JOINT VALIDATION & VERIFICATION REPORT

ORINOCO2

BCR-CO-635-14-006

Versa Expertos en Certificación |

Validation & Verification Report	
Project Title	*ORINOCO2*
Project ID	*BCR-CO-635-14-006*
Project holder	*Fundación Cataruben*
Project Type/Project activity	*REDD+; Activities that avoid land use change of natural savannahs*
Grouped project	*Is not a Grouped Project*
Version number of the Project Document to which this report version applies	*Project description version 2.6 09/12/2024* *Monitoring report version 2.6 09/12/2024*
Applied methodology	*BCR0002 GHG Emissions Reductions quantification. REDD+ Projects version 4.0, May 27, 2024.* *BCR0005 GHG Emission Reductions quantification. Activities that Prevent Land Use Change in Natural Savannas version 1.0, October 21, 2022.*
Project location	*Colombia, Orinoquia,* *Meta: Puerto Gaitán, Puerto López; San Martín; Mapiripán.* *Vichada: Puerto Carreño, La Primavera, Santa Rosalía, Cumaribo*
Project starting date	*Starting date of project activities* *(01/10/2018)*
Estimated total and mean annual amount of GHG emission reductions/removals	*Scheduled period for quantification of GHG emission reductions/removals.* *(01/10/2018 a 31/12/2027)*

	Total amount of GHG emissions reductions/removals (01/10/2018 a 31/12/2027). *REDD+ Activities: 803.164 tCO2e* *Natural savanna: 668.414 tCO2e* *Estimated average annual quantity of GHG emission reductions/removals (01/10/2018 a 31/12/2027).* *REDD+ Activities: 86,829 tCO2e/año* *Natural savanna: 72,261 tCO2e/año*
Monitoring period	*From 01-October-2018 to 31-December-2022*
Total amount of GHG emission reductions/removals	*Total amount of GHG emissions reductions/removals (01/10/2018 a 31/12/2022).* *REDD+ and savannas: 657,082* *Estimated average annual amount of GHG emission reductions/removals.* *REDD+ and savannas: 154.608 tCO2e*
Contribution to Sustainable Development Goals	*ODS 6* *ODS 13* *ODS 15*
Special category, related to co-benefits	*Wax palm*
Version and date of issue	*Version 3.0* *14/12/2024*
Work carried out by	*Round 1* *Lead Auditor: Diana Rauchwerger*

	Technical Expert: Beatriz Helena Villanueva *Round 2* *Lead Auditor: Lucas Andrés Rivera Jaimes* *Technical Revisor: Joaquín Emilio Montealegre*
Approved by	CAMILO ANDRES MONTAÑA SALAMANCA Firmado digitalmente por CAMILO ANDRES MONTAÑA SALAMANCA Fecha: 2024.12.14 11:10:00 -05'00' *Camilo Andrés Montaña Salamanca* *General Director VERSA EXPERTOS EN CERTIFICACIÓN S.A.S*

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1 Executive summary

VERSA's audit team, following a process of evaluation of the project documentation for the first monitoring period from 01/01/2018 to 12/31/2022, carried out the validation and verification of the ORINOCO2 project. This process included the review of the Project Description Document (PDD) and the Monitoring Report (MR), as well as documentary supports, procedures and criteria of Biocarbon Standard 's GHG program, and the applicable legal regulations for Colombia. Similarly, the validation and verification audit process are limited to the VERSA-P-0179 agreement of October 19, 2023, made between VERSA and Cataruben Foundation, who is the project holder.

In addition, the ORINOCO2 project was validated and verified under the BCR standard in its version 3.4 of March 2024, in addition to the following methodologies and tools:

- *ISO 14064-2:2019 - Specification with project-level guidance for quantification, monitoring and reporting of greenhouse gas (GHG) emission reduction activities and enhancement of GHG removals.*
- *ISO 14064-3:2019 - Specification with guidance for the validation and verification of greenhouse gas (GHG) declarations.*
- *Methodological Document for the AFOLU Sector / BCR0002 Quantification of GHG Emission Reductions from REDD+ Projects, version 4.0, May 27, 2024.*
- *Methodological Document for the AFOLU Sector / BCR0005 Quantification of GHG Emission Reductions and Removals - Activities that Avoid Land Use Change in Natural Savannah, version 1.0, October 21, 2022.*
- *Tool for demonstrating compliance with REDD+ safeguards, version 1.1, January 26, 2023.*
- *Sustainable Development Safeguards (SDSs), version 1.0, april, 2024*
- *Tool for determining contributions to meeting the Sustainable Development Goals (SDGs), version 2.0, March 1, 2022.*
- *Avoid Double Accounting (ADC) Tool, version 1.0, March 9, 2023.*
- *Monitoring, Reporting and Verification (MRV) Tool, version 1.0, February 13, 2023.*
- *Permanence and Risk Management Tool, version 1.0, March 7, 2023.*
- *Additionality and Baseline Tool, version 1.3, March 1, 2024.*
- *Greenhouse Gas Project Validation and Verification Manual, version 2.4, January 9, 2024.*

Fundación Cataruben is a non-profit organization dedicated to the conservation and sustainable management of natural resources in the Orinoco region of Colombia. Since its creation, Cataruben has worked to protect biodiversity and develop projects that promote the sustainable use of the territory. The Fundación Cataruben works closely with local communities, promoting management practices that integrate traditional and scientific knowledge. In this sense, Cataruben develops forest conservation projects, reforestation and

ecological restoration, conservation of natural savannas, contributing to climate change mitigation and improving the livelihoods of rural communities.

Versa Auditors is a Colombian company specialized in the certification of products and services, standing out for its agility, independence and impartiality in its processes. Its team of auditors has experience in conformity assessment, ensuring that its clients' products and services comply with applicable standards and regulatory requirements. Versa Auditors operates under principles of transparency, confidentiality and objectivity, ensuring the satisfaction and confidence of its clients. In this sense, Versa Auditors offers GHG verification services and carbon neutral certification, contributing to sustainability and compliance with environmental standards in various sectors.

2 Objective, scope and criteria

In the context of the applicable framework and validation and verification requirements, the specific objectives of this audit were as follows:

- *Provide a comprehensive assessment of the likelihood that the planned Greenhouse Gas (GHG) Project would achieve increases in absorptions or reductions in GHG emissions, as reported by the project proponent, by evaluating all factors that could influence the expected outcomes.*

- *Verify compliance with the requirements established by the carbon program and national regulatory framework to ensure the viability and effectiveness of the overall implementation of the GHG Project, including data integrity and compliance with environmental regulations.*

- *Ensure that the planned mitigation activities were implemented in alignment with the specific requirements of the selected methodology and the conservation and sustainability principles applicable to AFOLU projects.*

- *Validate compliance with monitoring, verification, and reporting principles required to meet current national legislation and applicable international standards, such as those of the ISO norms for GHG emissions management.*

- *Offer an independent evaluation that would provide a third-party opinion on the implementation and GHG emissions reductions/removals of the project, according to the criteria established in the Biocarbon Standard and in accordance with the methodologies and quality requirements of the voluntary carbon market.*

- *Ensure that the project met the principles of transparency and traceability through reliable monitoring and control systems, thereby providing confidence to stakeholders in the project's quality and its ability to achieve certified GHG reductions/removals.*

- *Identify and assess any significant changes in the procedures or criteria of the GHG project described in the PD.*

Audit Criteria

The validation and verification audit were conducted under the following criteria:

- ***Compliance with International ISO Standards***

ISO/IEC 17029:2019 *and ISO 14065: 2020- Conformity assessment: VERSA's audit team, following a process of evaluation of the project documentation for the first monitoring period from 01/01/2018 to 12/31/2022, carried out the validation and verification of the Orinoco2 project. This process included the review of the Project Description Document (PDD) version 2.3 and the Monitoring Report (MR) version 2.3, as well as documentary supports, procedures and criteria of Biocarbon Standard 's GHG program, and the applicable legal regulations for Colombia. Similarly, the validation and verification audit process are limited to the VERSA-P-0179 agreement of October 19, 2023, made between VERSA and Cataruben Foundation, who is the project holder.*

In addition, the project was validated and verified under the BCR standard in its version 3.3 of March 2024, in addition to the following methodologies and tools:

Principles and requirements for validation and verification bodies:

- *ISO 14064-2:2019 - Greenhouse gases. Part 2: Specification with project-level guidance at the project level for the quantification, monitoring, and reporting of greenhouse gas (GHG) emission reductions or removal enhancements reduction activities and enhancement of GHG removals.*
- *ISO 14064-3:2019 - Greenhouse gases. Part 3: Specification with guidance for the validation and verification and validation of greenhouse gas (GHG statements) declarations.*
- *ISO IEC 17029: 2019 and ISO 14065: 2020 - Greenhouse gases. Requirements for greenhouse gas validation and verification bodies for use in accreditation or other forms of recognition.*
- *MANUAL FOR VALIDATION AND VERIFICATION OF GHG PROJECTS. BCR STANDARD. Version 2.4. March 23, 2024.*

Methodological Documents and Tools of Document for the BCR Standard:

- *AFOLU Sector / BCR0002 - Methodological Document for the AFOLU Sector: Quantification of GHG Emission Reductions inform REDD+ Projects, version 4.0, May 27, 2024.*
- *BCR0005 -Methodological Document for the AFOLU Sector / BCR0005 Quantification of GHG Emission Reductions and Removals - Activities that Avoid Land Use Change in Natural Savannahs, version 1.0.*

- *REDD+ Safeguards Compliance Tool for demonstrating compliance with REDD+ safeguards, version 1.1, January 26, 2023.*
- *Sustainable Development Safeguards (SDSs), version 1.0, April, 2024.*
- *Tool for Contribution to determining contributions to meeting the Sustainable Development Goals (SDGs), version 2.0, March 1, 2022.*
- *Tool for Avoiding Avoid Double Counting Accounting (ADC),) Tool, version 1.0, March 9, 2023.*
- *Monitoring, Reporting, and Verification (MRV) Tool, version 1.0, February 13, 2023.*
- *Permanence and Risk Management Tool, version 1.0, March 7, 2023.*
- *Additionality and Baseline Tool, version 1.3, March 1, 2024.*

Specific National Regulations on Carbon Markets:

- *Resolution 1447 of 2018 by the Ministry of Environment and Sustainable Development.*
- *Resolution 831 of 2020 by the Ministry of Environment and Sustainable Development.*
- *NDC Update, 2020. by the Ministry of Environment and Sustainable Development.*
- *Decree 926 of 2017. by the Ministry of Finance and Public Credit Social and Environmental Safeguards for REDD+ in Colombia, 2018.*
- *Colombia's Forest Emissions Reference Level Proposal for REDD+ Results-Based Payment under the UNFCCC (2020 and9, 2024).*

Good Practice Documents and Additional Guidelines:

- *IPCC 2006 Guidelines for National GHG Inventories.*

Good Practice Guidance for Land Use, Land-Use Change, and Forestry (2003). Fundación Cataruben is a non-profit organization dedicated to the conservation and sustainable management of natural resources in the Orinoco region of Colombia. Since its creation, Cataruben has worked to protect biodiversity and develop projects that promote the sustainable use of the territory. The Fundación Cataruben works closely with local communities, promoting management practices that integrate traditional and scientific knowledge. In this sense, Cataruben develops forest conservation projects, reforestation and ecological restoration, conservation of natural savannas, contributing to climate change mitigation and improving the livelihoods of rural communities.

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verification services and carbon neutral certification, contributing to sustainability and compliance with environmental standards in various sectors.

The scope of the project's validation and verification audit included:

Validation and verification of the projected GHG emission reductions over the quantification period (02/01/2019 to 01/01/2049) and the reported emissions for the monitoring period (02/01/2019 to 12/31/2022. Taking into the account:

- *The boundaries and scenarios of the ghg project and its baseline scenarios for REDD+ activities and activities that prevent land use change in natural savannas.*
- *Physical infrastructure, activities, technologies, and processes of the GHG Project.*
- *GHG sources sink and reservoirs.*
- *Types of GHGs.*
- *Areas for a grouped project.*
- *Valuation of co-benefits*
- *Indicators related to DSGs.*
- *Assessment of compliance with the monitoring plan, the information collection activities, quality control management, and the assignment of responsibilities for the implementation of the mitigation project in accordance with the TOOL BCR MONITORING, REPORTING AND VERIFICATION (MRV), 2023.*
- *Identification of the environmental legal requirements of the project and their compliance.*
- *Validations and verification of compliance with the BCR Standard and relevant requirement*

Audit Methodology and Approach

VERSA conducted the GHG Project's validation and verification audit in accordance with its code of ethics, regulations, and internal procedures, which were aligned with the requirements of the BioCarbon Standard. The audit was carried out using a risk-based approach, aimed at identifying, assessing, and managing the potential risks associated with the GHG emission reduction statements and the controls established to mitigate these risks. This approach ensured that critical points or deviations in the project's implementation were identified and addressed promptly before issuing a conclusion.

Planning

The VERSA audit team, in collaboration with the project proponents, carefully planned the stages of validation and verification. This planning included:

- *Structured communication with project proponents, stakeholders, service providers, and the technical team, ensuring coordination of all relevant activities and availability of necessary resources.*

- *Conducting on-site visits in project areas to verify geographic boundaries, confirm the landowner's information, corroborate the existence and quality of documented mitigation elements, and validate activities described in the Project Design Document (PDD).*

- *An in-depth review of supporting documentation and evidence, evaluating both the level of assurance and materiality of the information, and ensuring it met the required transparency and quality.*

During this process, the audit team implemented a proactive communication system with project proponents, which facilitated resolving queries and clarification requests (CL) and proposing corrective actions (CAR) and future actions (FAR) when necessary, which contributed to strengthening compliance with the requirements and improving the project's execution and quality.

Ethics and Confidentiality Considerations

VERSA ensured that the project's validation and verification were conducted in accordance with the principles of impartiality, transparency, and confidentiality, avoiding any conflict of interest and adhering to ethical guidelines at each stage of the audit. No direct consulting services were provided to the GHG project proponents, thus preserving the independence of the process and the objectivity of the findings and conclusions issued.

3 Validation and verification planning

3.1 Validation and verification plan

The validation and verification plan where audit is an objective, systematic and documented process that evaluates a GHG (Greenhouse Gas) project based on its compliance with pre-established criteria. The objective is to demonstrate that the project complies with the requirements specified in the national standards and in the BCR's methodological documents. This process is based on the ISO IEC 17029:2019, ISO 14065:2020 and ISO 14064-3:2019 standards, and include the following stages to carry out the validation and verification:

Preliminar

1. Previous activities:

- *Definition of the type of service: Validation and Verification.*

- *Establishment of objectives, criteria, and scope.*
- *Determination of the level of assurance (95%) and materiality (5%).*

2. Selection of the equipment for validation and verification team.

3. Planning of the validation and verification process, which includes:

- *Conducting strategic analysis and risk assessment.*
- *Developing Development of an evidence collection and sampling plan.*
- *Creating of a specific validation and verification plan.*

4. Socialization of the audit plan and sampling with the client (Cataruben as a Project holder).

5. Execution of validation and verification activities, following the audit plan.

6. Collection of documentary and on-site evidence in accordance with the established sampling plan.

7. Evaluation of GHG-related claims.

8. Issuance of the final validation and verification report, together with the corresponding opinion.

This process was carried out in accordance with VERSA Procedures,"PRO-108 GHG Validation and Verification", which regulates the GHG validation and verification services. In this sense four stages were carried out: procedure. Service planning included:

*- **Preliminary activities and determination of Audit Plan**: Strategic analysis and risk assessment: During November 2023, the audit team conducted carried out an identification, control, and assessment of inherent risks, aimed at with the aim of assessing potential possible sources of errors, omissions, or distortions in the GHG project activities. The primary main inputs for this evaluation were the Project Document (PDD), the Monitoring Report (MRRM), the baseline Spreadsheets, and the monitoring plan records annex to the PDD an RM.*

*-**Document Review and Coordination of a site visit:** Based on the risk assessment, it was considered necessary to corroborate in-situ aspects such as GHG sources and, sinks, plots for determination of emission factor for biomass in natural savanna, project spatial boundaries, property and carbon rights, Safeguards, project implementation status, and data management. The evidence collection plan included documentary review, cross-referencing of secondary information, and the site visit, with interviews and tours.*

*-**Development of the audit plan:** Consistent with the criteria, scope, objectives, and level of assurance, the plan was prepared following the sampling plan. This included a detailed*

timeline of on-site audit activities, which took place from December 1 to 10, 2023. The evaluation allowed for an organized the review of qualitative and quantitative evidence to be addressed in an organized manner.

*-**Opinion**: During the documentary review and site visit stages, the likelihood probability that the project implementation would of the project will achieve the GHG reductions projected and declared by the proponents was evaluated. This made it possible allowed to issue an independent opinion on the validation of the project design and verification of the emissions such reductions cause by the project implementation and to approve the baseline scenario for the monitoring period.*

The validation and verification plan for the ORINOCO2 project was designed to comprehensively and systematically evaluate activities and reported results related to greenhouse gas (GHG) emission reductions. This plan was developed using the guidelines of ISO 14064-3 and the specific requirements of the BioCarbon Standard (BCR) V 3.4.

To initiate the verification activities, the VERSA audit team conducted a strategic analysis with the objective of identifying and assessing the inherent risks, control risks, detection risks, complexity and extent of the verification activities for the ORINOCO2 project. The sampling plan was carried out according to the inherent risks presented and the relevant mitigation actions. The risks identified by the VERSA audit team are described in Table 2. of Chapter 3.3 Level of Assurance and Materiality of this document.

***Schedule and duration of the validation/verification activities**:*

The detailed schedule for the validation and verification of the ORINOCO2 project extends from November 24, 2023, to July 5, 2024, with specific activities distributed in two moments, given the change in the audit team.:

First round:

- *November 24, 2023: Strategic planning and risk analysis.*
- *November 28, 2023: Development of audit plan.*
- *December 1 to 9, 2023: Field visit, interviews with owners and other stakeholders, plots sampling, project appraisal and closure of visit.*
- *December 13, 2023: Delivery of preliminary findings.*
- *January 13, 2024: Submission of responses to the findings by Fundación Cataruben.*
- *January 28, 2024: Review of findings (Round 1).*
- *February 13, 2024: Submission of responses to findings (Round 1).*

Second round (change of audit team):

- *April 15, 2024: Review of findings (Round 2).*
- *June 8, 2024: Submission of responses to findings (Round 2).*
- *June 11 to July 05, 2024: Validation and verification report drafting.*

- July 08 to 12, 2024: Technical review of the report.
- July 15, 2024: Drafting of the final opinion.

3.2 Audit team

In order to avoid conflicts of interest in its conformity assessment activities, VERSA does not assign professionals who declare conflicts of interest, kinship relationships, affinity or any consulting activity linked to the services or participants of the project. In the event that a professional has been involved in any of these activities, he or she may not provide services to said organization for a minimum period of two years after the end of the activity. During the selection phase of the audit team, the professionals will sign the declaration of impartiality through the form "FOR-108 NCI Assignment (No Conflict of Interest)", ensuring the non-existence of conflicts of interest. The confidentiality terms are stipulated in the contract between VERSA and the members of the audit team.

To strengthen the impartiality of its services, the VERSA Quality Directorate has set up an Impartiality Committee as an advisory body to address issues related to the management of impartiality risks. This committee meets with key stakeholders, including customer representatives, GHG Program members, auditors, and community representatives, among others. This initiative aims to ensure trust and transparency in validation and verification services. Likewise, VERSA has a risk matrix that assesses the risks inherent in its validation and verification activities and has adopted the appropriate measures to cover the legal liabilities arising from its operations in each of the scopes and geographical areas in which it operates.

The validation and verification team for the ORINOCO2 project was composed of qualified professionals, each with significant experience in auditing greenhouse gas (GHG) emission reduction projects. The first round of validation and verification included Diana Rauchwerger Londoño as Lead Auditor and Beatriz Helena Villanueva as Technical Expert. Diana Rauchwerger Londoño, experienced in forest carbon audits and certified in international standards such as ISO 14064, led the document review, audit planning, site visit, and field data collection. Beatriz Helena Villanueva, an expert in GHG emissions monitoring and reporting techniques, assisted in the documentary review and participated in the site visit, conducting interviews and verifying the activities implemented in the field.

During the second round of validation and verification, Lucas Rivera Jaimes assumed the role of Lead Auditor, who, with experience in forest carbon projects and forest carbon audits, was responsible for charge of reviewing the findings, preparing the validation and verification report, and the final evaluation of the project'sproject's compliance with the criteria established in the BCR Standard.

The activities carried out by the audit team included the review of all documentation provided by the project holder, verification of the implementation of field activities through visits and interviews, and the preparation and review of the validation and verification report

to ensure the accuracy and consistency of the data reported in the first monitoring period (2018-2022).

A table detailing the audit team and their type of involvement in the project is presented below:

Table 1. .VERSA's audit team

Role/Qualification	Name	Type of involvement		
		Information desk review	Site visit/ Interviews	Reporting
Lead Auditor/ Sectoral Expert	Diana Rauchwerger Londoño	x	x	
Activities	Development of strategic planning, identification of risks, objectives, scope, and evidence collection plan. During the field phase, coordinated and directed all activities described in the audit plan, ensuring compliance with established procedures. Additionally, evaluated the evidence and analyzed the information collected to determine conformity with the criteria outlined in Finding Report 1.			
Sectoral Expert	Beatriz Helena Villanueva	x	x	x
Activities	Provided technical support to the audit team by addressing aspects related to conformity assessment, particularly in the context of AFOLU projects. Evaluated and analyzed technical and scientific information pertaining to assessment methodologies and environmental management practices. Contributed to the development of the audit plan by leveraging expertise to define the appropriate scope and criteria and provided on-site guidance regarding technical and regulatory issues that emerged. during the audit.			
Lead Auditor	Lucas Rivera Jaimes	x		x
Activities	Provided technical support to the audit team in understanding aspects related to conformity assessment, particularly concerning AFOLU projects. Evaluated and analyzed technical and scientific information related to assessment methods and environmental management practices. Contributed to the development of the audit plan by applying expertise to define the appropriate scope and criteria, and offered on-			

Role/Qualification	*Name*	*Type of involvement*		
		Information desk review	*Site visit/ Interviews*	*Reporting*
	site guidance on technical and regulatory issues that arose during the audit			
Technical reviewer	*Joaquín Emilio Montealegre*	*x*		*x*
Activities	*The independent technical reviewer conducted a series of activities throughout the joint validation and verification process before issuing the opinion. The assessment of the competences of the auditing team was performed, along with the analysis of the design and development of the audit plan prepared by the lead auditor, ensuring that it included risk assessment and adequately addressed the objective, scope, and level of assurance. Moreover, verification was carried out to determine whether the client had resolved the validation and verification findings, and it was confirmed that the collected evidence supported the conclusions presented in the report. Additionally, it was ensured that the lead auditor's decisions were grounded in evidence and that the GHG statement complied with the established criteria.*			
Approver	*Camilo Montaña*	*x*		*x*
Activities	*Issuance of an independent validation/verification opinion, with the following types of opinions: adverse, approved, and the option to abstain from issuing an opinion, in accordance with the provisions of ISO 14064-3:2019.*			

Source: VERSA, 2024

In Annex 1, are listed documents to demonstrate how the team meets the compliance required for the validation/verification. A description of the auditors, technical reviewer, and final approver are provided.

To avoid conflicts of interest in its conformity assessment activities, VERSA did not assign professionals who declared conflicts of interest, kinship relationships, affinity, or consulting activities linked to the services or participants of the project. In cases where a professional had been involved in any of these activities, they were not permitted to provide services to that organization for a minimum period of two years after the conclusion of the activity. During the audit team selection phase, professionals signed the declaration of impartiality using the form "FOR-108 NCI Assignment (No Conflict of Interest)", ensuring the absence of

conflicts of interest. Confidentiality terms were stipulated in the contract between VERSA and the members of the audit team.

To strengthen the impartiality of its services, the VERSA Quality Directorate established an Impartiality Committee as an advisory body to address issues related to the management of impartiality risks. This committee met with key stakeholders, including client representatives, GHG Program members, auditors, and community representatives, among others. This initiative aimed to ensure trust and transparency in validation and verification services. Likewise, VERSA implemented a risk matrix that assessed inherent risks in its validation and verification activities and adopted appropriate measures to cover legal liabilities arising from its operations in each of the scopes and geographic areas in which it operates.

The validation and verification team for the ORINOCO2 project complied with the BCRBCR's Anti-Corruption Policy, in accordance with the BCRBCR's Validation and Verification Manual, paragraph 8.2.4. All auditors and the technical reviewer and approver have signed a conflict-of-interest statement, ensuring that no conflicts existed that could impede the provision of there does not seem to be any conflict that would prevent independent and, impartial validation and verification services from being provided, in line with BCR Validation and Verification Manual version 2.4, paragraph 8.2.4.1.

In addition, Versa maintains the confidentiality of all information accessed to which it had access during the process, in accordance with paragraph 8.2.4.2 of the BCR Validation and Verification Manual version 2.4. This implies not disclosing, transmitting, or revealing to third parties any information related to GHG projects, ensuring that such information is only used solely for the development of this validation and verification process. Regarding compliance with the code of ethics and anti-bribery and corruption regulations, the audit team strictly adhered to the provisions of the BCRBCR's Code of Ethics and all applicable anti-corruption regulations, ensuring the integrity and transparency of all activities performed. A description of the auditors, technical reviewer and final approver is listed in Annex 1.

3.3 Level of assurance and materiality

Considering the BCR v3.4, the objectives, scope, criteria of the validation and verification of the project process for the ORINOCO2 project was conducted to provide a reasonable level of assurance of compliance with the criteria defined in the project scope. To establish materiality, the objectives, level of assurance, criteria and ISO 14064-3:2019 guidelines, the information reported by the project holder showed an assurance level exceeding 95%. The scope of validation and /verification team assessed the were considered. The materiality through the audit plan concluding that was below than 5%.

To achieve this level of assurance and materiality, VERSA executed a validation and verification audit plan (Section 3.1) through the development of: 1) strategic analysis and risk

assessment, and 2) evidence collection and sampling plan, which minimized control, inherent, and detection risks, ensuring that the validation and verification team identified of the project was determined to be below 5%, implying that any material discrepancy individual or cumulative errors or omissions that could impact significantly affect the GHG statement and conclusions on GHG emission reductions/removals would be identified and corrected.

In this sense, Table 2 identifies and evaluates the risk level associated with potential errors, omissions, or misstatements that could occur during validation and verification activities, and outlines control mechanisms (evidence collection plan) to minimize the potential risks identified.

The validation and verification team defined the following criteria to assess the level of assurance (95%) and materiality (5%) for the Project:

*-**Project Owners and Development Team:** To ensure a material discrepancy of 5% and a level of assurance of 95%, VERSA reviewed 100% of the information from the cadastral analyses conducted by Cataruben to verify ownership and, consequently, carbon rights. This review was carried out during both the document assessment and the visit to Cataruben's offices, with information cross-referenced from documents /7/, /14/, /19/, /20/, /21/, /22/, /24/, /25/, /26/, /88/, /89/, /212/, /249/, /318/, and /319/ listed in Section 4.2 of this document.*

This sampling approach is systematic and non-statistical in nature. The deviations identified by the VERSA auditing team were communicated to the project proponent through FOR 101 GEI VALIDATION AND VERIFICATION FINDINGS, V6.0, with related findings numbered /112/ and /11223/, as detailed in Annex 2 of this document.

*-**Project Boundaries:** To ensure a material discrepancy of 5% and a level of assurance of 95%, VERSA reviewed 100% of the information from the Geographic Database (GDB) relevant to the criteria defined for the audit, as outlined in Section 2 of this document. This review also included information from official sources, such as the cadastral data available from IGAC's open data portal, accessible at the following link: https://geoportal.igac.gov.co/contenido/consulta-catastral. Additional documents reviewed included /416/, /7/, /14/, /16/, /19/, /20/, /21/, /25/, /26/, /88/, /104/, /114/, /249/, /250/, and /208/ listed in Section 4.2 of this document.*

This sampling approach is systematic and non-statistical in nature. The deviations identified by the VERSA auditing team were communicated to the project proponent through FOR 101 GEI VALIDATION AND VERIFICATION FINDINGS, V6.0, with related finding numbers /112/ and /11223/, as detailed in Annex 2 of this document.

*-**Baseline and Additionality:** To evaluate the identification of plausible reference scenarios and the demonstration of additionality, a comprehensive review was conducted of 100% of the documentation provided by the mitigation project proponent. This included an assessment of the credibility, suitability of the data, foundations, assumptions, and*

justifications. The review focused on compliance with the requirements of methodologies BCR 0005 V1.0 and BCR 0002 V4.0, with particular emphasis on the criteria outlined in the Additionality and Baseline Tool, version 1.3.

*Field corroboration was achieved through interviews with project beneficiaries and information cross-referencing, including documents /7/, /14/, /16/, /19/, /20/, /21/, /22/, /23/, /24/, /25/, /26/, /27/, /28/, /29/, /35/, /36/, /37/, /41/, /42/, /54/, /55/, /56/, /57/, /58/, /59/, /60/, /61/, /62/, /63/, /64/, /65/, /66/, /67/, /68/, /69/, /70/, /77/, /78/, /80/, /81/, /88/, /133/, /134/, /135/, /181/, /182/, /183/, /208/, /209/, /210/, /211/, /212/, /213/, /233/, /236/, /237/, /238/, /239/, /249/, /390/, /412/, /413/, /414/, and /416/ listed in Section 4.2 of this document.This sampling approach is systematic and non-statistical in nature. The deviations identified by the VERSA auditing team were communicated to the project proponent through FOR 101 GEI VALIDATION AND VERIFICATION FINDINGS, V6.0, with the related finding numbered /516/ as detailed in Annex 2 of this document.**Carbon Calculator:** A review was conducted of 100% of the procedures and secondary information sources related to activity data, emission factors, carbon reservoirs, and included emission sources, assessing their relevance against the criteria established for this audit, as outlined in Section 2 of this document. For primary information data, the procedures implemented by the project proponent were compared with the methodology described by IDEAM to verify their consistency with the "Proposal for Reference Level of Forest Emissions Due to Deforestation in Colombia for Results-Based Payment for REDD+ under the UNFCCC," available at the following link: https://redd.unfccc.int/media/02012019_nref_colombia_v8.pdf. This review also included documents /7/, /14/, /15/, /16/, /19/, /26/, /27/, /28/, /30/, /31/, /32/, /33/, /34/, /35/, /36/, /37/, /77/, /78/, /79/, /80/, /104/, /114/, /115/, /116/, /117/, /118/, /119/, /120/, /238/, /242/, /245/, /246/, /247/, and /248/ listed in Section 4.2 of this document.*

This sampling approach is systematic and non-statistical in nature. The deviations identified by the VERSA auditing team were communicated to the project proponent through FOR 101 GEI VALIDATION AND VERIFICATION FINDINGS, V6.0, with related findings numbered /1324/, /627/, /1829/, /1930/, /2132/, /2334/, /2435/, /2536/, /2637/, /30/, /31/, /32/, /35/, /36/, and /37/, as detailed in Annex 2 of this document.

***Uncertainty Assessment:** The evaluation of accuracy, uncertainty, and error associated with geographic information sources, emission factors, and other quantification parameters met the BCR criteria. This included the verification of information sources used to derive emission factors for deforestation and forest degradation in the natural forest stratum. For natural savannas, the procedures employed by the project proponent to estimate biomass and soil organic carbon (SOC) were assessed and corroborated in the field through interviews with the responsible staff at Cataruben and by measuring a savanna plot. This review was conducted during both the document assessment and the visit to Cataruben's offices, with information cross-referenced from documents /7/, /14/, /15/, /16/, and /246/ listed in Section 4.2 of this document.*

The deviations identified by the VERSA auditing team were communicated to the project proponent through FOR 101 GEI VALIDATION AND VERIFICATION FINDINGS, V6.0, with related findings numbered /1223/, /1930/, /2334/, and /30/.

*-**Monitoring Plan Design and Tracking**: An evaluation was conducted of the Monitoring Plan's design and implementation by the project, informed by the results of strategic planning and risk assessment. Compliance with the criteria defined for the audit, as outlined in Section 2 of this document, was compared against the information from documents listed in Section 4.2 (documents /7/, /14/, /15/, /16/, /332/, and /363/). This comparison facilitated the identification of findings recorded in FOR 101, which served as the basis for the activities to be undertaken by the audit team during the fieldphase. The relevant finding is numbered /314/.*

*-**Compliance with Sustainable Development Goals (SDGs):** To ensure a material discrepancy of 5% and a level of assurance of 95%, VERSA reviewed 100% of the information related to the proposed and implemented activities. This information was contrasted with the criteria defined by the "Tool for Determining Contributions to Meeting the Sustainable Development Goals (SDGs), version 2.0," as well as data provided by the United Nations (UN), accessible at the following link: **https://sdgs.un.org/goals/goal1#targets_and_indicators**. Additional information was cross-referenced from documents /7/ and /14/ listed in Section 4.2 of this document.*

This sampling approach is systematic and non-statistical in nature. The deviations identified by the VERSA auditing team were communicated to the project proponent through FOR 101 GEI VALIDATION AND VERIFICATION FINDINGS, V6.0, with related findings numbered /1526/ and /2637/.

*-**Management of reversal risks, non-permanence risks, and uncertainty:** To ensure a material discrepancy of 5% and a level of assurance of 95%, 100% of the procedures defined by the mitigation project proponent to address reversal risks were reviewed. These risks involve monitoring key indicators that allow for the identification of the integrity of carbon stocks in the long term. In this context, VERSA evaluated the consistency and coherence of the established procedures for risk identification, in accordance with the criteria of methodologies BCR 0002, V4.0, and BCR 0005, V4.0, as well as the Permanence and Risk Management Tool, Version 1.0, which establishes the discount buffer mechanism.*

The analysis of non-permanence risks conducted by VERSA considered political, economic, ecological, social, technological, and legal factors. The clarity of the uncertainty statement in the development plan (PD) regarding the measurements and methods used for carbon accounting was reviewed, along with the field protocol that specifies the measurement instruments and methods for reducing errors. Additionally, the uncertainty related to the models used to establish the baseline scenario was identified, ensuring a minimum absolute percentage error, and a conservative protocol for managing areas without information was established. This review also included documents/7/15/306/and /305/.

-Stakeholder Consultation: *The procedures established by the proponent for conducting consultations with all stakeholders were verified, and public comments received on the BioCarbon Standard platform from 10/29/2024 to 11/28/2024 were reviewed. To determine how the project ensures that its activities are the result of a participatory process, VERSA conducted interviews during the field visit with 57 property owners, representing 147 associated properties. This sampling approach is both statistical and systematic in nature, and it included revisions of documents /7/ and /14/.*

The deviations identified by the VERSA auditing team were communicated to the project proponent through FOR 101 GEI VALIDATION AND VERIFICATION FINDINGS, V6.0, with findings numbered /617/, /1122/, and /2233/.

Compliance with National Legislation: The audit team conducted a cross-check of the information reported by Cataruben in the Project Design Document (PDD) and the Reporting Mechanism (RM) against official Colombian legislation that adheres to international treaties. This includes Decree 926 of 2017, Law 2169 of 2021, the National Climate Change Policy 2017, Resolution 1447 of 2018, and Resolution 831 of 2020, among others. Detailed information can be found in Section 4.2 Document Review and Annex 3, as well as in documents /7/, /9/, /105/, /367/, /230/, and /278/.

All versions of the validation and verification report, prior to submission to the client, were subject to an independent internal technical review to confirm that all validation and verification activities were completed according to VERSA procedures.

Considering ISO/IEC 17029:2019, the audit planning process included a comprehensive risk assessment, preparation of a sampling and evidence collection plan, and the design of the audit plan. The sampling plan was based on an assessment of the risks of potential errors in declarations, structuring evidence collection activities to control potential sources of errors, omissions, or misstatements. Additionally, the plan considered logistical requirements and territorial access provisions, ensuring effective and accurate execution of audit activities.

Table 2 presents the risk assessment analysis conducted by the audit team as part of the strategic risk management in the validation and verification audit of the ORINOCO2 project. This evaluation identifies the types of risks, their justification, the assigned risk level, and the risk management measures adopted to mitigate or control these risks, thus ensuring accuracy and reliability in the validation and verification audit results. This assessment was used to define the audit sampling plan, in accordance with the guidelines set out in VERSA's Specific Procedure for Validation and Verification of GHG Projects.

Table 2. Risk Assessment

INHERENT RISKS	*PROBABILITY*	*IMPACT*	*RISK ASSESSMENT*	*RISK MANAGEMENT MEASURE*

The project does not explain and justify the baseline	*MEDIUM*	*HIGH*	*HIGH*	*Review of 100% of the reports and documents provided by the person responsible for the GHG project.* *Interviews with those involved to determine what is the scenario present in the territory; to confirm who are the actors responsible for generating deforestation or degradation and what are the practices that produce it.*
The project does not explain and justify additionality	*LOW*	*HIGH*	*MEDIUM*	*Review of 100% of the evidence provided by the project and interviews with at least 142 properties out of 149. Interviews that cannot be done in the field must be done virtually.* *Check:* *1. The actions we take to prevent deforestation must lead to a real reduction in carbon dioxide emissions.* *2. that something that would have happened in a* *anyway, for example restricted land use in the POT or EOT.* *3. Do not count as a reduction what is already in the national regulations or that is an obligation (Mas Bosques overlaps of PES of the PES and BanCO2 programs and*

				ECOPETROL as a financing entity) Interviews with: -CORMACARENA -CORPORINOQUIA - BIORINOCO Sustainable Low-Carbon Landscapes overlaps project of the Ministry of Agriculture
The project does not explain and justify the risks of permanence	*MEDIUM*	*HIGH*	*HIGH*	*It is necessary to verify that the beneficiaries' association contracts include that the delivery times of the economic benefits generated by the implementation of activities depend on the validation and verification times. Verify with interviews how effective the project's communication strategy is and evaluate how willing the beneficiaries are to implement the activities of the GHG project.*
The project does not explain and justify social and environmental safeguards	*LOW*	*HIGH*	*MEDIUM*	*The PDD and the RM did not find out how the project is aligned with the 15 social and environmental safeguards. Through interviews with the different actors involved, verify how the project's own activities are articulated with 15 safeguards of national interpretation. At a minimum, the following must be discussed: 142*

				properties of the beneficiaries (95% reasonable level according to the VERSA-CATARUBEN CONTRACT), ECOPETROL as a financing partner (1%), CORMACARENA, CORPORINOCO and BIORINOCO Sustainable Low-Carbon Landscapes (REDD+ program of the Ministry of Agriculture present in the Colombian Orinoquia) and Mas Bosques (PSA overlaps).
The project does not explain and justify the processes to avoid double counting	*LOW*	*HIGH*	*MEDIUM*	*Interviews with 142 beneficiaries' properties (95% reasonable level according to the VERSA-CATARUBEN contract), ECOPETROL as a financing partner (1%), CORMACARENA, CORPORINOCO and BIORINOCO Sustainable Low-Carbon Landscapes (REDD+ program of the Ministry of Agriculture present in the Colombian Orinoquia) and Mas Bosques (PSA overlaps). Review of other standards and programs, the project was not mentioned: PELIWAISI REDD+ UNUMA VICHADA COLCX-14-0018.*
Emission reductions	*LOW*	*HIGH*	*MEDIUM*	*A 100% verification of the spreadsheets will be carried out.*

estimates can be overestimated				*Review of 100% of the procedures and field verification of the strata (Natural Savannas and Natural Forests) identified by the project proponent. Verify in the field through measurements and interviews with those responsible for carrying out the information gathering process in the field by the project proponent*
The procedures for the management of GDB are deficient and do not report the % of the error	*LOW*	*HIGH*	*MEDIUM*	*A 100% verification of the GDB will be carried out.*
The project does not meet the requirements of the BCR 0002 and BCR 0003 methodologies to determine the leakage area	*MEDIUM*	*HIGH*	*HIGH*	*Interview with the beneficiaries to establish the actual displacement of the project's leakage.*
The project fails to demonstrate that it is conservative in establishing the project's reference area	*LOW*	*HIGH*	*MEDIUM*	*Verify through interviews with those responsible for the project the criteria defined for the establishment of the project's reference area.*
Control risk assessment				
Insufficient information to demonstrate the ownership of rights to the land use where the mitigation project	*HIGH*	*HIGH*	*LOW*	*Examine 100% of the processes regarding how the defined criteria for validation and verification were developed and incorporated into the*

activities are conducted				*project. Any doubts, inconsistencies, and/or methodological deviations identified by the audit team must be consulted with the standard, so that it can provide the guidance to be followed accordingly.*
Deficiency in the knowledge of the team responsible for the design and development of the project.	*HIGH*	*HIGH*	*LOW*	*The VERSA audit team will request supporting documents that verify the qualifications of the personnel responsible for the development and implementation of the project in accordance with the requirements of ISO 14066, ISO 14065, and the latest versions of IAF MD 6.*
Detection risk				
Insufficient information to demonstrate contributions to the SDGs.	*HIGH*	*HIGH*	*LOW*	*It will be verified that the SDGs are aligned with their respective targets and associated indicators relevant to the scope of the project*
Insufficient information to demonstrate ownership rights to land use for the properties included in the GHG project	*HIGH*	*HIGH*	*HIGH*	*All cadastral update studies (including deeds, certificates of freedom and tradition, etc.) conducted by Cataruben for the private properties involved in the GHG project will be reviewed in their entirety.*
Risks associated with the inability	*HIGH*	*HIGH*	*HIGH*	*Before the field visit, early warning red alerts in the territory will be verified*

to access the properties where the non-permanent plots of the project are located due to conditions of public order, climatic factors, among others				*on the website of the Ombudsman's Office, in order to conduct the audit without exposing the auditing team to these events*
Virtual Interviews				
Lacking competence in the management of Information and Communication Technologies (ICT)	*HIGH*	*HIGH*	*LOW*	*Before the interviews, it is important to agree with the interviewees on which ICT is the most suitable or convenient.*
Loss of confidentiality, security, and data protection.	*HIGH*	*HIGH*	*LOW*	*There is a policy of impartiality in place, and in this case, the topics discussed in the interviews are of public knowledge*

Source: VERSA, 2024

In of the audit plan, the audit team leader from VERSA coordinated with the technical expert to select Meet Google as the ICT for the evaluation, due to its accessibility and functionality in remote environments. A maximum time of one hour was established for each interview, allowing for effective discussion of the necessary topics. Additionally, the developing company took on the responsibility of coordinating the calls, sending invitations, and overseeing adherence to schedules, which optimized communication among all parties involved and ensured that everyone understood the purpose of each call.

