of $A_{núcleo-parche}$ y $A_{perforado-parche}$ The methodology establishes its estimation as the areas that pass from one category to another (core/drilled to patch); however, this would generate extreme values that would overestimate the emissions due to degradation in the leakage area. Therefore, for the purposes of calculating a conservative scenario in the CO2Bio P2-2 project, its value is estimated as the areas in the Core/Perforated category in t2 minus the areas that go from Core/Perforated to patch between periods t1 and t2.

Documentation provided by project proponent	
N/A	
Evaluation of OVV	**Date:** 09/30/2023
The information and documentation adjustment is sufficient for closure of the finding. **Closed**	

| NC/CAR id.	04	**Date:** 07/17/2023
Description of NC/CAR		
In accordance with BCR004 methodology for the quantification of GHG emission reductions, take into account the following criteria for ex ante and ex post quantification: Adjust the spreadsheet "1. Emissions_Wetlands.xls" considering emissions as of the start date January 2018 and annual accounting for the crediting period (30 years) and the monitoring period (2018-2021). Review and adjust the areas calculated for the baseline scenario and project scenario for ex ante and ex post quantification according to the final layers determined in the GIS analysis. 3. Support the strata of the project according to the analysis of land cover interpretation and the non-inclusion of the aquatic stratum in the project areas. 4. Characterize and support the "Open Arbusal and Dense Arbustal" coverages for the Orinoco region, since in the Corine Land Cover adapted for Colombia they correspond to other natural ecosystems (such as high Andean forests and xerophytic shrublands). Consider that for their classification and identification there are other biophysical criteria in addition to land cover. 5. In the projection of annual changes in the scenario with project justify in the PD the value of Percentage of projected decrease in decrease in coverage changes due to implementation of project activities (%P) and Percentage of projected increase in emissions in the leakage area due to implementation of project activities (%PF).		
Response from project proponent		**Date:** DD/MM/YYYYYYY

1. The project establishes a crediting period from 01/15/2021 - 12/31/2037. *Emisiones_Humedales V2.xlsx* / Hoja 1. Transformación_LB, the annual estimate of GHG emissions and reductions is made considering a 20-year period.

   On the other hand, the 2018-2021 period for monitoring emissions and reductions of the project is adjusted in the spreadsheet. The monitoring of the project areas is carried out through the interpretation of satellite images, under the Corine Land Cover methodology. The inputs used are optical images collected between January 1 and December 31, 2021, with special emphasis on times where cloud cover does not compromise the quality of the image, the information can be seen in the "Inputs" attribute table of the *CLC_2021 shapefile*. However, for the correct interpretation, support images are used with temporality of 2022 (January), this is done in order to ensure that the interpreted coverage corresponds to the present throughout 2021. This information can be seen in the "support" attribute table of the *CLC_2021 shapefile*.

2. Adjustment of the areas for ex ante and ex post quantification is performed 1.)

3. According to BCR0004, **item 10.5** historical period of land use change in Continental Wetlands. The result of the analysis determines that the natural vegetation cover belonging to the aquatic stratum (4.1.1. Marshlands, 4.1.2. Peatlands, 4.1.3. The opposite situation for the herbaceous (3.2.1.1.2. Dense flooded grassland and its variants) and dispersed (3.2.2.1.1.Dense shrubland, 3.2.2.2.2.Open shrubland, 3.2.1.1.2.3.   The information is related in the PDD CO2Bio P2-2, *item 22.3.2. Annual historical changes, table 29.* annual historical changes. The cartographic information is related in *Wetlands_CO2Bio P2-2_V2.0.gdb* > Dataset "Wetlands Reference Region" > Stratum 2009, Stratum 2018.

4. For the identification, interpretation and characterization of the project's land covers, we mainly used the *Corine Land Cover Legend adapted for Colombia (IDEAM, 2010)*, *Catalog of land cover patterns (IDEAM, 2012)* and as supporting information the *technical data sheet of land cover patterns in the Colombian Amazon (Sinchi Institute, 2009)* and the Magdalena-Cauca Basin Land Cover Map (*IDEAM, IGAC and CORMAGDALENA. 2008*). According to the above, dense shrubland is characterized as a cover consisting of a plant community dominated by distributed shrub elements, but there may be scattered arboreal elements. With respect to intervention, it is found that it may or may not be selectively intervened, however IDEAM, IGAC and CORMAGDALENA, 2008, p. 139, which includes the cover known in Colombia as stubble and scrub.

Below is a satellite-interpreted image, with a light blue border showing fragments of scrub and scattered shrub elements.