The evaluation included the review of 100% of the documentation provided, comparing the monitoring data with those described in the monitoring report (MR), its spreadsheets and cartographic annexes. The strata defined by the project were field verified to ensure that there were no significant changes or deviations from the baseline scenario described in the Project Description Document (PDD). The proposed mitigation actions were confirmed as

authentic, effective, quantifiable, verifiable, transparent and with sustained impact over time for the current verification period.

VERSA's audit team confirmed that the project has consistent and transparent procedures to address omissions and/or errors in GHG reporting, considering a materiality threshold of less than 5%. This conclusion is based on the collection and evaluation of objective evidence, such as GHG project documents, monitoring report, spreadsheets, field interviews, data sources for the calculation of removals, cartographic supports and annexes for the implementation of BCR tools and criteria.

Therefore, it is ensured that the GHG mitigation project meets the criteria of the BCR standard and the Biocarbon Standard guidelines in its methodology for quantifying GHG emissions in REDD+ projects BCR0002 version 4.0 and BCR0005 version 1.0.

The validation and verification of the Orinoco2 Project was carried out with a comprehensive approach that guaranteed a 95% level of security Materiality criteria were established, setting a threshold of 5%, considering the potential impact of the project on the reduction of GHG emissions, the credibility of the carbon market, and the financial and environmental impact of the project.

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3.4 Sampling plan

The sampling plan for the ORINOCO2 project was designed with the objective of guaranteeing a reasonable level of assurance and covering the full scope of validation and verification, considering the specific criteria of numeral 22 of the BCR Standard version 3.4. This plan includes a detailed description of the procedures and methodologies applied to select representative samples, ensuring the quality and type of evidence required, both qualitative and quantitative, to achieve the necessary level of assurance. The complete description of the sampling plan is as follows:

Assurance level: An assurance level of 95% was established for the validation and verification of the project, in line with the materiality criteria that consider a maximum allowable deviation of 5%.

Scope of validation and verification: The scope covers all activities reported in the Project Description Document (PDD) and Monitoring Report (MR), including baseline assessment, emission reductions, permanence of results, and project governance, as listed below:

- *Baseline and project GHG limits.*
- *Project activities.*
- *GHG sources and sinks.*
- *GHG types.*

- *Project areas.*
- *Quantification periods.*
- *Co-benefits assessment.*
- *Indicators related to SDGs.*
- *Monitoring plan and corresponding documentary support.*
- *Validation and verification Source: Present validation and verification report*

The sampling plan or evidence collection plan made it possible to establish the starting point to evaluate the compliance of the project against the validation and verification criteria. The design of the sampling plan includes the control and assurance of the quality of the information and the management of the risks associated with the audit identified in the table above. This plan was essential to ensure the accuracy and thoroughness of the audit, in accordance with the validation and verification requirements. The sampling and evidence collection plan was designed to ensure a thorough review of the ORINOCO2 project's compliance, evaluating all key aspects of its implementation, including information quality, carbon property rights, project boundaries, baseline establishment, additionality, project activities, and GHG emissions reduction calculations.

The development and execution of the evidence collection plan or sampling plan (Table 2) allowed for an assurance level of no less than 95%, thus meeting the reliability and quality standards required for project verification. This methodical approach ensured an exhaustive and objective audit, grounding the validation and verification process.

The criteria applied include ISO 14064-3, the BCR standard version 3.4 and the specific methodological guidelines for REDD+ projects BCR0002 version 4.0 and for natural savannas BCR0005 version 1.0. These criteria ensure that project activities are additional, quantifiable, verifiable and sustainable.

Quality and type of evidence: Qualitative and quantitative evidence was collected and evaluated. Qualitative evidence included stakeholder interviews at two points during the audit; virtual and face-to-face audits were conducted in the first round and virtual-only interviews, field observations, and review of legal and administrative documents were conducted in the second round of the audit. Quantitative evidence included forest inventory data, carbon estimates with official emission factors for the country from the NREF 2019, satellite images, project geo-database and statistical analysis on the reliability of the activity data.

For measurement procedures carried out by the proponent of the mitigation project in the forest and savanna ecosystems, it is essential to compare these methods with official sources of forest and savanna sampling. Various organizations, such as the FAO, provide guidelines that highlight the importance of an adequate sampling design, such as stratified random sampling, which allows for accurate estimations of biomass across different strata of the forest. It is also crucial to define a sample size based on the expected variability of the

parameters to be measured, ensuring that the measurement techniques are precise enough to capture the ecosystem's diversity. In the case of savannas, protocols established by the IUCN suggest using multipurpose plots for conducting inventories of species and vegetation cover, as well as a systematic sampling approach that takes the habitat's heterogeneity into account.

When comparing the proponent's procedures with these official methodologies, it is evident that the measurement methods are consistent with recommended practices and that the selection of plots is representative, supporting the validity of the results obtained. Furthermore, the alignment with validated approaches in the scientific literature reinforces the reliability of the collected data, contributing to the confidence that the measurement procedures carried out by the proponent are correct and meet the required quality standards for the study.

For the forest ecosystem, the center of the plot was verified using GPS, finding that it was correctly marked with wooden stakes matching the reported coordinates. It was confirmed that the radius of each plot was oriented to the north and that the area of each was 400 m². The trees were numbered and visibly painted in a clockwise direction. The Diameter at Breast Height (DBH) was measured at 1.30 m above the ground using a diameter tape, and the height of the trees was determined using a Vertex IV device, ensuring that the equipment was in good condition and properly calibrated. In conclusion, the measurement process of Cataruben (Diameter and Height of Trees) ensures an accurate and reliable assessment of the plots, promoting effective management and adequate monitoring of the project's objectives.

The for sampling herbaceous biomass in savannas employed a systematic random sampling approach. A 1 m² frame was randomly deployed at selected locations, and herbaceous vegetation samples were collected by cutting all biomass within the plot, ensuring the inclusion of all present species. Subsequently, the data obtained were compared with those provided by the Cataruben, confirming that no significant differences existed between the values. This indicates the reliability and validity of the methodology utilized for sampling herbaceous biomass in the study area

Table 2 Sampling Plan

Parameters and Criteria					
Carbon ownership and rights		*Sampling Plan Approach*	*Sampling Type of Evidence*	*Population*	*Sample size*
Carbon ownership and rights changes in	*Documentary Review of 100% of the agreements between*	*Quantitative and Qualitative*	*S*	*100 Documentation + Evidence*	*2 documents + 8 folders*

carbon contents for each identified reservoir.	*documentation provided by the project proponent and the owners of the land. owner*	*Non-statistical*			
	Interview with the technical team of the project, to inquire about the procedures provided in the supporting documents Vegetation cover by period of analysis: historical and baseline	*Qualitative*		*Baseline data*	*Data Ex ante and ex post sheets*
Compliance with the criteria defined for the V/V		*Qualitative* *Non-statistical*		*Baseline data*	
				PD, RM and evidence	*2 documents + 8 folders*

Project Boundary	*Documentary Review: Documents and files used by the project proponent to define the project's spatial-temporal limits, sources and reservoirs and their compliance with the criteria established by BCR*	*Qualitative and Quantitative*
	Interview with the project's technical team. Review of other sources of information to show that the boundaries of the project areas are not part of other projects	*Qualitative* *Quantitative*
Baseline	*Desk review of information to establish baseline scenarios for REDD+ activities and activities that reduce land-use change in natural savannahs. Evaluation of the conditions of applicability of the methodologies used (BCR0005 and BCR0002). And the establishment of baseline scenarios.*	*Qualitative*
Additionality	*Documentary review of information to demonstrate additionality for REDD+ activities and activities that reduce land-use change in natural savannas*	*Qualitative*

	and their compliance with the criteria and tools established by BCR	
Project Activities	*Documentary review of the design of the project activities for each methodology and progress in implementation during the monitoring period,* *Visits to specific points, interviews with key project stakeholders and corroboration of geographic information.* *Interviews with property project proponent team.*	*Qualitative y quantitative*
GHG emissions Reductions calculations	*Review of the spreadsheet and its compliance with the formulas and parameters established in Methodologies BCR0005 and BCR 0002* *Interviews with property project proponent team.*	*Quantitative y qualitative*
	Review of the sources of information for the establishment of emission factors for forests and soil organic carbon in natural savannah.	*Quantitative*
	Review and evaluation of the procedures carried out in the field for the collection of biomass samples, and the traceability of the data until the emission factor is calculated. *On-site review of the evidence from the establishment of five aboveground biomass sampling plots to determine the aboveground biomass emission factor in natural savannas.*	*Qualitative and* *Quantitative*
Grouped project	*Documentary review of compliance with the criteria established by BCR for the design of projects grouped in the AFOLU sector.*	*Qualitative*
Social and Environmental Safeguards, and REDD+ Safeguards	*Review of 100% of the documented information Verification of documented information on compliance with Cancun safeguards and national interpretation.* *Interview with property owners.*	*Qualitative*

	Interviews with property project proponent team.	
Co-beneficts	*Documentary review and evaluation of compliance with criteria and indicators to certify co-benefits of the Wax palm category, as well as the progress in the implementation of the actions in the monitoring period.* *Interviews with property project proponent team.*	*Qualitative y quantitative*
Stakeholders Consultation	*Review of relevant documentation.* *Meetings with relevant stakeholders* *Interviews with property project proponent team.*	*Qualitative*
Avoid Doble counting	*A review of 100% of the documented information provided by the project developer* *Review of the RENARE Platform projects registered in different carbon standards* *Review and evaluation of the use of the BCR tool for Avoid Double Accounting* *Interviews with property project proponent team.*	*Qualitative and quantitative*
Leakage and Permanence Risk	*Review and evaluation of the application of the BCR criteria and tool* *Document review and evaluation of compliance in the application of the Permanence and Risk Management tool.* *Interviews with property project proponent team.*	*Qualitative and quantitative*
ODS	*Review and evaluation of the use of the BCR tool to determine the contribution to the SDGs and the establishment of relevant indicators.*	*Qualitative*

Monitoring Plan	*documentary review to determine compliance with the design and follow-up to the implementation of the monitoring plan.*	*Qualitative and quantitative*
Quality control and management.	*Review of the schedule, responsible, result, among others, of the indicators of the project's Monitoring Plan. And compliance with the criteria established by BCR.* *Interviews with the Cataruben technical team responsible for the activities.*	*Qualitative*
Specific BCR program tools	*Evaluation of the application of BCR tools and guidelines*	*Qualitative*

Note: Types of Sampling: Random (A): Random selection of samples requires a tool that ensures a truly random selection, independent of the judgment or preferences of the sampler. This is important to ensure that all elements in the population have an equal opportunity to be sampled. Systematic (S): Taking samples randomly, starting from a point and then applying a systematic rule for the selection of the following samples (every 10th, after the first, etc.) Risk Based (BR): Random sampling based on a non-statistical selection of elements (random).

Table 4 below lists the detailed sampling plan carried out, together with the parameters identified, the evidence validated and verified, as well as compliance with environmental integrity.

Table 4. Detailed Sampling plan carried out for the ORINOCO2 project

Parameter or Requirement	***Sampling Plan***	***Evidence***	***Risks of potential errors, omissions, or misinterpretations***	***Cross Check Documentation (Annex 3)***
Project Activities	*Visits to specific points, interviews with key project stakeholders and corroboration of geographic information.*	*Verification of field activities, interviews and project geo-database.*	*None*	*1-2* *10 -12* *15 -17* *21-27* *29-32*

Parameter or Requirement	Sampling Plan	Evidence	Risks of potential errors, omissions, or misinterpretations	Cross Check Documentation (Annex 3)
Baseline	A review of 100% of the documented information provided by the project developer was carried out using systematic risk-based sampling.	Documentary assessment and field interviews to demonstrate net benefits to the atmosphere.	None	1-5 21 28 29-32
Additionality	Systematic risk-based sampling, reviewing 100% of the documented information and contrasting it with interviews and field observations.	Documentary assessment and field interviews to demonstrate net benefits to the atmosphere.	None	1-5 10-12 21 – 28 29-30
GHG emissions Reductions calculations	A review of 100% of the documented information provided by the project developer was carried out using systematic risk-based sampling.	Spreadsheets of calculation Methodologies used	Unreported methodological deviations Use of no actualized BCR methodologies	5 21-22 31-32
Emission Factor	A review of 100% of the documented	Assessment of Documents provided, and	Ack of control and traceability of the data and	5 21-22 31-32

Parameter or Requirement	*Sampling Plan*	*Evidence*	*Risks of potential errors, omissions, or misinterpretations*	*Cross Check Documentation (Annex 3)*
	information provided by the project developer, contrast with related scientific information. *Plot sampling of 20% of the plots for biomass emission factor in natural savanna.*	*plot sampling*	*field methodologies used.*	
Permanence	*Review of 100% of the documented information, contrasting it with official geographic data, carrying out field visits in the first round of audits, and contrasting it with documentary information in the project's geographic database.*	*Coverage verification points and geographic review.*	*None*	*1-10* *17-19* *25-27*

Parameter or Requirement	*Sampling Plan*	*Evidence*	*Risks of potential errors, omissions, or misinterpretations*	*Cross Check Documentation (Annex 3)*
Social and Environmental Safeguards, and REDD+ Safeguards	*Review of 100% of the documented information and comparison with field and virtual interviews.*	*Verification of documented information on compliance with Cancun safeguards and national interpretation.*	*None*	*6-12* *28*
Non-permanence and reversal risk assessment	*Review of 100% of the documented information, with a systematic risk-based sampling type.*	*Document review and field interviews.*	*None*	*6-12* *25-27*
Activities for demonstrate Cobeneficts	*Visits to specific points, interviews with key project stakeholders and corroboration of geographic information.*	*Verification of field activities, interviews and project geo-database.*	*None*	*16*
Stakeholders	*Meetings with stakeholders and review of relevant documentation.*	*Interviews and visits with stakeholders.*	*None*	*10-12* *15*
Avoid Doble counting	*A review of 100% of the documented information provided by the project developer,*	*eview of the renare Platform Review of projects registered in different*	*None*	*1-3*

Parameter or Requirement	Sampling Plan	Evidence	Risks of potential errors, omissions, or misinterpretations	Cross Check Documentation (Annex 3)
	contrast with related carbons standards information.	carbon standards		
Training and strengthening	Interviews with people involved in the governance structure and project training.	Field verification and interviews.	None	1-5 28
Project communication and PQRS system	Interviews with stakeholders and review of documented information on the PQRS system.	Interviews and documentary review.	None	6-12 28
Specific BCR program tools	Review of 100% of the documented information, with a systematic risk-based sampling type.	Document review and confirmation.	None	1,2, 15, 16 29-32

Risks of errors, omissions or misinterpretations: Potential risks associated with errors, omissions or misinterpretations in the data collected were identified and assessed. Control measures were implemented to mitigate these risks, such as cross audits in two rounds by different audit teams, additional field verifications and internal technical review.

The sampling or evidence collection plan made it possible to evaluate the conformity of the documentation presented, including the control and assurance of the quality of the information and the management of risks associated with the audit. In conjunction with the

project developer, strategic points were established for the on-site visits during the audit. These points were chosen based on audit, considering factors such as accessibility conditions, environmental status, field, population density, implementation actions, and security conditions, prioritizing key safety aspects that enabled a comprehensive verification of the project activities. Additionally, the project holder facilitated contact with property owners involved in the project and with other stakeholders, including representatives of environmental corporations and a representative of Ecopetrol as a strategic partner of the project.

In compliance with the BCR's Validation and Verification Manual, the implementation of the evidence collection plan made it possible to achieve a minimum assurance level of 95%. During the rounds of conclusions, the project proponent implemented the made necessary modifications and clarifications in response to the observations issued by of the audit team, thus achieving to ensure the agreed required level of assurance.

Considering Based on the evaluation and treatment of the non-conformities identified through out observed during the audit exercise, VERSA concludes, it is concluded that the analysis methods used in the sampling plan and in the audit, plan continue to be representative. The evidence collected is appropriate and obtained is sufficient and appropriate to issue a conclusion regarding the validation and verification process.

4 Validation and verification procedures and means

4.1 Preliminary assessment

In this sense, some conclusions are provided:

- *Compliance with the regulatory framework related to carbon management and applicable regulations was assessed, validating the regularity of project activities.*
- *Documents supporting the project's land tenure and/or carbon rights were reviewed.*
- *Information Quality Control: The controls in place to ensure the quality of information and documentary control of the project were evaluated.*
- *A review of other supporting documents, such as maps and spreadsheets annex to the PDD and RM, was conducted to ensure the accuracy and consistency of the information presented.*

Based on the evidence gathered, it was concluded that the criteria defined for this verification were adequate and that the project activities were implemented consistently over time. The reported emissions and removals are significant, and the evidence provided is complete, correct, consistent, up-to-date and sufficient to support the reported greenhouse gas reductions and/or removals.

With which the audit team is prepared with respect to defining sufficient information to determine the purpose and scope of the validation/verification.

4.2 Document review

VERSA's audit teams conducted a 100% review of the next documents listed in annex 3.

From the review of the documents provided by the developer of the Project and contrasted with official information, it can be concluded that the project demonstrates full traceability of evidence and records, confirming that the Project Holder has provided 100% of the data used in the calculations..

4.3 Interviews

During the audit of the validation and verification activities forof the ORINOCO2 project, interviews were conducted with various relevant actorsstakeholders. These interviews were carried outconducted in accordance with the audit plan established audit plan for the first and identified second round of findings, and they were conducted both in person and viaby videoconference.

The interviews were strategically designed to gather detailed information, validate, and verify key aspects of the project, such as project knowledge and objectives, agreements between the project holder and the property owners, training received, and the level of knowledge on topics such as climate change, mitigation and adaptation, sustainable production practices in natural savannas, biodiversity monitoring, gender equity, forest conservation, project start date, distributionimplementation of economic benefits, and project responsibilities among others. activities, governance, monitoring and perception of local communities and other stakeholders, based on the three-part model of the project, see Table 7. The aspects consulted included verification of activity data, assessment of additionality and permanence of project actions, compliance with social and environmental safeguards, and identification of potential risks and barriers.

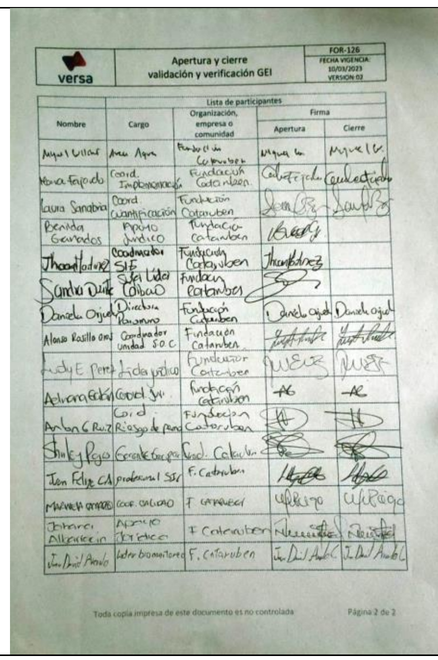
In terms of results, the topics addressed contributed to corroborating the information that justified the compliment with the criteria of the validation and verification. Table 5 Summarize all the interviews carried out with relevant actors, that took place during validation/verification activities. The interviews provided an understanding of the project activities and confirmed the accuracy and veracity of the documented information. Aspects such as community commitment to project activities and the implementation of activities to reduce deforestation as well as savanna conservation were identified. In addition, the interviews helped to identify aspects gathered in the findings (see section 6 of this Validation and Verification Report) and to corroborate the project's compliance with the established criteria of the Validation and Verification Manual version 2.4.

The interviews addressed key aspects such as the effectiveness of the mitigation activities implemented, the perception of project benefits by the communities, conflict management and resolution, and transparency in project communication. The results confirmed that

project activities are aligned with GHG emission reduction objectives and that adequate measures have been taken to ensure the permanence and sustainability of the project's positive impacts. It also highlighted the importance of continued support from local communities and other key stakeholders for the long-term success of the project.

These interviews were essential to validate the information presented in the Project Description Document (PDD) and Monitoring Report (MR), ensuring that all data and statements on project performance are accurate, verifiable and consistent with the criteria established in the BCR standard version 3.4 and applicable regulations.

Table 6. Stakeholders interviewed

Stakeholder type	***Stakeholders***
Cataruben Fundation Staff	*Date: 1/12/2023 and 8/12/2023* *Place: offices of the Cataruben Foundation* *Activity: Audit Opening and Audit Closing.* *Responsible party: Diana Rauchwerger and Helena Villanueva.*
	

versa — Apertura y cierre validación y verificación GEI — FOR-126, FECHA VIGENCIA: 10/03/2023, VERSION 02

Lista de participantes

Nombre	Cargo	Organización, empresa o comunidad	Firma: Apertura	Firma: Cierre
Miguel Villar	Area Agro	Fundación Cataruben	[illegible]	[illegible]
Mónica Fajardo	Coord. Implementación	Fundación Cataruben	[illegible]	[illegible]
Laura Sanabria	Coord. Cuantificación	Fundación Cataruben	[illegible]	[illegible]
Benilda Granados	Apoyo Jurídico	Fundación Cataruben	[illegible]	
Thoan Ordoñez	Coordinador SIF	Fundación Cataruben	[illegible]	
Sandra Duitk	Sub Líder Cóbalo	Fundación Cataruben	[illegible]	
Daniela Ojeda	Dirección Programa	Fundación Cataruben	Daniela Ojeda	Daniela Ojeda
Alonso Rosillo [illegible]	Coordinador unidad S.O.C	Fundación Cataruben	[illegible]	[illegible]
Judy E Pérez	Líder jurídica	Fundación Cataruben	[illegible]	[illegible]
Adriana Gaitán	Coord. SH	Fundación Cataruben	[illegible]	[illegible]
Antón G Ruiz	Coord. Riesgo de pend.	Fundación Cataruben	[illegible]	[illegible]
Shirley Pezo	Gerente Geográfico	Fund. Cataruben	[illegible]	[illegible]
Jean Felipe CA	profesional SIF	F. Cataruben	[illegible]	[illegible]
[illegible]	Coor. Calidad	F. Cataruben	[illegible]	[illegible]
Johana Albarracín	Apoyo Jurídico	F. Cataruben	[illegible]	[illegible]
Juan David Arévalo	Líder biomonitoreo	F. Cataruben	[illegible]	[illegible]

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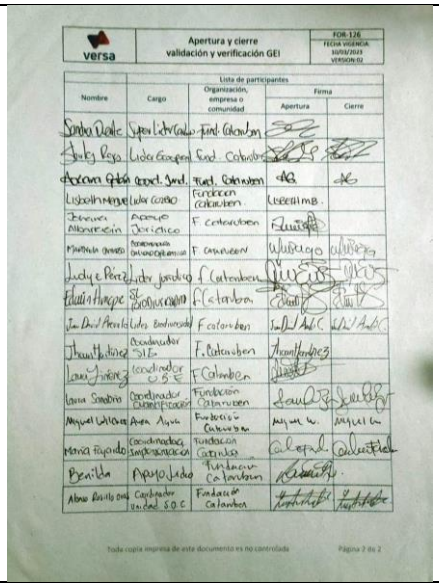
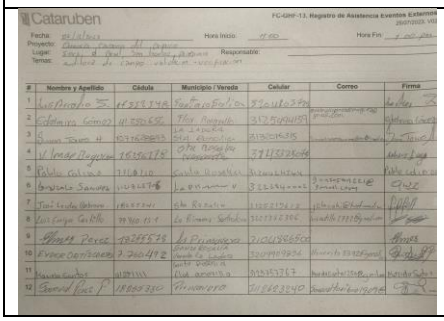
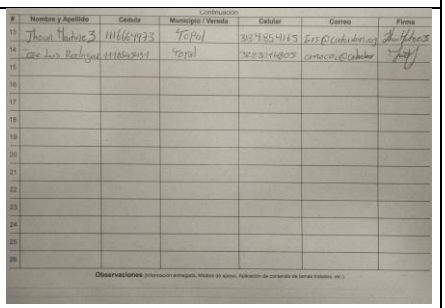
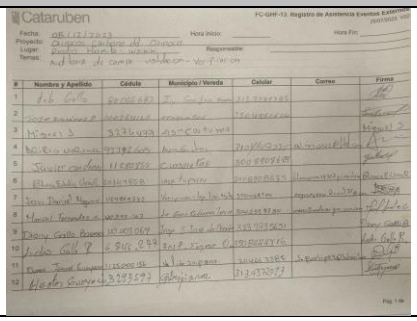
Stakeholder type	*Stakeholders*
Cataruben Fundation Staff	*Date: 8/12/2023* *Place: offices of the Cataruben Foundation* *Activity: Audit Closing.* *Responsible party: Diana Rauchwerger and Helena Villanueva.*
	
Local communities *On-site Visit*	*Date: 3/12/2023 and 5/12/2023* *Places:* *El Boral Farm (Property owners who are part of the project 14 people and 24 farms represented)* *Waikiki Farm (Property owners who are part of the project 12 people and 19 farms represented).* *Responsible party: Diana Rauchwerger and Helena Villanueva.*  

Stakeholder type	*Stakeholders*
	
Local communities *Virtual Interviews*	***Virtual Interviews*** *Date: 12/12/2023* *Place: Virtual, Meet Google (31 interviewees).* 1. *Juan José Castro, Nuevo Murivito Farm.* 2. *Astrid Gonzales, Puerto Rico Farm.* 3. *Alejandro Lacria, La Soledad Farm.* 4. *Carolina Gonzales, Machimbre Fram.* 5. *Nubia Zambrano, Los Alcornocos Farm.* 6. *Mónica Rivera, La Reforma Farm.* 7. *Juan A. Molano, Chaqueva Farm.* 8. *Fanny Rodriguez, Rep Guimariti Farm, Marco Polo Farm, Matazul Farm and Rincón Matazul Farm.* 9. *Neber Escobar, Los Algarrobos Farm and El Convento Farm.* 10. *Gloria Guayacan, Oropel Farm and La Lora Farm.* 11. *Jorge Benavides, Providencia Farm.* 12. *Alfredo Gonzalez, Los Venados Farm.* 13. *Jorge Eduardo García, Acaren Farm and Algarrobo farm.* 14. *Luis Felipe Cortez and Tatiana Cortez, La Sierra Farm, Laguna Farm, and Grande Farm.* 15. *Andrea Cortez, Villa Lorena Farm.* 16. *Mauricio Arenas, Las Violetas Farm and Arcoíris Farm.* 17. *Carlos Jaramillo, Santa Ana Farm, Santa Paula Farm, Onulú Farm, La Ermita Farm, La Conquista Farm, Bellavista Farm, Cayuré Farm and Dos Diamantes Farm.* 18. *Miriam Rocío López and Ludy López, La Esperanza Farm* 19. *Emerson Mejía, La Flor Farm and Las Brisas Farm.* 20. *Juan Escayón, Las Palmas Farm, La Conquista Farm, La Herradura Farm and Villa Hermosa Farm.* 21. *Mildred Murcia, Las Palmas Farm.* 22. *Raúl López, El Cachicamo Farm.* 23. *Carlos Quintero, El Edén Farm, Yaruma Farm and Valle Verde Farm.* 24. *William Navarro, El Algarrobo Farm* 25. *Gilberto Gómez, La Victoria Farm and Lagunita Farm.*

Stakeholder type	*Stakeholders*
	26. Juan Ignacio Mojica, Versalles Farm, Turulí Farm and Congrial Farm. *27. Francy Cerrano and Zulma Cortez, Delegate to represent 24 properties* *28. Laura Alfonso, El Retiro Farm* *29. Alfonso Riascos, El Zorro Farm, Brisas del Lolo Farm, La Laguna Farm, La Milagrosa Farm and Huerfanitas Farm.* *30. Max Arenas, Guacamayas Farm.* *31. Fanny Pardo, El Boquerón Farm.*
CORMACARENA	*Date: 12/12/2023* *Place: Virtual, Meet Google (1 interviewed).* *The meeting was held virtually with Sara Rodriguez.*
Ecopetrol	*Date: 13/12/2023* *Place: Virtual, Meet Google (3 interviewees).* *The meeting was held virtually with Eduardo Roa, María Juliana Salcedo and Diego Puentes.*

Source: Present validation and verification report.

The interviews provided an understandingwere based on the following basic questions, which gave rise to other specific questions of the ORINOCO2 Project.

Semi-structured interview

- *General*

1. Developer Perspective.

2. Knowledge of the carbon market (what is a carbon credit, climate change, etc.).

3. What benefits has the project activities and confirmed the accuracy and veracity of the documented information. Aspects such as brought to the community commitment to . You've benefited.

4. What they know about REDD+.

5. Have participated in the project activities.

6. How has the communication with the development company been. What communication channels are handled.

- *Safeguards:*

1. Know the channels to generate a PQR.

2. Know the percentages of profit distribution.

3. Know the results of the latest monitoring report. How much was sold. How much of the money was left.

4. Know how much money was spent on project activities and the implementation of .

5. Community spaces have been created to make decisions about what money should be spent on and on what activities to reduce.

6. How this money is coming to them.

7. How do you think the project supports the "Conservation of Forests and their biodiversity"

8. Communities: The prior consultation process has been carried out or someone from the Ministry of the Interior has come here.

9. Communities: Do you believe that the project is aligned with your customs and life plan?

- *SDG context*

1. What is the presence of the State in this area? Which state entities are present. And services are brought by the State to these areas.

2. How are the health posts.

3. How the issue of education in the area has been managed.

4. What is the issue of sanitation like?

5. What is the energy issue like in the area.

6. The flora and fauna in the area have been protected.

- *Questions to Authorities with interference in the project (Governor's Office, Mayor's Office, Foundations, Secretaries of Ethnic Affairs, representative of contiguous NNPs, Regional Autonomous Corporations, etc.).*

1. What is your perspective on the REDD+ projects that are being carried out in the region?

2. Accompaniment has been carried out in these territories.

3. Prior consultation processes have been carried out in this region or in the project.

4. What does the deforestation landscape look like in the region

Conclusion: as well as savanna conservation were identified.In general terms, the owners of the properties and the authorities involved in the project are fully aware of the specific aspects of the ORINOCO2 project. There are still issues to improve, but it is important to highlight that the project demonstrates support for communities and the reduction of GHG emissions.

Note: In addition, theannex 5 are the attendance lists for the group interviews helped to identify aspects gathered in the findings (see section 6 of this Validation and Verification Report) and to corroborate the project's compliance with the established criteria of the Validation and Verification. carried out during the field visit.

The interviews conducted with the technical team of Fundación Cataruben, responsible for design, implementation, and monitoring, confirmed that no relevant information was omitted in the provided documents. Additionally, the project holder's technical, administrative, and operational capacity for project implementation was evidenced.

The interviews with property owners allowed for:

- *Demonstrating the characteristics, the active participation of property owners in its implementation, and a strong relationship of trust and coordination with the project holder regarding the implemented activities.*

- *Validating the understanding and agreement with the project holder on the distribution of economic benefits, as well as property owners' involvement in the design of project activities. /249/260/275/295/.*

- *Confirming information related to the causes and agents of deforestation, forest degradation, and land-use change in natural savannas. /7//343/348/*

- *Verifying knowledge enhancement through training received during the monitoring period and the inclusion of a gender approach, empowering women in financial matters and access to opportunities. /261/262/263/272./.*

- *Confirming the implementation of activities on each property from 2018 to 2023/261/262/266/269/270/271/273/274/.*

- *Identifying two property owners with limited communication access and a low level of project understanding, which led to findings regarding safeguards compliance, subsequently addressed by the project holder.*

The interview with the Ecopetrol representative validated a good level of project knowledge and ensured that the investment source used to establish enabling conditions for project certification was not from resources allocated to biotic component compensation or mandatory 1% investment. Additionally, it was confirmed that Ecopetrol intends to be the preferred client for the carbon certificates generated by the project. /249/237/

The interview with the representative of the environmental corporation validated that no complaints or processes have hindered the project's implementation and that the project holder invited comments. The representative highlighted that this is one of the few projects in the region that approaches the corporation to provide information on its activities. /256/257/253/254./.

The results of the interviews and the resolution of findings confirmed that project activities align with GHG emission reduction objectives and that appropriate measures have been taken to ensure the permanence and sustainability of the project's positive impacts. It also highlighted the importance of continued support from local communities and other key stakeholders for the project's long-term successs

4.4 On-site visit

The site visit was carried out in an articulated manner with the interviews listed in section 4.3. The field visit, conducted from November 1 to December 9, 2023, initially involved the audit team traveling to the municipality of Yopal, to the offices of Fundación Cataruben (project holder), where the opening meeting and audit plan briefing took place. Subsequently, the audit team and part of the project holder's technical team began a journey from Yopal, Casanare, to the San Teodoro village in the municipality of During the validation and verification process of the ORINOCO2 project, several activities were carried out at the project site in December 2023 to assess the implementation and effectiveness of the reported activities. The field visit was designed to cover the specific characteristics of the project, the specifications of the BCR0002 version 4.0 and BCR0005 version 1.0 methodologies applied, the sectoral scope, the complexity of the information, data and parameters used by the project to report its results. In this sense, the schedule and activities carried out are detailed below:

12/1/2023 - Start of field visit.
The audit team started the field visit with an opening meeting to establish the objectives and scope of the audit. This meeting included the presentation of the audit team, a review of the schedule and planned activities, and confirmation of the logistics and resources necessary for the execution of the visit.

12/1/2023 - Opening meeting and start of the field visit
The opening meeting was held with the project representatives, where the objectives of the audit were discussed, doubts were clarified and the procedures to be followed during the visit were defined. This meeting was essential to align expectations and ensure the cooperation of all parties involved.

12/2/2023 to 12/8/2023 - Field visit: Interview of owners and others involved in the project
During this week, interviews were conducted with landowners, project partners, space was sought for a meeting with representatives of the Corporación Autónoma Regional de la Orinoquia, which could not take place, and other key stakeholders. In this sense, the interviews were focused on:

- *Activities Implementation: Verification of the implementation of project, conservation and monitoring activities as reported in the project documentation, specifically; project description document and monitoring report.*
- *Monitoring and data reporting: Evaluation of the methods and procedures used for monitoring and reporting data on GHG emissions and other environmental variables.*
- *Governance and community participation: Analysis of the governance structure of the project and the participation of local communities in project activities.*
- *Regulatory compliance: Verification of compliance with local and national environmental regulations, such as Resolution 1447 of 2018.*
- *Social and environmental benefits: Assessment of social and environmental benefits generated by the project, including perception and acceptance by local communities.*

12/9/2023 - Project appraisal and closing of field visit
The first audit team held a debriefing and closing meeting with the project representatives. During this meeting, the preliminary findings of the field visit were presented, possible areas for improvement were discussed and the next steps of the validation and verification process were clarified. This session was fundamental to ensure transparency and continued collaboration between all parties involved, for the next stages of the resolution of the findings that were sent after this phase of the field visit.

La Primavera, and then to Cumaribo. In these locations, interviews, on-site visits, and verification of the establishment of plots for determining the biomass emission factor in natural savannas were conducted. Upon completion, the team returned to Yopal, Casanare, where additional interviews were conducted with the project holder's technical team and other relevant actors (section 4.3).

Table 6. On site visit review

Stakeholder type	Stakeholders
Cataruben Fundation Staff	*Date: 1/12/2023 and 8/12/2023* *Place: offices of the Cataruben Foundation* *Activity: Audit Opening and Audit Closing.* *Responsible party: Diana Rauchwerger and Helena Villanueva.* *In this meeting, the following points were addressed:* • *Opening of the meeting and introduction of the team* • *Confirmation of the objective and scope* • *Introduction of VERSA EXPERTOS EN CERTIFICACIÓN S.A.S.* • *General presentation of the process* • *Presentation of the audit plan for GHG validation and verification (FOR-109)* • *Explanation of findings (CARs, CLs, FARs).* • *Ratification by the audit team of the confidentiality of the information* • *Clarification regarding the possibility of unexpected additional processes occurring (i.e., post-registration changes).* • *Methods for collecting information and evidence, as well as communication during the validation/verification.*
Cataruben Fundation Staff	*Date: 8/12/2023* *Place: offices of the Cataruben Foundation* *Activity: Audit Closing.* *Responsible party: Diana Rauchwerger and Helena Villanueva.* *In this meeting, the following points were addressed:* • *Acknowledgments* • *Summary of project strengths* • *Socialization of findings (FOR-101 GHG Validation and Verification Findings)* • *Terms for closing non-conformance findings* • *Explanation of the validation and verification process* • *Clarification regarding the possibility of new findings during the technical review stages* • *Information reviewed during the process* • *Information on the procedures and existing communication channels to address complaints, appeals, and other client feedback*
Local communities	***On-site Visit*** *Date: 3/12/2023 and 5/12/2023* *Places: El Boral Farm (Property owners who are part of the project 14 people) and Waikiki Farm (Property owners who are part of the project 12 people).* *Responsible party: Diana Rauchwerger and Helena Villanueva.* *In this meeting, the following points were addressed:*

Stakeholder type	Stakeholders
	• *Agreements between the owner and the owners* • *Identification of causes and agents of deforestation and land-use change in natural savannahs.* • *Project Activities* • *Training* • *Safeguards* • *Environmental and Socioeconomic Aspect.* • *Stakeholders engagement* Implementation of mitigation activities, monitoring and reporting of GHG emissions data, field coordination, conflict management and resolution, conservation strategies, reduction of deforestation and degradation, quality control procedures, evaluation of the effectiveness of implemented activities, integration of new technologies for monitoring, and risk assessment and mitigation measures. ***Virtual Interviews*** *Date: 12/12/2023* *Place: Virtual, Meet Google (33 interviewees).* *In this meeting, the following points were addressed:* • *Agreements between the owner and the owners* • *Identification of causes and agents of deforestation and land-use change in natural savannahs.* • *Project Activities* • *Training* • *Safeguards* • *Environmental and Socioeconomic Aspect.* • *Stakeholders' engagement* Implementation of mitigation activities, monitoring and reporting of GHG emissions data, field coordination, conflict management and resolution, conservation strategies, reduction of deforestation and degradation, quality control procedures, evaluation of the effectiveness of implemented activities, integration of new technologies for monitoring, and risk assessment and mitigation measures.
CORMACARENA	*Date: 12/12/2023* *Place: Virtual, Meet Google (1 interviewed).* *The meeting was held virtually with Sara Rodriguez. The interview was conducted following the guidelines established by VERSA in PRO-114 for remote validations and verifications. The purpose was to consult on various aspects:*

Stakeholder type	Stakeholders
	• *How they learned about the ORINOCO2 project* • *Their relationship with the foundation responsible for developing the CATARUBEN project* • *Their knowledge of the ORINOCO2 project* • *Communication channels with those responsible for the GHG project* • *Whether they have received complaints about the GHG project* • *Information received from the project manager* • *Requests received from companies of the Cataruben Foundation* • *Attempts to establish agreements for joint activities* • *Commitments made regarding the mitigation project and whether the Cataruben Foundation is upholding them* *The interviewee mentioned that she learned about the ORINOCO2 project through meetings and introductory letters. They have maintained a dialogue with the Cataruben Foundation and are aware that the project aims to promote forest conservation and sustainable development in the region. However, she has not received requests to participate in activities, nor have they attempted to establish collaboration agreements for joint projects.*
Ecopetrol	*Date: 13/12/2023* *Place: Virtual, Meet Google (3 interviewees).* *In this meeting, the following points were addressed:* *Voluntary allocation of resources (not related to 1%), social and environmental responsibility initiatives, collaboration and types of contributions to the project, impact of project activities on Ecopetrol's operations, integration of project activities with corporate voluntary sustainability strategies, evaluation of compliance with environmental and social standards.*

Source: Present validation and verification report

Table 7. Field visit schedule

Date	***Activity / Location***	***Evidenced Topics***
1/12/2023	***Travel**: From Yopal, Casanare to Puerto Gaitán, Meta*	*N/A*
2/12/2023	***Travel**: From Puerto Gaitán to San Teodoro, La Primavera, Vichada. **Property**: El Boral*	***Regional Context**: Economic conditions, environmental context, road access, agricultural frontier expansion /7/343/344/346/.*

3/12/2023	***Meeting**: On-site with property owners of 18 properties*	*See Section 4.3*
3/12/2023	***Property Tour**: Validate spatial boundaries and project activity implementation*	***Activities Observed**: Forest and non-transformed savanna areas, firebreaks, scattered tree planting, live fences, eco-efficient stoves, small dendro-energetic plantations, biodiversity monitoring /266/267/268/269/270/315/*
4/12/2023	***Travel**: From San Teodoro to Village 14, Cumaribo, Vichada. **Property**: Waikiki*	***Regional Context**: Economic conditions, environmental context, road access, agricultural frontier expansion /7/343/344/346/.*
5/12/2023	***Meeting**: On-site with property owners of 22 properties*	*See Section 4.3*
5/12/2023	***Property Tour**: Validate spatial boundaries and project activity implementation*	***Activities Observed**: Forest and savanna areas, firebreaks, scattered tree planting, live fences, biodiversity monitoring participation by community /266/267/268/269/270/315/*
5/12/2023	***Travel**: From Waikiki property to Muzolandia property*	***Regional Context**: Economic conditions, environmental context, road access, agricultural frontier expansion /7/343/344/346/.*
6/12/2023	***Property Tour**: Validate spatial boundaries and project activity implementation*	***Activities Observed**: Savanna and forest areas, firebreaks, scattered tree planting, live fences, pasture rotation, livestock water systems, community biodiversity monitoring /266/267/268/269/270/315/*
6/12/2023	***Travel**: From Waikiki property to El Capricho property*	***Regional Context**: Economic conditions, environmental context, road access, agricultural frontier expansion /7/343/344/346/.*
6/12/2023	***Tour and Verification**: El Capricho property*	***Activities Observed**: Forest and savanna areas, firebreaks, scattered tree planting, live fences, eco-efficient stoves, dendro-energetic plantations, biodiversity monitoring participation /x/.*
6/12/2023	***Biomass Plot Review**: Verify establishment of 5 biomass sampling plots for natural savanna biomass factor*	***Procedure Verification**: Plot setup, sampling, coding for lab verification /241/242/247/248/.* ***Note**: Herbaceous biomass cut and sent to laboratory for emission factor calculation, no re-sampling required or possible. No re-sampling of the plots was carried out because the herbaceous biomass is cut to send the respective samples to*

		the laboratory who determines the % of biomass of the sample, which was then used to define the total biomass emission factor *In this sense, evidence of cluster establishment was evidenced according to the procedure described/241/242/, and the team establishing the sampling plots was asked to perform a build-up from scratch to validate the procedure. The codes of the samples taken to be sent to the laboratory/x were verified, and then compared with the results obtained from the laboratory/248/.*
7/12/2024	***Return Travel**: From field site back to Yopal*	***Regional Context**: Economic conditions, environmental context, road access, agricultural frontier expansion /7/343/344/346/.*
8/12/2024	***Meeting**: Yopal, Casanare. Technical team of project design, implementation, and monitoring*	***Discussion Topics**: Review of criteria compliance, and confirmations that no relevant information was omitted.*

Annex 6 shows some images taken during the site visit

4.5 Clarification, corrective and forward actions request

The validation and verification process for the ORINOCO2 project included the identification and resolution of thirty-eight (38) findings that required clarification, corrective actions and future recommendations. These findings were addressed to ensure compliance with the requirements of the BCR Standard version 3.4, methodologies BCR0002 version 4.0, BCR0005 version 1.0 and validation and verification manual version 2.4.

Regarding the contribution of the project to the sustainable development goals, Non-Conformity 26 was found, regarding the lack of clarity of the description of the activities and the SDG Tool. However, this finding was solved in its entirety.

Regarding the consultation of stakeholders, Non-Conformities 2, 4 and 25 were found, referring to the lack of knowledge of the stakeholders and/or participants of the project. However, this finding was solved in its entirety.

With regard to compliance with national legislation, Non-Conformity 18 was found, regarding the lack of explanation of compliance with environmental and social safeguards. However, this finding was solved in its entirety.

In this order of ideas, the process of resolution of findings identified by the validation and verification team is described below;

4.5.1 Clarification requests (CLs)

During the validation and verification process, a total of 2 clarification requests (CLs) were issued. These requests addressed issues related to clarity in data presentation and methodological procedures. The main points of clarification included:

- *Data Accuracy: Clarification on the accuracy and sources of data used in the baseline and mitigation calculations.*
- *Methodology Applied: Detailed explanation of the application of the methodology and tools used in the project.*
- *Additionality Criteria: Justification and additional documentation on the additionality of project activities.*

Of these requests, 1 was successfully closed after receiving the required information in the first and second round of findings, and 1 was left as a future recommendation (FAR) for subsequent project reviews for further verification.

4.5.2 Corrective actions request (CARs)

If applicable, briefly describe the issues and the total number of findings that correspond to corrective actions requeA total of 31 corrective action requests (CARs) were identified during the audit. These requests focused on correcting inconsistencies or deviations in project implementation in accordance with the established validation and verification criteria. The main issues addressed included:

- *Methodological Compliance: Necessary adjustments to align project activities with BCR methodology and other applicable regulations.*
- *Monitoring and Reporting Data: Corrections to monitoring and reporting procedures to ensure completeness and accuracy of GHG emissions data.*
- *Carbon Rights Ownership: Documentation and verification of project carbon rights ownership.*

Of the 31 CARs issued, 30 were successfully closed after implementation of the necessary corrective actions, and 1 was also flagged as a future recommendation (FAR) for continued follow-up.

4.5.3 Forward action request (FARs)

Two requests for future recommendations (FARs) were identified during the validation and verification process, each from a CAR and a CL. These recommendations address findings that require continued attention in future project verifications. Key issues included:

- *Monitoring Improvements: Suggestions for improving monitoring procedures and data collection in future phases of the project.*
- *Information Management: Recommendations to optimize the management and storage of information to facilitate future audits and verifications, as well as contractual compliance to ensure the permanence of the project.*

In this order of ideas, during the validation and verification process of the ORINOCO2 project, a total of 38 requests were issued and managed, divided into 7 CLs, 31 CARs, of which 2 of them were managed as FARs. Therefore, the requests were effectively addressed, ensuring that the project complies with the quality standards and GHG mitigation criteria established by the BCR Standard version 3.4 and these results can be consulted in Annex 2.

5 Validation findings

VERSA's audit team identified certain aspects that the proponent of the GHG project solved in its entirety in 2 ROUNDS of response by the auditor and its description is as follows:

CAR: Corrective Action Request

The VERSA team identified 28 Corrective Action Requests (CARs), related to non-compliance with the requirements of the standards and the Biocarbon Standar program. The CARs identified are derived from:

- *Material misstatement: material errors affecting the decision of the intended user of the GHG inventory or project (ISO 14064-3:2019).*
- *Situations that influenced the ability of the project or inventory to achieve actual, measurable and verifiable GHG emissions quantification, reduction and/or removal.*
- *Any situation of risk that GHG emissions, reductions and/or removals cannot be monitored and/or calculated.*

The list of corrective action requirements identified by VERSA's audit team and their response by the project manager can be consulted in greater detail in Annex 2 of this document, respectively.

CL: Clarification Request

After performing this evaluation, four clarification requests (CLs) were identified, which were resolved in their entirety, due to the responses provided by the Project proponent. These were comprehensive and duly supported with evidence to address the CLs raised. The relevant adjustments were included in both the Project Document (PD), Monitoring Report (MR), evidence and relevant annexes. The list of clarification requests identified and their response by the project manager can be found in more detail in Annex 2.

FAR: Future Action Request

During the stage carried out by the audit team for this validation and retroactive verification process, a total of 28 corrective action requests (CAR), 4 requests for clarification (CL) and 0 requests for future action (FAR) were identified, all of which were satisfactorily closed.

5.1 Project description

The project description was assessed in accordance with the applicable validation requirements established by the BCR standard. To conduct this assessment, multiple project criteria were considered.

- ***Carbon ownership and rights**: The information on ownership and agreements between the project holder and property owners /249/ corresponds to the 147 properties included in the project and meets the criteria established in BCR Section 13.*

- ***Project Boundary**: The reviewed and cross-checked information /7/14/16/26/35/39/84/105/114/122/250/176/ related to the spatial and temporal project boundaries, sources, reservoirs, and GHGs meets the criteria established in BCR Sections 11.2, 11.3, 11.4, and 11.5; BCR 0005 Section 7; and BCR 0002 Sections 8 and 9.*

- ***Baseline**: The establishment of the baseline scenario for each project activity (BCR0005 and BCR0002) /7/ 151/ 339/ 340/ 341/ 342/ 343/ 344/ 545/ 346/ 347/ 348/ 349/ 350/351/ meets the criteria established in BCR Section 12.2, BCR 0005 Section 8, BCR0002 Section 10, and the guidelines in the BCR Baseline and Additionality Guidelines Section 7, including the use of the "CDM-UNFCC AR-TOOL-02" tool.*

- ***Additionality**: The demonstration of additionality for each project activity (BCR0005 and BCR0002) /7/ complies with the criteria established in BCR Section 11.6, BCR 0005 Section 8, BCR0002 Section 10, the guidelines in the BCR Baseline and Additionality Guidelines Section 7, and the use of the "CDM-UNFCC AR-TOOL-02" tool /334/327/328/336/.*

- ***Project Activities**: The design of project activities, based on an analysis of deforestation causes and agents and land-use changes in natural savannas /7/ and community participation /7/295/ and their implementation during the monitoring period /261/262/263/264/265/266/267/268/269/270/271/272/273/274/314/315/316/317 meets the requirements established in BCR 0005 Sections 4, 9, and 10, as well as the criteria in BCR 0002 Sections 5, 11, and 12.*

- ***GHG Emissions Reductions Calculations**: The emissions calculations /7/14/238/ include detailed formulas, methods, and parameters established in BCR Section 11*

and BCR 0002 Section 13. Emission factors were sourced from official sources /239/ or relevant scientific studies in the region /240/. The above-ground biomass emission factor was established using sampling plots, following national forest inventory methodologies in Colombia /241/242/244/. Activity data provided /15/103/ allowed evaluation of compliance with criteria established in each applied methodology (BCR 0005 and BCR 0002).

- ***Social and Environmental Safeguards, and REDD+ Safeguards**: Reviewed and collected evidence /7/14/253/254/255/275/ validates compliance with safeguards in line with BCR Standard Sections 15 and 18.*

- ***Risk, Leakage, and Permanence Risk**: The risk analysis, as well as management, prevention, and mitigation actions justified with the information and evidence presented /7/14/30/132/260/293/305/358/, validate compliance with the criteria established in BCR Section 12.3, Section 14, the BCR Tool Sustainable Development Safeguards, and the BCR Tool Permanence and Risk Management.*

- ***Co-benefits**: The reviewed information /7/14/314/315/316/317/290/ and evidence found during site visits validate and verify that activities were established with relevant indicators to certify co-benefits in the wax palm category, in compliance with BCR Standard Section 19.2.2.*

- ***SDGs**: The BCR SDG Tool was correctly used by the project holder to validate and verify its contribution to SDGs 6, 13, and 15 /7/14/309/310/311/313/, in compliance with BCR Standard Section 17.*

- ***Avoid Double Counting**: The proper use of the BCR Avoiding Double Counting Tool was validated /7/14/117/172/173/174/175/.*

- ***Monitoring Plan**: The evaluation of the Monitoring Plan established for the project /7/238/253/254/260/275/309/358/ demonstrates compliance with BCR requirements.*

- ***Quality Control and Management**: The project has an Operational Plan and a robust management system that allows periodic quality control of registered data. This information was verified through evidence /318/319/320/321/322/323/324/325/326/.*

- ***Specific BCR Program Tools**: The correct use of the tools was verified /7/:*
    - *BCR Guidelines: Baseline and Additionality V 1.3, March 1, 2024*
    - *BCR Tool: Permanence and Risk Management V1.1, March 19, 2024*
    - *BCR Tool: Sustainable Development Safeguards*
    - *BCR Tool: Sustainable Development Goals V1.0, July 13, 2023*
    - *BCR Tool: Compliance with REDD+ Safeguards Version 1*

- *BCR Tool: Avoidance of Double Counting V2.0, February 7, 2024*
- *BCR Tool: Monitoring, Reporting, and Verification V1.0, February 13, 2023*

In addition, the general description of the orinoco2 describe the project objectives and activities, and Include the following in the description:

(a) ***A brief description of the existing scenario prior to the implementation of the project activities:*** *"The project is located in the region known as the Colombian high plains. This area is considered one of the country's main agricultural regions. However, this scenario, which drives Colombia's agricultural development, also represents a challenge in generating low-carbon and socially and environmentally positive production/conservation models. The main causes of deforestation, forest degradation, and land-use change in the region are the expansion of the agricultural frontier and fires of natural or anthropogenic origin. The main agents are communities and natural events"*

(b) ***Details of how the project activities will result in GHG emission reductions/removals:*** *"In this sense, ORINOCO2 implements forest conservation activities and promotes the sustainable use of savannas. Based on this, the project's activities were designed to reduce pressure on forests through management actions that lower the risks of forest fires, as well as sustainable production actions in the savannas that prevent land-use changes. Additionally, economic benefits derived from the sale of carbon certificates are provided as incentives to the project participants, resources that serve for conservation and activity execution, resulting in emission reductions in the project areas, thus closing the project's sustainability cycle"*

(c) ***The special category(ies) to which the project is proposed to apply, with a brief description of the criteria by which the project demonstrates compliance.*** *"Given the nature of the project's activities focused on conserving areas of biological importance such as riparian forests and natural savannas, as well as the inclusion of multiple private property owners, the project includes environmental and social co-benefits aligned with the Wax Palm category of the BCR (BioCarbon Registry) standard"*

(d) ***A brief summary of how the project activities will contribute to the achievement of the Sustainable Development Goals.*** *" the project's activities contribute to Sustainable Development Goals (SDGs) 6 Clean Water and Sanitation,*

13 Climate Action, and 15 Life on Land, this is demonstrated by using the SDG tool Developed by BCR, ensuring that the project activities contribute to those SDGs ".

(e) *An average estimate of emission reductions/removals attributable to the project activities.*

- ***REDD+ Activities***

Total = 803.164 tCO2e
Annual average = 86,829 tCO2e/year

- ***Activities that avoid the transformation of natural savannas:***

Total = 668.414 tCO2e
Annual average = 72,261 tCO2e/year

Which the review of the Project Description Document (PDD) version 2.4. It is confirmed that the information is true and comes correctly from the project document and its annexes, thus the field audit and the cross-review of the information confirms this conclusion, therefore the project description is well founded, supported and meets the necessary requirements

5.2 Project type and eligibility

To assess whether the information submitted by the GHG project holder complies with the conditions set out in BCR Standard version 3.4 and in the validation and verification manual version 2.4,

First, a thorough review of the documentation provided, including the Project Description Document (PDD) and the Monitoring Report, was conducted/7/14/. This review focused on verifying that the project proponent has clearly identified the scope, project type, project activities and project scale, in accordance with the requirements of BCR Standard.

Regarding the project activities, it was assessed that the information provided /7/14/260//of the specific activities implemented met the criteria established in BCR 0005 section 10 and BCR 0002 section 12.

Finally, the assessment included interviews with project proponent and other stakeholders to corroborate the documented information and ensure that all project activities and categorizations are aligned with the criteria of the BCR Standard version 3.4. In conclusion, the assessment confirmed that the ORINOCO2 project complies with the established conditions, adequately identifying its scope, type, activities and scale, thus ensuring its eligibility and compliance with validation and verification requirements. Table 3. Project type and eligibility shows the detailed de assessment carried out.

Table 3. Project type and eligibility

Eligibility criteria	***Evaluation by validation body***
Scope of the BCR Standard	a. *Documentation review 7/14/238/327/328 / verified that the following greenhouse are quantified in the project emission calculations: Carbon Dioxide (CO2), Methane (CH4) and Nitrous Oxide (N2O). In compliance with BCR standard Scope.* b. *The projects use a methodology developed or approved by BioCarbon, applicable to GHG removal activities and REDD+ activities (AFOLU Sector). The project uses BCR 0005 and BCR 0002 in its development and quantification of GHG emission reduction/7/14//26/238/103/. In compliance with BCR standard Scope.* c. *Quantifiable GHG emission reductions and/or removals generated through implementation of GHG removal activities and/or REDD+ activities (AFOLU Sector).* *The project quantifies the emissions reduction trough implementations of activities that reduces the land use in natural savanna, Activities that reduce deforestation, and Activities that reduces Forest degradation/7/14//26/238/103/260/.*
Project type	***Activities in the AFOLU sector, REDD+ and different from REDD+:*** *According to the documentary review /7/14/260/ and corroborated in site visits and interviews with landowners and other relevant actors (section4.3 and 4.4 of this document) The project is in the category of projects in the AFOLU sector (Agriculture, Forestry and Other Land Uses). According to the BCR standard.* *The implementation of the project includes activities aimed at reducing emissions due to land-use change, as well as promoting the conservation and sustainable management of natural savannahs. Likewise, was verified that the project quantifies the emissions reduction trough implementations of activities that reduces deforestation, and Activities that reduces Forest degradation /7/14/260/*
Project activity(es)	*It was verified that the Project developer implements activities that reduce land use change in natural savannahs, as well as activities that reduce deforestation and forest degradation/7/14/260/. The specific interventions for each of the activities were designed based on a detailed analysis of causes and agents for each type of activity in compliance with the criteria established in BCR 0005 section 10 and BCR 0002 section 12.*

Eligibility criteria	Evaluation by validation body
	Likewise, the interventions include the participation of the landowners in their design and implementation/249/260/275/295/. *in site visits and interviews with landowners and other relevant actors (section4.3 and 4.4 of this document) this information was verified.*
Project scale (if applicable)	N/A. It does not apply to this type of projects, in accordance with criterion 10.3 "Project scale" of the standard BCR V3.4

Source: Present validation and verification report

o assess whether the information submitted by the GHG project holder complies with the conditions set out in BCR Standard version 3.4 and in the validation and verification manual version 2.4, several detailed and documented steps were carried out.

First, a thorough review of the documentation provided, including the Project Description Document (PDD) and the Monitoring Report, was conducted. This review focused on verifying that the project owner has clearly identified the scope, project type, project activities and project scale, in accordance with the requirements of BCR Standard version 3.4.

Regarding project activities, it was assessed that the PDD and the Monitoring Report describe in detail the specific actions implemented, such as restoration of degraded areas, protection of existing forests, and training and participation of local communities in sustainable land management practices. These activities were compared to the requirements of the BCR Standard to ensure compliance.

Finally, the assessment included interviews with project Source: Present validation and verification report
managers and other stakeholders to corroborate the documented information and ensure that all project activities and categorizations are aligned with the criteria of the BCR Standard version 3.4. In conclusion, the steps carried out for the assessment confirmed that the ORINOCO2 project complies with the established conditions, adequately identifying its scope, type, activities and scale, thus ensuring its eligibility and compliance with validation and verification requirement

5.3 Grouped project (if applicable)

The project orinoco2 is not a grouped project.

5.4 Other GHG program

According to the information provided by the project proponent, the project does not originate from another carbon program nor has it been rejected by any other program. None

of the areas included in the project have been part of previous climate change mitigation initiatives. To validate and verify this claim, a thorough assessment was conducted to ensure compliance with the criteria established by the BCR standard.

The evaluation was carried out in several stages: first, through a documentary review of the information provided by the project proponent, /7/14/79/80/81/82/83. Second, during interviews conducted with the technical team and property owners involved in the project (see Section 4.3 Interviews), it was confirmed that the project has not been part of other GHG programs and that none of the Orinoco2 areas have participated in prior mitigation initiatives. Third, a cross-check was performed between the documentary information and interview data to confirm compliance with the criteria outlined in Section 24 of the BCR standard.

To further corroborate this information, a comprehensive review was conducted using external information sources, such as RENARE and other carbon standard platforms (COLCX, BIOCARBON STANDARD Puro Earth, Global Carbon Council, Cercarbono, Plan Vivo, Climate Action Reserve, and VERRA). Table 4 Projects in the region presents a summary of the projects developed in Meta and Vichada departments that was found in the registry platforms, showing that Orinoco2 is not registered on those platforms.

Table 4 Projects in the region

standar	Id	Name	Sector	Location	Estate
Biocarbon Standar	Bcr-co-139-14-001	Proyecto de carbono forestal vichada alianza fiduciaria s.a.	Afolu	Vichada	Listing
Biocarbon Standar	Bcr-co-635-14-004	Cultivo2 project 1	Afolu	Vichada, meta	Registered
Biocarbon Standar	Bcr-co-co-14-003	Proyecto forestal alcaraván orinoquía	Afolu	Vichada, meta	Unregistered
Biocarbon Standar	Bcr-co-co-14-004	Redd+ awia tuparro +9	Afolu	Vichada	Listing
Biocarbon Standar	Bcr-co-259-14-002	El tigre redd+	Afolu	Meta	Registered
Biocarbon Standar	Bcr-co-261-14-001	Project for forestry restoration in productive and biological corridors in the eastern plains of colombia	Afolu	Vichada	Registered
Biocarbon Standar	Pcr-co-164-142-001	Proyecto forestal mavalle en plantaciones de caucho natural	Afolu	Meta	Registered
Biocarbon Standar	Pcr-co-630-142-001	Proyecto forestal fundación obra social redentorista señor de los milagros	Afolu	Vichada	Registered
Biocarbon Standar	Pcr-co-635-141-001	Co2bio	Afolu	Vichada	Registered

Biocarbon Standar	Pcr-co-635-141-002	Co2bio proyecto 2	Afolu	Vichada, meta	Registered
Biocarbon Standar	Pcr-co-697-142-001	Proyecto de carbono forestal organización la primavera	Afolu	Vichada	Registered
Biocarbon Standar	Pcr-co-bfx-14-001	Proyecto de conservación palameku kuwei redd+	Afolu	Vichada	Registered
Biocarbon Standar	Pcr-co-bfx-14-004	Proyecto de conservación kaliawiri redd+	Afolu	Vichada	Registered
Biocarbon Standar	Pcr-co-co-14-001	Proyecto forestal co2cero meta09	Afolu	Meta	Registered
Biocarbon Standar	Pcr-co-eco-14-001	Proyecto forestal co2cero caucho pl uno	Afolu	Meta	retired
Biocarbon Standar	Pcr-co-eco-14-002	Proyecto forestal co2cero caucho el viento	Afolu	Vichada, meta	retired
Biocarbon Standar	Pcr-co-eco-14-003	Proyecto forestal co2cero reforestadores vichada-meta	Afolu	Vichada, meta	retired
Colcx	Colcx-14-0010	Proyecto forestal núcleo vichada - meta co2cero		Vichada, meta	Full Registration
Colcx	Colcx-14-0011	Proyecto forestal co2cero caucho pl uno		Meta	Full Registration
Colcx	Colcx-14-0014	Proyecto forestal co2cero casanare		Meta	Full Registration
Colcx	Colcx-14-0017	Proyecto forestal co2cero caucho el viento		Vichada, meta	Full Registration
Colcx	Colcx-14-0024	Proyecto forestal co2cero		Meta	Full Registration
Cercarbono	7	Reforestación comercial en meta	Afolu	Meta	Certificate
Cercarbono	8	Proyecto forestal de mitigación de cambio climático "forestal de la orinoquía"	Afolu	Vichada	Certificate
Cercarbono	14	Recuperación de suelos degradados con el uso de incentivos financieros en el centro y oriente de colombia	Afolu	Vichada, meta	Certificate
Cercarbono	15	Bonos verdes colombia grupo custodiar s.a.	Afolu	Córdoba	Certificate
Cercarbono	60	Proyecto banakale - isimali redd+	Afolu	Vichada	Certificate
Cercarbono	180	Carbono rancho victoria	Afolu	Meta	Certificate

Verra	1530	Proyecto agrupado de iniciativas de plantaciones forestales comerciales en el departamento del vichada	Afolu	Vichada	Registered
Verra	1566	Proyecto redd+ resguardo indígena unificado selva de mataven (riu sm)	Afolu	Vichada	Registered
Verra	2512	Forestación de pastizales degradados en vichada, colombia	Afolu	Vichada	Verification approval requested
Verra	2532	Proyecto de carbón cumare	Afolu	Meta	Registered
Verra	2084	Proyecto de conservación redd+ sur del meta bosques de paz, sustento de vida	Afolu	Meta	Registered
Verra	3450	Agroforestería sostenible cacao meta, colombia	Afolu	Meta	Under validation

Source: Present validation and verification report

Subsequently, a spatial analysis (intersection) was conducted to assess any potential overlaps between the Orinoco2 project areas and other AFOLU projects registered in carbon standards. This analysis confirmed that there are currently no overlaps between the Orinoco2 project areas and other AFOLU sector initiatives areas. See Figure 1. Overlapping analysis.

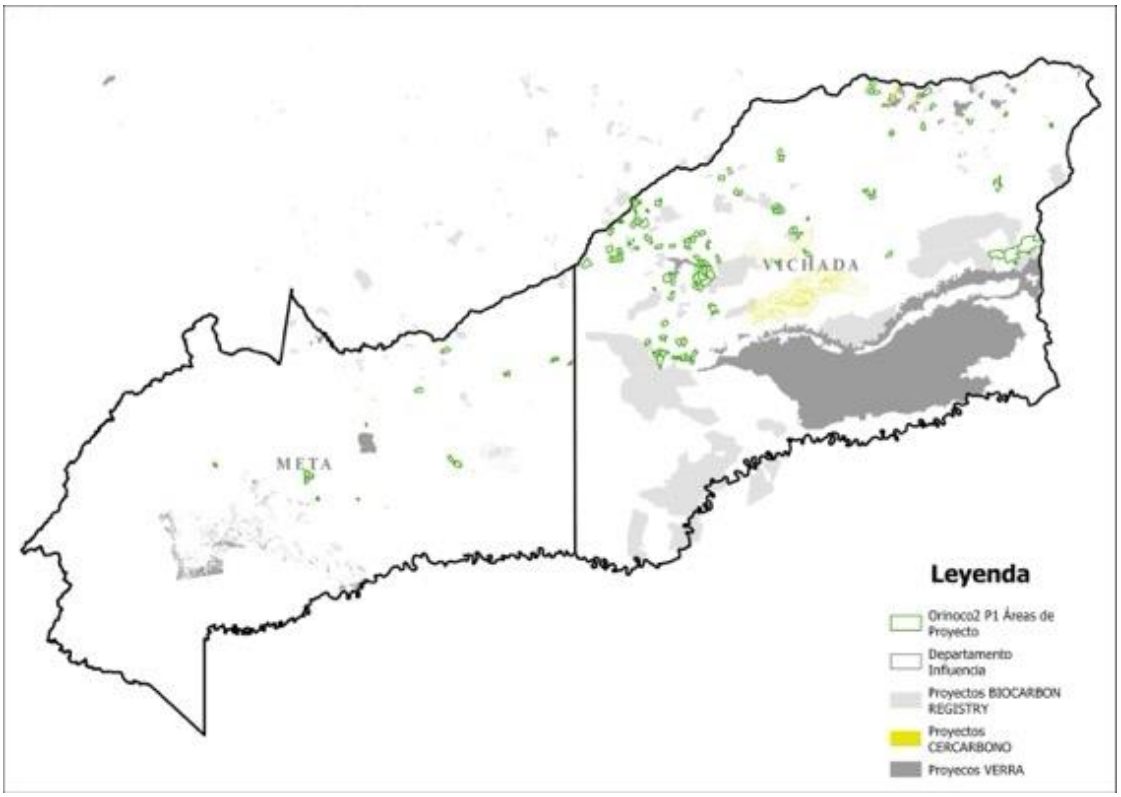


Figure 1. Overlapping analysis

The evaluation established that the Orinoco2 project does not come from other carbon programs and areas do not overlap with AFOLU projects registered on other platforms, thereby meeting the related requirement of BCR standard.

5.5 Quantification of GHG emission reductions and removals

To evaluate the quantification of GHG emission reductions and removals of the ORINOCO2 project, we followed the procedures established in accordance with the applicable requirements of the methodology used and the validation and verification manual version 2.4.

First, a thorough review of the Project Description Document (PDD) and the Monitoring Report was conducted to understand the methods and data used in the quantification of emission reductions. This review included verification of the mathematical formulas applied, the accuracy of the activity data, emission factors, and the sources of information used to ensure their validity and reliability.

Next, the applied methodology was examined, ensuring that it was aligned with the norms established by the BCR Standard version 3.4. This involved assessing the consistency and

transparency in the application of quantification methods, as well as the adequacy of the tools and models used to estimate GHG reductions. It was verified that the methodology was appropriate for the type of project and its specific context.

Subsequently, interviews were conducted with project managers and specialized technicians to clarify technical aspects of the quantification and resolve any ambiguities in the reported data. These interviews provided additional information and validated the understanding of the processes and procedures implemented in the project.

An assessment of the uncertainty associated with the emission reduction estimates was also performed as required by the BCR Standard version 3.4. This included the analysis of measurement error margins and the application of conservative approaches to ensure that reported reductions were not overestimated. The assumptions and emission factors used were reviewed and compared to the national reference level.

In addition, compliance with the monitoring plan described in the PDD was verified, ensuring that the monitoring activities were carried out as planned and that the data collected were representative and accurate. Field records and periodic monitoring reports were reviewed to confirm the consistency and accuracy of the reported emissions data.

Finally, the reported emission reductions were compared to the baseline established for the project. This step served to ensure that the GHG reductions were additional and directly attributable to project activities, meeting the additionality criteria established by the standard in its version 3.4.

5.5.1 Start date and quantification period

The ORINOCO2 project has an official start date set as October 1, 2018. This date marks the beginning of group activities aimed at generating emission reductions in the project areas. During the validation process, the evidence provided by the project holder was reviewed, including letters of intent sent by participating landowners during 2018, demonstrating their commitment to reducing deforestation, forest degradation, and land use change in natural savannas. This documentation is found in anexx " 2.1. PROPERTY DOCUMENTS" of the PDD and was reviewed to ensure consistency and adequate support for the declared start date.

The project areas correspond to qualified land within private properties, where landowners act as the primary agents of both transformation and conservation, protecting forests against wildfires. Thus, the intention of the landowners to preserve these areas and integrate them into a mitigation project was considered an essential step to generate the change envisioned by the project. This commitment was verified during the audit process through the review of the annex 6.5.1.2.2 "Property Implementation Plans" and supported planning records.

The start date of October 1, 2018, was established as the moment when participants began structuring property implementation plans, focusing on reducing wildfire risks, conserving natural forest, and implementing sustainable productive practices to conserve the ecosystems. During the validation, meeting records, service contracts, and related documentation were reviewed, confirming the preparation and initial execution of practical activities following the letters of intent. This process led to the conclusion that the declared start date accurately reflects the beginning of mitigation actions within the project.

Upon reviewing the documents and records presented, it was determined that the evidence provides a solid justification and complies with the criteria set forth in the BCR standard and the BCR0002 and BCR0005 methodologies. The specific mitigation actions that began after structuring the implementation plans and letters of intent ensure that the activity start requirements, established in the Validation and Verification Manual (VVM), are met.

Next, the expected quantification period was evaluated, which runs from October 1, 2018 to December 31, 2022. This period was corroborated by reviewing monitoring records, ensuring that GHG emissions and removals data were collected continuously and systematically during this time interval.

Additionally, project operational time was examined, which is defined as the period during which the project is operational and generating GHG emission reductions. The useful life of the project was also evaluated, which refers to the total period during which the project is expected to continue to generate environmental benefits and GHG reductions. The ORINOCO2 + project has a projected lifespan of 40 years (2018 to 2058), aligned with long-term sustainability objectives and requirements of the BCR standard for Afolu and REDD+ Projects.

Finally, these aspects were confirmed through interviews with project managers and other key stakeholders, who provided additional information to validate the accuracy of the data presented.

The audit has validated that the project has an effective start date of 1 October 2018, at which point group activities began to generate emission reductions in the project areas. This aspect is supported by the letters of intent sent by the project participants during 2018, and Property Implementation Plans. Demonstrating a clear and documented commitment to carry out the necessary actions to mitigate the environmental impact on the property's participants in the project.

5.5.2 Application of the selected methodology and tools

5.5.2.1 Title and Reference

The ORINOCO2 project used two different methodologies to address the different types of ecosystems present in the project area. For forests, the methodology "Quantification of

Greenhouse Gas Emission Reductions from REDD+ Projects" was applied, identified by reference BCR0002, version 4.0, For natural savannas, the methodology entitled "Quantification of Greenhouse Gas Emission Reductions in Natural Savannas", identified by reference BCR0005, version 1.0. Both methodologies and their associated tools were validated and confirmed as valid at the time of submission of the project registration.

In this regard, it was verified that the project holder applied both methodologies, including all the parameters and data referred to by each methodology. The assessment of the application of the methodologies was performed in accordance with the applicable validation requirements, ensuring that the guidelines and procedures established by the BCR standard version 3.4 were followed.

Additionally, the desk review included confirmation that the specific versions of the methodologies used were the most recent and valid at the date of submission of the project registration. Emission quantification procedures, reduction calculations and monitoring tools were reviewed to ensure that they were aligned with the methodological requirements of each of the methodologies.

Finally, the implementation of the specific tools and parameters indicated in both methodologies was evaluated. This assessment included the documentary review and cross-checking with the requirements established in each methodology (BCR0005 and BCR 0002) verification of activity data, emission factors and other parameters used in the GHG reduction calculations for both forests and natural savannas. It was ensured that all data and tools were applied correctly and in accordance with the corresponding methodological guidelines.

Table 5. Methodologies and Tools usage assessment

Methodology/ Tool	*Assessment*
Bcr0005 Quantification Of GHG Emissions Reduction Version 1.0	*This assessment included the documentary review /7/14/238/ and cross-checking with the requirements established BCR 0005 /327/. Confirm the use of the current version of the methodology.*
Quantification Of GHG Emission Reductions Redd+ Projects Bcr0002 Version 4.0	*This assessment included the documentary review /7/14/238/ and cross-checking with the requirements established BCR 0002 /328/. Confirm the use of the current version of the methodology.*
BCR Guidelines: Baseline and Additionality V 1.3 March 1, 2024	*The demonstration of additionality for each project activity (BCR0005 and BCR0002) /7/ complies with the criteria established in BCR Section 11.6, BCR 0005 Section 8, BCR0002 Section 10, the guidelines in the BCR Baseline and Additionality Guidelines Section 7, and the use of the "CDM-UNFCC AR-TOOL-02" tool /334/327/328/336/.The development of section 3.3 was reviewed.*

	and compared with the information and guidelines of the tool. The correct use by the project is validated and verified.
BCR Tool: Permanence and Risk Management V1.1 19 March 2024	*The information and evidence presented /7/14//358/, validate compliance BCR Tool Permanence and Risk ManagementThe development of section 7 was reviewed and compared with the information and guidelines of the tool. The correct use by the project is validated and verified.*
BCR Tool Sustainable Development Safeguards	*The information and evidence presented /7/14/253/254/358/, validate compliance with the criteria established in BCR Section 14, and the BCR Tool Sustainable Development Safeguards.The development of section 8 was reviewed and compared with the information and guidelines of the tool. The correct use by the project is validated and verified.*
BCR Tool: Sustainable Development Goals V 1.0 13 July 2023	*The BCR SDG Tool was correctly used by the project holder to validate and verify its contribution to SDGs 6, 13, and 15 /7/14/309/310/311/313/, in compliance with BCR Standard Section 17.* *The development of section 10 was reviewed and compared with the information and guidelines of the tool. The correct use by the project is validated and verified.*
BCR Tool To Demonstrate Compliance With The Redd+ Safeguards Version 1.	*Reviewed and collected evidence /7/14/253/254/255/275/ validates compliance with safeguards in line with BCR Standard 18. And correct usage of Tool To Demonstrate Compliance With The Redd+ Safeguards Version 1.* *The development of section 11 was reviewed and compared with the information and guidelines of the tool. The correct use by the project is validated and verified.*
BCR Tool: Avoidance of Double-Counting V2.0 7 February 2024	*The proper use of the BCR Avoiding Double Counting Tool was validated through the documentary review, /7/14/117/172/173/174/175/. Interviews with the technical team (see section 4.3) The development of section 15 was reviewed and compared with the information and guidelines of the tool. The correct use by the project is validated and verified.*
BCR Tool: Monitoring, Reporting and Verification V1.0 February 13, 2023	*The development of section 16 of the PDD was reviewed and compared with the information and guidelines of the tool. /7/238/253/254/260/275/309/358/ The correct use by the project is validated and verified.*

5.5.2.2 Applicability

To evaluate the compliance of the ORINOCO2 project with all the applicability conditions of the methodologies and tools used to quantify GHG emission reductions and removals, the following steps were carried out.

First, the applicability conditions of BCR0002 version 4.0 and BCR0005 Version 1.0 were identified. Second, the compliance with these conditions was compared against the justification and evidence provided by the project proponent in the PDD and its annexes. Finally, a conclusion was drawn for each applicability condition. In this sense, a conformity assessment was conducted for each applicability criterion. See Table 6 for further details.

Table 6. Compliance Assessment with project applicability conditions under BCR0002 version 4.0 and BCR0005 Version 1.0 methodologies.

Methodology	Applicability Condition	Conclusion – Cross Check
BCR0002 V4.0	The areas within the geographical boundaries of the project correspond to the forest category according to the national definition of forest for the Clean Development Mechanism (CDM) at the beginning of project activities and 10 years prior to the project start date.	**Complies**. An eligibility analysis was performed in accordance with BCR0002 V4.0 methodology numeral 8.1 /7/117/
BCR0002 V4.0	The causes of deforestation can include, among others: expansion of the agricultural frontier, mining, timber extraction and infrastructure expansion.	**Complies**. The main causes identified are the expansion of the agricultural frontier and fires /7/167/
BCR0002 V4.0	The Project Areas do not correspond to the category of wetlands	**Comple,** The limits of the project were analyzed and do not correspond to wetland areas according to the definition established in the methodology.
BCR0002 V4.0	The Project areas do not have organic soils	**Cumple,** the surveys carried out by the project owner and the surveys carried out by the IGAC were reviewed. and there are no organic soils in the project areas
BCR0002 V4.0	The causes of forest degradation identified may include: selective logging, firewood extraction, forest fires, grazing in forest areas, expansion of the agricultural frontier, and illicit crops.	**Complies**. Causes include the expansion of the agricultural frontier and fires/7/167/151/

Methodology	Applicability Condition	Conclusion – Cross Check
BCR0002 V4.0	No reduction in deforestation or degradation is expected to occur in the absence of the project.	**Complies**. The baseline and additionality analysis evidences the continuation of deforestation and degradation without the project /7/334/
BCR0002 V4.0	Carbon stocks in soil organic matter, litter and dead wood may decrease or remain stable in areas within the project boundaries.	**Complies**. Carbon stocks decrease according to the baseline scenario /7/
BCR0002 V4.0	The quantification of GHGs other than CO_2 should be included in the quantification caused by forest fires (if applicable) during the monitoring period.	**Complies**. The quantification of CH_4 and N_2O emissions caused by forest fires during monitoring is contemplated /7/312/
BCR0005 V1.0	The areas within the geographical limits of the project correspond to natural savannahs.	**Complies**. An analysis was conducted for the delimitation of eligible areas of the natural savanna ecosystem /7/27/37/
BCR0005 V1.0	Project activities avoid land use change in natural savannas.	**Complies**. Activities avoid land use change through sustainable practices and conservation /7/ 260/
BCR0005 V1.0	Project activities include biodiversity conservation actions that integrate efforts to preserve, restore and/or manage and sustainably use the savannas.	**Complies**. Activities include preservation, restoration and sustainable management of savannas /7/260/
BCR0005 V1.0	The causes of land use changes identified may include, among others: expansion of the agricultural frontier, mining, extraction and loss of vegetation cover.	Complies. The main cause identified is the expansion of the agricultural frontier /53/54/65/
BCR0005 V1.0	Carbon stocks in soil organic matter litter and dead wood may decrease or remain stable in areas within the project boundary.	**Complies**. A decrease in carbon stocks is expected according to the baseline scenario /7/
BCR0005 V1.0	The amount of nitrogen-fixing species used in project activities is not significant, so GHG emissions from denitrification can be considered insignificant.	**Complies**. GHG emissions from denitrification are negligible due to dispersed planting of native species /7/260/312/

Source: Present validation and verification report, based on project description document version 2.5.

On the other hand, it was validated that the project proponent, in the quantification of emissions within the PDD Version 2.5, in the following sections:

- *Section 3: Quantification of GHG Emissions Reduction*

- *Section 3.1: Quantification Methodology*
- *Section 3.1.1: Applicability Conditions of the Methodology*
- *Section 3.1.2: Methodology Deviations*
- *Section 3.2: Project Boundaries, Sources, and GHGs*
- *Section 3.2.1: Spatial Limits of the Project*
- *Section 3.2.2: Carbon Reservoirs and GHG Sources*
- *Section 3.2.3: Time Limits and Analysis Periods*
- *Section 3.4: Uncertainty Management*
- *Section 3.5.1: Leakage*
- *Section 3.6: Mitigation Results*
- *Section 3.6.1: Eligible Areas within the GHG Project Boundaries*
- *Section 3.6.2: Stratification*
- *Section 3.6.3: Emission/Removal Reductions in the Baseline Scenario*
- *Section 3.6.4: Emission/Removal Reductions in the Project Scenario*

Strictly followed the guidelines established in BCR 0002 Version 4.0 and BCR 0005 Version 1.0 methodologies.

Additionally, for the development of the PDD V2.6, Section 3.3: Identification of the Baseline Scenario and Additionality, the project proponent complied with the criteria set forth in Section 10 of the BCR 0002 methodology and Section 8 of the BCR 0005 methodology, correctly using the BCR Baseline and Additionality Tool V.1.3. Conducting an independent analysis for each methodology.

Therefore, it is concluded that the project meets all the conditions of applicability and use of tools for each of the methodologies.

On the other hand, the evaluation of the analysis of applicability of the methodologies carried out by the project proponent was carried out (Table 7)

Table 7. Analysis of the pertinence of the combined use of BC0002 and BCR0005 methodologies.