Figure 3. 5,6,2 Landsat 8 composition, vegetation visualization Shrubland
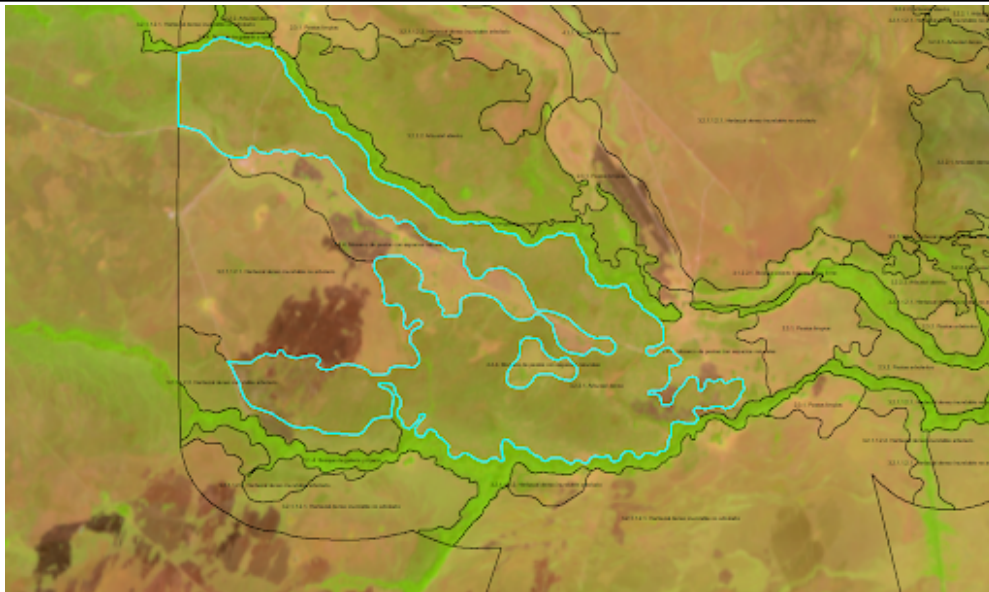
Elaboration: The Cataruben Foundation

Visualization that corresponds to reality

Figure 4. *Photograph of the in situ interpretation Figure 3.*

Elaboration: The Cataruben Foundation

The open shrubland corresponds to the definition of dense shrubland with the difference that in the open shrubland the canopy strata are discontinuous.

5. *Justification for the selection of %P and %Pf is included in the PDD (Section 23.3.3).*

<table>
<tr><td colspan="3">For the case of the projection of the decrease in changes in natural cover (%P), a value was established according to the decrease recorded as a result of the implementation of the project activities in Monitoring Period 1 (2018-2021), assuming that in the coming years there will be a similar trend.

Regarding the projection of the increase in emissions in the leakage area, a conservative value of 10% was applied, which is suggested and accepted by the BCR standard in other methodologies of the AFOLU sector.</td></tr>
<tr><td colspan="3">Documentation provided by project proponent</td></tr>
<tr><td colspan="3">1. <u>1. Emissions_Wetlands V2.xlsx</u>

3. PDD CO2Bio P2-2, <u>item 22.3.2. Annual historical changes, table 29</u>. annual historical changes. The cartographic information <u>Wetlands_CO2Bio P2-2_V2.0.gdb</u>

<u>Characterization of cartographic inputs for generation of Corine Land Cover CO2Bio P2-2</u>

4. <u>Corine Land Cover legend adapted for Colombia (IDEAM, 2010)</u>.

<u>Catalog of land cover patterns (IDEAM, 2012)</u>.

<u>technical data sheet on land cover patterns in the Colombian Amazon (Sinchi Institute, 2009)</u>.

Land Cover Map Magdalena-Cauca Basin (<u>IDEAM, IGAC and CORMAGDALENA, 2008)</u>.</td></tr>
<tr><td colspan="2">Evaluation of OVV</td><td>Date: 09/30/2023</td></tr>
<tr><td colspan="3">The information and documentation adjustment is sufficient for closure of the finding.

Closed</td></tr>
</table>

<table>
<tr><td>NC/CAR id.</td><td>05</td><td>Date: 07/17/2023</td></tr>
<tr><td colspan="3">Description of NC/CAR</td></tr>
</table>

In the construction of emission factors, the following elements should be considered for the estimation of baseline emissions in the REDD+ activity according to the BCR002 methodology:

1. Include emission factors for the post deforestation scenario (identify land uses characterized by forest loss and quantify carbon for these areas in the baseline).

2. According to "GPP-23. Inventory design procedure for biomass growth monitoring (AR).docx" present the design for the location of the plots, the calculation of the number of plots and the calculation of the sampling error (E%).

3. The construction of the carbon emission factors does not present an analysis of the corroboration of the values with alternative sources or the elements considered to conclude that the values applied represent the baseline scenario.

4. Aboveground biomass - deforestation: the Aboveground biomass value reported by the project is higher than that reported in the National Reference Level for the biome covering the project area. Present an analysis of other studies that support that the value applied by the project does not represent a risk of overestimation and include in the analysis the results obtained by CO2Bio P2 -1.

6. Aboveground biomass - degradation: uncertainty of the values applied to the different classes (patch, core, perforated) is not presented.

7. Since palms and lianas were included in the biomass estimation with specific equations, include in the "GOP-15 Forest Plot Survey Procedure" the criteria considered for their measurement.

8. Specify within the "GOP-15 Forest Plot Survey Procedure" the measurement of trees with bifurcations before 1.3m, since the field measurement was not carried out in accordance with the protocol.

Response from project proponent	Date: DD/MM/YYYYYYY

Under the guidelines of the methodological document BCR0002, the inclusion of emission factors for the post-deforestation scenario is not requested. Therefore, in a deforestation event in forest areas, it is assumed that all carbon contained in Aboveground biomass and Belowground biomass is emitted in the same year, while carbon stored in the soil is assumed to be emitted in equal proportions during the following 20 years.

2. The results of the design for plot location, calculation of the number of plots, and calculation of sampling error (E%) are included in the DATA QUALITY CONTROL REPORT - FORESTS (*2. Data Analysis*).

3 y 4. The definition of the total biomass emission factor for the CO2Bio P2-2 project was based on the project's own data, for which a sampling procedure was designed based on the National Forest Inventory Field Manual, being the basis for the definition of the size of the plots, types of individuals and variables to be measured in the field.