Criteria	***BCR 0002***	***BCR 0005***	***Project Proponent Análisis***	***CAB Assesstment***
Intervention area	*Forested Areas Susceptible to deforestation/forest degradation*	*Natural savannah areas*	*The methodologies have totally different areas of intervention.*	*According to the documental review of project areas /7/14/26/28/29/76/ 114/ and on-site visit (section 4.4 of this document) corroborate with interviews (section 4.3 of*

				this document). The PP analyst is correct.
Causes and agents	The result of the analysis of causes and agents shows that the owners and natural conditions (fires of natural origin) are the main agents. While economic or subsistence interests are the main causes.	The result of the analysis of causes and agents shows that the owners are the main agents of land use change. While economic or subsistence interests are the main causes. In summary, the landscape is transformed due to lack of knowledge and underlying economic and natural causes.	The agents are and their interests are similar but the areas affected are different. Therefore, an intervention on the causes and agents is required but with particular actions for each type of area. If interventions are only carried out for one area, the other continues its transformation by not carrying out interventions.	A documentary review of the causes and agents identified in PDD Section 2.3.1 /7/ and external documentation /339/340/342/347/350/ was conducted. This analysis was complemented by interviews with landowners and on-site visits, validating the analysis presented by the project proponent regarding the causes and agents of deforestation and land-use change in natural savanna.
Project activities	Specific activities to reduce deforestation and forest degradation. Within the knowledge management activities, particular actions are established with forests, their conservation and restoration.	Specific activities to avoid land use change in natural savannahs. Within the knowledge management activities, particular actions are established with natural savannahs, their conservation and sustainable use.	Considering the analysis of causes and agents. Specific activities are designed for each type of intervention area in accordance with the project areas defined by each methodology. And other activities are also designed that ensure a comprehensive intervention.	It is validated and verified that each methodology applied by the project proponent implements independent activities. The design of project activities, based on an analysis of deforestation causes and agents and land-use changes in natural savannas /7/ and community participation /7/295/ and their implementation during the monitoring period /261/ 262 / 263/ 264/ 265/ 266/ 267/ 268/ 269/ 270/ 271/272/ 273/ 274/ 314/ 315/ 316 /317 meets the requirements established in BCR 0005 Sections 4, 9, and 10, as

				well as the criteria in BCR 0002 Sections 5, 11, and 12
Base line and Additionality	Additionality analysis is carried out in accordance with the methodology and standard.	Additionality analysis is carried out in accordance with the methodology and standard.	Independent additionality analysis for each component that ensures the additionality of the interventions and overall, the financial additionality of the project. Without the resources received by the two components of the project, the activities that reduce emissions could not be implemented.	The demonstration of additionality for each project activity (BCR0005 and BCR0002) described in the PDD /7/ section 3.3 complies with the criteria established in BCR Section 11.6, BCR 0005 Section 8, BCR0002 Section 10, the guidelines in the BCR Baseline and Additionality Guidelines Section 7, and the use of the "CDM-UNFCC AR-TOOL-02" tool /334/327/328/336/. Consequently, the analysis of the Project Proponent is validated
Emissions	It is carried out by monitoring REDD+ eligible areas.	It is carried out by monitoring the eligible natural savanna areas.	Since they are different areas with different interventions, their quantification is independent. Always complying with the applicability criteria of each methodology for each type of area.	Activity data provided /15/103/ allowed evaluation of compliance with criteria established in each applied methodology (BCR 0005 and BCR 0002). Y therefore, the analysis carried out is pertinent
Leakage	Leakage area is established in accordance with the BCR0002 methodological guidelines	Leakage area is established in accordance with the BCR0005 methodological guidelines	The leakage areas for the forest component are totally different from the natural savanna component. They are monitored independently and quantified separately.	According to the documental review of leakage areas /7/14/30/33/122/128/129/ 114/ and on-site visit (section 4.4 of this document) corroborate with interviews to the Cataruben team (section 4.3 of this document).

			For its management, risks are addressed in a comprehensive manner, understanding the causes and range of mobility of the agents.	*The PP analyst is correct.*

Source: Present validation and verification report. Adapted from pdd V2.6

Finally, the project proponent was requested to establish the baseline and additionality scenario for each methodology applied in Section 3.3 of the Project Document Version 2.4. Additionally, an analysis was requested regarding the relevance of combining the BCR002 and BCR005 methodologies within the same project scenario, as well as their compatibility with the baseline, additionality, leakage, and other relevant elements. This analysis was developed by the project proponent in Section 2.5 of the PDD.

The audit team reviewed and evaluated the analysis and supporting evidence, concluding that the project correctly identifies and delineates the activities and justified the pertinent criteriaboundaries for each methodology. It was determined that both methodologies are applicable together without overlap and that they do not negatively affect baseline, additionality, leakage, or emissions reductions. Therefore, it is concluded that the use of both methodologies in the development of the project is pertinent

The audit team reviewed and evaluated the analysis and supporting evidence, concluding that the project correctly identifies and delineates and justified the pertinent criteria for each methodology. It was determined that both methodologies are applicable they do not negatively affect baseline, additionality, leakage, or emissions reductions.

5.5.2.3 Methodology deviations (if applicable)

It was confirmed that the ORINOCO2 project does not present a methodological deviation in the emission quantification processes.

5.5.3 Project boundary, sources and GHGs

During the validation and verifications process of the ORINOCO2 project, a thorough review was conducted to assess compliance with requirements related to project boundaries, including the identification of selected sources and gases. This evaluation was based on a review of documentation provided by the project holder, along with observations made during the on-site visit to project areas in the departments of Meta and Vichada.

The documentation evaluated included geospatial data that clearly defined the project boundaries and the scope of the managed areas, along with records of carbon inventories and other technical studies supporting the identification of emission sources and carbon reservoirs within the project area. These documents were thoroughly reviewed to verify the

accuracy of the geographical delimitation and consistency with the applied methodologies (BCR0002 and BCR0005). Additionally, satellite data were assessed to corroborate the location and extent of the areas included in the project.

specifically, the following sections were reviewed was compared with the information developed in the annexes and BCR 0005 and BCR0002 methodologies:

- *3.2 Project boundaries, sources and GHGs*
- *3.2.1. Spatial limits of the project /35/*
- *3.2.1.1. Project area /26/28/73/74/75/76/114/*
- *3.2.1.2 Reference Region for Baseline Estimation /87/176/*
- *3.2.1.3 Leakage area /30/31/32/33/34/122/129/132/*
- *3.2.2. Carbon reservoirs and GHG sources*

The geographic information described was compared with the information developed in the annexes and BCR 0005 and BCR0002 methodologies:

- *1.1.1. GDB savvanas*
- *1.1.2 GDB REDD+*

During the on-site visit, the following aspects were reviewed:

On-site verification of the boundaries defined in the project maps using GPS devices and comparison with available geospatial data.
Interviews with landowners to confirm their understanding and acceptance of the established boundaries on their properties. Direct observation of the land conditions and conservation activities implemented to ensure consistency with the intervention areas declared in the PDD/7/.

This review and contrast focused on confirming that the geographic boundaries of the project were clearly defined and included all relevant areas for GHG mitigation activities. It was verified that the delineation of project areas was based on accurate and up-to-date geospatial data, ensuring that all areas subject to conservation and reforestation activities were adequately included and following the guidelines established in BCR 0005 and BCR0002 methodologies .

In addition, during the desk review and field visit, the project boundaries were corroborated using Geographic Information Systems (GIS) tools and comparison with the maps and descriptions provided in the project documentation and related GDB annex. This on-site verification confirmed the accuracy of the geographic delimitation and the correct identification of the intervention areas.

Next, the sources of emissions and greenhouse gases (GHG) selected by the project were evaluated. This analysis included a review of the emission quantification processes for each identified source, such as deforestation, forest degradation and land use change in natural savannas. It was verified that all relevant gases, including CO_2, CH_4 and N_2O, were included

in the quantification of emissions (Table 8, Table 9), and that the methods used for their estimation were consistent with the methodological requirements.

The selected carbon pools were also reviewed, ensuring that all key ecosystem components such as aboveground biomass, belowground biomass, litter, dead wood and soil organic carbon were considered in the analysis(Table 8, Table 9). This review was based on technical documentation and field data collected during the visit, confirming that the selected reservoirs were representative and appropriate for the project context.

Finally, the assessment also included confirmation that the project boundaries, selected sources and gases considered were in compliance with the applicable validation requirements as specified in the validation and verification manual version 2.4. Also, it was verified that the project boundaries were justified based on scientific and technical criteria, and that the selection of sources and reservoirs followed the methodological guidelines

Table 8 Reservoirs and sources REDD+ Activities.

Type	Source or Reservoir	GHG	Included (YES/NO/ Optional)	Justification and Cross-Check
: Reservoir: **GHG:** CO_2	Aerial biomass	CO_2	YES	The change in carbon content in this reservoir is significant according to the IPCC and is highly affected by the loss of natural cover; land use change and temperature increase. (FAO. 2017, Kauffman et al. 2016). Likewise, the loss of forest cover and CO2 release can have a considerable impact on the global C balance /7/14/364/239/(Brown et al., 1996). Thus, it is considered as a relevant reservoir for the quantification of emissions in the baseline and monitoring scenario of the project.
Reservoir	Reservoir Subterranean Biomass	CO_2	YES	The change in carbon content in this reservoir is significant according to the IPCC and can be significantly affected by changes in land use/364/ (Kauffman et al. 2016). In addition, official information applicable to the project is available.
Reservoir	Reservoir Deadwood and leaf litter	CO_2	YES	Carbon content is expected to decrease in the baseline scenario. However, based on the availability of official data applicable to the project, only the dead wood pool is considered for the emissions estimate.

Type	Source or Reservoir	GHG	Included (YES/NO/ Optional)	Justification and Cross-Check
Reservoir	Reservoir Soil organic carbon	CO_2	YES	The change in carbon content in this reservoir is significant according to the IPCC, and it is susceptible to considerable carbon losses in the baseline scenario. Therefore, its inclusion in REDD+ projects is recommended /363/(Yepes et. al, 2011). In addition, there is official information applicable to the project.
Source	Source Woody biomass combustion	CO_2	NO	According to BCR0002 V4.0 methodology, CO2 emissions due to woody biomass combustion are not quantified. /329/
		CH_4	YES	In the event of fire events in the tree component (woody biomass combustion) during the monitoring period, the affected area will be identified and CH4 emissions will be quantified. /7/14/239/
		N_2O	YES	In the event of fire events in the tree component (woody biomass combustion) during the monitoring period, the affected area will be identified and CH4 emissions will be quantified. /7/14/239/

source: Fundación Cataruben, 2024.

Table 9 Reservoirs and sources Savannas Activities

Type	Source or Reservoir	GHG	Included (YES/NO/ Optional)	Project Proponent Justification and CAB Cross-Check
Reservoir	Reservoir Aerial biomass	CO_2	YES	The change in carbon content in this reservoir is significant according to the IPCC and is highly affected by natural cover loss, land use change and temperature increase 7/14/362/328/.(Bond-

Type	Source or Reservoir	GHG	Included (YES/NO/ Optional)	Project Proponent Justification and CAB Cross-Check
				Lamberty et al., 2018, FAO. 2017, Kauffman et al. 2016). Therefore, it is considered relevant for the quantification of GHG emissions in the scenario with and without project.
Reservoir	Reservoir Subterranean Biomass	CO_2	YES	The change in carbon content in this reservoir is significant according to the IPCC, 2006.
Reservoir	Reservoir Soil organic carbon	CO_2	YES	It is contemplated, as it is one of the main carbon reservoirs in savanna ecosystems, in addition it can be highly affected by the loss of natural cover, land use change and temperature increase (Bond-Lamberty et al., FAO. 2017, Kauffman et al. 2016).7/14/362/364/239/
Reservoir	Reservoir Necromass and Leaf Litter	CO_2	NO	Conservatively excluded. While carbon contents in this reservoir may decrease in the baseline scenario, no official local or regional data applicable to the project are available.
Source	Source Woody biomass combustion	CO_2	NO	According to BCR0002 V4.0 methodology, CO2 emissions due to herbaceouswoody biomass combustion are not quantified. /7/14/328/239/360/
		CH_4	YES	In the event of fire events in the tree component (woody biomass combustion) during the monitoring period, the affected area will be identified and CH4 emissions will be quantified. It is not considered in savanna burns. /7/14/328/239/
		N_2O	YES	In the event of fire events in the tree component (woody biomass combustion) during the monitoring period, the affected area will be identified and CH4 emissions will be quantified. /7/14/328/239/

Source: This Document adapted from PDD V2.6

Finally, the assessment also included confirmation that the project boundaries, selected sources and gases considered were following the applicable validation requirements as

specified in the validation and verification manual version 2.4. Also, it was verified that the project boundaries were justified based on scientific and technical criteria, and that the selection of sources and reservoirs followed the guidelines of the methodologies (BCR 0005 and BCR 0002) used for quantifying GHG reductions.

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

To assess the compliance of the areas within the geographic boundaries of the Orinoco REDD+ project2 with the land cover and land use categories, it was ensured that the requirements established in the BCR Standard version 3.4 and the applied methodologies BCR0002 version 4.0 (section 8.1) and BCR0005 version 1.1(section 7.1.1) were met.

***BCR002:** First, an analysis of the project's REDD+ eligible areas was carried out. Given that these areas correspond to stable forests located within the boundaries of the properties for a period of at least ten years prior to the start date of the project. The definition of forest adopted by Colombia and used by the Forest and Carbon Monitoring System (SMByC) was used as a reference. According to this definition, forest is considered to be land occupied mainly by trees, which may contain shrubs, palms, guaduas, herbs and lianas, and which has a tree cover with a minimum canopy density of 30%, a minimum in situ canopy height of 5 meters at the time of identification, and a minimum area of one hectare.*

To identify the forests present on the properties, the project generated a classification process through the Google Earth Engine (GEE) platform using Landsat constellation images, which have a spatial resolution of 30 meters per pixel and a revisit time of 16 days. Forest maps for the years 2008 and 2018 were generated using image collections from Landsat 5, 7 and 8 satellites using the GEE platform. During the construction of the mosaics, the incumbent established filters for each year, obtaining 20 scenes for the year 2008 and 28 scenes for the year 2018. This information search process ensured the selection of images free of environmental noise such as clouds or distortions, guaranteeing optimal conditions for digital processing. In case of clouds, the project performed a masking to eliminate them, including their shadows, thus ensuring a clear representation of the earth's surface.

Once the different satellite images were obtained, the project merged them to create a mosaic on which the analysis was carried out. Forest classification using Digital Image Processing (DIP) required training samples verified by field observations, high-resolution imagery (WorldView 2, GeoEyes, Planet) and visual interpretation. The Random Forest algorithm was used by the project to classify forest and non-forest mosaics from the training samples. This supervised learning technique generated multiple decision trees on a training dataset, the results of which were combined to obtain a single, more robust model.

Subsequently, to ensure the thematic quality of the products generated, the project implemented a supervised review and adjustment process through visual interpretation. The project proponent through the Procedure carried out this process for Computer-Aided Interpretation (PIAO), complemented by the use of the "Imagery" module of ArcGIS Pro v3.2 software. These measures improved the results of the classifications obtained in GEE,

ensuring greater accuracy and reliability in the thematic quality of the products. Finally, after review and supervised adjustment by the project manager, the model was validated for each year using the AcATaMa add-on in QGIS software, which is a measure to verify the consistency and accuracy of the classification. It is worth noting that the AcATaMa add-on is a development of the Forest and Carbon Monitoring System (SMByC), which is part of IDEAM.

To define the monitoring areas for degradation, the project area layers/118/ were coded according to the procedure described in Colombia's national reference level /224/ and were processed using the Morphological Spatial Pattern Analysis (MSPA) algorithm /398/399. Core forest and Edge Forest were delimitated.

***BCR 0005:** Regarding the eligible areas of natural savannas, the project proponent evidenced that the geographical limits of the project corresponded to the savanna biome, specifically to the Llanos Ecoregion, according to the WWF classification. The project developer using land cover maps from 2012 and 2018, at a scale of 1, carried out the identification of these areas:100,000. This was the product of an inter-institutional work led by IDEAM and in which various institutions of the National Environmental System (SINA) participated, as well as the Agustín Codazzi Geographic Institute (IGAC) and National Natural Parks (PNN), consolidating as national cartography. According to section 7.1.1 of methodology BCR0005 Version 1.0, coverages identified as grasslands and shrublands are considered savannas. It was verified that the savanna areas were maintained in these categories from five years prior to the project start date until the beginning of project activities, as shown in multitemporal satellite images provided by the project developer.*

The conformity evaluation is detailed below:

1 Evaluation of Compliance with the Areas within the Project's Geographic Boundaries According to the Land Cover/Use Categories (BCR Standard, BCR0002, BCR0005)

The evaluation of compliance concerning the land cover and use categories within the geographic boundaries of the Orinoco2 project has been conducted in accordance with the BCR0002 and BCR0005 methodologies, as well as the requirements set by the BCR Standard. The analysis was carried out using specific geospatial inputs described in Annex 1.1 GDB, which include satellite products and classification models.

The project utilized satellite images from Landsat 8 (years 2022 and 2018) and Landsat 5 (year 2008) to identify and validate the eligible areas within the project boundaries, by calculating the Normalized Difference Vegetation Index (NDVI) and classifying forest and non-forest areas (BNB) using the Google Earth Engine (GEE) platform. These inputs allow for precise determination of land use and cover areas, as required by section 9.1 of the BCR0002 methodology.

For the analysis of natural savanna cover, in accordance with the BCR0005 methodology, section 7.1.1, Sentinel-2 images from 2022 were used, combined with Computer-Assisted Photo Interpretation (PIAO) techniques, enabling the identification of land use covers. The cover results were validated using field control points and through the generation of a confusion matrix, which showed an overall accuracy of 95.85% and a Kappa index of 93.65%. These results reflect a high level of accuracy in the land cover classification, meeting the requirements of both methodologies.

2 Analysis of the Relevance of the Cartographic Sources and Methods Used

The use of cartographic sources and the methods applied in the Orinoco2 project are highly relevant to ensure the veracity and accuracy of the information, especially in REDD+ projects where accuracy in land cover classification is critical for validation and monitoring.

The satellite images used, specifically Landsat 8 and Sentinel-2, are widely recognized and used in international projects for monitoring land cover changes, making them reliable, high-resolution sources for vegetation and land use analysis. The use of the Google Earth Engine (GEE) platform for processing these images ensures efficient and accurate integration of satellite data, with the capability to handle large volumes of geospatial data.

The use of the AcATaMa tool for validating the BNB (Forest/Non-Forest) models is a robust technique that supports the consistency of the analyses. This tool allows for validation of the classification results through models designed to ensure data accuracy and coherence. The procedures described in the annexes, such as Annex 1.1.2.2 AcATaMa, clearly document the methodology used, reinforcing the transparency and reproducibility of the analysis.

Additionally, the use of the confusion matrix to validate the classified layers provides an additional quality control mechanism regarding the interpretation of CLC with satellite images, ensuring that the classification of land covers is correctly assigned, with an accuracy level close to 96%. This validation methodology is a standard for supervised land use change classification, determining the accuracy and quality of the results.

3 Evaluation of Eligibility Analysis Results According to BCR0002 and BCR0005 Methodologies

Spatial Resolution Applicable to Project Areas

The eligibility analysis conducted under the BCR0002 and BCR0005 methodologies is based on spatial resolutions appropriate for the project's objectives. For identifying eligible areas under BCR0002, Landsat 8 and Landsat 5 images were used, with a spatial resolution of 30 meters, sufficient to detect land cover changes at the landscape scale, using supervised classification in GEE. For identifying BCR0005 eligible areas, national land cover inputs from Corine Land Cover at a 1:100,000 scale, adapted for Colombia by IDEAM, were used. For monitoring and classifying the savannas, Sentinel-2 images with a spatial resolution of 10

meters were employed, providing a higher level of detail to identify specific characteristics of natural savannas and other land covers.

Sources of Information to Corroborate Interpretations and Classifications

The sources of information used include satellite data from Landsat 5 and Landsat 8, both internationally recognized and widely accepted for monitoring forest covers and land use. These data were corroborated with field control points and complemented with models validated by the AcATaMa tool, ensuring that interpretations and classifications are accurate and verifiable.

Additionally, the classifications were verified through field control points, further reinforcing the reliability of the satellite images and ensuring that the classification accurately reflects the field conditions. This procedure is clearly documented in the annexes, such as Annex 1.1.2.3 Procedures – GGP-05, demonstrating the transparency and accuracy of the process.

Analysis of the Accuracy of the Interpretation Processes of the Layers Used

The eligibility analysis results were highly accurate under both methodologies. For the interpretation process of forest and non-forest areas under BCR0002, accuracy levels reached 0.96 (2008), 0.95 (2018), and 0.94 (2022), indicating that the layers used for land cover classification meet high-quality standards.

Under the BCR0005 methodology, the confusion matrix generated to validate savanna coverages for the year 2022 showed an overall accuracy of 95.85% and a Kappa index of 93.65%, reflecting a high level of reliability in the interpretation and classification of the satellite images used. These results ensure that the eligible areas for the project have been correctly identified and validated according to the established methodological standards.

In conclusion, the Orinoco2 project complies with the criteria established in the BCR0002 and BCR0005 methodologies for the identification and monitoring of eligible areas, using reliable satellite data sources and robust validation methods. The geospatial tools and classification methods implemented have provided accurate and consistent results, confirmed by accuracy analyses and field validation, ensuring that the interpretations and classifications of land cover and use are reliable and aligned with the BCR Standard requirements.

5.5.4 Baseline or reference scenario

To assess the baseline scenario identified for the ORINOCO2 project, the applicable validation requirements related to the establishment of the baseline scenario according to and the applied methodologies BCR0002 version 4.0 (section 9) and BCR0005 Version 1.0 (section 8) and the validation and verification manual version 2.4 (sections 7, 9.1 and 9.2) were followed. Documentary review was carried out to ensure that assumptions, methods, parameters, data sources and emission factors were applied in a transparent manner,

adequately justified and supported by sufficient evidence, as well as the step-by-step indicated by each of the methodologies indicated for the establishment of the baseline scenario.

Below are the steps taken to assess the assumptions, methods, data, and factors involved in identifying the baseline scenario, focusing on transparency, justification, uncertainty management, and compliance with national and sectoral policies.

a. *Identification of Assumptions, Methods, and Data Sources*
   The baseline scenario analysis was based on clearly defined assumptions and methods, supported by verified data sources.

For BCR0002, the key assumption was that deforestation and forest degradation in the Orinoquía high plains would continue due to the expansion of the agricultural frontier and the need for landowners to exploit natural resources for subsistence. This assumption was justified using historical deforestation data from sources like IDEAM, validated through spatial analyses and satellite imagery, documented in Table 14 of the DPD and the project's GDB.
For BCR0005, the baseline scenario of converting natural savannas to agricultural land was supported by records from the Ministry of Agriculture, DANE, and IDEAM, showing an increase in transforming savannas into crops like rice, and corn.

b. *Uncertainty Management and Use of Prudential Assumptions*

Uncertainty was managed by using official sources to identify deforestation rates, forest degradation, and land-use change in natural savannas and ensuring the require precision. To evaluate how the GHG project holder applied the uncertainty management mechanisms in the quantification of the, the guidelines of methodologies BCR0002 version 4.0 and BCR0005 version 1.1 were followed.

For the savanna's component, the 2012 and 2018 land cover maps from the national land cover maps were used /75/76/77/. The interpretation was cross-checked with in situ observations, documented records, and high-resolution images from sensors such as WorldView 2 and Sentinel 2 /92/93/99/. Validation of these maps was also performed using a validation matrix (confusion matrix), achieving an accuracy of over 90%. /90/100/376/377/378/379/.

For REDD+ Activitiest, the maps used to estimate the activity data for baseline was reviewed. For the REDD+ component, the project holder used non-forest forest maps of national origin /180/181/182/. The validation of the non-forest and forest maps by comparing classification results with a reference dataset, including in situ observations and high-resolution images and de use Of ACaTaMa (a QGIS add-on specifically developed for this purpose by IDEAM)/. The accuracy results achieved were over 90% /215/271/273/274.

The use of prudential assumptions also was validated trough the assessment of documental review and cross check with official information and application of the Baseline and Additionality Guidelines Section 7, and the use of the "CDM-UNFCC AR-TOOL-02" tool.
The the baseline scenario for each project activity (BCR0005 and BCR0002) are identified by de project proponent in section 3.3. of the PDD /7/:

Step 0 Evidente of Start date of the project: *El Equipo auditor valido la evidencia que sustenta la fecha de inicio del proyecto (ver sección 5.5.1)*

Step 1a. Identify credible alternative land use scenarios to the proposed project activities: *The audit team verified that the likely land-use alternatives within the project areas are credible and realistic, as they align with the region's context. Based on the prior identification of the region's economic practices or trends and their dynamics over time, two possible land-use alternatives were established in the without-project scenario for each activity (BCR0002 and BCR0005):*

The outcome of the List of credible alternative land use scenarios that would have occurred on the land within the project activity boundary of the BCR0002 is.

- *Continuation of the pre-project land use scenario*
- *Reduction of deforestation and forest degradation within the project boundary carried out without being registered as a BCR project activity.*

And the outcome of the List of credible alternative land use scenarios that would have occurred on the land within the project activity boundary of the BCR0005 is:

- *Continuation of the pre-project land use scenario*
- *Reduction change land use in the Natural Savana within the project boundary, performed without being registered as the BCR project activity*

The list of alternatives presented by the project developer is thoroughly supported and consistent with the attached documents, covering the biophysical, cultural, and economic context. These contexts are substantiated by reviewed sources, including DANE, UPRA, SINIC, the National University of Colombia, specific studies, and the departmental development plans for Meta and Vichada. These sources provide a robust and detailed basis confirming that the assumptions used are accurate and align with the project's stated premises. /152 /153/ 154/ 155/ 156/ 159/ 161/ 162/ 163/ 164/ 165/ 166/ 167/ 189/ 190/ 191 /192/ 340/ 341/ 343/ 344/ 345/ 346/ 347/ 348/ 349/. During the on-site visit, the social, biophysical, and economic context was also validated and verified, further confirming the adequacy and accuracy of the assumptions presented by the project developer, as documented in references

Step 1.b Consistency of credible alternative land use scenarios with enforced mandatory applicable laws and regulations

The determination of credible alternative land use scenarios compliant with applicable legislation and regulations, considering enforcement within the region or country for BCR0002, yielded the following scenarios:

- ***Continuation of the pre-project land use scenario:*** *Regarding forest lands, the analysis confirms that despite national legislation prohibiting deforestation, such as Law 99 of 1993 and Decree 1791 of 1996, deforestation and forest degradation remain widespread in the project area/177/178/. This is demonstrated through spatial analyses. The analysis verifies that the pre-project land-use scenario, involving continued deforestation and degradation, is a probable and credible baseline scenario*

- ***Reduction of deforestation and forest degradation within the project boundaries, executed without registration as a BCR project activity****: El Audit team validates that This scenario is aligned with national laws protecting forest areas in the Colombian Orinoco. Law 99 of 1993 mandates the preservation of natural forests and prohibits land use changes for agriculture, livestock, or infrastructure without authorization from environmental authorities. Similarly, Decree 1791 of 1996 reinforces this by requiring sustainable management for natural forests, permitting interventions only for conservation, restoration, or sustainable use, and prohibiting land use changes without an approved management plan and environmental license/366/367/.*

Similarly, for the natural savanna component under BCR0005, the identified credible alternative land use scenarios compliant with legal requirements include:

- ***Continuation of the pre-project land use scenario:*** *In the case of natural savannas, the agricultural expansion, particularly for crops like rice, maize, and palm, represents a significant risk of land-use change. The inclusion of the project area within Colombia's agricultural frontier, as emphasized by the National Development Plan and Resolution 128 of the Ministry of Agriculture, strengthens the likelihood that the conversion of savannas into agricultural lands is a probable alternative scenario /71/368/*

- ***Land-use change reduction within the natural savanna areas inside the project boundaries, conducted independently of registration as a BCR project activity****. The audit team validates that This scenario is aligned with the rules and laws and the assumptions are prudent. The assessment confirms compliance with regulations governing the management of natural savannas in Colombia's Orinoco region, recognized as strategic ecosystems. Law 99 of 1993 mandates that savannas be managed to ensure conservation and sustainable use, emphasizing biodiversity preservation, water regulation, and carbon storage. Decree 2372 of 2010 permits intervention for productive activities only under management*

plans that safeguard long-term sustainability, integrating ranching and agroforestry with soil and biodiversity protection. /366/ 369/

Step 2. Barrier analysis

It is validated that the project proponent correctly performs the barrier analysis for each scenario of each project activity (BCR0005 and BCR002) Incorporating barriers to investment, institutional, social, and land tenure, ownership, inheritance, and property rights. The list of land use scenarios that are not prevented by any barrier, and consequently determine the baseline scenarios in accordance with CDM-UNFCC AR-TOOL-02, Sub step 2c. are:

- *For BCR0002: Continuation of the pre-project land use scenario*
- *For BCR0005: Continuation of the pre-project land use scenario*

c. *Consideration of National Policies and Sectoral Circumstances*

The baseline scenario analysis included a review of relevant national and sectoral policies. For BCR0002, Law 99 of 1993 and Decree 1791 of 1996 were considered, prohibiting land-use change in forest areas without authorization. However, spatial analysis shows that deforestation remains common in the region.

For BCR0005, provisions from the National Development Plan and Resolution 128 of the Ministry of Agriculture were considered, allowing the conversion of savannas within the agricultural frontier.

Additionally, Resolution 1447, Article 41, was considered for baseline establishment.

d. *Consistency in Baseline Scenario Identification and Emission Factors*

The procedures used were consistent with emission factors, activity data, and GHG emission projections, using the BioCarbon Baseline and Additionality Tool V.1.3. Data from national sources ensured credibility and conformity with national and regional conditions, accurately reflecting current trends.

e. *Data Quality Assurance According to ISO 14064-2*

Rigorous procedures were implemented to ensure data quality in line with ISO 14064-2, including cross-verification with forest inventories from IDEAM and multitemporal analyses using official sources to validate deforestation projections. Quality controls were also established for GHG emission data, detailed in Section 16.3 of DPD V2.4.

In accordance with section 11.2 of the BioCarbon Standard version 3.4, it was corroborated that the project complies with its baseline establishment criteria, as well as its re-validation period or baseline update to be carried out every 10 years.

Finally, the establishment of the baseline scenario for each project activity (BCR0005 and BCR0002) meets the criteria established in BCR Section 12.2, BCR 0005 Section 8, BCR0002 Section 10, and the guidelines in the BCR Baseline and Additionality Guidelines Section 7, including the use of the "CDM-UNFCC AR-TOOL-02" tool./370/

In conclusion, the analysis performed is aligned with the criteria established in paragraphs 10 of the BCR 0002 methodology and 8 of the BCR 0005 methodology, in accordance with the guidelines set forth in the Baseline and Additionality Tool V.1.3. The baseline scenario analysis conducted for the BCR0002 and BCR0005 methodologies was evaluated and meets the applicable validation requirements. The assumptions, methods, and data used are properly justified and supported by solid documentary evidence, including references to national laws and sectoral policies. The uncertainty management was appropriate, using conservative assumptions. Consequently, the evidence used to determine the baseline scenarios is relevant and properly justified.

5.5.4.1 Reference Region For Baseline Estimation

The auditor has reviewed the delineation of the reference region for estimating land-use changes in natural savannas, as well as deforestation and forest degradation in vegetation and natural covers (grasslands, shrublands, and forests) that could occur in the project area in the baseline scenario. The similarity between the reference regions and the project area in terms of access, drivers of land-use change, land-use categories, landscape configurations, environmental and socioeconomic conditions, and local/regional context has been assessed. Below is the evaluation of the process based on the provided information.

- *(a) Similarity in access: The auditor confirms that both the project area and the both reference regions have developed or developing road infrastructure. This road network facilitates human access to different parts of the territory, similarly influencing deforestation and coverage transformation. Access to natural areas for activities like livestock and agriculture results in changes in land cover and loss of natural space. The provided cartographic information (Annex 1. Emissions/1.1.Gdb/1.1.1.sabanas and 1.1.2.REDD. Feature Dataset Biophysical Surroundings/Vias.shp) supports this statement, and it is concluded that access is comparable in both territories.*
- *(b) Drivers of change: It is confirmed that both the project area and the reference regions share similar environmental conditions (climate, relief, soil type, and water resources), influencing drivers of change such as deforestation and soil degradation. Socioeconomic pressures, like population growth and demand for natural resources, are comparable in both regions, affecting the expansion of the agricultural frontier similarly. The information provided in Annex 1.Ediciones/1.1.Gdb/1.1.1.sabanas and*

1.1.2.REDD (DriversChange/Aptitud.shp) is consistent with methodological requirements.

(c) *Land uses: The auditor validates that both the reference regions and the project areas share similar geographical and environmental characteristics, the territory covered by natural vegetation, intended for agroforestry, silvopastoral systems, and primary forest conservation. Details regarding land use and capacity are well-described in the biophysical context (Section 2.3.2.1.2) and supported by cartographic information (Annex 1. Emissions/1.1.Gdb/1.1.1.sabanas and 1.1.2.REDD).*

(d) *Land use category: The reference region and the project area share similar geographical and environmental characteristics. Land-use categories are clearly described, and the provided cartographic data (Annex 1. Emissions/1.1.Gdb/1.1.1.sabanas and 1.1.2.REDD) are consistent with the applicable data and methodology.*

(e) *Land use categories and/or changes in land use:The auditor validates that land-use conflict identification is consistent with the local and regional conditions described in the biophysical context (Section 2.3.2.1.2), supported by cartographic data (Annex 1. Emissions/1.1.Gdb/1.1.1.sabanas and 1.1.2.REDD).*

(f) *Landscape configuration: It is concluded that both the project area and the reference region have a flat topography with similar environmental conditions influencing vegetation distribution and landscape configuration. The presence of conservation figures, such as RUNAP categories, promotes the creation of biological corridors and key wildlife habitats. This is reflected in the types of ecosystems present in both territories and is consistent with the methodology and cartographic data provided.*

(g) *Environmental conditions: The auditor validates that climatic conditions, such as precipitation, temperature, and seasonality, are similar in the project area and the reference region. These climatic factors influence vegetation distribution and species life cycles. The cartographic information (Annex 1. Emissions/1.1.Gdb/1.1.1.sabanas and 1.1.2.REDD) and the description of the biophysical context in Section 2.3.2.1.2 support the similarity of these conditions.*

(h) *Socioeconomic conditions: The predominant economic conditions in the reference region are similar to those in the project area, with livestock, agricultural, and silvopastoral systems being prevalent. These conditions are clearly described in the social and economic contexts (Sections 2.3.2.2 and 2.3.2.3), reinforcing the validity of the selected reference regions.*

Additionally, the project proponent ensured compliance with the criteria for establishing each reference region according to the guidelines of each methodology. Below is the evaluation of the process based on the provided information.

Table 10 evaluation of the process

Literal/methodology	Criterion	Compliance	Documentation/References
a (BCR0002)	The reference region must include the project area	Comply. The auditor confirms that 100% of the project area is within the reference region, according to the visualization of vector information in Annex 1.Emissions/1.1.Gdb/1.1.2.REDD+/Feature dataset Project area. The procedure used to compare the layers of the reference region and the project area is appropriate, ensuring that the entire project area is contained within the reference region.	Annex 1.Emissions/1.1.Gdb/1.1.2.REDD+/Feature dataset Project area
b (BCR0002)	The reference region must be larger than the project area	Comply. The reference region is 9.3 times larger than the project area (217936ha vs. 29,857ha). While the methodology allows for a ratio of up to 10 times the project area, this proportion is sufficient to capture the mobility of agents that may access the project area. The ratio calculation is clear and precise, and is well documented in the information provided.	Calculation based on provided data, 217936ha vs. 29,857ha
c (BCR0002)	Physical conditions must be at least 80% similar between the reference region and the project area	Comply. The similarity analysis conducted using the Similarity Search tool shows a 94% coherence between the project areas and the reference region. Key physical variables such as vegetation (98%), soils (84%), slope (100%), temperature (88%), and precipitation (88%) are similar in both areas. This exceeds the 80% similarity threshold required by the methodology, ensuring that physical conditions are	Annex 1.1.2.5 Similarity Analysis, Table 23.1

		comparable. This evaluation is supported by the results in Table 23.1 and the information in Annex 1.1.2.5 "Similarity Analysis".	
d (BCR0002)	*Socioeconomic and land-use conditions must be similar between the reference region and the project area*	*Comply. The auditor verifies that both the reference region and the project area are located in the departments of Meta and Vichada, which share similar socioeconomic and land-use characteristics. The primary economic activities (livestock and agriculture) and the overall territorial context are consistent across both areas, allowing for a suitable comparison between deforestation trends and land use. This information is cited in section 2.3.2.1 Territorial context.*	*Section 2.3.2.1 Territorial context*
e (BCR0002)	*Differences in land tenure should not affect deforestation and degradation drivers*	*Comply. The auditor confirms that both the reference region and the project area consist solely of privately-owned land, excluding collective ownership areas such as Indigenous Reservations or Peasant Reserve Zones. This ensures that there are no significant differences in tenure that could affect deforestation and degradation dynamics. Cartographic information is stored in the Feature Dataset Biophysical Environment and the land tenure database related to the municipal resource informality index from SIPRA.*	*Feature Dataset Biophysical Environment, SIPRA land tenure database*
f (BCR0002)	*The deforestation and degradation agents identified in the reference region can access the project area*	*Comply. The auditor confirms that deforestation and degradation agents can access both the project area and the reference region. Both areas are located within the "Sabanas de los Llanos" ecoregion, within the Orinoquía biome.*	*Feature Dataset Orinoquia Biome.shp, Sabanas Ecoregion.shp*

		Clear accessibility criteria, including slope and proximity to roads, are applied according to IDEAM guidelines. The relevant cartographic data is available in Feature Dataset Orinoquia Biome.shp and Sabanas Ecoregion.shp.	
g (BCR0002)	The project area is of interest to the agents identified in the previous criterion	Comply. Since land tenure is similar (privately-owned properties) and access conditions (road networks and soil characteristics) are comparable, deforestation and degradation agents have interest in both the reference region and the project area. The relevant geographic information is available in the Feature Dataset Biophysical Environment, which includes access routes and edaphoclimatic conditions.	Feature Dataset Biophysical Environment (access routes and conditions)
h (BCR0002)	The reference region must not include special management areas or areas within the geographic boundaries of other GHG projects	Comply. The auditor confirms that all special management areas, such as protected areas or existing GHG projects, have been excluded from the reference region. The cartography used for this exclusion is found in the Feature Dataset RReferencia, ensuring compliance with this criterion.	Feature Dataset RReferencia
i (BCR0002)	The reference region must exclude areas with restricted access for deforestation and degradation agents	Comply. Areas with restricted access, such as zones with slopes greater than 15° and conservation areas under RUNAP, have been excluded from the reference region. This exclusion follows IDEAM criteria for defining restricted access, ensuring that the identified agents cannot operate in these areas. Cartographic information is available in the Feature Dataset Restricted Access, which includes vector	Feature Dataset Restricted Access (collective territories, natural spaces)

		information on collective territories and natural spaces.	
j (BCR0002)	The reference region must include the leakage area	Comply. The auditor confirms that the reference region includes all leakage areas, ensuring that impacts outside the project boundaries are monitored correctly. The cartography and geographic information on leakage areas are stored in the Feature Dataset Arealeakage, allowing proper monitoring of emissions and leakage.	Feature Dataset Arealeakage
a (BCR0005)	The reference region and the project area must be part of the same ecoregion	Comply. The auditor confirms that both the reference region and the project area are located within the "Sabanas de los Llanos" ecoregion in the Orinoquía biome, ensuring geographical coherence between the areas. The relevant information is found in the Feature Dataset Biome Ecoregion, where the ecoregion and biome vector files are included.	Feature Dataset Biome Ecoregion, savanna ecoregion shapefiles
b (BCR0005)	The drivers of land-use change identified in the reference region can access the project area	Comply. The land-use change agents identified in the reference region, primarily private landowners, have similar access and economic interests in the project area. Soil characteristics and access routes facilitate the operation of these agents in both areas. The vector information is documented in Drivers of Change within the Feature Dataset.	Drivers of Change Feature Dataset
c (BCR0005)	The project area is of interest to the agents identified in literal b	Comply. Since land tenure is similar (privately-owned properties), the agents identified in literal b (private landowners) have a common interest in	Feature Dataset

		both territories, ensuring that deforestation and degradation trends observed in the reference region are applicable to the project area. This information is available in the Feature Dataset Biophysical Environment.	Biophysical Environment
d (BCR0005)	The figures of land tenure and land-use rights in the reference region are similar to the project areas	Comply. Land tenure in both areas is consistent, as it includes only privately-owned properties, excluding collective ownership areas. This ensures that land-use and tenure dynamics are comparable. The relevant cartography is available in the Feature Dataset Land Tenure.	Feature Dataset Land Tenure

The auditor concludes that the selected reference regions for estimating is appropriate and complies with the methodological guidelines. The similarities in access, drivers of change, land uses, land-use categories, landscape configuration, environmental, and socioeconomic conditions between the project areas and the reference regions are sufficient to ensure comparability of baseline scenarios. The provided documentation and cartographic data meet the requirements for delineating and assessing the reference regions, ensuring a solid foundation for estimating emissions and reductions within the project. The analysis of the literals according to the BCR0002 and BCR0005 methodologies confirms that the selection of the reference region complies with the methodological requirements. The physical, socioeconomic, similarities between the reference regions and the project areas provide a solid foundation for baseline. The documentation and geospatial data used are consistent and meet the established standards, ensuring that the reference regions are representative and applicable for the project's activities

5.5.5 *Additionality*

The additionality assessment of the project was conducted through a document review of section 3.3.6.1, Step 4 (Common Practice Analysis – REDD), section 3.3.6.2, Step 4 (Common Practice Analysis – Natural Savannas), and section 3.3.7 (Additional Information) of the PDD /7/, verifying compliance with the criteria established in BCR Section 11.6, BCR 0005 Section 8, BCR0002 Section 10, the guidelines in the BCR Baseline and Additionality Guidelines Section 7, and the application of the "CDM-UNFCC AR-TOOL-02" tool /334/327/328/336/. The CDM-UNFCC AR-TOOL, used to identify the baseline scenario and

demonstrate additionality. Using the tool in the steps 0, 1ª, 1b, 2ª,2b y 2c was applied according to Section 5.5.4 of this document, where the baseline scenarios were established.