Likewise, the selection of sampling points was carried out randomly, having as sampling universe the eligible areas of the project that complied with the forest category, according to the forest/non-forest analysis proposed by IDEAM, and that have remained stable during the last ten years, thus reducing the subjective selection of the areas and the biases in the estimations.

Similarly, to reduce the probability of errors in data collection, digital tools were used to record information in the field. To this end, a digital form was designed and uploaded to the ODK Collect platform, ensuring traceability of the information during and after the field activities. Additionally, in order to avoid under- or overestimates in the calculations, an exploratory analysis was applied to the information collected in the 34 sampling points; from this, outliers that could have an effect on the final calculations were identified and treated.

In this sense, the procedures and considerations applied for the estimation of biomass content in the project are aligned with national protocols for such purposes, which supports the technical validity of the data obtained, where an Aboveground biomass value of 267.70 ± 73.3 t/ha and Belowground biomass of 59.52 ± 15.20 t/ha were recorded, with an uncertainty level of 7.98 %.

On the other hand, IDEAM (2019) in its proposal for Reference Levels of forest emissions reports for the Orinoco biome an Aboveground biomass value of 86 t/ha; these estimates are the result of sampling carried out in the period 2015-2018 and making use of the equation of Chave et al. (2014) for the calculation of biomass contents. However, other studies reported in the area (Table 1.) show that higher aboveground biomass values can be found for the forests found in this region, which coincides with the scenario recorded in the CO2Bio P2-2 project.

Table 1. Reports of Aboveground biomass in forests of the Colombian Orinoquia.

Location	N° Plots	Plot size (ha)	Aerial biomes $\overline{x}$ (t/ha)	Equations Used	Author
Santa Rosalía, Vichada.	5	1	128,739	Álvarez et al. (2012).using DBH, height and wood density variables.	Gonzalez A. (2015)
Orinoco	5	1	138,7	Alvarez et al.	Alvarez et al.

				(2012)	*(2016).*
Goal	*16*	*1*	*162,46*	*Álvarez et al. (2012). using DBH, height and wood density variables. Goodman et al. (2013)*	*Aldana, Villanueva & Stevenson*
Yopal	*5*	*0,1*	*132,5*	*Álvarez et al., (2012), using DBH, height and wood density variables.*	*Carvajal & Andrade, 2020*
Orinoquia	*± 30*	*0,353*	*86*	*Chave et al. (2014): using DBH, height and wood density variables.*	*IDEAM (2019)*
Tropical rainforest	*Aboveground biomass map of Colombia, 2007 (Galindo et.al 2011).*		*287*	*Álvarez et al. (2012) using DBH and wood density variables.*	*IDEAM (2018)*

Thus, other authors have reported Aboveground biomass values between 128.74 - 287 t/ha; while the CO2Bio P2-2 project recorded an average Aboveground biomass of 267.70 t/ha. This contrast presents differences between the values reported in each study; however, these differences may be influenced by different factors, such as variations between the methodologies used in each case; in this we highlight, aspects such as sampling intensity, where in the case of Co2Bio P2-2 was 34 sampling points while other authors varied between 5 to 16 points, being less the number of plots sampled; In addition, the configuration and shape of the sampling plots, where the comparison studies implemented plots with square shapes, with an area between 0.1 - 1 ha, while in our case, circular and nested plots were made, covering an area of 0.07 m^2 , the above, following what was established by the National Forest Inventory.

On the other hand, differences are evident with respect to the allometric equations and dasometric variables used to calculate Aboveground biomass. In the case of NREF, it is done using the equation proposed by Chave et al. (2014) where DBH, wood density and total height variables are used; while for our case and the other authors, the equation proposed by Álvarez et al. (2012) specific for tropical rainforests, in this equation, the DBH and wood density variables are used for biomass calculations; on the other hand, for the palm species found in the monitoring, the equation is applied while for palms, the equation proposed by Goodman et al. (2013) is used, taking into account the DBH.

Regarding the CO2Bio P2 project, which reports an average Aboveground biomass value of 332.79 t/ha, there is a 19% difference with respect to the value presented by the CO2Bio P2-2 project. In general, the two inventories report similar species such as Alibertia edulis, Attalea butyracea, Vitex orinocensis, Himatanthus articulatus, Cordia alliodora, among others; therefore, this difference could be influenced by factors such as the protocol implemented in each case, where CO2Bio P2 was based on the Protocol for the national and subnational estimation of biomass - carbon in Colombia (Yepes et. al., 2011), for which it implemented 21 50x50 m square plots.

6. *For the definition of emission factors in primary and secondary degradation, reference values used by the Forest and Carbon Monitoring System (SMByC) for the estimation of average annual biomass loss due to degradation were applied (Ramírez et. al, 2018). In this sense, uncertainty analysis is not performed, as they represent conservative values and are consistent with the national reference scenarios.*

7. *GOP-15 Forest Plots Survey Procedure" is updated to include the criteria for diameter and height measurements for palms and lianas (0. Procedures).*

8. *According to the GOP-15 procedure, the diameter measurement in tree individuals should be taken at a height of 1.30 m above ground level; in case of bifurcations below 1.30 cm, they are considered as different specimens and the diameter is measured in the two shafts; when the bifurcation is above 1.30 cm, it is considered that there is only one individual, taking the measurement at the agreed height. However, there were cases where, due to alterations in the stem, the measurement point was adjusted; in this sense, in order to avoid overestimations in the calculation of Aboveground biomass due to possible errors in the sampling, an exploratory data analysis was carried out to validate the adequacy of the information recorded, in addition to identifying and dealing with any missing and/or atypical data that might be present.*