Regarding the baseline scenarios in line with CDM-UNFCC AR-TOOL-02, Sub-step 2c, the scenarios were defined as follows: for BCR0002, the continuation of the pre-project scenario; and for BCR0005, the continuation of the pre-project scenario. Given these scenarios, the additionality tool requires a common practice analysis (Step 4).

The audit team reviewed and validated the common practice analysis and verified the information for REDD+ activities. The Orinoco2 project activities represent uncommon practices in the implementation region, as outlined below: although Reduce Deforestation Agreements exist in sectors such as palm, livestock, and cocoa, their coverage is limited and they focus more on traceability than on effectively reducing deforestation on private lands /7/381/. Forest fire prevention and alternative energy use are still in early stages in the Orinoquía and are not common on small farms /45/. Similarly, forest governance and knowledge management on private properties are scarce, as structured management systems are not typically implemented in these areas /382/341/349/340/.

Furthermore, the audit team reviewed and validated the analysis and information for sustainability activities in cattle ranching and pasture rotation in natural savannas. The analysis of sustainable cattle ranching, tree planting in natural savannas, pasture rotation, and savanna conservation in the Altillanura region of Meta and Vichada indicates that these practices remain uncommon, reinforcing the project's additionality. Although some model farms, such as Tréquina in Arauca, have implemented sustainable practices like rotational grazing and the use of native forage species, these methods are not widely adopted in Altillanura, where extensive cattle ranching continues to degrade soils and biodiversity. Similarly, tree planting in natural savannas through silvopastoral systems, aimed at enhancing forest cover and providing shade for cattle, is mostly limited to pilot projects in specific areas and not yet integrated into traditional ranching. Conservation initiatives for natural savannas, including cattle ranching conversion and productive conservation, are also nascent and have not achieved widespread adoption, with agricultural expansion remaining a significant threat /383/384/385/342/346/348/.

To demonstrate compliance with national norms and laws for establishing additionality, an evaluation was conducted in line with Article 37 of Resolution 1447 of 2018 /337/. This analysis confirms that the Orinoco2 project, aimed at reducing emissions, meets the established additionality criteria by showing that GHG reductions would not have occurred without the project and that these reductions yield a net benefit relative to the baseline. In compliance with Article 37, the project confirms that areas included are not committed to compensatory measures for the biotic component under environmental licensing or forest reserve permits, validated through consultations with property owners and corroborated with cartographic data. Furthermore, none of the project areas are involved in environmental service payment schemes, as confirmed by cartographic records for Meta and Vichada /40/41/42/43/44/45/46/47/48/49/50/51/52/.

In conclusion, according to the compliance assessment described, it was confirmed that the project demonstrates that the baseline scenarios do not correspond to the project scenario, which underpins the additionality of REDD+ activities and activities that prevent land-use change in natural savannas.

5.5.5.1 Project Activities

The evaluation of the activities proposed for implementation in the project (section 2.3.8.1 "Design of Project Activities" of the PDD version 2.5) strategically addresses both direct and indirect factors. Based on document review, contrasting with the information in section 2.3.1 "Analysis of causes and agents of deforestation and transformation of natural savanna covers," the following evaluation was conducted:

Focus on Direct Factors: The activities aimed at mitigating the expansion of the agricultural frontier are essential for reducing deforestation, degradation, and land-use change in natural savannas. Efficient land use and improving productivity without expanding agricultural areas are key strategies. To achieve this, farm planning and defining the baseline of the properties are fundamental tools that allow for resource optimization without the need for deforestation.

Regarding timber extraction, sustainable forest management and the creation of economic incentives for forest conservation are proposed, offering viable alternatives to reduce pressure on forest resources. Activities such as promoting dendro-energy banks, using eco-efficient stoves, and land-use planning not only improve resource management but also contribute to sustainable use.

The activities are also designed to combat grassland degradation and fires (natural or human-caused) through ecosystem rehabilitation and the introduction of more resilient fire management practices. These actions help maintain ecological balance and prevent the transformation of natural savannas.

Focus on Indirect Factors: At the structural level, the activities address underlying factors such as the lack of knowledge about sustainable practices. Strengthening technical capacities through training programs and technical assistance provides landowners with the necessary tools to adopt forest conservation and sustainable production practices in natural savannas. This is key to changing traditional patterns of land-use change, deforestation, and forest degradation.

Additionally, activities focused on innovative economic dynamics aim to shift traditional economic incentives that drive agricultural expansion. By promoting sustainable economic alternatives, such as ecotourism or biodiversity conservation, rural communities' income sources are diversified without resorting to deforestation, contributing to the economic stability of these areas.

Conclusion: The proposed implementation activities present a comprehensive approach to addressing deforestation, tackling both its direct and indirect causes, as well as the structural factors that perpetuate it. By combining strategies that improve productive practices with the creation of economic incentives and the strengthening of local knowledge, the project has the potential to transform the relationship between communities and the natural ecosystems in the region).

5.5.5.2 Independence of Project Activities

The activities proposed by the project proponent, detailed in Table 19 Project Activity Design, are structured to meet the reporting and monitoring standards established by the BCR0002 and BCR0005 methodologies. Each activity has an independent report supported by clear and specific indicators, with an appropriate evaluation frequency to ensure rigorous monitoring of its effectiveness in controlling deforestation and land-use changes in the savannas.

The Monitoring Plan, along with the established indicators and monitoring frequencies, is documented in Annex 6.1 Monitoring Plan of Project Activities. This plan ensures that each intervention is monitored according to its relevance to the project and its impact on the natural ecosystems of the Colombian Orinoquía.

***Clarity and Focus of Activities:** Each activity has been assigned a specific ID, providing clarity about its focus, which allows identification of whether the activity is oriented towards:*

- *The overall development of the project with general activities, or*
- *The fulfillment of a specific methodology, such as REDD+ or the preservation of savannas, under the BCR0002 and BCR0005 methodologies.*

This distinction is crucial as it simplifies the monitoring and evaluation process, ensuring that each intervention aligns with the established objectives and addresses the corresponding conservation needs. The use of these identifiers enables precise traceability of progress in each component, facilitating accountability and tracking of advancements towards ecosystem conservation.

***As conclusion,** the described activities and their monitoring system comply with the requirements of the BCR0002 and BCR0005 methodologies, providing a clear and effective framework to assess their effectiveness in controlling deforestation and land-use changes in the savannas. The implementation of an independent reporting system per activity, supported by specific indicators and a well-defined monitoring plan, ensures the alignment of interventions with conservation objectives. Furthermore, the use of identifiers for each activity enhances clarity in the evaluation process, ensuring that specific conservation needs are effectively addressed*

5.5.6 Conservative approach and uncertainty management

To evaluate how the GHG project holder applied the uncertainty management mechanisms in the quantification of the baseline and mitigation results, the guidelines of methodologies BCR0002 version 4.0 and BCR0005 Version 1.0 were followed, as well as the guidelines of the validation and verification manual version 2.4. All data and parameters were reviewed in section 6.1.2.1 "Data and Parameters."

BCR0002:
First, the accuracy of the maps used to estimate the activity data was reviewed. According to the guidelines of the methodologies, uncertainty management is determined by the accuracy of these maps and the application of discounts in the emission factors. For the REDD+ component, the project holder used forest and non-forest maps of national origin, validated through AcATaMa, a QGIS add-on specifically developed for this purpose by IDEAM. The validation of the non-forest and forest maps for the years 2005, 2018, and 2022 was conducted by comparing classification results with a reference dataset, including in situ observations and high-resolution images /215/271/273/274/. The accuracy results achieved were 96% for 2005, 95% for 2018, and 94% for 2022, meeting the requirement of an accuracy higher than 90%. The emission factors for deforestation and forest degradation were taken from Colombia's national reference levels (NREF)/390/238/. The degradation emission factor excludes soil carbon pool.

BCR0005:
For the savanna component, the 2012 and 2018 land cover maps from the national land cover dataset were used. The computer-assisted interpretation was cross-checked with in situ observations, documented records, and high-resolution images from sensors such as WorldView 2 and Sentinel 2 /92/93/99/. Validation of these maps was also performed using a validation matrix (confusion matrix), achieving an accuracy of 98% for 2012, 96,98% for 2018, and 98% for 2022, meeting the requirement of an accuracy higher than 90% /90/100/376/377/378/379/.

For emission factors, the methodology accepts an uncertainty of up to 10%. In the case of the biomass emission factor for savannas, uncertainty was estimated using formula 15 from the tool "Estimation of carbon stocks and change in carbon stocks of trees and shrubs in A/R CDM project activities". As result, the emission factors for biomass in natural savannas recorded an uncertainty of 9%, meeting the required threshold /7/14/246/. For the soil pool, a conservative default value was selected by the project proponent based on a local peer-reviewed study /338/340/.

$$\mu_{\Delta C} = \frac{t_{VAL}\ x\ \sqrt{\sum_{i=1}^{M} W_i^2 x \frac{S_i^2}{n_i}}}{b_{TREE}}$$

Where:

$\mu_{\Delta C}$	*Uncertainty in ΔC_{ARB}*
t_{VAL}	*Two-tailed t-student value for a 90% confidence level and degrees of freedom equal to n-M, where n is the total number of sample plots within the biomass estimation strata and M is the total number of biomass estimation strata.*
S_i^2	*Variance in biomass per hectare in stratum i;* $(t\ d.m.ha^{-1})^2$
W_i	*Ratio between the area of stratum i and the sum of the areas of the biomass estimation strata (meaning, $W_i = A_i / A$)*
n_i	*Number of sample plots in stratum i*
b_{TREE}	*Average biomass per hectare in stratum i;* $t\ d.m.ha^{-1}$

t was verified that the data and parameters used to estimate the reduction or removal of GHG emissions were consistent with the country's official reference level emission factors, activity data, GHG emissions projections, and other parameters utilized to build the national GHG inventory and the national reference scenario, in accordance with Article 41 of Resolution 1447 of 2018. Additionally, reference data from scientific studies specific to the region where the project is implemented were used, with an uncertainty level below 10% for data associated with biomass emission factors in natural savannas.

Furthermore, it was confirmed that procedures were implemented to ensure data quality, in compliance with ISO 14064-2 and the requirements of methodologies BCR0002 version 4.0 and BCR0005 Version 1.0. These procedures included the validation of classification models and the use of digital image processing tools, ensuring the accuracy and reliability of the data used.

The audit team validated and verified that the uncertainty levels associated with activity data and emission factors meet the criteria of the BCR Standard and the methodological documents BCR0005 and BCR0006. Consequently, it was concluded that the project uses reliable data and applies a conservative approach to uncertainty management.

5.5.7 Leakage and non- permanence

During the document review, it was confirmed that the project holders identified non-permanence risks associated with fires, financial issues, land tenure disputes, conflicts between landowners and indigenous communities in the region, limited active participation of landowners in project activities, loss of efficient communication among project participants, and potential loss of properties in the project. Each of these risks was assigned a specific risk level, mitigation measures, monitoring indicators, reporting procedures, and monitoring frequency /7/14/358/.

Regarding leakage risk, management will involve spatial and cartographic monitoring of the leakage area /30/122/308/, community monitoring, and participation in regional governance spaces such as the SIRAP, aiming to reduce the displacement of GHG emissions /307/. The project holders ensure the continuity of project activities throughout the quantification period through mechanisms such as 20-year contractual agreements signed between the landowners and the project proponent, the design and development of a risk management plan, and the implementation of a Monitoring Plan /249/358/260/. Additionally, a 20% reserve of the total emission reductions quantified for each verified period was established, with 10% as an individual reserve and another 10% as a general reserve.

Since leakage management includes monitoring the leakage area, the audit team conducted a thorough evaluation of the establishment of the leakage area for each type of activity (BCR0005 and BCR0002).

For the REDD+ activity leakage area, compliance with the criteria established in Section 9.3 of the BCR0002 methodology was verified. This included the incorporation of forest areas within the mobility range of agents, determined through a spatial proximity analysis (close neighbors) based on Global Forest Change data (2008-2018), similarity analysis, and the establishment of a leakage belt /122/132/167/, to identify and delimit these areas. Additionally, it was confirmed that the leakage areas are geographically distinct from the project areas, with no overlap /29/28/114/117/, and that restricted-access areas, such as those with different land tenure regimes, were excluded. Since the agents are private landowners, collective community areas and special management zones, such as those registered in the RUNAP (National Registry of Protected Areas), were excluded /105/106/107/108/109/110/113/. The total leakage area to be monitored is 21,617 versus 29,857 ha of project area.

For the leakage area related to prevent land-use change in natural savannas, in compliance with the criteria in Section 7.1.4 of the BCR0005 methodology was verified /30/31/32/33/34/. It was confirmed that natural savanna areas within the agents' mobility range were included, which could lead to land-use changes due to the implementation of project activities. This analysis, which included private landowners, agro-industrial companies, family farming, and the land market, considered factors such as land-use capability, terrain, temperature, precipitation, land uses, roads, and land tenure /53/ 54/ 55/ 56/ 57/ 58/ 59/ 61/ 62/ 63/ 64/

65/ 66/ 68/ 69/ 152/ 153/ 154/ 155/ 159/ 160/ 161/ 165/ 212/. The total leakage area to be monitored is 76,577 against 87,396 ha of project area.

The justification provided by the project proponent was validated and verified. The establishment of the leakage area was determined through a spatial proximity analysis, evaluating the relationships between deforestation and land cover transformation agents for each methodology. Mobility distances of the agents were defined to delineate the leakage belt for the two activities (BCR0005 and BCR0002) and analyzed using statistical tests (Tukey), which showed no significant differences between the evaluated leakage areas and the transformation agents /387/396/.

The analysis was further reinforced using the "average nearest neighbor ratio" algorithm in GIS software ArcGIS Pro, where the spatial distribution of agents was evaluated. The analysis identified that the spatial distribution of the agents follows a dispersed pattern. Additionally, it determined that the average distance between neighbors is 1,000 meters, representing an appropriate measure to capture the relevant spatial interactions between deforestation and land cover transformation agents.

Finally, it was validated that the leakage areas for both activities (BCR0005 and BCR0002) did not overlap, with monitoring of the coverages related to each activity. For REDD+ activities, the leakage area corresponds to forested zones within the leakage belt, while for activities in natural savannas, changes in grassland and shrubland coverage within this belt are monitored /30/31/32/34/124/128/129/132/.

The audit team satisfactorily validated and verified that the project's leakage and non-permanence risks will be assessed in each monitoring period, following the guidelines of the Permanence and Risk Management Tool v1.0 and the procedures outlined in the established Monitoring Plan.

5.6 Monitoring plan

The evaluation of the description of the monitoring plan for the Orinoco2 project was carried out through a thorough review of the project documentation for each methodology and compliance with the applicable validation requirements, as specified in Sections 9.1, 10.2, and 10.3 of the Validation and Verification Manual, version 2.3.

A summary of the compliance is presented below:

a) Necessary data and information to estimate GHG reductions or removals during the quantification period.

- ***BCR0005:** The information sources associated with the activity data of the reference region /7/84/85/86/87/, the project area /7/26/27/, and the leakage area /7/30/32/34/, the soil carbon emission factors from relevant regional studies /240/,*

and the establishment, through sampling plots, of the biomass emission factor of natural savannas, according to the carbon reservoirs and emission sources included /7/224/245/246/247/248/, were corroborated and are consistent with the BCR0005 criteria established for the development of the baseline scenario and the project scenario. /7/238/227/

- ***BCR0002:*** *The information sources associated with the activity data for deforestation and forest degradation of the reference region /182/, the project area /7/114/115/, and the leakage area /7/14/132/122/, the emission factors from official national sources /224/239/, according to the carbon reservoirs and emission sources included, were corroborated and are consistent with the BCR0002 criteria established for the development of the baseline scenario and the project scenario. /7/238/228/*

b) Data and supplementary information for determining the baseline or reference scenario.

- ***BCR0005:*** *The assumptions, methods, and parameters for establishing the reference scenario are applied transparently and are duly justified. The use of prudential assumptions was validated through the assessment of document review and cross-check with official information and the application of the "Baseline and Additionality Guidelines," Section 7, and the use of the "CDM-UNFCCC AR-TOOL-02" tool. Likewise, the establishment of the reference region and the activity data associated with official information from Colombia /86/, and the biomass emission factors in natural savannas with data from scientific studies in the region, are applied appropriately and transparently /7/240/.*

- ***BCR0002:*** *The assumptions, methods, and parameters for establishing the reference scenario are applied transparently and are duly justified. The use of prudential assumptions was validated through the assessment of document review and cross-check with official information and the application of the "Baseline and Additionality Guidelines," Section 7, and the use of the "CDM-UNFCCC AR-TOOL-02" tool. Likewise, the establishment of the reference region and the activity data associated with official information from Colombia /224/239/ (Reference Levels of Colombia) are applied appropriately and transparently, complying with national legislation as established in Resolution 1447 of 2018.*

c) Specification of all potential emissions that occur outside the project boundaries, attributable to the activities of the GHG Project (leakage);

- ***BCR0005:*** *The specification of all potential emissions that occur outside the project boundaries, attributable to the activities of the GHG Project, was verified through compliance with the criteria established in BCR0005 for establishing the leakage*

area, which is monitored to determine the increase in emissions that may occur due to the implementation of the project activity.

- ***BCR0002:*** *The specification of all potential emissions that occur outside the project boundaries, attributable to the activities of the GHG Project, was verified through compliance with the criteria established in BCR0002 for establishing the leakage area, which is monitored to determine the increase in emissions that may occur due to the implementation of the project.*

d) Information related to the assessment of environmental and social effects of the project activities.

The environmental and social impact assessment was conducted in accordance with the implementation of the "Sustainable Development Safeguards Tool" (SDS Tool), version 1.1 of July 4, 2024, developed by BioCarbon Standard.

Based on this tool (SDS Tool), the project carried out the "Environmental Impact Assessment," evaluating the project's activities regarding land use, resource efficiency, pollution prevention and management, as well as impacts on water, biodiversity, ecosystems, and climate change. The "Socioeconomic Impact Assessment" evaluated the project's impacts on key aspects such as human rights, specifically in terms of labor and working conditions, gender equality and women's empowerment, land acquisition, restrictions on land use, displacement and involuntary resettlement, indigenous peoples and cultural heritage, and community health and safety. Additionally, topics related to corruption, economic impact, and forest governance were addressed.

In summary, the project identifies multiple positive impacts due to the characteristics of the conservation and sustainable land use project. It also identifies 2 potentially negative impacts, related to the conflict between cattle ranching and key species such as the jaguar, and another related to the machismo culture of the region that could become a barrier to advancing gender equality and women's empowerment. In response to these impacts, an appropriate prevention plan is designed for the management of large felines within the project areas and a strengthening plan with a gender focus for women. Finally, aspects were evaluated where the project proponent justifies that the project activities could not imply or give rise to any of the impacts mentioned in Annex 1 of the tool (SDS Tool). The audit team validated and verified the information based on document review/253/254/255/333/, corroborated during site visits and interviews with landowners, the technical team of the Cataruben Foundation, the representative of the regional environmental corporation, and the representative of Ecopetrol..

On the other hand, compliance with REDD+ safeguards was also evaluated according to the criteria established in BCR0002, as well as the "Tool for Demonstrating Compliance with REDD+ Safeguards," developed by BioCarbon Standard, and the criteria set forth in the "National Interpretation of Environmental and Social Safeguards for REDD+ in Colombia."

In this regard, the safeguard compliance monitoring matrix was reviewed, and indicators, units of measurement, monitoring schedule and methodology, and evidence of compliance with each safeguard were observed, correctly established and aligned with the tool's guidelines /1/2/7/275/. The audit team validated and verified the information based on document review, corroborated during site visits and interviews with landowners, the technical team of the Cataruben Foundation, the representative of the regional environmental corporation, and the representative of Ecopetrol.

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

It was verified that the project proponent has an Operational Plan that allows periodic management of the quality of the monitored data and parameters. The audit team confirmed that the quality procedures designed and applied by the project /7/14/98/226/318/319/320/321/322/325/326/ are appropriate and consistent, and comply with the quality procedures established in the BCR Standard. Likewise, during the site visit and interviews with the administrative and technical team in charge of the design, implementation, and monitoring of the project, the capacity of the proponent was evidenced to establish appropriate procedures to ensure the proper management of emission reductions and quality controls for monitoring activities.

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

- ***BCR0005:*** *It was validated that the methods defined for calculating emission reductions correspond to the monitoring of activity data of the project area and the leakage area during the monitoring period, using remote sensors such as Sentinel and high-resolution sensors like Planet and Worldview-2 images, complemented by in situ observations. The detection of changes in eligible areas will be carried out through the application of the Corine Land Cover methodology and the Computer-Assisted Interpretation Procedure – PIAO /7/14/73/74/75/76/77/101/32/33/. The emission factor of biomass is established by plots and the soil emission factor, the reference value of the scientific study developed by Hyman et all /240//in the region where the project is developed was used (see Section 6.2.3.1.1 Emission Factor of Natural Savanna). With the activity data and established emission factors, the project proponent calculates the emission reductions using the formula established in BCR0005.*

  With the activity data and established emission factors, the project proponent calculates the emission reductions using the formula established in BCR0005:

- ***BCR0002:*** *The audit team reviewed and validated that the geographical boundaries of the project are correctly integrated into a Geographic Information System (GIS), georeferencing all project areas, including the reference region and the leakage belt.*

This demarcation was conducted in accordance with the eligibility criteria for developing REDD+ activities under the BCR methodology.

To ensure the integrity of the monitoring methods for REDD+ areas, the auditor verified that the project developer utilizes high-resolution satellite imagery, such as Sentinel and Planet remote sensors, supplemented by in situ observation /115/116/118/117/120/224/. Detection of changes in eligible areas is performed through Digital Image Processing (DIP) on the Google Earth Engine platform, validated by the Computer-Assisted Interpretation Procedure (PIAO) /215/214/226/230/231/. For forest degradation activity data monitoring, the project area layers are coded and processed according to the procedure described in Colombia's national reference level /118/ /224/ using the Morphological Spatial Pattern Analysis (MSPA) algorithm /398/399/.

These methods were reviewed and meet the established accuracy and reliability requirements. Additionally, for monitoring fires in tree-covered areas, the auditor validated the use of the Heat Point Monitoring platform in Colombia, Google Earth Engine, and in situ observation. It was also verified that periodic monitoring of emission reductions from deforestation and degradation is conducted following the guidelines described in Section 14.4 of the BCR0002 V.4.0 methodology, or corresponding sections in updated versions, ensuring that the project maintains rigorous tracking of the areas.

The emission factor used for calculation corresponds to the validated emission factor from the Colombian NREF. Therefore, the emission reductions are calculated using the formulas established in BCR0002:

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

The audit team validated, through document review, interviews, and the site visit, that roles and responsibilities are defined for monitoring and reporting the relevant variables. The project proponent has a complete operational structure that allows monitoring and reporting of the relevant variables for calculating the project's emission reductions, including: Project Director, Spatial Analysis Unit, Emissions Quantification Unit, Project Activities Implementation Unit, Governance Unit, SDG Safeguards and Co-benefits Unit, Biodiversity Area. In each area or unit, there is qualified and competent personnel responsible for each area. Besides, it is an entity certified with ISO 9001 and ISO 14001 standards, which reinforces its commitment to quality.

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

The audit team reviewed and verified that the project proponent accurately describes the correct use of the tools defined by the standard to determine contributions to Sustainable Development Goals (SDGs) 6, 13, and 15. /309/

i) Criteria and indicators related to the contribution of the project to sustainable development objectives.

Compliance with the SDG criteria and indicators was verified through evidence /310/311/312/

j) Procedures associated with the monitoring of co-benefits of the special category, as applicable.

It was validated, through document review /7/261/, interviews, and the site visit, that the project has an activity tracking plan to demonstrate co-benefits of the Wax Palm category, with established monitoring procedures for each action.

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

It was validated that the project has an activity tracking plan to demonstrate benefits of the Wax Palm category, which includes the methodology, unit of measurement, formula used to monitor the indicators, monitoring frequency, and responsible parties for monitoring the criteria and indicators of the benefits /7/261/315/316/317/318/

Measures to evaluate compliance with the monitoring plan according to Section 10 of the BCR Standard.

It was validated that the project proponent applied methodologies developed by BCR in its updated version, which are currently available on the BioCarbon Standard website (www.biocarbonstandard.com).

For activities that prevent land-use change in natural savannas (BCR0005), the audit team validates that the monitoring plan adequately addresses monitoring:

- ***Project boundaries:*** *The geographic data are found in a robust geographic information system. The activity data of the project area and the leakage area during the monitoring period, using remote sensors such as Sentinel and high-resolution sensors like Planet and Worldview-2 images, will be used, complemented by in situ observations. The detection of changes in eligible areas will be carried out through the application of the Corine Land Cover methodology and the Computer-Assisted Interpretation Procedure – PIAO /7/14/73/74/75/76/77/101/32/33/*

- ***Implementation of project activities:*** *The design of the Monitoring Plan for the implementation of project activities consistently records relevant data and parameters (Activity ID, Indicator ID, Indicator Name, Type, Goal, Unit of*

Measurement, Monitoring Methodology, Monitoring Frequency, Responsible for Measurement, Indicator Result in the Reporting Period, Supporting Documents, and Observations) /7/240/.

- ***Project permanence:*** *It was validated that the project proponent addresses the monitoring of the permanence of the project activity through the identification of risks and measures to prevent and mitigate them in accordance with the Risk and Permanence Tool /7/358/*

- ***Project emissions:*** *It is validated that the project proponent establishes the emissions monitoring plan according to the guidelines and formulas established in Section 13.1.4 of the BCR0005 methodology /7/327/*

- ***Quality control and quality assurance procedures:*** *The audit team validated that the monitoring plan has a transversal system that allows periodic management of the quality of the data and parameters to be monitored /7/14/98/318/319/320/321/325/326/*

For REDD+ activities (BCR0002), the audit team validates that the monitoring plan adequately addresses monitoring of:

- ***Project boundaries:*** *The geographic data are found in a robust geographic information system both for monitoring deforestation and monitoring forest degradation; the auditor verified that the project developer utilizes high-resolution satellite imagery, such as Sentinel and Planet remote sensors, supplemented by in situ observation /115/116/118/117/120/224/. Detection of changes in eligible areas is performed through Digital Image Processing (DIP) on the Google Earth Engine platform, validated by the Computer-Assisted Interpretation Procedure (PIAO) /215/214/226/230/231/*

- ***Activities:*** *The design of the Monitoring Plan for the implementation of project activities consistently records relevant data and parameters (Activity ID, Indicator ID, Indicator Name, Type, Goal, Unit of Measurement, Monitoring Methodology, Monitoring Frequency, Responsible for Measurement, Indicator Result in the Reporting Period, Schedule, Supporting Documents, and Observations) /7/240/.*

- ***Compliance with safeguards:*** *The monitoring plan for compliance with REDD+ safeguards was validated according to the criteria established in BCR0002, as well as the "Tool for Demonstrating Compliance with REDD+ Safeguards," developed by BioCarbon Standard, and the criteria set forth in the "National Interpretation of Environmental and Social Safeguards for REDD+ in Colombia." In this regard, the safeguard compliance monitoring matrix was reviewed, and indicators, units of measurement, monitoring schedule and methodology, and evidence of compliance*

with each safeguard were observed, correctly established and aligned with the tool's guidelines.

- ***Project permanence:*** *It was validated that the project proponent addresses the monitoring of the permanence of the project activity through the identification of risks and measures to prevent and mitigate them in accordance with the Risk and Permanence Tool /7/358/*

- ***Emissions:*** *It is validated that the project proponent establishes the emissions monitoring plan according to the guidelines and formulas established in Section 14.5 of the BCR0002 methodology /7/328/*

- ***Quality control and quality assurance procedures:*** *The audit team validated that the monitoring plan has a transversal system that allows periodic management of the quality of the data and parameters to be monitored /7/14/98/226/318/319/320/321/322/325/326/*

Additionally, the audit team conducted an evaluation based on document review /7/14/253/254/255/333/ to determine whether The project proponent carried out an uses integrated tools to monitor the project comprehensively, following the BCR standard guidelines.

- *Section 16.1.1. REDD+ Area Monitoring Procedure: describes the procedures for emissions monitoring according to methodology BCR0002.*
- *Section 16.1.2. Monitoring Procedure for Natural Savanna Areas: details the procedures for emissions monitoring according to methodology BCR0005.*
- *Annex 1.1 GDB REDD+ AND SAVANNAS: contains geographic data and analyses related to the BCR0005 methodology.*
- ***Annex 1.2.1 EMISSIONS_PROJECT / SHEET 4. EMISSIONS MONITORING:*** *includes specific sheets for calculating emissions for each applied methodology.*
- ***Annex 6.1. Project Activities Monitoring Plan:*** *documents the activities developed by the project, clearly identifying the activities associated with methodologies BCR0002 and BCR0005, as well as additional actions to demonstrate co-benefits of the "wax palm" category. Each activity is identified with its respective indicators.*
- ***Annex 6.2. Safeguard Monitoring Plan****: details compliance with safeguards in accordance with the requirements of the Sectoral Methodological Document AFOLU "Quantification of GHG Emission Reduction REDD+ Projects BCR002", version 4.0, and the tool for Demonstrating Compliance with REDD+ Safeguards, version 1.1.*
- ***Annex 6.3. SDGs TOOL-2023.XLSX:*** *describes the project activities that contribute to SDGs 6, 13, and 15, with their respective indicators and tracking plans.*
- ***Annex 6.4. Risk Analysis and Management****: details the project risk analysis based on sections 7 (Risk Management) and 3.5 (Leakage and Non-Permanence).*

- ***Annex 5.1.1. Environmental Impact Assessment:*** *describes the environmental and socialimpact assessment analyzing, identifies potential negative impacts, and establishes mitigation measures.*
- ***Annex 5.1.2. Socioeconomic Impact Assessment:*** *documents the probable effects on biodiversity, ecosystems,socioeconomic impact assessment, identifying risks and communities withinsetting out mitigation measures.*

The audit team, after reviewing the projectprocedures and documentation, validates that the activities, boundaries. , emission quantification procedures, leakage, and impacts for each applied methodology are clearly defined.

Additionally, the project proponent's application of the Monitoring, Reporting, and Verification Tool, version 1.0, was evaluated, including:

- ***Identification of the monitoring periods:*** *detailed in section 16 of the monitoring plan and in Table 65 of the project document v2.4, which establishes a project duration of 40 years with 2-year monitoring intervals, except for the first period of 4.25 years (from 10/01/2018 to 12/31/2022).*
- ***Conservative approach and uncertainty management:*** *described and applied throughout section 3 of the project document and evaluated in section 5.5.6 of the VVR.*
- ***Monitoring plan and processes:*** *detailed in section 16 of the project document.*
- ***Methodological documents:*** *the project proponent follows the monitoring plan guidelines of methodologies BCR0002 version 4.0 and BCR0005 Version 1.0.*

In conclusion, it was confirmed that the project proponent conducted the assessment in accordance with Section 15 of the BCR standard, utilizing the SDSs tool. monitoring plan complies with the requirements of each applied methodology, the Monitoring, Reporting, and Verification Tool, and the BCR standard. The criteria and parameters are integrated within relevant tracking tools that allow for monitoring and delimitation of both methodologies, thereby ensuring the integrity of the overall project.

5.7 Compliance with Laws, Statutes and Other Regulatory Frameworks

The audit team conducted a thorough verification of the project's compliance with applicable legal requirements, encompassing GHG emissions, environmental protection, human rights, and ethnic communities, as outlined in the Legal Compliance Matrix /7/278/. It was confirmed that the project maintains a documented procedure /321/ /326/ that establishes specific guidelines for the updating and control of legal information. This procedure includes the periodic assessment of applicable national legislation, ensuring that any changes in laws, decrees, or resolutions impacting the project scope are promptly integrated and managed within its operations.

Also, during the planning, implementation and monitoring process of the ORINOCO2 project, an assessment of compliance with all relevant laws, statutes and regulatory frameworks at the local, regional and national levels was conducted. This assessment included regulations related to GHG mitigation activities, as well as laws related to the protection of human and indigenous peoples' rights, in accordance with international regulations such as the United Nations Declaration on the Rights of Indigenous Peoples and ILO Convention 169 on Indigenous and Tribal Peoples.

To ensure ongoing compliance, the project has implemented a documented system (Document Management System) to identify and continuously access relevant legislation and regulations. This system, called Procedure GJP-14 Legal Requirements Management, establishes parameters for effective compliance management within the project areas and activities. Likewise, the information is rigorously controlled and updated in a matrix of legal regulations, ensuring that all applicable regulations are followed and periodically reviewed.

Specifically, the project adheres to a number of key regulatory provisions. For example, under Decree 2811 of 1974, which dictates the National Code of Renewable Natural Resources and Environmental Protection. Law 164 of 1994, which ratifies the United Nations Framework Convention on Climate Change, has also been complied with, with the project aimed at reducing CO2 equivalent emissions during the 2018-2027 quantification period and with regard to this 2018-2022 monitoring period.

In addition, the National Policy for the Integrated Management of Biodiversity and its ecosystem services of 1996 has been incorporated through the monitoring of threatened species and conservation actions. Conpes 2834 of 1996, which seeks the sustainable use of forests, is reflected in the conservation activities of 33,9609 hectares of forest on private land linked to the project. Compliance with Law 629 of 2000, which approves the Kyoto Protocol in Colombia, is evidenced in the management of GHG emissions reductions, and the implementation of activities to prevent and control forest fires is aligned with the 2002 National Forest Fire Prevention and Control Plan.

In this sense, it is validated and verified that:

a) The project does not violate any local, state/provincial/national or international regulations or obligations: */7/278//321/ /326/*

(b) identifies the potential environmental and socio-economic impacts resulting from the implementation of the project/initiative activities; based on the use of Annex A: Sustainable Development Safeguards (SDS) Assessment Questionnaire: *The project proponent developed a matrix to evaluate and monitor environmental and socioeconomic impacts based on the Annex A questionnaire / 253/254/333/. This matrix includes responses to the questionnaire items (yes, no, not applicable, and potentially), specifies the nature of each impact (positive or negative), and assigns a risk level (low,*

medium, high) to items identified as having a negative impact. Preventive and mitigation actions are also established for identified potential negative impacs.

The assessment identified 16 aspects where project activities do not generate impacts and 2 aspects where they potentially could, with medium-risk levels. The audit team verified that the questionnaire was correctly completed, with negative responses (don't causes negative impacts) adequately justified by reliable references and evidence /7/253/254/255/260/323/295/298/304/.

***(c) develop preventive and/or mitigation activities to manage risks and provide the criteria and indicators necessary to monitor the implementation of the activities and the achievement of the objectives of the action plan**: The identified negative impacts are addressed through preventive and mitigation measures, including an action plan for managing conflicts between felines and livestock and a gender-focused strengthening plan for women involved in the project both plans have a criteria an indicators pertinent /253/254/260/. This validation was further supported through site visits and interviews, particularly with property owners and the representative of the regional environmental authority (Cormacarena).*

***(d) periodically review and review evaluation questions throughout the project/initiative life cycle to ensure consideration and management**: The project proponent provides for periodic review of questions and risk reassessment (/7/253/254).*

In conclusion, the compliance assessment conducted by the audit team confirms that the project proponent has effectively implemented the environmental and social assessment in accordance with the guidelines of Section 15 of the BCR standard and by utilizing the SDSs tool. The document review and the development of a risk matrix based on the tool's questionnaire allowed for the identification of potential environmental and socio-economics impacts, specifying both their nature and risk level, and establishing prevention and mitigation measures where necessary. The accurate justification of responses to negative aspects, supported by reliable references and evidence, along with validation through field visits and interviews with key stakeholders, enabled the audit team to conclude that the project proponent meets the standard requirements for managing impacts on biodiversity, ecosystems, and communities within the project boundaries and determinate that the project activities do not cause any net harm to the communities and/or environment.

2016 National Climate Change Policy, the project has adopted strategies to manage climate change, including forest fire prevention and biodiversity monitoring. Decree 298 of 2016, which establishes the National Climate Change System (SISCLIMA), has also been complied with, with the project contributing to GHG mitigation targets.

Finally, Law 2169 of 2021, which establishes goals to achieve carbon neutrality, and Resolution 849 of 2022, which regulates the Integrated Territorial Climate Change

Management Plans (PIGCCT), have been integrated into the project activities. Table 14 below shows how the project ORINOCO2 are in compliance with the project's regulatory provisions

5.8 Carbon ownership and rights

To assess carbon ownership and rights in the ORINOCO2 project, a review of the relevant agreements and contractual documents provided by the project holder was carried out, ensuring compliance with the requirements established by the BCR Standard version 3.4, methodologies BC0002 version 4.0 and BCR0005 Version 1.0, as well as the validation and verification manual 2.4. National regulations do not explicitly define carbon ownership, so the project holder, the Cataruben Foundation, has aligned itself with existing land tenure legislation, thus mitigating legal risks due to ownership disputes.

Cataruben has established an implementation model in which it acts as the project proponent, while the 147 landowners are the managers of the ecosystems to be conserved. Cataruben leads the monitoring, reporting, validation management and verification procedures, and the landowners execute the necessary activities within their property boundaries. This model ensures that the landholders hold the rights to carbon sequestration in private land areas.

Regarding free, prior and informed consent (FPIC), a process has been implemented to identify and map all communities living in the project's reference region. This process is crucial to define and delimit the eligible area without causing environmental, economic or social damage. Although the project does not develop activities in the territories of ethnic groups, it has ensured that local communities are informed and have participated in consultations, respecting their rights to consent and participate in the design and implementation of the project.

It is important to note that ORINOCO2 does not involve the territories of ethnic groups or traditional communities; however, the project seeks to guarantee respect for their rights and to carry out the procedures established by the applicable legislation in the region in question.

The validated agreements between Cataruben and the 148 participants of the properties are transparent and include fair and equitable compensation provisions. Documentation was reviewed to ensure that these agreements clearly define the responsibilities and obligations of all parties involved, and that stakeholders have a clear understanding of the project's objectives, timelines and potential impacts.

In terms of distribution, the ORINOCO2 project involves a total of 148 participants acting as ecosystem managers, distributed in different roles essential for the implementation and management of project activities. Of these, 91 are landowners, which implies that they have direct ownership of the land and are responsible for conservation and sustainable management activities within their respective territories.

Finally, 39 participants are legal representatives, who act on behalf of organizations or individuals who hold land rights but cannot directly manage project activities. These legal representatives ensure that decisions and actions taken in the project are aligned with the interests and rights of the landowners. Finally, 18 participants act as proxies, which means that they have authority to make operational and administrative decisions on behalf of the landowners. This role facilitates the coordination and execution of activities in the managed properties.

5.9 Risk management

Following the guidelines of section 13 of BCR0002 methodology version 4.0 and BCR0005 methodology Version 1.0, as well as the tool "Permanence and Risk Management" version 1.1, an assessment of the risks related to the implementation of ORINOCO2 project activities in the environmental, financial and social dimensions was carried out, see Table 15.

First, the potential natural and anthropogenic risks that the GHG mitigation actions could face were identified. For each risk, specific measures were determined to mitigate them, ensuring that GHG emission reductions or removals would be maintained during the project quantification period. Among the environmental risks considered are catastrophic fires with the highest risk rating for the project, for which preventive and monitoring measures are defined.

As for financial risks, those related to the expected costs and investments, as well as the project's cash flows, were evaluated. Measures were established to mitigate these risks, such as the search for strategic allies and the constant monitoring of applicable regulations. In addition, risk workshops were held with the strategic partner Ecopetrol.

In the social dimension, risks associated with the participation of local communities and other stakeholders were considered. Spaces for dialogue and consultation with indigenous communities near the project areas were implemented, ensuring their participation and addressing potential conflicts. Clear agreements on responsibilities were also established and mechanisms were implemented to strengthen communication and governance among project participants.

The Permanence and Risk Management tool version 1.0 was used to assess and manage reversion risks, ensuring that conservation areas were maintained during the life of the project. In this regard, a reserve of 20% of the Verified Carbon Credits (VCCs) was implemented as a guarantee, with provisions that allow the project holder to dispose of 10% of the total retained after the verification period.

To ensure adaptive risk management of the ORINOCO2 project, continuous monitoring and evaluation procedures were adopted, periodically reassessing risks and updating mitigation actions as necessary. These procedures were based on the PMBOK guide (Project Management Fundamentals Guide), allowing for flexible adaptation to future conditions and

reducing uncertainty in the generation of results for the ORINOCO2 project. Table 11 below lists the risk management proposed for the ORINOCO2 project.

Table 11. Risk Management for the ORINOCO2 project

Dimension	Risk	C[11]	Mitigation Activities
Environmental	Catastrophic Fire Events, natural or anthropogenic origin	High	1. Design of project activities involving fire management education 2. Implementation of forest fire prevention measures, 3. Project activity preventive monitoring in summer time (early warnings).
Financial	Emerging regulations, norms or changes in standards or methodologies that establish new conditions for new conditions for carbon project management	Medium	1. Constant monitoring of applicable norms, national regulations and standards. 2. Project design with an adaptive model involving the owners, Cataruben and the strategic collaborates in such a way that it can adapt to the circumstances.
Financial	Lack of resources to implement, validate and verify the project	Medium	1. Design of a project activity in order to find a strategic partner to generate the enabling conditions for the monitoring, reporting and verification system.
Financial	Potential overlaps not compatible with other climate change mitigation initiatives	Medium	1. Register with Renare 2. Search and monitor carbon program databases.
Social	Lack of security of land tenure and therefore of ownership and carbon rights.	Medium	1. Legal analysis of ownership and rights over carbon prior to verifications.
Social	Increased conflicts between indigenous communities and private landowners, due to the implementation of project activities	Medium	1. Creation of spaces for dialogue with the indigenous communities near the project areas.
Social	Little active participation of landowners in project activities.	Medium	1. Agreements on responsibilities clearly established in the contracts of engagement.
Social	Land tenure disputes or complaints about participation mechanisms (tutelas, lawsuits, prior consultations), lawsuits, prior consultations)	Low	NA
Social	Forced displacement due to security conditions	Low	NA

Dimension	Risk	C[µ]	Mitigation Activities
Social	Materialization of unethical and non-compliant acts (bribery, deception, others) in the project.	Low	NA
Social	Loss of efficient communication among the project participants.	Medium	1. Establishment of a project monitoring platform with access for all project participants. 2. Design of a governance model between the three main actors of the project.
Social	Non-permanence of some properties in the project due to a change in economic activity, sale, rental or transaction that generates more income or dissatisfaction with the project activities	Medium	1. Establishment of permanence clauses in the employment contract. 2. Strengthening of the PQRS mechanism. 3. Establishment of a governance model among the three project stakeholders.

Source: Adapted from PDD V2.6

[µ] C: Score.

5.10 Sustainable development safeguards (SDSs)

The audit team conducted an evaluation based on document review /7/14/253/254/255/333/ to determine whether the project proponent carried out an environmental and social assessment analyzing the probable effects on biodiversity, ecosystems, and communities within the project boundaries. It was confirmed that the project proponent conducted the assessment in accordance with Section 15 of the BCR standard, utilizing the SDSs tool.

In this sense, it is validated and verified that:

a) The project does not violate any local, state/provincial/national or international regulations or obligations: /7/278//321/ /326/

(b) identifies the potential environmental and socio-economic impacts resulting from the implementation of the project/initiative activities; based on the use of Annex A: Sustainable Development Safeguards (SDS) Assessment Questionnaire: The project proponent developed a matrix to evaluate and monitor environmental and socioeconomic impacts based on the Annex A questionnaire / 253/254/333/. This matrix includes responses to the questionnaire items (yes, no, not applicable, and potentially), specifies the nature of each impact (positive or negative), and assigns a risk level (low, medium, high) to items identified as having a negative impact. Preventive and mitigation actions are also established for identified potential negative impacs.

The assessment identified 16 aspects where project activities do not generate impacts and 2 aspects where they potentially could, with medium-risk levels. The audit team verified that the questionnaire was correctly completed, with negative responses (don't causes negative impacts) adequately justified by reliable references and evidence /7/253/254/255/260/323/295/298/304/.

***(c) develop preventive and/or mitigation activities to manage risks and provide the criteria and indicators necessary to monitor the implementation of the activities and the achievement of the objectives of the action plan**: The identified negative impacts are addressed through preventive and mitigation measures, including an action plan for managing conflicts between felines and livestock and a gender-focused strengthening plan for women involved in the project both plans have a criteria an indicators pertinent /253/254/260/. This validation was further supported through site visits and interviews, particularly with property owners and the representative of the regional environmental authority (Cormacarena).*

***(d) periodically review and review evaluation questions throughout the project/initiative life cycle to ensure consideration and management**: The project proponent provides for periodic review of questions and risk reassessment (/7/253/254).*

In conclusion, the compliance assessment conducted by the audit team confirms that the project proponent has effectively implemented the environmental and social assessment in accordance with the guidelines of Section 15 of the BCR standard and by utilizing the SDSs tool. The document review and the development of a risk matrix based on the tool's questionnaire allowed for the identification of potential environmental and socio-economics impacts, specifying both their nature and risk level, and establishing prevention and mitigation measures where necessary. The accurate justification of responses to negative aspects, supported by reliable references and evidence, along with validation through field visits and interviews with key stakeholders, enabled the audit team to conclude that the project proponent meets the standard requirements for managing impacts on biodiversity, ecosystems, and communities within the project boundaries and determinate that the project activities do not cause any net harm to the communities and/or environment.

5.11 Stakeholder engagement and consultation

The audit team, based on document review, evidence from interviews, and the site visit, validated and verified that the project proponent meets the BCR requirements for stakeholder consultation. In this regard, the team verified that the project proponent:

- *Ensured the participation of property owners involved in the project in the design and implementation of project activities /7/14/274/275/.*
- *Identified the land tenure of the properties that are part of the project according to national regulations /7/250/214/.*

- *Identified stakeholders, including both property owners within the project and various regional actors, and created a robust database of these stakeholders /7/256/.*
- *Described the characteristics of the diverse stakeholders, including producers, agribusinesses, government entities, and neighboring communities /7/256/.*
- *Identified potential anticipated changes in the well-being of communities /7/296/.*
- *Located the stakeholders /21/26/256/.*
- *Established mechanisms for stakeholders to provide feedback: regular public meetings in municipalities, a complaints and requests (PQRS) system, and invitations sent by email to present the project and receive comments /7/257/279/280/281/282/283/284/285/286/287/288/289/290/291/292/293/.*

Stakeholders Consultations

During the stakeholder consultation process for the ORINOCO2 project, a review was conducted to validate the individuals, groups and organizations that would be affected by project activities. In the initial phase, a database of potentially interested stakeholders was created and documented including communities, agricultural and forest enterprises and governmental entities /256/. An official letter was sent to these stakeholders, for a total of 147 letters detailing the project design and the potential impacts identified, inviting them to make comments, suggestions or recommendations through official channels such as telephone, presential meetings, and e-mail /257/. One comment was received by email, from the agricultural company Agrocacay S.A.S. questions were raised regarding the measurement of carbon sequestration in reforestations and the monitoring of threatened species. The project proponent informed that the REDD+ project focuses on the conservation of natural areas through the reduction of emissions caused by deforestation and forest degradation, and that the landowners would carry out conservation and monitoring activities in conjunction with Fundación Cataruben/.

Public Comments on Biocarbon Standard

Additionally, the ORINOCO2 project was open for public comment on the Biocarbon Standard public platform, from September 11, 2023 until October 11, 2023. During this 30-calendar day period, all stakeholders were invited to provide their comments and suggestions on the project. Therefore, it is validated that no comments were received during the public consultation period on Biocarbon Standard, according to the documentation available on said platform at the time of this validation and verification audit

6 Verification findings

6.1 Project and monitoring plan implementation

6.1.1 Project activities implementation

The audit team verified that the activities implemented during the verification period 2018-2022 /260/ followed the guidelines established in the validated Monitoring Plan /7/. There is consistency and coherence between the monitoring and the design of the Monitoring Plan in terms of the alignment of the implemented activities with the methodologies and objectives of the indicator, following the established implementation schedule /7/14/260/. The following is a detailed evaluation of the Monitoring Plan compliance during the verification period for activities that prevent land-use change in natural savannas (Table 12) and REDD+(Table 13¡**Error! No se encuentra el origen de la referencia.**) activities. Likewise, the information was verified in the site visit and with interviews with the property owners.

Table 12 Natural Savannas implemented Activities

ID	Name	Ind ID	Ind. Name	Global Target	Projected Progress	Reported Result	Cross Check
S1	Improvement of landowners' income generated by the sale of carbon credits obtained by the natural savanna ecosystem	S-1.1	Percentage increase in average income derived from the sale of verified carbon credits	25%	0%	0%	No progress reported for this monitoring period
S1	Improvement of landowners' income generated by the sale of carbon credits obtained by the natural savanna ecosystem	S-1.2	Percentage of landowners with improved income from the sale of verified carbon credits	100%	0%	0%	No progress reported for this monitoring period
S2	Implementation of landscape management tools in savannas	S-2.1	Number of properties implementing Landscape Management Tools in natural savannas	103	80	80	Report detailing 80 properties implementing landscape management tools (live fences, scattered trees in natural savannas) /7/14/270/
S3	Implementation of sustainable productive practices in natural savannas	S-3.1	Number of properties implementing sustainable productive, soil management, and conservation practices	103	70	70	Document detailing the 147 properties and implementation of sustainable cattle ranching, family farming, ecotourism practices, among others /7/14/271/

S4	*Alliance management to financially enable conditions for project activity validation and first verification*	*S-4.1*	*Formalized alliance or agreement*	*1*	*1*	*1*	*Verified through a meeting with the Ecopetrol representative on the existence of the agreement with Ecopetrol /7/14/*
S5	*Capacity-building plan for the community on natural savanna management and conservation of strategic ecosystem services, sustainable production systems, and landscape management tools*	*S-5.1*	*Percentage of Training Plan execution aimed at strengthening capacities*	*100%*	*25%*	*25%*	*Report including information on topics covered, objectives, theoretical content, and attendance lists /7/14/391/*

Source: Present validation and verification report

Table 13 REDD+ Activities

ID	Name	Ind ID	Ind. Name	Global Target	Projected Progress	Reported Result	Cross Check
R1	Improvement of landowners' income generated by the sale of carbon credits obtained in the forest ecosystem	R-1.1	Percentage increase in average income derived from the sale of verified carbon credits	25%	0%	0%	No progress reported for this monitoring period
R1	Improvement of landowners' income generated by the sale of carbon credits obtained in the forest ecosystem	R-1.2	Percentage of landowners with improved income from the sale of verified carbon credits	100%	0%	0%	No progress reported for this monitoring period
R2	Implementation of sustainable fire management practices for wildfire prevention	R-2.1	Number of properties implementing sustainable practices to prevent wildfires	75	75	75	Report attached on the implementation of practices such as firebreaks, fire barriers, or grass pruning to reduce fire risks affecting the forest /266/267/
R3	Monitoreo de la superficie forestal en conservación dentro de los límites del proyecto	R-3.1	Number of monitoring instances	35	1	1	Report of monitored heat points contributing to early warnings with landowners /7/14/392/
R4	Promotion of eco-efficient stoves and dendroenergy banks	R-4.1	Number of properties implementing dendroenergy banks	10	5	5	Report detailing the properties implementing dendroenergy banks, /7/14/269/
R4	Promotion of eco-efficient stoves and dendroenergy banks	R-4.2	Number of eco-efficient stoves	20	7	7	Report presented with the percentage of properties implementing eco-efficient stoves on 7 properties with evidence /7/14/269/

R5	Design and implementation of a project governance model to ensure sustainability by involving ecosystem managers, project proponent, and strategic partner	R-5.1	Number of operational governance instances with effective participation of key actors	34	1	1%	Governance document, to be implemented from 2025 onward /7/14/293/
R6	Promote the demarcation and signage in strategic ecosystems and natural protection areas	R-6.1	Number of properties with identified and signposted areas important for terrestrial biodiversity	20	7	7	Document evidencing the identification of areas of biological importance for properties participating in the project with the property owners. Includes planning for signage in 2025 /7/14/394/
R7	Promote the recognition of conservation areas and figures for sustainable ecosystem management	R-7.1	Number of properties with declared conservation areas and/or figures	10	2	2	Report presented detailing properties with areas declared as conservation figures, along with resolutions issued by the Ministry of Environment and Sustainable Development /7/14/265/266/
R8	Capacity-building plan for the community on sustainable forest management and conservation of strategic ecosystem services, fire management to prevent wildfires, sustainable production systems, and	R-8.1	Progress in the execution of the Training Plan aimed at strengthening community capacities in ecosystem services and forest conservation	100%	25%	25%	Detailed report on the training sessions conducted for the monitoring report; this report includes information on topics covered, objectives, theoretical content, and a matrix summarizing each training session /7/14/262/263/

	landscape management tools						

6.1.2 Monitoring plan implementation and monitoring report

The audit team verified that the project's Monitoring Plan was executed in accordance with the requirements of the methodologies used (BCR0005 and BCR002) specifying and as follow:

The data and information needed to quantify GHG emission reductions. reductions during the 2018-2022 quantification period: ***For BCR0005 activities,*** *the information sources associated with the activity data of the reference region /7/14/84/85/86/87/, were corroborated and are consistent with the BCR0005 criteria established for the baseline scenario. The project area /7/26/27/, and the leakage area /7/30/32/34/, the soil carbon emission factors from relevant regional studies /240/, and the establishment, through sampling plots, of the biomass emission factor of natural savannas, according to the carbon reservoirs and emission sources included /7/224/245/246/247/248/, were corroborated and are consistent with the BCR0005 criteria established for monitoring period /7/238/227/. For* ***BCR0002 activities:*** *the information sources associated with the activity data of the reference region /182/, the project area /7/114/115/, and the leakage area /7/14/132/122/, the emission factors from official national sources /224/239/, according to the carbon reservoirs and emission sources included, were corroborated and are consistent with the BCR0002 criteria established for the development of the baseline scenario and monitoring the project emission during 2018-2022. /7/238/228/*

Additionally, the documentary supports that evidence the implementation of activities that prevent land use change in natural savannas and REDD+ activities are presented in section 6.1.1. The Information related to the monitoring of environmental and social effects of the project activities /14/253/254/ and compliance with REDD+ Safeguards /14/275/. The Procedures established for the management of GHG reductions or removals and related quality control /14//7/14/98/226/318/319/320/321/322/325/326. the methods defined for the periodic calculation of GHG reductions or removals, and leakage /14/73/74/75/76/77/101/32/33. The roles and responsibilities for monitoring and reporting the variables relevant to the calculation of reductions /7/14/325/. the assessment of the project contribution whit the Sustainable Development Goals (SDGs)/14/309/ and monitoring of co-benefits of the wax pal category /14/260/, were verified.

Based on the above, the evaluation conducted supports reliable practices of monitoring, tracking, and control of the GHG project activities, as well as the procedures to ensure data quality, in accordance with the ISO 14064-2 standard. The audit team has verified all the parameters presented in the monitoring plan against the criteria of the BCR Standard

(section 21), the BCR005 methodology (section 13), the BCR002 methodology (section 14), and the BCR Monitoring, Reporting, and Verification (MRV) tool (section 10).

6.1.2.1 Data and parameters

In the evaluation of project monitoring, a comprehensive review was conducted to verify the monitored data and parameters. Each parameter was evaluated in accordance with the criteria established in the BCR0002 and BCR0005 methodologies, as well as the BCR Standard.

The audit team verified that the values of the parameters established and monitored during the quantification period were documented in the project's accounting annexes /7/14/238/. These values were used to calculate GHG emissions in both the baseline scenario and the project and leakage areas in the with-project scenario ex ante and ex post (Section 6.2). The audit concludes that the data and parameters were monitored according to the established criteria. Below are the data and parameters monitored during the monitoring period.

Emission factor deforestation

Data/Parameter	*Total biomass in forests*	*Cross-Check*
data unit	*t/ha*	
Description	*Plant biomass contained in forest ecosystems.* *It is estimated from the sum of aboveground biomass (BA) and belowground biomass (BS).*	*/390/238/*
Data source used	*Ministerio de Ambiente y Desarrollo Sostenible – NREF Colombia*	
Values	*106,47*	
Indicate what the data is used for (Baseline/Project/Leakage Emission Calculations)	*Definition of the carbon emission factor in total biomass (REDD+ Activities).* *Calculation of emissions in forest ecosystems in baseline.* *Calculation of emissions in forest ecosystems in project areas.* *Calculation of emissions in forest ecosystems in leakage areas.*	
Justification of the choice of data or description of the measurement methSDG and procedures applied.	*The value is taken from the NREF, so it represents a conservative value, according to the national context for the estimation of GHG emissions.*	

Emission factor deforestation

Data/Parameter	*Soil organic carbon in forests*	*/390/238/*
data unit	*tC/ha*	

Description	Carbon content in soils in forest ecosystems	
Data source used	Ministerio de Ambiente y Desarrollo Sostenible – NREF Colombia	
Values	64,51	
Indicate what the data is used for (Baseline/Project/Leakage Emission Calculations)	Definition of the soil carbon emission factor (REDD+ Activities) Calculation of baseline emissions in forest ecosystems Calculation of emissions in forest ecosystems in the project area.	/7/14/238/
	Calculation of emissions in forest ecosystems in leakage areas	
Justification for the choice of data or description of the methSDG and measurement measurement methSDG and procedures applied	The value is taken from the NREF, so it represents a conservative value, according to the national context for the estimation of GHG emissions.	

Emission factor forest degradation

Data/Parameter	Emission factor of forest degradation	Cross-Check
data unit	t/ha	
Description	Loss of carbon content when a core forest is degraded to a border forest in the orinoquia Biome.	/239/238/
Data source used	Ministerio de Ambiente y Desarrollo Sostenible – NREF Colombia	
Values	98,74	
Indicate what the data is used for (Baseline/Project/Leakage Emission Calculations)	Definition of the carbon emission factor in forest degradation (REDD+ Activities). Calculation of emissions in forest ecosystems in baseline. Calculation of emissions in forest ecosystems in project areas. Calculation of emissions in forest ecosystems in leakage areas.	/239/238/

Justification of the choice of data or description of the measurement methSDG and procedures applied.	The value is taken from the NREF, so it represents a conservative value, according to the national context for the estimation of GHG emissions.	/239/238/

Emission factor natural savanna

Data/Parameter	Total biomass in natural savannas	/7/14/ 238/
data unit	t/ha	/7/14/ 238/
Description	Plant biomass contained in natural savanna ecosystems. It is estimated from the sum of aboveground biomass (BA) and belowground biomass (BS).	
Data source used	Own data from sampling	/7/14/ 238/
Values	3,78	
	Definition of the carbon emission factor in the total biomass of natural savannas	
Indicate what the data is used for (Baseline/Project/Leakage Emission Calculations)	Calculation of baseline emissions in forest ecosystems Calculation of emissions in forest ecosystems in the project area.	
	Calculation of emissions in forest ecosystems in leakage areas	
Justification of the choice of data or description of the measurement methSDG and procedures applied.	Sampling was conducted according to nationally validated methodologies and was carried out in eligible areas of the project.	/7/14/ 238/241/ 242/ 244/ 245/ 246/ 247/ 248/

Emission factor natural savanna

Data/Parameter	Soil organic carbon in natural savannas	/7/14/ 238/
data unit	tC/ha	
Description	Carbon content in soils in natural savanna ecosystems	
Data source used	Hyman et al., 2022. Soil carbon storage potential of acid soils of Colombia's Eastern High Plains	/7/14/ 238/240/
Values	65,94	/240/

Indicate what the data is used for (Baseline/Project/Leakage Emission Calculations)	Definition of the carbon emission factor in the soil of natural savannas Calculation of emissions in forest ecosystems at baseline Calculation of emissions in forest ecosystems in project areas Calculation of emissions in forest ecosystems in leakage areas leakage	/7/14/ 238/240/338/
Justification of the choice of data or description of the measurement methSDG and procedures applied.	The study is regional, so it was developed in areas with ecosystems and environmental characteristics similar to the project areas.	/240/ /

Data activity Reference Region

Data/Parameter	REDD+ Reference Region forest area	Cross-Check
data unit	ha	
Description	Areas in the reference region that correspond to the forest category, years 2005, 2017,	180/181/182
Measured/Calculated/Default:	Calculated	
Data source	Area covered by natural forest - Forest and Carbon Monitoring System	181/182
Monitored parameter value(s)	Forest area Reference region 2005: 217,936ha Forest area Reference region 2017: 196,312 ha	181/182
Indicate what the data is used for (Baseline/Project/leakage Emissions Calculations)	Estimation of change in forest cover in baseline.	
Monitoring equipment (type, accuracy class, serial number, calibration frequency, date of last calibration, validity)	ArcGISV3.1 y QGIS V3.28 National data on the area covered by natural forest Forest area 2005 Forest area 2017 Thematic precision is achieved through ACATAMA	371/372/ 373/374
Measurement/reading/recording frequency	Yearly	
Calculation method (if applicable)	Geospatial Procedure for the implementation of Carbon projects	/402/

Quality control procedures applied	Formats of in situ observations, field coverage Procedure ACATAMA	/230

Data activity Reference Region Fragmentation

Data/Parameter	REDD+ Reference Region forest area - fragmentation classes	CROS-CHECK
data unit	ha	
Description	Areas in the reference region that correspond to the category of forest subjected to the fragmentation process MSPA algorithms years 2005, 2017,	
Measured/Calculated/Default:	Calculated	
Data source	Area covered by natural forest - Forest and Carbon Monitoring System - MSPA Algorithms.	
Monitored parameter value(s)	Forest area Reference region 2005: Core Forest: 40,229 ha Edge Forest: 177,707 ha Forest area Reference region 2017: Core Forest: 33,112 ha Edge Forest: 163,199 ha	178/179/
Indicate what the data is used for (Baseline/Project/leakage Emissions Calculations)	Estimation of fragmentation in the reference region	
Monitoring equipment (type, accuracy class, serial number, calibration frequency, date of last calibration, validity)	MSPA Version 2,3. National data on the area covered by natural forest Forest area 2005 Forest area 2017 Thematic precision is achieved through ACATAMA The level of uncertainty is determined by the inputs, that is, the maps of the area covered by natural forest.	178/179/ 180/181
Measurement/reading/recording frequency	Yearly	
Calculation method (if applicable)	Geospatial Procedure for the implementation of Carbon projects	390/399/ 400/4001
Quality control procedures applied	Formats of in situ observations, field coverage Procedure ACATAMA	

Data activity Reference Region Degradation

Data/Parameter	Forest area of the REDD+ Reference Region that went from Core Forest to Edge Forest.	CROS-CHECK
data unit	ha	
Description	Areas in the reference region that correspond to the Core forest category and were transformed into Edge Forest 2005, 2017.	
Measured/Calculated/Default:	Calculated	
Data source	Area covered by natural forest - Forest and Carbon Monitoring System -, fragmented forest (Core Forest - Edge Forest) MSPA Algorithms.	
Monitored parameter value(s)	Forest area Reference region 2005: Core Forest: 40,229ha Edge Forest: 177,707 ha Forest area Reference region 2017: Core Forest: 33,112 ha Edge Forest: 163,199 ha Reference region Degradation 2005 - 2017 B Core Forest 2005 —- Edge Forest, 2017: 6790 ha	178/ 179/177
Indicate what the data is used for (Baseline/Project/leakage Emissions Calculations)	Estimation of degradation in the reference region	
Monitoring equipment (type, accuracy class, serial number, calibration frequency, date of last calibration, validity)	MSPA Version 2,3. ArcGIS Pro v2.3, QGIS. National data on the area covered by natural forest Forest area 2005 Forest area 2017 Thematic precision is achieved through ACATAMA The level of uncertainty is determined by the inputs, that is, the maps of the area covered by natural forest.	178/ 179/180/ 181/177/
Measurement/reading/recording frequency	Yearly	
Calculation method (if applicable)	Geospatial Procedure for the implementation of Carbon projects	224/ 390/398-

	The NREF procedure, carried out by IDEAM, presents the third Reference Level of Forest Emissions of Colombia for the period 2023-2027,	399/ 400/401/
Quality control procedures applied	Formats of in situ observations, field coverage Procedure ACATAMA	/230/

Data activity REDD Leakage Area Baseline

Data/Parameter	REDD+ Leakage Area Baseline	CROS-CHECK
data unit	ha	
Description	Areas in the leakage belt that correspond to the forest category, years 2005, 2018,	132/123/124
Measured/Calculated/Default:	Calculated	
Data source	Area covered by natural forest - Forest and Carbon Monitoring System.	
Monitored parameter value(s)	Forest area 2005: 21,617 ha Forest area 2018: 19,876 ha	132/123/124
Indicate what the data is used for (Baseline/Project/leakage Emissions Calculations)	Estimation of change in forest cover in the leak area.	
Monitoring equipment (type, accuracy class, serial number, calibration frequency, date of last calibration, validity)	ArcGISV3.1 y QGIS V3.28 National data on the area covered by natural forest Thematic precision is achieved through ACATAMA	180/181
Measurement/reading/recording frequency	Yearly	
Calculation method (if applicable)	Procedure Supervised forest classification Geospatial Procedure for the implementation of Carbon projects	/402/226
Quality control procedures applied	Formats of in situ observations, field coverage Procedure ACATAMA	/230/

Data activity REDD Leakage Area Project Limits

Data/Parameter	REDD+ Leakage Area	CROS-CHECK

data unit	ha	
Description	Areas in the leakage belt that correspond to the forest category, years 2018, 2022,	132/128/ 129
Measured/Calculated/Default:	Calculated	
Data source	Area covered by natural forest - Forest and Carbon Monitoring System - PDI Processing - Google Earth Engine	226
Monitored parameter value(s)	Forest area 2018: 25,593 ha Forest area 2022: 25,405 ha	132/128/ 129/226/ 220/221/ 222
Indicate what the data is used for (Baseline/Project/leakage Emissions Calculations)	Estimation of change in forest cover in the leak area.	
Monitoring equipment (type, accuracy class, serial number, calibration frequency, date of last calibration, validity)	ArcGISV3.1 y QGIS V3.28 National data on the area covered by natural forest Forest area 2018: 94.0% Forest area 2022: 96.0% Thematic precision is achieved through ACATAMA	180/181
Measurement/reading/recording frequency	Yearly	
Calculation method (if applicable)	Procedure Supervised forest classification Geospatial Procedure for the implementation of Carbon projects	/402/
Quality control procedures applied	Formats of in situ observations, field coverage Procedure ACATAMA	/230

Data activity REDD Leaks Area Fragmentation Lb and Project Limits

Data/Parameter	REDD+ Leakage Area Fragmentation Baseline and project limits.	CROS-CHECK
data unit	ha	
Description	Areas in the leak belt that correspond to the forest category, and were analyzed through MSPA. years 2005, 2018, 2022,	
Measured/Calculated/Default:	Calculated	

Data source	*Area covered by natural forest - Forest and Carbon Monitoring System - fragmented forest (Core Forest - Edge Forest) MSPA Algorithms*	
Monitored parameter value(s)	*Forest area leaks 2005:* *Core Forest: 4853 ha* *Edge Forest: 16,765 ha* *Forest area leaks 2018:* *Core Forest: 4303 ha* *Edge Forest: 15573 ha* *Forest area leaks 2022:* *Core Forest: 4961 ha* *Edge Forest: 20444 ha*	*220/221/ 222/223/*
Indicate what the data is used for (Baseline/Project/leakage Emissions Calculations)	*Estimation of fragmentation in the leak area*	*/402*
Monitoring equipment (type, accuracy class, serial number, calibration frequency, date of last calibration, validity)	*MSPA Version 2,3.ArcGISV3.1 y QGIS V3.28* *National data on the area covered by natural forest* *Forest area 2018: 94.0%* *Forest area 2022: 96.0%* *Thematic precision is achieved through ACATAMA* *The level of uncertainty is determined by the inputs, that is, the maps of the area covered by natural forest.*	*126/127/ 130/131*
Measurement/reading/recording frequency	*Yearly*	
Calculation method (if applicable)	*Procedure Supervised forest classification* *Geospatial Procedure for the implementation of Carbon projects*	
Quality control procedures applied	*Formats of in situ observations, field coverage* *Procedure ACATAMA*	

Data activity REDD Leakage Area Baseline Degradation

Data/Parameter	*Forest area in the Fuga area, which has changed category, going from Core Forest to Edge Forest.*	*Cross-Check*
data unit	*ha*	

Description	Areas in the escape zone that correspond to the category of Core forest and were transformed into Edge Forest 2005, 2017.	132/128/129
Measured/Calculated/Default:	Calculated	
Data source	Area covered by natural forest - Forest and Carbon Monitoring System -, fragmented forest (Core Forest - Edge Forest) MSPA Algorithms.	226
Monitored parameter value(s)	Forest area leaks 2005: Core Forest: 48,53 ha Edge Forest: 15,573 ha Forest area leaks 2018: Core Forest: 4,303 ha Edge Forest: 20,613 ha Forest area leaks 2022: Core Forest: 4,961 ha Edge Forest: 20444 ha Reference region Degradation 2005 - 2017 Core forest 2005 —-> Edge Forest 2017: 675 ha	125/126/127/131
Indicate what the data is used for (Baseline/Project/leakage Emissions Calculations)	Estimation of degradation in the leak area.	
Monitoring equipment (type, accuracy class, serial number, calibration frequency, date of last calibration, validity)	MSPA Version 2,3. ArcGIS Pro v2.3, QGIS. National data on the area covered by natural forest Forest area 2005 Forest area 2018 Forest area 2022 Thematic precision is achieved through ACATAMA The level of uncertainty is determined by the inputs, that is, the maps of the area covered by natural forest.	220/221/222/223/
Measurement/reading/recording frequency	Yearly	
Calculation method (if applicable)	Geospatial Procedure for the implementation of Carbon projects The NREF procedure, carried out by IDEAM, presents the third Reference Level of Forest	224/390/398-399/400/401

	Emissions of Colombia for the period 2023-2027	
Quality control procedures applied	Formats of in situ observations, field coverage Procedure ACATAMA	/230

Data activity REDD Project Area Degradation

Data/Parameter	Degradation of project areas	CROS-CHECK
data unit	ha	
Description	Areas in the project area that correspond to the category of core forest and were transformed into Edge Forest, in the period 2018, 2022.	132/128/129
Measured/Calculated/Default:	Calculated	
Data source	Area covered by natural forest - Forest and Carbon Monitoring System -, fragmented forest (Core Forest - Edge Forest) MSPA Algorithms.	226
Monitored parameter value(s)	Eligible forest area 2018 Core Forest: 9,089 ha Edge Forest: 20,767 ha Forest area Monitoring 2022: Core Forest: 9,087 ha Edge Forest: 20,701 ha Degradation Project Areas 2018 - 2022 Core forest 2018 —-> Edge Forest 2022: 0 ha	115/117/ 118/ 119/120
Indicate what the data is used for (Baseline/Project/leakage Emissions Calculations)	Estimation of degradation in the leak area.	
Monitoring equipment (type, accuracy class, serial number, calibration frequency, date of last calibration, validity)	MSPA Version 2,3. ArcGIS Pro v2.3, QGIS. National data on the area covered by natural forest Forest area 2005 Forest area 2018 Forest area 2022 Thematic precision is achieved through ACATAMA The level of uncertainty is determined by the inputs, that	220/221/ 222/223/

	is, the maps of the area covered by natural forest.	
Measurement/reading/recording frequency	Yearly	
Calculation method (if applicable)	Geospatial Procedure for the implementation of Carbon projects The NREF procedure, carried out by IDEAM, presents the third Reference Level of Forest Emissions of Colombia for the period 2023-2027	224/390/398-399/400/401
Quality control procedures applied	Formats of in situ observations, field coverage Procedure ACATAMA	/230

Data activity Savanna Areas Reference Region

Data/Parameter	Savannah cover in the reference region	CROS-CHECK
data unit	ha	
Description	Areas in the reference region that correspond to the category of sheets in the period 2012 - 2018.	
Measured/Calculated/Default:	Calculated	
Data source	National map of land covers, Corine Land Cover methodology.	
Monitored parameter value(s)	Savannah cover 2012: 3,046,769 ha Savannah cover 2018: 2,293,288 ha	85/86/87
Indicate what the data is used for (Baseline/Project/leakage Emissions Calculations)	Estimation of the transformation of natural savannahs in the reference region - Baseline.	
Monitoring equipment (type, accuracy class, serial number, calibration frequency, date of last calibration, validity)	ArcGIS Pro v2.3, QGIS. National land cover map, Corine Land Cover methodology. Validation matrix 2012 Validation matrix 2018 Thematic precision is achieved through Validation Matrix	376/377/378/379
Measurement/reading/recording frequency	Yearly	

Calculation method (if applicable)	Geospatial Procedure for the implementation of Carbon projects FC-GOG-29. Instructions for Interpretation of Clc - Scale 100,000 FC-GOG-23. Confusion Matrix GOP-13. Procedure in Geographic Information Systems.docx	94/95/96/98/402
Quality control procedures applied	Formats of in situ observations, field coverage Characterization of cartographic inputs for the generation of the Corine Land Cover.	101/102/223

Data activity Savanna Areas in Project Areas

Data/Parameter	Eligible savanna areas and monitoring	CROS-CHECK
data unit	ha	
Description	Eligible savanna areas in accordance with the BCR0005 methodology definition and their respective monitoring.	
Measured/Calculated/Default:	Calculated	
Data source	National map of land covers, Corine Land Cover methodology.	
Monitored parameter value(s)	Eligible Savannah: 2012 - 2018: 87,396 ha Savannah Monitoring 2022: 86,790 ha	27/28
Indicate what the data is used for (Baseline/Project/leakage Emissions Calculations)	Eligible natural savanna areas.	
Monitoring equipment (type, accuracy class, serial number, calibration frequency, date of last calibration, validity)	ArcGIS Pro v2.3, QGIS. National land cover map, Corine Land Cover methodology. Validation matrix 2022 Thematic precision is achieved through Validartion Matrix	27/28/71/72/74/75/76 91/92/93/94
Measurement/reading/recording frequency	Yearly	
Calculation method (if applicable)	Geospatial Procedure for the implementation of Carbon projects	94/95/ 96/98/402

	FC-GOG-29. Instructions for Interpretation of Clc - Scale 100,000 FC-GOG-23. Confusion Matrix GOP-13. Procedure in Geographic Information Systems.docx	
Quality control procedures applied	Formats of in situ observations, field coverage Characterization of cartographic inputs for the generation of the Corine Land Cover.	101/102/223

Data activity Savanna covers in leak areas

Data/Parameter	Natural savannah covers in the fuas areas	CROS-CHECK
data unit	ha	
Description	Eligible savanna areas in accordance with the BCR0005 methodology definition and their respective monitoring.	
Measured/Calculated/Default:	Calculated	
Data source	National map of land covers, Corine Land Cover methodology.	
Monitored parameter value(s)	Savannah Area 2012: 2012 - 2018: 84973 ha Savannah Area 2012 - 2018: 76577 ha Savannah Area 2018 - 2022: 74,501 ha	
Indicate what the data is used for (Baseline/Project/leakage Emissions Calculations)	Areas of savannas in leaks	
Monitoring equipment (type, accuracy class, serial number, calibration frequency, date of last calibration, validity)	ArcGIS Pro v2.3, QGIS. National land cover map, Corine Land Cover methodology. Validation matrix 2022 Thematic precision is achieved through Validartion Matrix	74/75/76 31/32/33/ 91/92/93/94
Measurement/reading/recording frequency	Yearly	
Calculation method (if applicable)	Geospatial Procedure for the implementation of Carbon projects FC-GOG-29. Instructions for	94/95/ 96/98/402

	Interpretation of Clc - Scale 100,000 FC-GOG-23. Confusion Matrix GOP-13. Procedure in Geographic Information Systems.docx	
Quality control procedures applied	Formats of in situ observations, field coverage Characterization of cartographic inputs for the generation of the Corine Land Cover.	101/102/223

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6.1.2.2 Environmental and social effects of the project activities

Since validation and first verification are presented together the audit team conducted an assessment based on document review /7/14/253/254/255/ to determine whether the project proponent carried out an environmental and social assessment analyzing the probable effects on biodiversity, ecosystems, and communities within the project boundaries. It was confirmed that the project proponent conducted the assessment in accordance with Section 15 of the BCR standard, utilizing the SDSs tool. (details in section 5.10).

In addition, the progress in the design of the feline management plan and the creation of the plan for the strengthening of the capacities of the women who are part of the project were evaluated for the monitoring period. /14/300/317/. This verification was further supported through site visits and interviews, particularly with property owners.

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

The audit team verified that the project proponent has a robust organizational structure and has implemented an operational plan with procedures for the periodic management of monitoring quality and is aligned with BCR 0005 section 13.2 y and BCR 0002 Section 14.6.

In this regard, the audit team confirmed that quality procedures were appropriately applied, with clear responsibilities and authority established for recording, monitoring, measuring, and reporting project activities. These procedures reflect a "best practice" approach in the management system, effectively establishing the necessary quality control measures for the collection and monitoring of activities and data / 7/ 14/ 98/ 226/ 318/ 319/ 320/ 321/ 322/ 325/ 326/ 242/ 247/ 230/. Additionally, during the site visit and interviews with the administrative and technical teams responsible for the design, implementation, and monitoring of the project, the project proponent's capacity to implement these procedures was demonstrated, ensuring proper management of emission reductions and rigorous quality controls for monitoring activities.

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

The audit team evaluated compliance with the methods defined for the periodic calculation of GHG reductions or removals, and the leakage data and information, taking into account the guidelines of the BCR0005 and BCR0002 methodologies:

- ***BCR0005:*** *The audit team reviewed and validated that the geographical boundaries of the project are correctly integrated into a Geographic Information System (GIS)It was verified the methods defined for calculating emission reductions correspond to the monitoring of activity data of the reference region, project area and the leakage area during the monitoring period (2018-2022) /26/27/28/29/30/31/32/33/34/, the sources of information associated with these data were obtained using remote sensors such as Sentinel and high-resolution sensors like Planet and Worldview-2 images, complemented by in situ observations/92/93/99/102/The detection of changes in eligible areas was be carried out through the application of the Corine Land Cover methodology and the computer-Assisted Interpretation Procedure – PIAO /73/74/75/76/77/101/. The accuracy of the maps was verified from the confusion matrix with an accuracy of 98%. /90/100/ 336/337/.*

  The aboveground biomass emission factors were established from the establishment of sampling points /245/, biomass sampling /244/246/247/ and subsequent submission to the CIAT laboratory /248/. No re-sampling of the plots was carried out because the herbaceous biomass is cut to send the respective samples to the laboratory who determines the % of biomass of the sample, which was then used to define the total biomass emission factor. In this sense, in the on-site visit evidence of cluster establishment was evidenced according to the procedure described/241/242/, and the team establishing the sampling plots was asked to perform a build-up from scratch to validate the procedure. The codes of the samples taken to be sent to the laboratory were verified, and then compared with the results obtained from the laboratory/248. For the soil emission factor, the reference value of the scientific study developed by Hyman et all /240/ in the region where the project is developed was used (see Section 6.2.3.1.1 Emission Factors - Natural Savanna). With the activity data and established emission factors, the project proponent calculates the emission reductions using the formula established in BCR0005.

- ***BCR0002:*** *The audit team verified that the geographical boundaries of the project are correctly integrated into a Geographic Information System (GIS), georeferencing spatial limits, including the reference region, project areas and the leakage belt. This demarcation was conducted in accordance with the eligibility criteria for developing REDD+ activities under the BCR methodology. To ensure the integrity of the monitoring methods for REDD+ areas, the auditor verified that the project developer utilizes high-resolution satellite imagery, such as Sentinel and Planet remote sensors, supplemented by in situ observation /114/115/116/118/117/ /118/119/ 120/ 121/ 122 / 123/ 124/125/ 126 / 127*

128/ 129/ 130/ 131/132 /. Detection of changes in eligible areas is performed through Digital Image Processing (DIP) on the Google Earth Engine platform, validated by the Computer-Assisted Interpretation Procedure (PIAO) /215/214/226/230/231/, The Thematic accuracy above the 90% was verified through AcATaMa /2015/ 219/. Additionally, for monitoring fires in tree-covered areas. It was also verified that periodic monitoring of emission reductions from deforestation and degradation is conducted following the guidelines described in Section 14.4 of the BCR0002 V.4.0 methodology, or corresponding sections in updated versions.

The emission factor used for calculation corresponds to the validated emission factor from the Colombian NREF /224/ 390/. Therefore, the emission reductions are calculated using the formulas established in BCR0002: (section 6.2)

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

The documentary analysis of the project's activity monitoring plan and the review of procedures implemented by the Cataruben Foundation showed a clear definition of roles and responsibilities. Records and protocols detailing each team member's specific functions were reviewed /14/7/326/260/275/ /309/ 358/ , ensuring that all monitored and reported variables meet the requirements established in BCR0002 and BCR0005.

During the verification of the responsibility assignment process for monitoring and reporting relevant variables in calculating emission reductions or removals within the ORINOCO2 project, it was confirmed that the Cataruben Foundation is primarily responsible for these activities, led by its technical team. This responsibility is further supported by close collaboration with local communities, who participate in data monitoring and reporting. This collaborative approach ensures effective monitoring with a high degree of accuracy, shared responsibility, and differentiated data accuracy.

The audit team validated, through document review, interviews, and the site visit, that roles and responsibilities are clearly defined for monitoring and reporting the relevant variables. The project proponent has a complete operational structure that enables effective monitoring and reporting of the relevant variables for calculating emission reductions. Key roles include the Project Director, Spatial Analysis Unit, Emissions Quantification Unit, Project Activities Implementation Unit, Governance Unit, SDG Safeguards and Co-benefits Unit, and Biodiversity Area. Each unit has qualified and competent personnel with responsibilities specific to each area. Furthermore, the entity's ISO 9001 and ISO 14001 certifications underscore its commitment to quality /326/327/. Quality attributes were reviewed during the data collection and processing stages, verified through interviews with the project proponent team, confirming the prioritization of accuracy, completeness, timeliness, relevance, and ease of use of information. It was also verified that information sources are reliable, and that adequate validation and consolidation processes are conducted /322/.