Documentation provided by project proponent	
0. Procedures 2. Data analysis	
Evaluation of OVV	**Date:** 09/30/2023
The information and documentation adjustment is sufficient for closure of the finding. **Closed**	

NC/CAR id.	06	Date: 07/17/2023
Description of NC/CAR		

In the construction of emission factors, the following elements should be considered for the estimation of baseline emissions in the Wetland conservation activity according to the BCR004 methodology:

1. According to "GPP-23. Inventory design procedure for biomass growth monitoring (AR).docx" present the design for the location of the plots, the calculation of the number of plots and the calculation of the sampling error (E%) for the shrub stratum.

2. The construction of the carbon emission factors does not present an analysis of the corroboration of the values with alternative sources or the elements considered to conclude that the values applied represent the baseline scenario.

3. For Soil Organic Carbon - Wetlands: the same approach as the National Reference Level is used, where the SOC is divided into 20 years. In the NREF the SOC value is at 30 cm. The inclusion of a greater depth does not have elements that support the assumption of loss of SOC at 100 cm when transforming coverages to other land uses.

4. Attach the support of the accreditation of the laboratory where the samples were analyzed for the estimation of the baseline parameters.

Response from project proponent	**Date:** *DD/MM/YYYYYYY*

1. Design results for plot location, plot number calculation, and sampling error (E%) calculation can be found in the WETLAND DATA QUALITY CONTROL REPORT.

2. The definition of emission factors for the CO2Bio P2-2 Wetlands component of the project was based on the project's own data, collected through field sampling. Given that the biomass distribution could present differences according to the type of cover, two strata were defined: Herbaceous and Scattered. Thus, 16 plots were considered for the Herbaceous stratum and 7 plots for Dispersed. In order to avoid the subjective selection of sampling points, the distribution was randomized over the eligible areas of the project.

On the other hand, the laboratory analyses were carried out by the CIAT Analytical Services Laboratory, under the standards of the NTC/IEC 17025 Standard, which guarantees high quality standards in the procedures applied and the calibration of the equipment used. In addition, an exploratory data analysis was performed to identify and treat outliers that could have an effect on under- or overestimates of biomass content.

In this sense, biomass averages of 0.774 ± 0.3 t/ha were recorded for the Herbaceous stratum and 126.21 ± 31.68 t/ha for the Dispersed stratum. However, given that the percentage of uncertainty was greater than 10%, the lower limit of the 95% confidence interval was applied for the definition of the project's emission factors.

On the other hand, Orozco et. al (2023) in their study conducted in Meta savannas report biomass values of 2.3 tC/ha in pastures and 117 tC/ha in areas with presence of morichales, shrub and tree species. Likewise, the CO2Bio P2 project recorded biomass contents of 14.43 t/ha in the herbaceous stratum and 79.44 t/ha in the dispersed stratum.

Under this scenario, the values reported by the CO2Bio P2-2 project show lower biomass contents compared to the other studies, possibly influenced by the time of the sampling (in the case of CO2Bio P2-2 in summer) and the protocol applied. However, this scenario would indicate conservative values and would not represent an overestimation in the calculations of GHG emissions due to the transformation of this type of cover.

3. The estimation of emission factors was performed according to the guidelines of the BCR0004 methodology, where for the case of soil organic carbon "it is assumed that SOC is emitted in equal proportions for 20 years once the land use change event occurs".

Although NRef, in the definition of SOC emission factors for forest areas, contemplates a depth of 0-30 cm, other authors have reported differences in the vertical distribution of carbon content in savannas; For example, Batjes (1999) made a comparison of the SOC reservoir in different agro ecological zones, finding that for the warm humid tropics, 92 to 95 tC/ha are reported at a depth of 0.3 m and 176 to 182 tC at 1 m depth, showing that about 53% of the carbon is found at depths greater than 0.3 m. Hyman et al. 2022, establish that in natural savannas of Meta, they report 120.1 tC/ha) at depths of 1 m where 45.11% of this is located at depths of 0.1 to 1 m. Similar to Orozco et.al 2023, who report 201.8 tC/ha at a depth of 0.6 m where 38.56% is located at depths greater than 0.30 m. For the CO2Bio P2-2 project, the Wetland component reports 153.986 tC/ha at a depth of 1 m, where 41.55% is distributed at depths greater than 0.3 m.