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

The audit team verified that the Project demonstrated compliance with its contribution to the Sustainable Development Goals (SDGs) through the use of the SDG Tool v1.0 /14/336/329/. It was confirmed that the project proponent completed the tool using Excel /309/, where all project activities associated with SDG goals and relevant indicators were recorded /309/260/. According to the criteria contained in the Excel tool, each SDG monitoring activity presented the following information: project activity, contribution of the activity, type of activity, activity measurement unit (activity indicator), and the respective evidence for each monitoring period. The audit team verified that the project activities identified were consistently aligned with the contribution to the respective SDGs /309/260/, and that the project activity or component corresponds to the SDG targets and indicators (see Table 14). Therefore, the audit team concludes that the design for monitoring the contribution to the SDGs is consistent. And the contribution to SDGs 6, 13 and 15 is verified in the monitoring period.

Table 14 Evaluation of the procedure to monitor contribution to SDGs

SDG	***SDG Indicator***	***Project Activity or Component Contributing to the SDG***	***Supported Evidence Cross-Check***
6	*6.1.1 Proportion of the population with safely managed drinking water services*	*S-5. Strengthening of technical capacity in the community for managing natural savannas and conserving strategic ecosystem services, fire management, sustainable production systems, and landscape management tools.*	*Characterization of properties, preparation of plans for efficient water use and saving, and diagnosis. /310/311/*
13	*13.2.2 Total greenhouse gas emissions per year*	*Reduction of GHG emissions through project activities.*	*GHG emissions reduction monitoring conducted for the period 2018-2022, evaluating compliance with the target in terms of GHG emissions reduction relative to the baseline scenario. /312/*
15	*15.1.1 Forest area as a proportion of total area*	*Conservation of forest cover within project areas through the implementation of REDD+ activities.*	*Monitoring of forest cover within project areas./119/*
15	*15.1.2 Proportion of sites important for terrestrial and freshwater*	*R-6. Promote the delineation and marking of strategic ecosystems and protected natural areas.*	*Methodology implemented to identify areas important for biological diversity to later promote marking of strategic*

	biodiversity that are part of protected areas, by ecosystem type.		ecosystems. Twenty properties selected due to their large extensions of key ecosystems for biological diversity. /394/260/
15	15.5.1 Red List Index	B-2. Monitoring of globally threatened species and actions for their conservation.	Plan and methodology for participatory biodiversity monitoring, including the identified endangered species /395/ 260/.

Source: Present validation and verification report

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

It was verified that the project has implemented an implementation plan to demonstrate the benefits of the Wax Palm category, in accordance with the guidelines described in section 19.2.2. of the BCR standard /14/336/260/. The procedures include activities related to restoration actions within the properties that are part of the project, identification of High Conservation Values (HCV), monitoring and conservation of threatened species, implementation of sustainable productive practices in natural savannas, and women's empowerment /14/260/. Indicators were established along with their target, unit of measurement, responsible party for measurement, implementation schedule, and supporting documentation /7/14/260/. The monitoring procedures are integrated with monitoring the implementation of the project activities (BCR0005 and BCR0002), which ensures data quality and consistency of procedures. The Table 15 includes the criteria and progress of the indicators during the monitoring period.

Table 15. Co-Benefits criteria and indicators assessment.

ID	Name	Ind	Indicator Name	Global Target	Projected Progress	Result	Cross-Check
B1	Identification and monitoring of High Conservation Values (HCV) present in the project area	B-1.1	Identified High Conservation Values	4	1	1	Identification analysis of: HCV1, HCV2, and HCV4 /14/260/315/
B2	Monitoring of globally threatened species and actions taken for their conservation	B-2.1	Participatory wildlife monitoring to identify threatened species in the project area	3	25%	25%	Methodology and preliminary pilot for the development of participatory biodiversity monitoring to

							identify species in any threat status /14/260/315/
B3	Restoration actions in degraded ecosystems	B-3.1	Number of properties conducting restoration activities	20	1	1	Report on restoration activities implemented by ecosystem managers 14/260/316/
B3	Restoration actions in degraded ecosystems	B-3.2	Number of hectares in some degree of restoration	40	-	-	Report on restoration activities implemented by ecosystem managers 14/260/316/
B4	Biodiversity Strengthening Plan	B-4.1	General Biodiversity Training Plan	40	10%	10%	General biodiversity training plan and progress 14/260/315/
EG1	Strengthening access and management of financial goods and services with a gender equity approach	EG-1.1	Trainings conducted to strengthen access and management of financial goods and services	10	1	1	Workshop plan and progress in topics focused on strengthening the capacities of women involved in the project14/260/317 /
S3	Implementation of sustainable productive practices in natural savannas	S-3.1	Number of properties implementing sustainable productive, soil management, and conservation practices	147	147	147	Report detailing sustainable productive practices in natural savannas, including activities and the number of properties where they are implemented. 14/260/271/274/

Source: Present validation and verification report

The audit team verified that the activities implemented during the verification period 2018-2022 /260/ followed the guidelines established in the validated Monitoring Plan. There is consistency and coherence between the monitoring and the design of the Monitoring Plan in terms of the alignment of the implemented activities with the methodologies and objectives of the indicator, following the established implementation schedule /7/14/260/.

6.2 Quantification of GHG emission reductions and removals

The evaluation of the consistency in the quantification of GHG emission reductions or removals of the ORINOCO2 project was carried out in accordance with the applicable requirements of the methodologies BCR0002 version 4.0 and BCR0005 Version 1.0, as well as the validation and verification manual version 2.4. During this process, it was verified that the methods and procedures used for quantification were correctly implemented and aligned with the methodological guidelines and established standards.

The verification process included a detailed review of the information provided in the Project Description Document (PDD) and the Monitoring Report (MR) for the 2018-2022 period. The audit team verified that the project proponent documented the application of data validation and cleaning procedures, such as supervised classification of forests and tracking of eligible areas using tools like ArcGIS and QGIS. Data accuracy was validated using confusion matrices for savanna maps and the AcATaMa plug-in for forest maps, ensuring the required thematic accuracy (section 6.1.2.1). Additionally, the proper and traceable use of emission factors was verified (section 6.2.3.1.1.1 Emission Factors). The document review confirmed that quality control procedures were adequately implemented, ensuring the integrity and reliability of the data and procedures used in quantification /7/14/238/.

6.2.1 Methodology deviations (if applicable)

it was confirmed that the ORINOCO2 project does not present a methodological deviation in the emission quantification.

6.2.2 Baseline or reference scenario

To assess the baseline scenario identified for the ORINOCO2 project, the applicable validation requirements related to the establishment of the baseline scenario according to and applied methodologies BCR0002 version 4.0 (section 9) and BCR0005 Version 1.0 (section 8) and the validation and verification manual version 2.4 (sections 7, 9.1 and 9.2) were followed. Documentary review was carried out to ensure that assumptions, methods, parameters, data sources and emission factors were transparently applied, adequately justified and supported by sufficient evidence, as well as the step-by-step approach indicated by each of the methodologies indicated for the establishment of the baseline scenario.

First, the land use alternatives identified in the project areas were reviewed. Alternatives considered included continuation of previous land use, REDD+ projects without certified emission reductions, and other credible or documented land use alternatives. Each of these

alternatives was evaluated for consistency with applicable laws and regulations, as well as alignment with land use trends in the reference region.

The evaluation included the identification of potential activities in the project areas, considering the specific conditions of the area and the reference region. For example, activities such as palm crops, corn, rice and clean pastures were considered. These activities were selected based on their potential and credibility, as well as their consistency with common land use practices in the region.

The land use alternatives identified were verified to be consistent with applicable laws and regulations. For each alternative, their alignment with local and national regulatory frameworks and policies was assessed, ensuring that any proposed land use was legally permitted and regulated.

In addition, relevant national and sectoral policies were taken into account, as well as the specific circumstances of the forest sector and the region, which were listed in the project description document in section 3.3. This included an assessment of how these policies and circumstances would influence land use and the implementation of project activities.

Moreover, to identify the baseline scenario, consistency was maintained with emission factors, activity data, GHG emission projection variables and other relevant parameters. Procedures were ensured to maintain data quality under ISO 14064-2 and the requirements of the applied methodologies BCR0002 version 4.0 (section 9) and BCR0005 version (section 8).

Additionally, uncertainty analysis was considered using conservative assumptions, ensuring that any variability in the data and methods was adequately managed. The methods and parameters were selected to minimize uncertainty and provide conservative and reliable estimates, which are within the limits established by the applied methodologies BCR0002 version 4.0 (section 13.1) and BCR0005 version (section 12).

Besides, during the assessment of the baseline scenario, multiple sources of information were used and cross-checks of data used by the project proponent and official country information were performed. This process ensured that the baseline scenario identified was relevant, adequately justified and aligned with national accounting. The documents reviewed included their geo database; land cover maps, satellite imagery and historical land use records, providing a compendium of information for the identification of the baseline scenario.

In accordance with section 11.2 of the BioCarbon Standard version 3.4, it was corroborated that the project complies with its baseline establishment criteria, as well as its period of re-validation or baseline update to be carried out every 10 years.

6.2.3 Mitigation results

The following sections 6.2.3.1 and 6.2.3.2 list the mitigation results for the first monitoring period of the ORINOCO2 project. The information provided in the monitoring report version 2.5by the project proponent has been verified in its technical annexes in accordance with the BCR standard version 3.4 and the validation and verification manual version 2.4.

6.2.3.1 GHG emissions reduction/removal in the baseline scenario

To determine the emission reductions in the baseline scenario, the project holder determined the activity data for deforestation, forest degradation and land use change in natural savannas. To do so, the project holder followed the guidelines established in the methodological documents BCR0002 version 4.0, sections 13.2.1 and 13.2.2, and BCR0005 version , sections 11.2.2 and 11.2.4.

Subsequently, the project holder calculated the emission factors for each component, according to the carbon pools selected in section 5.5.3 of this validation and verification report and procedures established in methodologies BCR0002, section 13.3, and BCR0005, section 11.3.

Finally, to calculate the GHG emissions resulting from the relationship between the activity data and the defined emission factors, the procedures established in sections 13.4 of BCR0002 methodology and 11.4 of BCR0005 were followed.

Activity Data

According to BCR0002 and BCR0005 methodologies, activity data corresponds to changes in forest area and natural cover area in the geographical and temporal boundaries of the project.

According to BCR0002 and BCR0005 methodologies, activity data corresponds to changes in forest area and natural cover area in the geographical and temporal boundaries of the project.

In accordance with the guidelines of methodology BCR0002, item 13.2 Activity data, the non-forest forest maps generated by the Forest & Carbon Monitoring System in the reference region, period 2005 - 2017, were used. These were stratified through MSPA software into Forest Core and Forest edge as related in section The processes performed in deforestation consisted of determining how many pixels (areas) of Forest Core and Forest edge went to non-forest, while for degradation were the areas of Forest Core that transited to Forest edge.

On the other hand, regarding the BCR0005 methodology guidelines, item 11.2 Activity data, the national land cover maps, period 2012 - 2018, were used. In relation to the activity data, only the change in the vegetation covers typical of savannas (Grasslands - Shrubs) identified in 2012 will be considered, focusing specifically on the transitions towards other anthropic covers for the year 2018.

Activity Data - Deforestation

For the estimation of deforestation activity data, the historical average approach was selected. The processes applied by the project proponent are presented below;

Annual historical deforestation in the reference region.

The calculation of historical average deforestation was performed by the project holder through the analysis of change in forest to non-forest cover, occurred in the reference region in the period 2005 - 2017, using the following equation:

$$CSB_{año} = (\frac{1}{t_2 - t_1})\ x\ (A_1 - A_2)$$

$$CSB_{año} = (\frac{1}{2017 - 2005})\ x\ (217.936 - 196.312)$$

$$CSB_{año} = 1.802\ ha/year$$

Where:

$CSB_{año}$	*Annual change in the area under forest cover in the reference region; ha*
t_1	*Year of beginning of reference period; year*
t_2	*Year end of reporting period; year*
A_1	*Forest area in the reference region, at the initial point in time; ha*
A_2	*Forest area in the reference region at the final point in time.; ha*

Given that the 2023-2027 period contemplates the stratification of the forest into Core and Edge areas. The analysis was repeated considering this stratification in the following way:

For the Forest Core stratum:

$$CSB_{Núcleo,año} = (\frac{1}{2017-2005})\ x\ (40.229 - 33.112)\ CSB_{Núcleo,año} = 593.08\ ha/year$$

For the Forest edge stratum:

$$CSB_{Borde,año} = (1/(2017 - 2005))x\ (177.707 - 163.199) = 1.209\ ha/year$$

Subsequently, to estimate the rate of forest cover loss or historical deforestation rate the value of $CSB_{año}$ the project holder divided by the area of forest in the reference region at the

initial time of analysis (t_1). This value was multiplied by the eligible forest area to estimate the expected loss in the project area in the baseline scenario.

In accordance with the national baselines, for the quantification period the project holder applied the national circumstances adjustment to the $CSB_{lb,año}$ calculated from the historical average, according to the most conservative scenario of the logistic model developed for this purpose. (Ministerio de Ambiente y Desarrollo Sostenible – IDEAM, 2020; Ministerio de Ambiente y Desarrollo Sostenible – IDEAM, 2024).

Annual historical deforestation in the leakage area.

The project holder using the forest cover change analysis for the period 2005 - 2017, relating the following equation, calculated the annual historical deforestation in the leakage area:

$$\boldsymbol{CSB_{f,año} = (\frac{1}{t_2 - t_1})\ x\ (A_{1,f} - A_{2,f})}$$

$$\boldsymbol{CSB_{f,año} = (\frac{1}{2017 - 2005})\ x\ (1.374617 - 19.876)}$$

$$\boldsymbol{CSB_{f,año} = 145,08\ ha/year}$$

Where:

$CSB_{f,año}$	*Annual change in the area covered by forest in the leakage area; ha*
t_1	*Beginning year of the reporting period; year*
t_2	*Final year of reporting period; year*
$A_{1,f}$	*Forested area of the leakage area at the start of the reference period; ha*
$A_{2,f}$	*Forested area in the leakage area at the end of the reference period; ha*

Similar to the reference region, to project the change in forest cover in the baseline scenario for the period 2023-2027, the project holder conducted the analysis considering the defined strata: core and forest. The following values were presented:

For the Forest Core stratum:

$$\boldsymbol{CSB_{f\ Núcleo,año} = (\frac{1}{2017 - 2005})\ x\ (4.448853 - 4.303)}$$

$$\boldsymbol{CSB_{f\ Núcleo,año} = 45,83\ ha/year}$$

For the Forest edge stratum:

$$CSB_{f\ Borde,año} = \left(\frac{1}{2017-2005}\right) x\ (16.765 - 15.573) = 99,33\ ha/year$$

In this sense, the rate of forest cover loss in the reference region and the value of annual change in the leakage area calculated by the project holder from the historical average represent the expected forest loss in the project area and leakage area, respectively, in the baseline scenario

Activity data - Forest Degradation

To define the activity data for degradation, the project holder followed the guidelines of the proposed national reference level - NREF (Ministry of Environment and Sustainable Development - IDEAM, 2024) /239/. To define the monitoring areas for degradation, the project area layers /118/ were coded according to the procedure described in Colombia's national reference level /224/ and were processed using the Morphological Spatial Pattern Analysis (MSPA) algorithm /398/399/. After the post stratification where only 2 categories are defined: Forest Core and Forest edge in the reference region, project areas and leakage areas, the project holder proceeds to perform the forest degradation process which consists of: Determine the Forest Core areas that transitioned to Forest edge.

Annual historical degradation in the baseline project area.

The calculation of the annual historical degradation in the baseline the project holder performs them from the fragmentation analysis in the period 2005 - 2017. Likewise, the equation applied is based on the stipulations of the BCR0002 methodology for the calculation of primary degradation, making an adjustment in the transition between fragmentation classes (core areas that move to edge).

$$DFP_{lb,año} = \left(\frac{1}{t_2 - t_1}\right) x\left(A_{núcleo,lb} - A_{núcleo-borde,lb}\right)$$

Where:

$DFP_{lb,año}$	*Annual historical primary degradation in baseline; ha*
t_1	*Beginning year of the reporting period; year*
t_2	*Final year of reporting period; year*
$A_{núcleo,lb}$	*Area of the reference region in core class in the year of the beginning of the reference period; ha*

$A_{núcleo-borde,lb}$ Area of the reference region that goes from core to edge in the final year of the reference period; ha

In order to avoid overestimating emissions due to degradation, the value of $A_{núcleo-borde,lb}$ was defined by the project proponent as the areas in the Core category at t1, minus the areas that move from Core to Edge between periods t1 and t2. As described below:

$$DFP_{lb,año} = \left(\frac{1}{2017-2005}\right) x\ (40.299 - (33.563 - 6666))$$

$$DFP_{lb,año} = \left(\frac{1}{2017-2005}\right) x\ (40.299 - 26.897)$$

$$DFP_{lb,año} = 555.50\ ha/year$$

Thus, when related to the project's Forest Core area, average annual degradation values of 555.5 ha/year are estimated.

Annual historical degradation in the leakage area

Similarly, for the estimation of historical degradation in the leakage area, the project proponent applied the following equation:

$$DFP_{lb,f,año} = \left(\frac{1}{t_2-t_1}\right) x\left(A_{núcleo,lb,f} - A_{núcleo-borde,lb,f}\right)$$

Where:

$DFP_{lb,f,año}$ Annual primary degradation in the leakage area; ha

t_1 Beginning year of the reporting period; year

t_2 Final year of reporting period; year

$A_{núcleo,lb,f}$ Leakage area in core class in the year of the beginning of the reference period; ha

$A_{núcleo-borde,lb}$ Leakage area moving from core to patch in the final year of the reporting period; ha

As in the previous section, the value of $A_{núcleo-borde,lb,f}$ was defined by the project holder as the area in the Core category in t1 minus the areas moving from Core to Edge between periods t1 and t2, applying the equation as follows:

$$DFP_{lb,f,año} = \left(\frac{1}{2017-2005}\right) x(4860 - (4.853 - 630))$$

$$DFP_{lb,f,año} = \left(\frac{1}{2017-2005}\right) x(4860 - 4.228)$$

$$DFP_{lb,f,año} = 52,5\ ha/year$$

Activity Data - Changes in land use in Natural Savannas

The analysis of change in the area with natural vegetation cover (CSCN) for the estimation of activity data in land cover classified as savannas was carried out by the project proponent based on the guidelines established in the BCR 0005 methodology, section 11.2.

The main input for the analysis of the land cover change matrix is the IDEAM's Corine land cover for the years 2012 and 2018 carried out by the project proponent, defined in the reference region area, in order to generate a land use classification for each cover /7/14/ , As a result of the analysis of the land cover change matrix, the project holder obtains that 62.8% (3,200,728 Ha) of the land covers within the reference region of the ORINOCO2 project, has been maintained during reference period.

Annual historical changes in the reference area

The calculation of the annual historical change in the reference region for the scenario, the project proponent contemplated the multi-temporal analysis to the land covers classified as savannah in the period 2012 - 2018, applying the following equation:

$$CSCN_{año} = \left(\frac{1}{t_2 - t_1} ln \frac{A_2}{A_1}\right) x\ A_p$$

$$CSCN_{año} = \left(\frac{1}{2018-2012} ln \frac{2.293.288}{3.046.769}\right) x87.396$$

$$CSCN_{año} = 4.138,22\ ha/year$$

Where:

$CSCN_{año}$	*Change in the area with natural vegetation cover in the without-project scenario;ha/year*
t_1	*Beginning year of the reference period in which the changes are analyzed*
t_2	*Final year of the reporting period in which the changes are analyzed*
A_1	*Area under natural vegetation cover in the reference region in t1; ha*
A_2	*Area in natural vegetation cover in the reference region in t2; ha*
A_p	*Eligible project area; ha*

In this regard, based on the historical average of land use changes in the reference region, the project holder calculated a natural savannahs transformation rate of 4.73%, which represents an average annual change of 4,181.22 ha in the project area.

Annual historical changes in land use in the leakage area.

In turn, the annual historical changes in land use in the leakage area the project holder estimates using the following formula, for the period 2012 - 2018:

$$CSCN_{f,año} = \left(\frac{1}{t_2 - t_1} ln \frac{A_2}{A_1}\right) x\, A_f$$

$$CSCN_{f,año} = \left(\frac{1}{2018 - 2012} ln \frac{76.577}{84.973}\right) x 76.577$$

$$CSCN_{f,año} = 1.327,8\ ha/year$$

Where:

$CSCN_{f,año}$	*Change in area with natural vegetation cover in the leakage area, in the without-project scenario; ha/year*
t_1	*Beginning year of the reference period in which the changes are analyzed*
t_2	*Final year of the reporting period in which the changes are analyzed*
A_1	*Area in natural vegetation cover in the leakage area t1; ha*
A_2	*Area in natural vegetation cover in the region area of leakage in t2; ha*
A_f	*Leakage area; ha*

in this sense, the historical transformation rate recorded in the reference region and in the leakage area represents the expected loss of vegetation cover in the without-project scenario.

6.2.3.1.1 Emission factors

Emission factor of REDD+

The emission factor used for calculation corresponds to the validated emission factor from the Colombian NREF /224/ 390/. See section 6.1.2.1 Data and Parameters

Emission factor of Natural Savanna

Biomass

The aboveground biomass emission factors were established through the establishment of sampling points /242/245/ based on the methodology of the national forest inventory of Colombia. 5 sampling points composed of five sampling plots, (i.e. a total of 25 sampling plots) were determined with the following formula:

$$n = \frac{S^2}{\underline{y}_U^2 cve^2 + \frac{S^2}{N}}$$

***Where**:*

n	*Sample size*
S^2	*Sample variance*
$\underline{y}$	*Mean of the guiding variable*
cve	*Sampling error (%)*
N	*Population size. Total number of sampling points within the project boundaries.*

Each sampling unit consisted of a cluster composed of five (5) circular plots with a 15-meter radius (707 m²) arranged in a cross, with an 80-meter distance between the central points. trees and shrubs were conservatively excluded from sampling. Herbaceous vegetation was collected from four 1 m x 1 m quadrants located 7.5 meters from the center of each plot. And subsequent submission to the CIAT laboratory /248/.

During the on-site visit, evidence of cluster establishment was observed according to the described procedure /241/242/. The team responsible for establishing the sampling plots was asked to perform a setup from scratch to validate the procedure. Additionally, a review of the documented quality control of the established plots was conducted /247/, which verifies the data's quality traceability and confirms proper procedure implementation. The codes of the samples taken for laboratory submission were verified and subsequently compared with the laboratory results /248/.

Additionally, based on the information collected in the field, for the calculation of aboveground biomass, the dry and wet weight data were related, applying the following equation:

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

Where:

BS	*Dry biomass of material harvested in 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

Subterranean biomass was estimated by the project proponent based on the ratio factor of 1.6, established by default for tropical grasslands by the IPCC (2006) /359/.

Soil

For the soil emission factor, the reference value of the scientific study developed by Hyman et all /240/ in the region where the project is developed was used. The audit team determined that the default value used from the study by Hyman et al. /240/ is conservative and appropriate, considering that: the BCR 0005 methodology Annex A "On-site Measurement" allows for soil sampling up to a depth of 1 meter /327/, the reviewed studies have values up to a depth of 1 meter, and the study by Costa et al. /338/ establishes a higher value than that of Hyman et al. /240/.

In this sense, considering the principles of BCR, particularly Relevance, Accuracy, and Conservative Approach, and as described in BCR0005 Section 12.1, Conservative Selection of Default Data, project holder Locally peer-reviewed studies from areas with similar climate and soil conditions to those of the project area . The following table evaluates the use of default emission factors for natural savanna COS.

Table 16: assessment of default emission factors for natural savanna (COS)

Data	Study	Compliance with BCR Principles			Analysis
		Relevance	Accuracy	Conservative Attitude	
79.9 ton/ha C up to 30 cm.	Costa, C. et al //	Relevant is a study developed within the reference area of the project, and where it is located in La Primavera, the municipality where most of the project implementation areas are located.	High accuracy as it is in the same reference region of the project. In the municipality where most of the project areas are located (La Primavera) which reduces bias and uncertainty	Conservative since it comes from local studies reviewed by experts. From areas with climatic and soil conditions similar to those of the project area. Although it is evident that the depth of the roots can reach up to a meter deep. And the carbon contents are significant up to 60 cm deep, the data provided by the study is taken at 30 cm.	Adequate data complies with BCR principles and section 12.1 of BCR00005

Data	Study	Compliance with BCR Principles			Analysis
		Relevance	Accuracy	Conservative Attitude	
65,94 ton/ha C up to 40 cm.	Hyman et all	Relevant, it is a study developed in the same within the reference area of the project	High accuracy as it is in the same reference region of the project. Municipality of Puerto Gaitán and Puerto López	Conservative since it comes from local studies reviewed by experts. From areas with climatic and soil conditions similar to those of the project area. Although it is evident that the depth of the roots can reach up to a meter deep. And the carbon contents are significant up to 60 cm deep. The data given by the study is taken at 40 cm.	Adequate data complies with BCR principles and section 12.1 of BCR 00005

Source: Thi document adapte from PDD V2.6

GHG emissions in the baseline scenario

GHG emissions correspond to the amount of carbon dioxide (CO_2) to be emitted because of deforestation and forest degradation events, and changes in land use in natural Savannahs in a no-project scenario. Thus, the procedures applied for its calculation are based on the guidelines of BCR 0002 (section 13.4) and BCR 0005 (section 11.4) methodologies.

Deforestation

The annual estimate for deforestation in the baseline scenario for each identified stratum is estimated taking into account the following equation

$$\boldsymbol{EA_{lb,año} = (DA_{lb}\ x\ CT_{eq})}$$

Where:

EA_{lb}	Annual emission due in the baseline scenario; tCO_2/year
$DA_{lb,año}$	Annual historical deforestation in the baseline scenario; ha
CT_{eq}	Carbon dioxide equivalent; tCO_2e/ha.

The audit team, complying with BCR0002 version 4.0 methodological requirements, verified the detail of the annual emissions calculations for the entire quantification period.

Degradation

For the calculation of annual emissions in the baseline scenario, the following equation is used:

$$EA_{d,lb,año} = (DFP_{lb,año} \, x \, DCBT_{DP})$$

Where:

$EA_{d,lb,año}$	*Annual emission due to degradation, in the baseline scenario; tCO2/year*
$DFP_{lb,año}$	*Annual historical primary degradation, in the baseline scenario; ha*
$DCBT_{DP}$	*Carbon dioxide equivalent contained in the Total biomass difference per hectare in the primary degradation class; tCO2e/ha*
$DFS_{lb,año}$	*Annual historical historical secondary degradation in the baseline scenario; ha*
$DCBT_{DS}$	*Carbon dioxide equivalent contained in the difference of Total biomass per hectare in the secondary degradation class; tCO2e/ha*

The audit team, complying with BCR0002 version 4.0 methodological requirements, verified annual emissions calculations for the entire quantification period.

Land use change in natural savannahs

The following equation is used to calculate annual emissions in the without-project scenario for the sheeting component:

$$EA_{lb} = CSCN_{lb} \, x \, (CBF_{eq} + COS_{eq})$$

Where:

EA_{lb}	*Annual emission in the without-project scenario; tCO2e/ha/yr*
$CSCN_{lb}$	*Historical changes in the without-project scenario; ha/yr*
CBF_{eq}	*Carbon dioxide equivalent contained in the Total biomass; tCO2e/ha*
COS_{eq}	*Soil carbon content; tC/ha*

The audit team, complying with BCR0005 version methodological requirements, verified the annual emissions calculations for the entire quantification period

6.2.3.2 GHG emissions reduction/removal in the project scenario

To determine the projected emission reductions during project implementation, the project proponent followed the guidelines set out in methodology documents BCR0002 and BCR0005. First, the project holder estimated the activity data for the scenario with project,

according to the guidelines described in sections 13.2.1 and 13.2.2 of the BCR002 methodology, and sections 11.2.3 and 11.2.5 of BCR0005.

Regarding the emission factors, the project holder applied the same values used in the calculation of the baseline scenario emissions, which are detailed in section 6.1.2.1 of this validation and verification report.

To calculate the GHG emissions, derived from the relationship between the activity data and the defined emission factors, derived from the relationship between the activity data and the defined emission factors, the project proponent followed the procedures established in sections 13.4 of BCR0002 methodology and 11.4 of BCR0005.

Activity data

Activity data corresponds to changes in forest area and natural cover area within the project boundaries. For the scenario with project, its estimation was carried out by the project proponent using as a reference the average of historical changes recorded in the reference region and the leakage area, as well as the projected impact due to the implementation of the project activities. The procedures used by the project proponent for this estimate are detailed below;

Projected annual deforestation in the with-project scenario

The annual projected deforestation in the scenario with REDD+ project was calculated by applying the following equation:

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

Where:

$CSB_{proy,año}$	*Annual change in area under forest cover in the with-project scenario; ha*
$CSB_{lb,año}$	*Annual change in area covered by forest in the without-project scenario; ha*
$\%DD$	*Projected decrease in deforestation due to implementation of REDD+ activities.*

For the quantification period, the project proponent projects a decrease in deforestation of 96.56%, according to the behavior observed during the first monitoring period and considering that the implementation of the project activities promotes the conservation of the total forest cover and seeks to strengthen technical capacities for the sustainable management of the project areas.

On the other hand, the project proponent based on the following equation estimated the projected annual deforestation in the leakage area in the scenario with project:

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

Where:

$CSB_{REDD+proy,f\ año}$	*Annual change in the area covered by forest in the leakage area, in the with-project scenario; ha*
$CSB_{f,lb}$	*Annual change in the area covered by forest in the leakage area, in the baseline scenario; ha*
$\%E_f$	*Percentage increase in leakage area emissions due to implementation of REDD+ activities.*[1].

Projected annual degradation in the with-project scenario

The project proponent using the following equation estimated the estimate of projected degradation in the project area:

$$\boldsymbol{DFP_{REDD+proy,año} = DFP_{lb} x (1 - \%DFP)}$$

Where:

$DFP_{REDD+proy,año}$	*Annual primary degradation of the project area in the with-project scenario; ha*
DFP_{lb}	*Annual historical primary degradation in the without-project scenario; ha*
$\%DFP$	*Projected decrease in degradation due to the implementation of REDD+ activities* [2]

Finally, for the calculation of the projected degradation in the leakage area, the project proponent used the following equations:

$$\boldsymbol{DFP_{f,año} = DFP_f\ x\ (1 + \%E_f)}$$

Where:

$DFP_{f,año}$	*Annual primary degradation in the leakage area in the with-project scenario; ha*

[1] *According to BCR 0002 methodology, the use of a default value of 10% is accepted.*
[2] *A 99% decrease in degradation is projected, according to the behavior observed during the first monitoring period and taking into account that the project activities are aimed at conserving the entire eligible forest area.*

DFP_{lb}	Annual historical primary degradation of the leakage area in the without-project scenario; ha
$\%DFP$	Percent increase in leakage area emissions due to implementation of REDD+ activities [3]

Projection of annual changes in natural savannah in the with-project scenario

The project proponent based on the following equation quantified the estimation of annual changes in savannah areas in the scenario with project:

$$\boldsymbol{CSCN_{Proy} = CSCN_{lb} x (1 - \%DC_{proy})}$$

Where

$CSCN_{proy}$	Change in area with natural vegetation cover in the with-project scenario; ha/year
$CSCN_{lb}$	Change in area with vegetation cover in the without-project scenario; ha/year
$\%DC_{proy}$	Projected decrease in cover change due to implementation of project activities.[4]

The project proponent calculated estimated annual changes in leakage area changes in the with-project scenario as follows:

$$\boldsymbol{CSCN_{Proy,f,año} = CSCN_{f,lb} x (1 - \%E_f)}$$

Where

$CSCN_{proy,f,año}$	Change in natural vegetation cover in the leakage area, in the with-project scenario; ha/year
$CSCN_{f,lb}$	Annual change in vegetation cover area in the leakage area, in the baseline scenario; ha/year
$\%E_f$	Percentage of projected increase in emissions in the leakage area due to implementation of project activities.[5]

Annual emissions in the with-project scenario

[3] According to BCR0002 methodology, the use of a default value of 10% is accepted..
[4] Based on the project activities to be implemented and the behavior observed during the first monitoring period, the project proponent estimates a 97.02% decrease in land use changes.
[5] The use of a default value of 10% is accepted by BCR 0005 methodology.

Annual GHG emissions correspond to the projected amount of CO2 to be emitted as a result of deforestation and forest degradation events, and land use changes in natural savannahs during the crediting period, in a scenario without project. The procedures applied by the project holder for its calculation are based on the guidelines of BCR 0002 (section 13.4) and BCR 0005 (section 11.4) methodologies.

Deforestation

The project proponent using the following equation calculates annual emissions from deforestation in the with-project scenario:

$$EA_{REDD+proy,año} = (DA_{REDD+proy}\ x\ CT_{eq})$$

Where:

$EA_{REDD+proy,año}$	*Annual emission in the scenario with project; tCO2/year*
$DA_{REDD+proy}$	*Projected annual deforestation with project; ha*
CT_{eq}	*Carbon dioxide equivalent[6]; tCO_{2e}/ha.*

The project proponent calculates the annual emission from deforestation in the leakage area as follows:

$$EA_{f,año} = DA_f\ x\ CT_{eq}$$

Where:

$EA_{f,año}$	*Annual emission in the scenario with project; tCO2/year*
DA_f	*Projected annual deforestation in the leakage area; ha*
CT_{eq}	*Carbon dioxide equivalent; tCO2e/ha.*

The calculation of estimated annual emissions for the entire quantification period by the project holder, which were verified in the audit process.

Forest Degradation

[6] *The estimation of GHG emissions contemplates the distinction in emission factors, according to the period of analysis (2018-2022 and 2023-2027) and the strata identified for each case.*

The annual emission calculation in the scenario with project the project holder uses the following equation:

$$EA_{d,REDD+proy,año} = (DFP_{REDD+proy,año}\ x\ DCBT_{DP})$$

Where:

$EA_{d,REDD+proy,año}$	*Annual emission in the with-project scenario; tCO2/year*
$DFP_{REDD+proy,año}$	*Annual historical primary degradation in the with-project scenario; ha*
$DCBT_{DP}$	*Carbon dioxide equivalent contained in the difference of Total biomass per hectare in the primary degradation class; tCO2e/ha*

In order to calculate the annual emission in the leakage area, the project proponent uses the following equation:

$$EA_{d,f,año} = (DFP_{f,año}\ x\ DCBT_{DP})$$

Where:

$EA_{d,f,año}$	*Annual emission in the leakage area; tCO2/year*
$DFP_{f,año}$	*Annual historical primary degradation in the leakage area; ha*
$DCBT_{DP}$	*Carbon dioxide equivalent contained in the difference of Total biomass per hectare in the primary degradation class; tCO2e/ha*

The audit team verifies the calculation of estimated annual emissions for the entire quantification period identified by the project holder.

Land use change in natural savannahs

For the annual emission calculation in the scenario with project the project holder uses the following equation:

$$E_{proy,año} = CSCN_{proy}\ x\ (CBF_{eq} + COS_{eq})$$

Where:

$E_{proy,año}$	*Annual emission in the with-project scenario; tCO2e/ha/yr*
$CSCN_{proy}$	*Land use change in the with-project scenario; ha/yr*
CBF_{eq}	*Carbon dioxide equivalent contained in Total biomass ; tCO2e/ha*
COS_{eq}	*Carbon dioxide equivalent contained in soils; tCO2e/ha*

Finally, for the calculation of the annual emission in the leakage area, the project proponent uses the following equation:

$$E_{f,año} = CSCN_f \; x \left(CBF_{eq} + COS_{eq}\right)$$

Where:

$E_{f,año}$	*Annual emission in the leakage area; tCO2e/ha/year*
$CSCN_f$	*Change in land use in the leakage area; ha/year*
CBF_{eq}	*Carbon dioxide equivalent contained in the Total biomass; tCO2e/ha*
COS_{eq}	*Carbon dioxide equivalent contained in soils; tCO2e/ha/ha*

The audit team verifies the calculation of the estimated annual emissions for the entire quantification period performed by the project holder.

Emission Reduction Calculation in the Scenario with Project

The emissions reduction calculation relates the difference between the amount of GHG estimated in the baseline scenario and the projected emissions in the project area and the leakage area. Therefore, the following describes the procedures applied by the project proponent for the quantification of project emissions reductions, based on the BCR 0002 (Section 13.5) and BCR 0005 (Section 11.5) methodologies.

Once all the formulas have been applied, the project holder generates a summary table of projected emissions by year for both forests (deforestation and forest degradation) and Savannas //. The GHG emissions column in the baseline scenario shows the emissions that would occur in the without-project scenario, according to the historical and regional trend. The emissions column in the with-project scenario shows the emissions from the project according to the activities that were designed. The column of emissions attributable to leakage corresponds to the projection of a 10% increase in historical emissions in the leakage belt, due to the implementation of project activities.

Finally, the estimated net GHG reduction column corresponds to baseline emissions minus project emissions and emissions attributable to leakage. That is, it corresponds to the projected reduction of emissions by the project that could be translated into carbon certificates according to the results presented in each of the future monitoring and verification reports by the project proponent.

As a general conclusion, it is determined that the calculations of emission reductions have been carried out in accordance with all the guidelines established in the BCR 0005 Version 1.0 and BCR 0002 version 4.0 methodologies. Both for the baseline scenario and in the project scenario. Finalmente el equipo

El equipo auditor, después de verificar los procedimientos, la calidad de los datos y los parámetros monitoreados (sección 6.1.2.1), verifico que la hojas de cuantificación /238/

estuvieran formuladas de acuerdo con las ecuaciones de la sección 6.2.3.1 y 6.2.3.2. finalmente, recalculo la cuantificación y como resultado obtuvo los mismos valores (Table 17, Table 18, Table 19, Table 20) presentado por el proponente del proyecto para el primere periodo de cuantificación del proyecto.

Table 17 Deforestation ex ante emission reductions

Deforestation				
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	15.884,0	674,0	708,0	14.502
2019	66.790,0	2.833,0	2.834,0	61.123
2020	69.653,0	2.955,0	2.834,0	63.864
2021	72.039,0	3.056,0	2.834,0	66.149
2022	73.893,0	3.135,0	2.834,0	67.924
2023	86.487,0	3.669,0	3.391,0	79.427
2024	89.180,0	3.783,0	3.391,0	82.006
2025	91.662,0	3.889,0	3.391,0	84.382
2026	93.934,0	3.984,0	3.391,0	86.559
2027	95.995,0	4.072,0	3.391,0	88.532
Total	755.517,0	32.050,0	28.999,0	694.468
Anual average	82.181	3.486	3.143	75.552

Table 18 Forest Degradation ex ante emission reductions

Forest Degradation				
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	3.098,0	31,0	130,0	2.937,0
2019	12.393,0	124,0	518,0	11.751,0
2020	12.393,0	124,0	518,0	11.751,0
2021	12.393,0	124,0	518,0	11.751,0
2022	12.393,0	124,0	518,0	11.751,0
2023	12.393,0	124,0	518,0	11.751,0

2024	12.393,0	124,0	518,0	11.751,0
2025	12.393,0	124,0	518,0	11.751,0
2026	12.393,0	124,0	518,0	11.751,0
2027	12.393,0	124,0	518,0	11.751,0
Total	114.635,0	1.147,0	4.792,0	108.696,0
Anual average	11.889,0	103	510	11.277

Table 19 Savannas ex- ante emission reductions

Avoid change land use in Natural Savanna				
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	19.246,0	563,0	618,0	18.065,0
2019	76.982,0	2.251,0	2.470,0	72.261,0
2020	76.982,0	2.251,0	2.470,0	72.261,0
2021	76.982,0	2.251,0	2.470,0	72.261,0
2022	76.982,0	2.251,0	2.470,0	72.261,0
2023	76.982,0	2.251,0	2.470,0	72.261,0
2024	76.982,0	2.251,0	2.470,0	72.261,0
2025	76.982,0	2.251,0	2.470,0	72.261,0
2026	76.982,0	2.251,0	2.470,0	72.261,0
2027	76.982,0	2.251,0	2.470,0	72.261,0
Total	**712.084,0**	**20.822,0**	**22.848,0**	**668.414,0**
Anual average	**76.982,1**	**2.251,0**	**2.470,1**	**72.261,0**

Table 20 Total project ex- ante emission reductions

Total Project: BCR0005 Activities + BCR0002 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	38.228,0	1.268,0	1.456,0	35.504,0
2019	156.165,0	5.208,0	5.822,0	145.135,0

2020	159.028,0	5.330,0	5.822,0	147.876,0
2021	161.414,0	5.431,0	5.822,0	150.161,0
2022	163.268,0	5.510,0	5.822,0	151.936,0
2023	175.862,0	6.044,0	6.379,0	163.439,0
2024	178.555,0	6.158,0	6.379,0	166.018,0
2025	181.037,0	6.264,0	6.379,0	168.394,0
2026	183.309,0	6.359,0	6.379,0	170.571,0
2027	185.370,0	6.447,0	6.379,0	172.544,0
Total	**1.582.236,0**	**54.019,0**	**56.639,0**	**1.471.578,0**
Anual average	**171.053,0**	**5.840,0**	**6.123,0**	**159.090,0**

6.2.3.2.1 GHG Emissions Reduction During the Monitoring Period 2018-2022

Was verified that, to quantify emission reductions in the ex post project scenario, the project proponent determined emissions from deforestation, forest degradation, and land-use changes in natural savanna within the project areas and leakage area. Once emissions were established, they were subtracted from baseline emissions to determine the project's emission reduction. As follows:

Emissions from deforestation in forest areas

The estimate of deforestation in the project area in the monitoring period was calculated with the following equation:

$$CSB_{project,year} = (\frac{1}{t_2 - t_1})\ x\ (A_{REDD+proy,1} - A_{REDD+proy,2})$$

Where:

$CSB_{project,year}$	Annual change in the area covered by forest in the project area; ha / year
t_1	Start year of the monitoring period; year
t_2	Final year of the monitoring period; year
$A_{REDD+proy,1}$	Surface in forest, in the project area at the beginning of the monitoring period; ha
$A_{REDD+proy,2}$	Surface in forest, in the project area at the end of the monitoring period; ha

and,

$$EA_{REDD+project,year} = DEF_{REDD+project,year}\ x\ TCO_{2eq}$$

Where:

$EA_{REDD+project,year}$	Annual emission in the project area; tCO_2 / ha
$DEF_{REDD+project,year}$	Annual deforestation in the project area; ha
TCO_{2eq}	Total equivalent carbon dioxide; tCO_{2e}/ha

It was verified an annual deforestation in the project areas of 13.80 ha/year. And annual emissions 2,695 tCO2e

Emissions from deforestation in the leakage area

The calculation of emissions from deforestation of forests in the leakage area was carried out, taking into account the following equations:

$$\boldsymbol{CSB_{f,year} = (\frac{1}{t_2 - t_1})\ x\ (A_{f,1} - A_{f,2})}$$

Where:

$CSB_{f,year}$	Annual change in the area covered by forest in the leakage area; ha/ year
t_1	Start year of the monitoring period; year
t_2	Final year of the monitoring period; year
$A_{f,1}$	Forest surface in the leakage area at the beginning of the monitoring period; ha
$A_{f,2}$	Forest area in the leakage area at the end of the monitoring period; ha

and,

$$\boldsymbol{EA_{f,year} = (DEF_{f,year}\ x\ TCO_{2eq}) - EA_{lb,f,year}}$$

Where:

$EA_{f,year}$	Annual emission in the leakage area ; tCO_2/ha
$DEF_{f,year}$	Annual deforestation in the leakage area ; ha
TCO_{2eq}	Total equivalent carbon dioxide; tCO_{2e}/ha
$EA_{lb,f,year}$	Annual emission from deforestation in the leakage area in the baseline scenario; tCO_{2e}

The audit team verified an average deforestation of forests of 45.8 ha per year was recorded in the leakage area, which represents annual emission 8,945.51 tCO2e. it was verified that , this scenario does not represent an increase in GHG emissions due to the implementation of the activities. REDD+, since it does not exceed the historical emissions in leakage area, established in baseline.