Thus, in an event of transformation of natural land cover to other land uses, a significant proportion of carbon from the 0.3 -1 m layer could be released into the atmosphere, which would represent an underestimation of emissions by not including this layer.
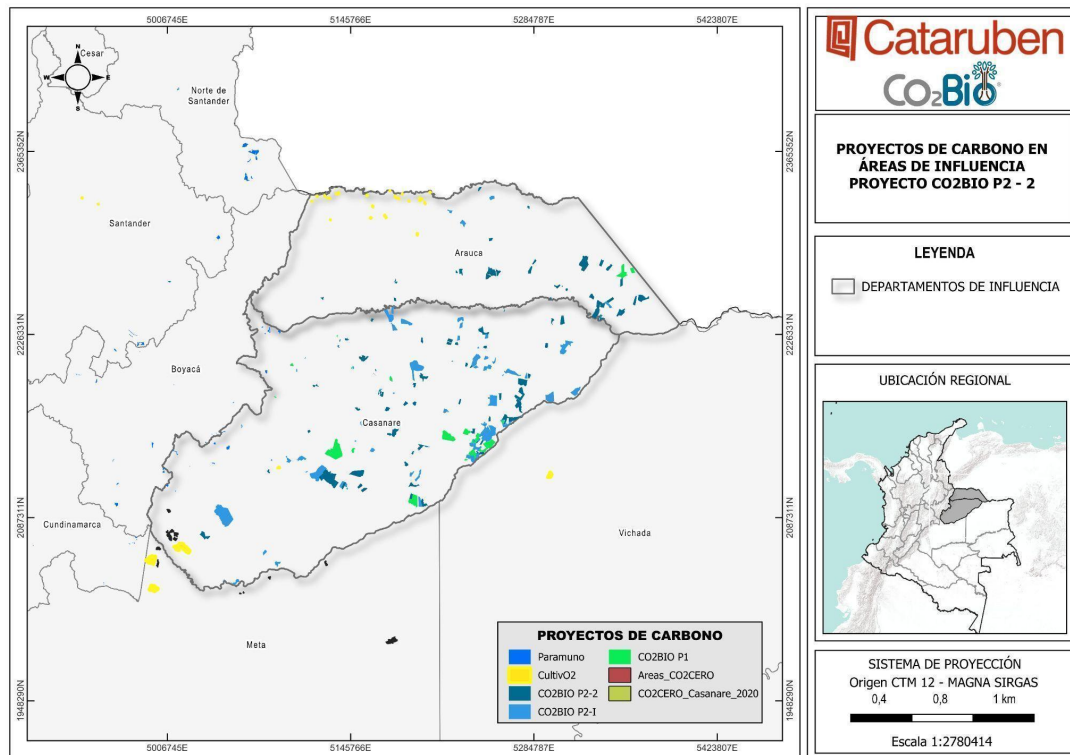
4. Documentation provided by the Analytical Services Laboratory - CIAT (2. Laboratory) is attached.

Documentation provided by project proponent	
N/A	
Evaluation of OVV	**Date:** 09/30/2023
The information and documentation adjustment is sufficient for closure of the finding. **Closed**	

NC/CAR id.	07	Date: 07/17/2023
Description of NC/CAR		
Section 4.1 of the PD describes the actions to identify possible project overlaps and indicates that the RENARE platform is not enabled. However, it does not specify how the verification of the overlap with the CO2Bio P2-1 project and other GHG initiative registration platforms was performed in the absence of RENARE.		
Response from project proponent		**Date:** DD/MM/YYYYYYY

Section 4.1 of the PD describes that in order to avoid possible overlapping of areas, a review of several standards was carried out; among them, BioCarbon Registry, Colcx, Cercarbon and Verra. The objective of this review was to verify and validate the shapefiles of the different registered projects and compare them with the CO2Bio P2-2 project areas. In this way, we sought to ensure that there is no double counting or overlapping of areas.

During the review process, a total of 8 projects located in the departments where the project is present were identified. However, it was possible to obtain only 6 shapefiles available for these projects. As a result of this analysis, no intersection with the CO2Bio P2-2 project areas was found.

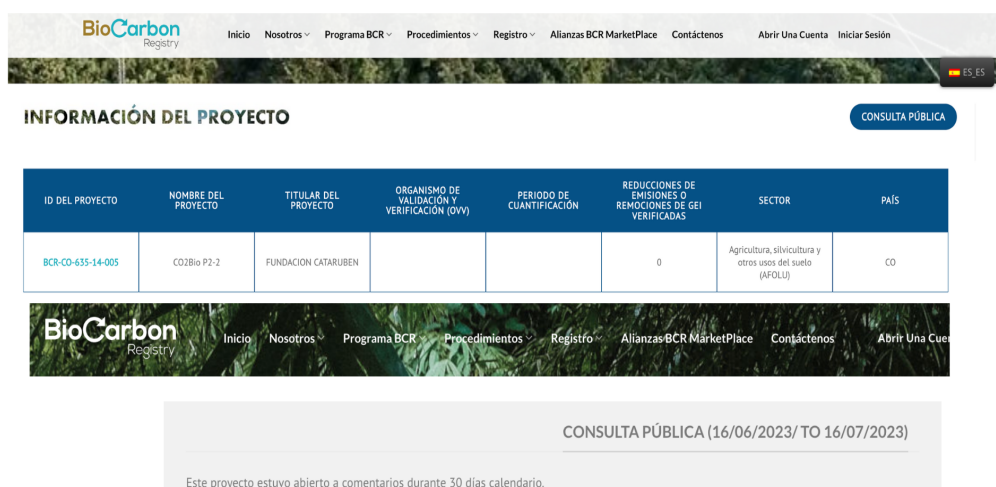| Documentation provided by project proponent	
4. Review of projects registered in other GHG initiative registration platforms.xlsx	
Evaluation of OVV	**Date:** 09/30/2023
The information and documentation adjustment is sufficient for closure of the finding. **Closed**	

Clarifications (CLs)

CL id.	01		Date: 07/17/2023
Description of CL			
Clarify and support the monitoring period start date (January 2018) and end date (January 2021) and the number of monitored years that make up the period.			
Response from project proponent			Date: DD/MM/YYYYYYY
The start date of the project corresponds to January 15, 2018 and the date of the first verification and/or monitoring ends on December 31, 2021. This corresponds to 4 years of monitoring. The cartographic files for BCR0002 are the non-forest forest maps generated by the SMByC where mainly images taken between January 1 and December 31 of the period are used, for each year. While BCR0004, the Corine land cover generated by IDEAM is used for the analyzed periods, the monitoring images are analyzed throughout the year.			
Documentation provided by project proponent			
N/A			
Evaluation of OVV			Date: 09/30/2023
The information and documentation adjustment is sufficient for closure of the finding. *Closed*			

CL id.	02		Date: 07/17/2023
Description of CL			
Considering that the equation to estimate Aboveground biomass used was the one reported by Alvarez et al. (2012) and this includes wood density including the values used in the PD. The date of the source used should be reviewed and specified for Alvarez et al. Appears 2012 and 2013 cite according to the source(s) used in the PD and in the ER calculator.			
Response from project proponent			Date: 07/28/2023
Table 57 describes the wood density values used in the analyses. Similarly, citation criteria are unified for Álvarez et al. (2012).			
Documentation provided by project proponent			
BCR_DdP CO2Bio P2-2_Version2.docx			
Evaluation of OVV			Date: 09/30/2023
The information and documentation adjustment is sufficient for closure of the finding. *Closed*			

CL id.	03	Date: 07/17/2023
Description of CL		
Include in Table 61 of the PD the denomination of values by transition type (Core - Patch and Drilled - Patch) for degradation and the corresponding source in the table "Ramirez et al., 2018".		
Response from project proponent		*Date: 07/28/2023*
Adjustment is made in Table 61, including a column with the denomination of values and updating of the data source.		
Documentation provided by project proponent		
_BCR_DdP CO2Bio P2-2_Version2.docx_		
Evaluation of OVV		*Date: 09/30/2023*
The information and documentation adjustment is sufficient for closure of the finding. **Closed**		

CL id.	04	Date: 07/17/2023
Description of CL		
Present the following relevant supports in the consultation process for the validation of the project: 1. Response from the institutions consulted with the analysis and relevance of the inclusion of comments. 2. Consultation period on the BCR standard page with the analysis and relevance of the inclusion of comments. 3. Results of the consultation with the Ministry of the Interior to corroborate the overlap with ethnic territories with the project areas.		
Response from project proponent		*Date: DD/MM/YYYYYYY*

1. *In paragraph 10 of the PD. Stakeholder consultation and in Annex 1.1.5. <u>Stakeholder consultation</u> / <u>CO2Bio P2-2 stakeholder consultation responses</u>, the evidence of the responses received according to the requests made in the framework of the stakeholder consultation are listed. The notified entities responded to The Cataruben Foundation through email, phone calls and WhatsApp to coordinate the socialization of the initiative. Meetings were scheduled with the different agencies and support was provided by telephone and WhatsApp to address specific questions about the project. We sought to establish a good way of working and collaborating with each entity involved.*

2. *The initiative was under public consultation on the BioCarbon Registry website from 06/16/2023/ to 07/16/2023, however no comments were received.*

3. *In order to determine that there are no ethnic communities in the project area, a request was made to the Ministry of the Interior for "Determination of appropriateness and timeliness of prior consultation for projects", through File 2023-1-004044-045285 dated June 22, 2023, which request is in "Ongoing" status, awaiting a response from the Ministry of the Interior. The evidence <u>for</u> the request can be found in Annex 1.1.6.*

Documentation provided by project proponent
1. <u>Comments received inquiries from interested parties CO2Bio P2-2</u>
2. <u>The right to prior consultation</u>.

Evaluation of OVV	**Date:** 09/30/2023
The information and documentation adjustment is sufficient for closure of the finding. **Closed**	

Forward-looking actions (FARs)

N/A

Annex 3. Documentation review

NO.	Evidence
1	BCR_DdP_CO2BioP2-2 Version 2.1.pdf
2	MonitoringReport_CO2BioP2-2_Version 2.1.pdf
3	LEGAL DOCUMENTS THE CATARUBEN FOUNDATION - RUT Cataruben 2022 - Legal Representative - Chamber of Commerce Certificate

4	Enrolled documents
	  - LEGAL DOCUMENTS
	  - LETTERS OF INTENT

5	START OF ACTIVITIES AND LINKED DOCUMENTS - Socialization Start of activities in Bosques.pdf - Socialization of the beginning of activities in Wetlands.pdf - FC-GO-FT-019 PROJECT CONSTITUTION MINUTES.pdf
6	RISK MANAGEMENT - Risk Management Monitoring Plan and Report.xls - Country Risk/ Minutes of the Economic Benefits Committee.pdf - Beneficiary supplier evaluation format-proposta.xls - Market/supply Latam
7	ENVIRONMENTAL ASPECTS - FC-GAF-10. Environmental Aspect and Impact Management Matrix.xls - Environmental Impact Assessment Matrix.xls - Socioeconomic Impact Assessment Matrix.xls

8	STAKEHOLDER CONSULTATION
	- Letters and responses Mayors' offices
	- Official letters and replies Corporations
	- Letters and responses Non-Governmental Entities
	- Letters and replies Governorships
	- OF 23 064 - Casanare Chamber of Commerce
	Meetings held
	  - Hato Corozal
	  - San Luis de Palenque
	  - Trinidad

9	ORIGIN OF PRIOR CONSULTATION - Application Letter and Attachments - 1. Support of Request for Determination of Propriety.pdf - 2. Prior Consultation Determination request file .jpg - Resolution of Proceeding of Prior Consultation ST - 1449 de 2023.pdf
10	CO-BENEFITS - CO-BENEFITS Monitoring Plan and Report (CO2Bio P2-2).xls
11	SDGS - ODS Monitoring and Reporting Plan (CO2Bio P2-2).xls

NO.	Evidence
12	*FINANCIAL MODEL* - *MF CO2Bio P2-2 June/2023.xls*

13	*QUALITY CONTROL AND QUALITY ASSURANCE*
	  - *Manuals, Policies and Procedures*
	  - *Registration and Data Archiving System*

14	*WETLANDS* *- Project Activities Execution Monitoring Plan.xls*
15	*WETLANDS - SOCIO-ENVIRONMENTAL IMPACTS* *- Socio-environmental Effects.xlsx*

16	*WETLANDS - EMISSIONS*
	Procedures.
	  - *Alvarez, E., Duque, A., Saldarriaga, J., Cabrera, K., de Las Salas, G., del Valle, I. & Rodríguez, L. (2012). Tree above-ground biomass allometries for carbon stocks estimation in the natural forest.*
	  - *Cairns (1997) Root_biomass_allocation_in_the_worlds_upland_forest.*
	  - *GOP-15 Forest Plots Survey Procedure*
	  - *GPP-23. Inventory design procedure for biomass growth monitoring (AR).docx (1)*

17	*WETLANDS - EMISSIONS* *Laboratory* *- NTC-ISO-IEC17025.pdf* *- Presentation LSA General.pdf* *- Report LFS-037 Final.pdf* *- Report LFS-057 Final.pdf* *- Results_S2023-45.pdf* *- Results_S2023-72.pdf* *- Results_T2023-34.pdf* *- Results_T2023-42.pdf*
18	*WETLANDS - EMISSIONS* *Data analysis* *- Calculation No. Plots CO2Bio P2-2 (1).xlsx* *- DATA QUALITY CONTROL REPORT_WETLANDS v2.pdf* *- ReportResults V2.xlsx*
19	*WETLANDS - EMISSIONS* *1. Emissions_WetlandsV3.xls*

20	*WETLANDS - BIODIVERSITY*
	  - *Wetlands Biodiversity Monitoring Plan. xls*
	  - *Baseline*

21	*WETLANDS - GEOSPATIAL*
	  - *ANNEX 1 - ACATAMA*
	  - *WETLANDS_CO2BIO_2_V3.0.gdb*
	  - *plots WETLAND.xlsx*

22	*WETLANDS - GEOSPATIAL* *Wetland Proceedings* - *CHARACTERIZATION OF CARTOGRAPHIC INPUTS FOR CORINE LAND COVER GENERATION _CO2Bio P2-2 (1) (1) (1).pdf*

NO.	Evidence
	- *FC-GOF-09 Quality Control of Natural Cover Interpretation_.xlsx* - *GOG-03 PROCEDURE FOR THE DELIMITATION OF LEAKAGE AREAS.pdf* - *GOG-26. Instructions AcATaMa.pdf* - *GOG-28. INSTRUCTIONS FOR FLOOD MONITORING - WETLAND WITH GEE SCALE 1100.000.pdf* - *GOG-29. CLC INTERPRETATION INSTRUCTIONS- SCALE 100.000.pdf* - *GOP-13. Geographic Information Systems Procedure..pdf*
23	*WETLANDS - GEOSPATIAL* *Supporting Documents* - *SUPPORT PHOTOGRAPHS* - *03 Spatial identification of Continental Wetlands systems in Colombia_Flórez et al. 2016pdf (1).pdf* - *Inland_Wetlands_Colombia.pdf* - *IDEAM, IGAC and CORMAGDALENA, 2008. Magdalena-Cauca Basin Land Cover Map.pdf* - *IDEAM, 2010. CORINE Land Cover legend adapted for Colombia.pdf* - *IDEAM,2012. Land Cover Catalog.pdf* - *Sinchi Institute, 2009. Factsheet of the land cover patterns in the Colombian Amazon.pdf* - *PNN,2021 Monitoring land cover PNN_V5.pdf*
24	*REDD+ ACTIVITIES* - *REDD+ Activities.xlsx*
25	*EMISSIONS - REDD+* *Procedures* - *Aldana, A. M., Villanueva, B., Stevenson, P. R. Tree turnover and carbon 95-119.pdf* - *Alvarez, E., Duque, A., Saldarriaga, J., Cabrera, K., de Las Salas, G., del Valle, I.,Rodríguez, L. (2012). Tree above-ground biomass allometries for carbon stocks estimation in the natural forests 0.pdf.* - *Alvarez-Davila, E., Cayuela, L., Gonzalez-Caro, S., Aldana, A. M., Stevenson, P. R., Phillips, O., ... _ Rey-Benayas, J. M. (2017). Forest biomass density across large climate gradients in northern South 154-185.pdf.* - *Cairns (1997) Root_biomass_allocation_in_the_worlds_upland_fore.pdf* - *Carvajal-Agudelo, B. N., Andrade, H. J. (2020). Carbon sequestration in biomass of land use systems, municipality of Yopal, Casanare, Colombia. Orinoquia, 24(1), 13-22..pdf.* - *González Abella, J. (2015). Dynamics, structure and diversity of gallery forests of the Tomo Grande Reserve, Vichada. Uniandes..pdf* - *GOP-15 Forest Plots Survey Procedure.pdf* - *GPP-23. Inventory design procedure for biomass growth monitoring (AR).docx (1).pdf* - *IDEAM,2019. NREF.pdf* - *Rodríguez Garavito, J. P., _ Soriano Ariza, J. N. (2018). Evaluation of C02 fixation potential in Attalea butyracea (Arecaceae) in a gallery forest in Casanare, Colombian Orinoquia_.pdf.* - *Yepes et al., IDEAM, 2011.Protocol for national and subnational estimation_1 (1).pdf*

NO.	Evidence
26	EMISSIONS - REDD+ Data analysis - Calculation No. Plots CO2Bio P2-2 (1).xlsx - DATA QUALITY CONTROL REPORT.pdf - ReportResults V2.xlsx
27	EMISSIONS - REDD+ 1. Emissions_REED++V3.xls
28	SAFEGUARDS REDD+ SAFEGUARDS - Safeguards Monitoring Report REDD+.xls
29	BENEFITS SIMULATOR - Economic Benefit Simulator- CO2Bio P2 - 2.xls
30	REDD+ - GEOSPATIAL Geodatabase ANNEX 1 FRAGMENTATION - DEGRADATION Area_leakage_RReferenceampk REDD_CO2Bio_P2-2_V3.gdb

31	REDD+ - GEOSPATIAL
	Procedures
	  - FC-GOP-01 Procedure to determine eligible areas - RED Projects.pdf
	  - GOG-03 PROCEDURE FOR THE DELIMITATION OF LEAKAGE AREAS.pdf
	  - GOP-21. Procedure for Determining Degradation and Fragmentation in REDD+ Projects.pdf
	Maps.jpg

32	REDD+ - GEOSPATIAL
	Biodiversity
	  - Important areas.gdb
	  - AVC_1.gdb
	  - AVC_2.gdb
	  - AVC_3.gdb
	  - AVC_4.gdb

33	REDD+ - GEOSPATIAL REDD+ plots.xls
34	REDD+ - GEOSPATIAL SMByC Maps

35	REDD+ - GEOSPATIAL
	Procedures
	  - FC-GOP-01 Procedure to determine eligible areas - RED Projects.pdf
	  - GOG-03 PROCEDURE FOR THE DELIMITATION OF LEAKAGE AREAS.pdf
	  - GOP-21. Procedure for Determining Degradation and Fragmentation in REDD+ Projects.pdf

36	REDD+ - GEOSPATIAL
	Area of influence and intervention-20231107T204203Z-001
	  - List of coordinates of the area of influence of Co2Bio P2-2.xlsx
	  - List of the coordinates of the CO2Bio P2-2 intervention area.xlsx

37	MONITORING REPORT - GENERAL SDGS

NO.	Evidence
	- *1. SDG 6 (WATER AND SANITATION)* - *2. SDG 13 (CLIMATE ACTION)* - *3. SDG 15 (LIFE OF TERRESTRIAL ECOSYSTEMS)* - *BCR TOOL ODS (CO2Bio P2-2) - WETLANDS (1).xlsm* - *BCR TOOL ODS (CO2Bio P2-2) - REDD+ (1).xlsm*
38	*MONITORING REPORT - GENERAL* *CO-BENEFITS* - *BIODIVERSITY CONSERVATION* - *COMMUNITY BENEFITS* - *GENDER EQUITY* - *CLIMATE CHANGE ADAPTATION*
39	*MONITORING REPORT - GENERAL* *RISK MANAGEMENT* - *Environmental - Hot spot monitoring report* - *Environmental - Flood Report* - *Financial - Income Statement and Cash Flow Statement* - *Financial - Demand Variation Report* - *Financial - Compliance Report* - *Social - Digital Media Reporting* - *Social - Land Tenure Report* - *Social - Knowledge sharing report* - *Risk Management Monitoring Plan and Report.xls*
40	*MONITORING REPORT - HUMADELES* *Project Activities* - *ACT.1* - *ACT.2* - *ACT.3* - *ACT.4*
41	*MONITORING REPORT - HUMADELES* *Wetland Biodiversity Monitoring* - *HIGH CONSERVATION VALUES* - *PARTICIPATORY BIODIVERSITY MONITORING* - *MONITORING PLAN BIOLOGICAL COMPONENT*
42	*MONITORING REPORT - FORESTS* *Forestry - Project Activities* - *ACT.1* - *ACT.2* - *ACT.3* - *ACT.4* - *ACT.5* - *ACT.6*
43	*MONITORING REPORT - FORESTS* *Supports Safeguards* - *Safeguards 1* - *Safeguards 2* - *Safeguards 3* - *Safeguards 4*

NO.	Evidence
	- Safeguards 5 - Safeguards 6 - Safeguards 7 - REDD+ Safeguards Report (CO2Bio P2-2)
44	MONITORING REPORT - FORESTS Graphic outputs.jpg
45	1. Annexes / 1.1 General / 1.1.11 Host Country Declaration and Risk Declaration

Annex 4. Abbreviations

Abbreviations	Full texts
AFOLU	AFOLU Agriculture, Forestry and Other Land use
BCR	Biocarbon Registry
UNFCCC	United Nations Framework Convention on Climate Change
SOC	Soil Organic Carbon
QA/QC	Quality Assessment/Quality Control
GHG	Greenhouse gases
OEC	Conformity Assessment Bodies
PS	Project Document
REDD+	Deforestation and Degradation Reductions
RM	Monitoring Report
TP	Project Holder
tCO2e	Unit Tons of carbon dioxide equivalent