Emissions from Forest degradation in project areas

The calculation of emissions due to forest degradation in the project area during the monitoring period was carried out based on the following equations:

$$\boldsymbol{DFP_{REDD+project,year} = (\frac{1}{t_2 - t_1})\ x\ (A_{core} - A_{core-edge})}$$

Where:

$DFP_{REDD+project,yea}$	*Annual primary degradation in the project area; ha/ year*
t_1	*Start year of the monitoring period; year*
t_2	*Final year of the monitoring period; year*
A_{core}	*Project area in core class, in the year of the beginning of the monitoring period; ha*
$A_{core-edge}$	*Project area changing from core to edge, in the final year of the monitoring period; ha*

and,

$$\boldsymbol{EA_{REDD+project,year} = (DFP_{REDD+project,year}\ x\ DTBCO_{2eq,1})}$$

Where:

$EA_{REDD+project,year}$	*Annual emission in the project area for the monitoring period; tCO_2/ha*
$DFP_{REDD+project,year}$	*Annual primary degradation in the project area; ha*
$DTBCO_{2eq,1}$	*Equivalent carbon dioxide contained in the difference in total biomass per hectare in the primary degradation class; tCO_{2e}/ha*

For the monitoring period, in the project area, there were no changes in the forest surface because of primary degradation. In this way, the annual emissions for the monitoring period 2018-2022 was zero. The audit team review that de deforestation in monitoring period was from edge forest.

Emissions due to forest degradation in the leakage area

The calculation of emissions due to forest degradation in the leakage area was carried out, with the following equations:

$$DFP_{f,year} = (\frac{1}{t_2 - t_1})\ x\ (A_{core,f} - A_{core-Edge,f})$$

Where:

$DFP_{f,year}$	*Annual primary degradation in the leakage area ; ha/ year*
t_1	*Start year of the monitoring period; year*
t_2	*Final year of the monitoring period; year*
A_{core}	*Area of leaks in core class, in the year of the beginning of the monitoring period; ha*
$A_{core-edge}$	*Leakage area that changes from core to Edge, in the final year of the monitoring period; ha*

and,

$$EA_{f,year} = (DFS_{f,year}\ x\ DTBCO_{2eq,1})$$

Where:

$EA_{f,year}$	*Annual emission in the leakage area for the monitored period; tCO_2/ha*
$DFP_{f,year}$	*Annual historical primary degradation in the leakage area ; ha*
$DTBCO_{2eq,1}$	*Equivalent carbon dioxide contained in the difference in total biomass per hectare in the primary degradation class; tCO_{2e}/ha*

The audit team verified that there were no increases in emissions in the leak area, so the emissions and activities did not displace emissions during the monitoring period .

Emissions from changes in land use in natural savannas in project areas

The calculation of emissions due to changes in land use in natural savannas during the monitoring period, in the project area, was carried out by applying the equations:

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

Where:

$CSCN_P$	*Change in the surface with natural vegetation cover in the project area; ha/ year*
t_1	*Start year of the monitoring period*

t_2	Final year of monitoring period
A_1	Surface in natural vegetation cover in the project area at the beginning of the monitoring period; ha
A_2	Area of natural vegetation cover in the project area at the end of the monitoring period; ha

and,

$$\boldsymbol{EA_P = CSCN_P\ x\ (CBF_{eq} + cos_{eq})}$$

Where:

EA_P	Annual emission in project area; tCO_{2e}/ha/ year
$CSCN_P$	Change in the surface with natural vegetation cover in the area of the project; ha/ year
$\boldsymbol{CBF_{eq}}$	Equivalent carbon dioxide contained in the total biomass; tCO_{2e}/ha
$\boldsymbol{COS_{eq}}$	Carbon dioxide equivalent contained in soils; tCO_{2e}/ha

For the monitoring period an average of changes in land use in natural savannas of 121 ha per year was verified. Which corresponds to 2,251 tCO2e annual emissions.

Emissions from land use changes from natural savannas in the leakage area

The quantification of GHG emissions leakage area in natural savanna, due to the implementation of project activities during the monitoring period, were calculated with the equations:

$$\boldsymbol{CSCN_f = \left(\frac{1}{t_2 - t_1}\right)\ x\ (A_{f,1} - A_{f,2})}$$

Where:

$CSCN_f$	Change in the surface with natural vegetation cover in the leakage area ; ha/ year
t_1	Start year of the monitoring period
t_2	Final year of monitoring period
$A_{f,1}$	Surface in natural vegetation cover in the leakage area at the beginning of the monitoring period; ha
$A_{f,2}$	Surface in natural vegetation cover in the leakage area at the end of the monitoring period; ha

and,

$$EA_f = \left[CSCN_f \, x \, (CBF_{eq} + cos_{eq})\right] - EA_{f,lb}$$

Where:

EA_f	*Annual emission in leakage area ; tCO_{2e}/ha/ year*
$CSCN_f$	*Change in the surface with natural vegetation cover in the leakage area ; ha/ year*
CBF_{eq}	*Equivalent carbon dioxide contained in the total biomass; tCO_{2e}/ha*
COS_{eq}	*Carbon dioxide equivalent contained in soils; tCO_{2e}/ha*
$EA_{f,lb}$	*Annual emission in the leakage area in the baseline scenario; tCO_{2e}*

It was verified 7,724.05 tCO2e emitted. However, when compared to the baseline values, they do not represent an increase in GHG emissions in the leakage area

Reduction of net emissions due to project implementation (20118-2022)

The calculation of net emissions reduction is estimated from the relationship between baseline GHG emissions, project emissions and emissions due to leaks, considering the following equation was used:

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

Where:

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

Finally, the audit team, after verifying the procedures, data quality, and monitored parameters (Section 6.1.2.1), confirmed that the quantification sheets /238/ were formulated according to the equations in this section (above). Finally, the team recalculated the quantification and obtained the same values (Table 21, Table 22,Table 23, Table 24) presented by the project proponent for the first monitoring period (2018–2022).

Table 21 Deforestation ex-post emissions reductions

Deforestation

Year	GHG emissions in the baseline (tCO2e)	Project GHG emissions (tCO2e)	GHG emissions attributable to leakage (tCO2e)	Net GHG Reduction (tCO2e)
2018	15.884,0	673,8	-	**15.210**
2019	66.790,0	2.695,4	-	**64.095**
2020	69.653,0	2.695,4	-	**66.958**
2021	72.039,0	2.695,4	-	**69.344**
2022	73.893,0	2.695,4	-	**71.198**
Total	298.259,0	11.455,0	-	286.805

Table 22 Forest degradation ex post emissions reducction

Forest Degradation				
Year	baseline GHG (tCO2e)	Project GHG emissions (tCO2e)	GHG emissions attributable to leakage (tCO2e)	Net GHG Reduction (tCO2e)
2018	3.098,0	-	-	**3.098**
2019	12.393,0	-	-	**12.393**
2020	12.393,0	-	-	**12.393**
2021	12.393,0	-	-	**12.393**
2022	12.393,0	-	-	**12.393**
Total	52.670,0	-	-	52.670

Table 23 Savannas ex-post emission Reductions

Avoid land use change in natural savanna				
Year	baseline GHG (tCO2e)	Project GHG emissions (tCO2e)	GHG emissions attributable to leakage (tCO2e)	Net GHG Reduction (tCO2e)
2018	19.246,0	563,0	-	**18.683**
2019	76.982,0	2.251,0	-	**74.731**
2020	76.982,0	2.251,0	-	**74.731**
2021	76.982,0	2.251,0	-	**74.731**
2022	76.982,0	2.251,0	-	**74.731**
Total	327.174,0	9.567,0	-	317.607

Table 24 Total Project ex post emission reductions

Total Project: BCR0005 activities + BCR 0002 Activities				
Year	baseline GHG (tCO_2e)	Project GHG emissions (tCO_2e)	GHG emissions attributable to leakage (tCO_2e)	Net GHG Reduction (tCO_2e)
2018	38.228	1.237	-	36.991
2019	156.165	4.946	-	151.219
2020	159.028	4.946	-	154.082
2021	161.414	4.946	-	156.468
2022	163.268	4.946	-	158.322
Total	**678.103**	**21.022**	**-**	**657.082**
Anual average	**159.554**	**4.946**	**-**	**154.608**

6.3 Sustainable development safeguards (SDSs)

The audit team conducted an evaluation based on document review /7/14/253/254/255/333/ to determine whether the project proponent carried out an environmental and social assessment analyzing the probable effects on biodiversity, ecosystems, and communities within the project boundaries. It was confirmed that the project proponent conducted the assessment in accordance with Section 15 of the BCR standard, utilizing the SDSs tool. Is verified that:

a) The project does not violate any local, state/provincial/national or international regulations or obligations: */7/278//321/ /326/*

(b) identifies the potential environmental and socio-economic impacts resulting from the implementation of the project/initiative activities; based on the use of Annex A: Sustainable Development Safeguards (SDS) Assessment Questionnaire: *The project proponent developed a matrix to evaluate and monitor environmental risks based on the Annex A questionnaire / 253/254/333/. This matrix includes responses to the questionnaire items (yes, no, not applicable, and potentially), specifies the nature of each impact (positive or negative), and assigns a risk level (low, medium, high) to items identified as having a negative impact. Preventive and mitigation actions are also established for identified risks.*

The assessment identified 16 aspects where project activities do not generate impacts and 2 aspects where they potentially could, with medium-risk levels. The audit team verified that the questionnaire was correctly completed, with negative responses adequately justified by reliable references and evidence /7/253/254/255/260/323/295/298/304/.

(c) develop preventive and/or mitigation activities to manage risks and provide the criteria and indicators necessary to monitor the implementation of the activities and the achievement of the objectives of the action plan*: The identified risks are addressed through preventive and mitigation measures, including an action plan for managing conflicts between felines and livestock and a gender-focused strengthening plan for women involved in the project both plans have a criteria an indicators pertinent /253/254/260/. This validation was further supported through site visits and interviews, particularly with property owners and the representative of the regional environmental authority (Cormacarena).*

(d) periodically review and review evaluation questions throughout the project/initiative life cycle to ensure consideration and management*: The project proponent provides for periodic review of questions and risk reassessment (/7/253/254).*

In addition, the progress in the design of the feline management plan and the creation of the plan for the strengthening of the capacities of the women who are part of the project were evaluated for the monitoring period. /14/300/317/. This verification was further supported through site visits and interviews, particularly with property owners.

6.4 Sustainable Development Goals (SDGs)

The audit team verified that the Project demonstrated compliance with its contribution to the Sustainable Development Goals (SDGs) using the SDG Tool v1.0 /14/336/329/. It was confirmed that the project proponent completed the tool using Excel /309/, where all project activities associated with SDG goals and relevant indicators were monitored /309/260/. According to the criteria contained in the Excel tool, each SDG monitoring activity presented the following information: project activity, contribution of the activity, type of activity, activity measurement unit (activity indicator), and the respective evidence for each monitoring period. The audit team verified that the project activities identified were consistently aligned with the contribution to the respective SDGs /309/260/, and that the project activity or component corresponds to the SDG targets and indicators. (See Table 14 .in section 6.1.2.6.)

Therefore, the audit team concludes that the design for monitoring the contribution to the SDGs is consistent. And the contribution to SDGs 6, 13 and 15 is verified in the monitoring period.

6.5 Climate change adaptation

During the verification audit of the project, the criteria and indicators used by the project proponent to carry out actions demonstrating its contribution to climate change adaptation were evaluated. The evaluation included a review of the information and evidence of project activity implementation during the monitoring period, cross-referenced with the criteria established in the BCR standard (Table 25). The audit team verifies that the project

proponent meets the criteria described in the BCR standard and that the adaptation actions derive directly from the implementation of project activities during the 2018-2022 monitoring period.

Table 25 Climate change adaptation assessment

Criterion a): Consider some strategic lines proposed in national climate change policies and/or address aspects framed in the regulations of the country where the project is implemented.
Assessment Detail
The project considers the strategic lines of The National Plan for Adaptation to Climate Change – PNACC ***- Action line 7:*** ***3.2. Evaluate GHG emissions from farms, farms or communities, including livestock sources and changes in land use.*** *The Project reduces emissions by implementing activities that prevent land use change in natural savannas /7/14/* ***3.7. Implement adaptation and mitigation measures on farms or communities*** *The Project incorporates 147 private properties in the implementation of the project activities /7/14/249/260/275/* ***3.8 Implement economic instruments for GHG mitigation on farms, or communities.*** *The Project generates economic incentives for the implementation of REDD+ activities and natural savannahs. There is no progress in the current monitoring period.* ***Action line 4: Strengthen Forest governance to prevent deforestation and forest degradation.*** *The Project promotes forest governance based on forest conservation. For the monitoring period, it presents the design of the project's forest governance strategic. /7/14/293/* ***- Action line 7:*** ***7.1 Incorporate management and conservation actions for ecosystems and their services into property and community planning, considering their role in reducing emissions and increasing territorial adaptation.*** *The Project involves the participation of the project owners through the development of participatory farm implementation plans. For the current monitoring period, progress is being made in the implementation of sustainable production practices in savannas within 70 farms. /7/14/271/*

Criterion b) Improves the conditions of conservation of biodiversity and its ecosystem services, in the areas of influence, outside the limits of the project (e.g. natural coverage in areas of special environmental interest, biological corridors, water management in basins, among others.
Assessment Detail
The project promotes and provides improvement actions for the conservation and safeguarding of biodiversity and its ecosystem services. In addition, it identifies and monitors HCVs, and manages the improvement of water resources within the properties. *For the monitoring period, it is verified that HCV were identified within the areas of Project /260/315/. Signage design of 20 areas of biological importance. Design the participatory biodiversity monitoring model /260/315/. Implements restoration actions within the areas of the properties that are part of Project /260/316/. And promotes the declaration of RNSC/ 265/266/*
Criterion c) Implements activities that contribute to sustainable low-carbon productive landscapes.
Assessment Detail
The project promotes the implementation of sustainable production systems and practices. Providing strengthening of the capacities of project participants, with the purpose of achieving empowerment of communities in the development of responsible actions in the care and preservation of natural resources. *For the current monitoring period, the following is verified: 80 properties implementing landscape management tools (live fences, scattered trees in natural savannas) /7/14/270/and 80 properties and implementation of sustainable cattle ranching, family farming, ecotourism practices, among others /7/14/271/*
Criterion d) proposes areas with restoration processes in areas of special environmental importance.
Assessment Detail
The identification of potential areas to be restored and the actions necessary to carry out the restoration activities are included. For the current monitoring period, restoration actions are verified within properties 14/260/316.
Criterion e) Design and execute adaptation strategies based on an ecosystem approach.
Compliance
The projectactvities is based on the conservation, restoration and sustainable management of natural ecosystems, within nature-based solutions. *For the current monitoring period, the programmed progress of the implementation of the project activities is verified /7/14/260/*
Criterion f) 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

Assessment Detail
The project includes the development of training for the transfer of knowledge with the local community. For the current monitoring period, progress has been made in the plan to strengthen biodiversity (260/315), progress has been made by 25% in the plan to strengthen capacities in the conservation of forest ecosystems (262/263), and sustainable management of natural savannahs (391)/

6.6 Co-benefits – Wax Palm

As outlined in Chapter 6.1.2.7 of this report, a comprehensive review of the compliance parameters associated with co-benefits was conducted for the current monitoring period. Consequently, the audit team satisfactorily verified the activities under the special category "Wax Palm." It was confirmed that the project has implemented an implementation plan to demonstrate the benefits of the Wax Palm category, in accordance with the guidelines described in section 19.2.2 of the BCR standard /14/336/260/. The procedures include activities related to restoration actions within the properties that are part of the project, identification of High Conservation Values (HCV), monitoring and conservation of threatened species, implementation of sustainable productive practices in natural savannas, and women's empowerment /14/260/.

The identification and monitoring of High Conservation Values (HCVs) was documented in Table 22 of the monitoring report version 2.4, where the results obtained in the identification of HCVs associated with biodiversity, landscapes and ecosystem services are described. This activity was supported by the verified methodology, ensuring the application of biodiversity assessment techniques. Likewise, the monitoring of globally threatened species was addressed through the planning of a participatory bioacoustic monitoring methodology, demonstrating progress in the conservation of threatened fauna.

In addition, the restoration actions in degraded ecosystems, reported in the compliance report, were verified, where the restoration activities implemented by the land managers are documented, including the planting of native species such as Acacia mangium and Mauritia flexuosa. In terms of gender equity, the project holder made progress in the formulation of a training plan to strengthen the management of financial goods and services with a gender approach. These activities were monitored and reported with specific indicators, demonstrating adequate compliance with the established co-benefits criteria, see section 6.1.2.7

Based on this, Based on this, the audit team verified that the project:

- Carries out restoration activities

- High Conservation values area found un project area
- Area taking actioin to conserve and monitoring threatened species
- Implemented sustainable productions actions
- Sopport actioins to empower women

6.7 REDD+ safeguards

The audit team verified that the Project proponent evaluated the environmental and social impacts generated by the implementation of the project activities, in compliance with the criteria established in the "Sustainable Development Safeguards Tool" (SDS Tool) version 1.1 of BioCarbon Standard. The evaluation included the questionnaire in Annex A of this tool, allowing the analysis of the environmental impacts on the use of land, water, biodiversity, ecosystems and climate change, as well as the social impacts on human rights, corruption, economy and forest governance /253/254/255/.

During this monitoring period, and through documentary support, compliance with the measures aimed at preventing impacts on social, economic and environmental rights was verified. In this context, it was verified that the project addresses and complies with REDD+ Safeguards, using both the "Tool to Demonstrate Compliance with REDD+ Safeguards" version 1.1 of the BioCarbon Standard, as well as the national interpretation of the "Environmental and Social Safeguards for REDD+ in Colombia".

To this end, the Project proponent developed a Safeguards Monitoring Plan that defines twenty-three (23) indicators for monitoring REDD+ Safeguards /275/. Each indicator includes: safeguard ID, indicator ID, name, type, national interpretation element, objective, goal, unit of measurement, methodology and monitoring frequency, person responsible for measurement, result in the reported period, supporting documents and observations, thus complying with the criteria of BCR

Table 26. REDD+ Safeguards Monitoring Assessment

Requirement "Tool to Demonstrate Compliance with REDD+ Safeguards" BCR	National Interpretation Requirement "Environmental and Social Safeguards for REDD+ in Colombia"	Project indicator	Compliance supports - Cross check.
1. About compatibility: Demonstrate that the project activities are in accordance	A1 Correspondence with national legislation: REDD+ policies, actions and measures must be aligned with international	1.1. Compatibility reports carried out	As proof of compliance, a document is presented that analyzes the compatibility of the Project activities, related to various national and international policies, mainly in aspects of climate change, forest conservation and biodiversity. This

with these policies and that they are not contrary to them.	agreements signed by Colombia, national legislation and policies related to forest conservation, biodiversity and climate change. It is crucial to take into account the regulatory framework, since ignorance does not justify non-compliance.		analysis document will be updated on an ongoing basis to incorporate new policies related to these topics /277/278/276/.
2. Implement tools that guarantee the effective, transparent and efficient dissemination of information associated with Project activities. To do this, you must keep a record of the means used for disclosure.	B2. Transparency and Access to Information: Transparent, accessible and clear. Disseminate through workshops, documents and the internet, adapting to needs.	2.1. Spots and/or radio audios produced and broadcast within the framework of the project.	Different radio spots were created and broadcast in which relevant information was disseminated to the parties interested in the project /280/279/.
		2.2. Communications sent by email and WhatsApp to disseminate information within the framework of the project.	Communication channels such as email and WhatsApp were verified, through which information was delivered to those linked to project /281/284/279/.
		23. In-person and/or virtual socializations for property achievement	Several meetings were held with project actors, such as property owners, community leaders and representatives of various territorial entities /282/279/.
		2.4. Digital documents produced and disseminated within the framework of the initiative, such as brochures, posters, illustrative documents, guides, among others.	Several documents were prepared that served as support to deliver project information to the different stakeholders, such as posts, portfolios and reports, among others. Likewise, informative videos /285/286/287/288/289/290/291/279/ were made.

		2.5. Registros de la initiative en el RENARE	As a guarantee of transparency in the operation of the project, the management of the project registry on the RENARE platform is demonstrated, so that it can be published and consulted by those who wish to access the information /294/279/.
		2.6. Activities or documents carried out with organizations, associations, community action boards or interest groups.	The Project proponent held the I, II and III Biodiversity, Carbon and Water Forum, in collaboration with organizations such as USAID, Latam Airlines, Luker Chocolate and the Casanare Chamber of Commerce, as well as with owners of private properties linked to the project and the civilian population in general /292//279/.
		2.7. PQRS system for addressing and responding to comments, questions, suggestions or complaints.	The procedure for the proper management of the PQRS is evidenced, as well as the channel for their presentation and the reporting and control system /293/279/.
	B3. Accountability: Be accountable for management and results.	2.8. Project management reports	Information bulletins that make known the progress, management and results within the framework of the implementation of the project to the managers of the ecosystem /294/.
	B4. Recognition of Forest Governance Structures: Recognize and strengthen those who decide on forests so that they participate in decision-making.	2.9. Reports for the recognition of forest governance structures.	The consolidation of a governance strategy that seeks to identify, recognize and respect the governance and local organization structures is evident, through the formation of a governance table that will have the participation of the three parties: the ecosystem managers, the strategic ally and the owner of the project /393/279/.
	B5. Capacity Building: Strengthen the capacities of actors in technical, legal and administrative areas	2.10. Workshops and/or training developed within the framework of the initiative	The report of the different training spaces developed is evident, through which knowledge was strengthened and interaction between attendees was promoted /262/263/298/279/.

	to improve decision making.		
3. Recognize and respect the rights of the communities present in the territory, establishing working groups and other mechanisms that link them to the project from its pre-feasibility and structuring phase. Furthermore, it must integrate traditional ancestral knowledge and propose new forms of sustainable use of the territory.	C6. Free, Prior and Informed Consent (FPIC): Apply national provisions on consultation and FPIC, in accordance with legislation, jurisprudence and guidance from the Ministry of the Interior.	3.1. Working groups held with the communities	The documents are presented by which the free, prior and informed consent of the communities linked to the project /250/274/262/ is guaranteed.
	C7. Respect for Traditional Knowledge: Respect and promote the traditional knowledge and visions of the territory of ethnic peoples and communities.	3.2. Analysis of developed community mappings	The inventory of the ethnic communities present in the project development area, as well as the linked local communities, is presented. Evidence of the geographical location of these communities is also presented, which provides clarity about the specific area of intervention and guarantees non-affectation /296/295/.
	C8. Distribution of Benefits: Guarantee the participation and fair distribution of the derived benefits.	3.3. Contracts and/or conservation agreements signed	The linking contacts to the Orinoco2 project are presented, signed with the ecosystem managers, which guarantee the legal ownership of the land and, therefore, the respect and guarantee of their rights over it /249/.
	C9. Territorial Rights: Respect the territorial, collective and individual rights of ethnic and local communities.		
4. Demonstrate that you have shared information clearly and effectively with communities and that they had the	D10. Participation: Respect the right to full and effective participation of all actors involved to guarantee governance and adequate decision-making on REDD+.	4.1. Media for the transparent, clear, complete, inclusive and effective dissemination of information.	There are documents that support the use of the different communication channels established for the dissemination of the project, such as email and WhatsApp. /281/284/.
		4.2. Real and effective participation mechanisms	Documents are evident that support the use of different participation channels, such as virtual and in-person meetings, as well as the

opportunity to participate.		*from the feasibility and structuring phase of the project*	*mechanism for requests, complaints, claims and suggestions. /298/262/263/.*
5. Conserve, protect, restore and sustainably use ecosystems. In addition, they must comply with environmental standards and demonstrate that no activities have been carried out that involve the conversion of natural forests.	*E11. Conservation of Forests and their Biodiversity: Support the conservation of forests and the implementation of measures established for this purpose.*	*5.1. Cycle of training given to the community*	*The report documents the training carried out during the current monitoring period, with the purpose of educating and promoting the conservation of ecosystems and biodiversity /299/300/.*
		5.2. Forest non-conversion	*Graphic outputs are evident that support and demonstrate the non-conversion of forests during the present monitoring period /301/302/303/.*
	E12. Provisions of Environmental Goods and Services: Support the provision of ecosystem services and their enjoyment.	*5.3. Compliance with environmental regulations*	*The certifications issued by the Regional Autonomous Corporations are evident, proving that the project proponent has not incurred infractions or sanctions for environmental aspects /304/.*
6. Take measures to reduce reversal risks.	*F13. Environmental and Territorial Planning: Support the consolidation of territorial and environmental planning instruments provided for in the legislation, under a focus on conservation and sustainable management of the forest.*	*6.1. Analysis of reversal risks carried out within the framework of the initiative*	*A matrix is presented in which the analysis and management of the risk of reversal of the project is demonstrated, as well as the mitigation measures related to the project activities /358//305/.*
	F14. Sectoral Planning: Propose REDD+ actions based on environmental and territorial planning instruments, as well as legislation related to the conservation of	*6.2. Actions so that the project is maintained over time*	*The minutes of the contract linking the Orinoco2 project are presented, which contemplates actions to address the risk of reversal through contractual clauses /306/305/.*

	forests and their biodiversity.		
7. Identify and control leaks, minimize their impact and implement response protocols.	G15. Forest Control and Surveillance to Avoid the Displacement of Emissions: Incorporate measures to reduce the displacement of emissions in its design and guarantee timely monitoring and control when the displacement of emissions occurs.	7.1. Analysis to identify leaks and their causes 7.2. Response protocol to minimize such leaks	To comply with this safeguard, the report on the development of monitoring actions by Geographic Information Systems (GIS) of the leak area and community monitoring is considered, with the identification of critical areas and GHG emissions events, in order to reduce the displacement of emissions /307/.

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6.8 Double counting avoidance

The verification of double counting avoidance for the ORINOCO2 project was conducted in accordance with the principles and requirements established by the BCR Tool "Avoiding Double Counting (ADC)" version 2.0 and applicable national regulations /336/331/7/14//26/114/79/80/81/82/83/357/. In this regard, it was verified that:

- *The project is not, nor has it been, registered in other registry platforms. (See section 5.4. Other GHG Program)*
- *The project areas do not overlap with other project areas in the AFOLU sector. (See section 5.4. Other GHG Program, Figure 1. Overlapping Analysis)*
- *The project's registration in RENARE was verified to confirm compliance with national regulations. The project ID is 3721.*

The structured assessment and application of the BCR Tool "Avoiding Double Counting (ADC)" ensured that the ORINOCO2 project complied with all necessary measures to prevent double counting of GHG emission reductions or removals. The combination of systematic project registration, rigorous cartographic analysis, and ongoing monitoring confirms the transparency and integrity of the project's carbon accounting practices, upholding the standards required by the BCR Program and applicable national regulations.

6.9 Stakeholders' Consultation

The audit team, based on document review, evidence from interviews, and the site visit, validated and verified that the project proponent meets the BCR requirements for stakeholder consultation. See section 5.11 of this document.

During the stakeholder consultation process for the Orinoco REDD+ project2 , a review was conducted to validate the individuals, groups and organizations that would be affected by project activities. In the initial phase, a database of potentially interested stakeholders was created and documented in Annex 4.1.1 of the PDD. An official letter was sent to these stakeholders, for a total of 147 letters detailing the project design and the potential impacts identified, inviting them to make comments, suggestions or recommendations through official channels such as telephone and e-mail. In addition, the possibility of organizing virtual or face-to-face meetings was offered upon request.

In this sense, stakeholder consultation allowed us to identify their interests, potential risks and appropriate mitigation measures. The project documentation provides mechanisms for stakeholders to comment on the project, demonstrating their involvement in project design and implementation. Ensured that the 147 invitations to comment were sent to relevant stakeholders, allowing for broad participation.

In line with the above, only one comment was received by email, out of 147 letters sent, and this comment was answered in a timely manner. For example, from the company AGRICULTURAL de Agrocacay S.A.S, questions were raised about the measurement of carbon sequestration in reforestations and monitoring of endangered species. The project owner informed that the REDD+ project focuses on the conservation of natural areas through the reduction of emissions caused by deforestation and forest degradation, and that the landowners would carry out conservation and monitoring activities in conjunction with the Cataruben Foundation.

Finally, the comments received were documented and evaluated to see if they were adequately considered. Table 47 of the document summarizes the comments and corresponding considerations, ensuring transparency and an adequate response to the concerns raised. In addition, if there were complaints or grievances from stakeholders, a full explanation was provided on how they were addressed and whether they were satisfactorily resolved.

6.9.1 Public Consultation

The ORINOCO2 project was open for public comment on the Biocarbon Standard public platform, from September 11, 2023 until October 11, 2023. During this 30-calendar day period, all stakeholders were invited to provide their comments and suggestions on the project. Therefore, it is verified that no comments were received during the public consultation period on Biocarbon Standard, according to the documentation available on said platform at the time of this validation and verification audit.

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7 Internal quality control

To ensure the quality of the validation and verification activities of the ORINOCO2 project, measures were implemented in accordance with the guidelines established in the BCR standard version 3.4 section 21, the methodologies BCR0002 version 4.0 section 14.6, BCR0005 version 1.0 section 13.2 and the validation and verification manual version 2.4 section 10.3. These measures ensure that the project holder carries out the procedures and activities in a systematic and rigorous manner, guaranteeing the integrity and accuracy of the reported data.

In this regard, the project owner responsible for project implementation has established an integrated management system that incorporates manuals, procedures and formats necessary to comply with the requirements and expectations of GHG quantification methodologies, as well as applicable legal and regulatory requirements. This system is based on ISO 9001:2015, ISO 14001:2015 standards, ensuring effective, and environmentally responsible quality management.

The integrated management system includes specific quality control and assurance procedures for data collection, processing and reporting. These procedures ensure the accuracy, completeness, timeliness, relevance and reliability of the information, minimizing the risk of errors and omissions. In addition, regular internal audits are implemented to review and evaluate compliance with established procedures, identifying areas for improvement and taking corrective action, when necessary.

During the validation and verification process, reviews of the project documentation, including the Project Description Document (PDD) version 2.4 and the Monitoring Report (MR) version 2.4, were carried out. These reviews included verification of GHG quantification methods, activity data, emission factors, implemented mitigation measures and their documentary supports. In addition, field visits were conducted to verify the implementation of project activities and the completeness of the reported data.

Therefore, the quality control measures implemented by the project holder for the ORINOCO2 project ensure that validation and verification activities are carried out effectively and in accordance with applicable standards and methodologies. The implementation of an Integrated Management System, combined with regular internal audits and reviews of project documentation, guarantees the accuracy and reliability of the reported data, complying with the requirements established by the BCR standard and methodologies BCR0002 version 4.0 section 14.6 and BCR0005 version 1.0 section 13.2. A complementary description of the information quality control and document management process can be found in paragraph (g) of section 6.1.2.1 of this validation and verification report..

8 Validation and verification opinion

The audit team conducted the validation and independent verification of the ORINOCO2 project in accordance with the following documents and regulations:

- *BCR Standard version 3.4*
- *Methodology BCR0002: Quantification of GHG Emission Reductions in REDD+ Projects, version 4.0, May 2022.*
- *Methodology BCR0005: Quantification of GHG Emissions Reductions and Removals-Activities Avoiding Land Use Change in Natural Savannah, version 1.0, February 2023.*
- *BCR Validation and Verification Manual version 2.4, January 2024.*
- *ISO 14064-2:2019 Standard.*
- *ISO 14064-3:2019 Standard.*

In this sense, it has been verified that the activities established in the validation and verification audit plan have been fully executed. In addition, it is confirmed that the declaration related to Greenhouse Gas Emissions (GHG) is free of substantial and material discrepancies, ensuring a confidence level of 95%, as stipulated in the BCR standard version 3.4.

For the 2018 to 2022 monitoring period, an estimated total emissions reduction of 657,082 tCO2e was verified, with an average annual reduction of 154,608 tCO2e in the Monitoring Report (MR) version 2.4. These values were derived from the detailed analysis and correct application of BCR0002 version 4.0 and BCR0005 version 1.0 methodologies, according to the procedures and criteria established in the validation and verification manual version 2.4 by the project owner. In this sense, project activities included the conservation of forests and natural savannahs, the restoration of degraded ecosystems and the implementation of sustainable practices.

Therefore, the lead auditor recommends a positive validation and verification opinion for the ORINOCO2 project. In this order of ideas, the validation process was developed as follows: i) strategic planning of the monitoring plan and ex ante and ex post estimation of GHG reductions; ii) on-site audit and interviews with stakeholders; iii) resolution of two rounds of findings and issuance of the final validation report, verification and opinion. During the validation process, corrective and clarifying actions were proposed, all of which have been successfully closed, as explained in section 11 Annexes, specifically Annex 3 of the validation and verification report.

The review of the Project Description (PDD) version 2.6 and Monitoring Report (MR) version 2.4 documentation, together with background research, follow-up interviews and review of stakeholder comments, has provided the audit team with sufficient evidence to validate compliance with the established criteria

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9 Validation statement

Versa Expertos en Certificación S.A.S. been commissioned by ***Fundación Cataruben*** *to validate the* ***ORINOCO2*** *GHG emissions reduction project. The declared* ***ORINOCO2*** *project involves the activities developed in Meta and Vichada, Colombia. The* ***ORINOCO2*** *project has been developed in accordance with the guidelines of international standards ISO 14064-2:2019, ISO 14064-3:2019 and the specific requirements of the GEI Biocarbon Standard program.*

Versa Expertos en Certificación S.A.S. conducted a review of all the supporting documentation used by by ***Fundación Cataruben*** *for the elaboration of the* ***ORINOCO2*** *project and made a field visit together with by* ***Fundación Cataruben.*** *There, through interviews and review of primary information sources, it confirmed the organizational and reporting limits, activity data, emission factors and global warming potentials used; as well as the methodological assumptions and exclusions made.*

Versa Expertos en Certificación S.A.S. established the objectives, scope and validation criteria in the commercial proposal and legal agreement VERSA-P-0179 and in the approved audit plan for the validation of the Project ***ORINOCO2****. The objectives, scope and validation criteria are described below:*

Objective

The Validation process consists of the evaluation by Versa Expertos en Certificación S.A.S of the project design document and/or monitoring reports in accordance with the guidelines of the ISO 14064-2:2019 standard, the guidelines of the selected GHG program, the methodologies used and the legislation of the country where the project is developed.

Scope

Validate and verify the project activities, its PDD, its monitoring plan, its GHG sources, sinks and/or deposits, its GHG emissions reduction quantification period, its baseline scenario, its requirements management processes legal and information, guidelines and methodological documents Biocarbon Standard. ***Sectoral scope:*** *AFOLU; REDD+ and Activities that avoid land use change of natural savannahs.*

Criteria

- *ISO 14064-2:2019*
- *ISO 14064-3:2019*
- *BCR0002 Methodology: Quantification of GHG Emission Reductions in REDD+ Projects, version 4.0, Mayo 2024.*
- *BCR0005 Methodology: Quantification of GHG Emissions Reduction. Activities that prevent Land Use Change in Natural Savannas, version 1.0, February 2023.*

- *Biocarbon Standard requirements*

Versa Expertos en Certificación S.A.S. ensures that the data and information supporting the GHG statement are projected in nature. Validation activities have been configured in such a way that they offer a high, but not absolute, level of assurance.

Versa Expertos en Certificación S.A.S. identified that, according to the review of the evidence provided by ***Fundación Cataruben*** *and during the field visit, from the beginning of the initiative the* ***ORINOCO2*** *project has generated contributions to the Sustainable Development Goals (SDGs 6,13 and 15 defined by the project). This is applicable for the components (Quantification of GHG Emission Reductions) according to the relevant criteria and indicators.*

Versa Expertos en Certificación S.A.S. validated that the project presents the procedures related to the monitoring of co-benefits for the special categories Wax Palm, described in the "BioCarbon_joint Validation and verification Report ". These co-benefits are listed below:

- *Biodiversity*
- *Community*
- *Gender equity*

Versa Expertos en Certificación S.A.S. based on the results of the activities developed, it declares for all intended users that the ***ORINOCO2*** *project of* ***Fundación Cataruben*** *in 2024 complies with the principles established by ISO 14064-2:2019, ISO 14064-3:2019 and the GHG Biocarbon Standard program are within the level of material assurance and importance and is free from material errors. This statement is addressed to Biocarbon Standard and other interested parties and is issued.*

Report No.: GEI-P-238

Level of assurance: 95%

Legal Agreement No.: VERSA-P-0179

Material discrepancy: 5%

10 Verification statement

Versa Expertos en Certificación S.A.S. been commissioned by ***Fundación Cataruben*** *to verify* ***ORINOCO2*** *GHG emissions reduction project. The declared declared* ***ORINOCO2*** *project involves the activities developed in Meta and Vichada, Colombia. The* ***ORINOCO2*** *project has been developed in accordance with the guidelines of international standards ISO 14064-2:2019, ISO 14064-3:2019 and the specific requirements of the GEI Biocarbon Standard program.*

Versa Expertos en Certificación S.A.S. conducted a review of all the supporting documentation used by ***Fundación Cataruben*** *for the elaboration of the* ***ORINOCO2*** *project. It made a field visit together with* ***Fundación Cataruben*** *where through interviews and review of primary information sources, it confirmed the organizational and reporting limits, activity data, emission factors and global warming potentials used; as well as the methodological assumptions and exclusions made.*

Versa Expertos en Certificación S.A.S. established the objectives, scope and verification criteria in the commercial proposal and legal agreement VERSA-P-0179 and in the approved audit plan for the verification of the ***ORINOCO2.*** *The objectives, scope and verification criteria are described below:*

Objective

The Verification process consists of the evaluation by Versa Expertos en Certificación S.A.S of the project design document and/or monitoring reports in accordance with the guidelines of the ISO 14064-2:2019 standard, the guidelines of the selected GHG program, the methodologies used and the legislation of the country where the project is developed.

Scope

Validate and verify the project activities, PDD, monitoring plan, GHG sources, sinks and/or deposits, GHG emissions reduction quantification period, baseline scenario, requirements, management processes legal and information, guidelines and methodological documents for Biocarbon Standard. ***Sectoral scope:*** *AFOLU; REDD+ and Activities that avoid land use change of natural savannahs.*

Criteria

- *ISO 14064-2:2019*
- *ISO 14064-3:2019*
- *BCR0002 Methodology: Quantification of GHG Emission Reductions in REDD+ Projects, version 40, 27th May 2024.*
- *BCR0005 Methodology: Quantification of GHG Emissions Reduction. Activities that prevent Land Use Change in Natural Savannas, version 1.0, February 2023.*
- *Biocarbon Standard requirements*

Versa Expertos en Certificación S.A.S. ensures that the data and information supporting the GHG statement are historical in nature. Verification activities have been configured in such a way that they offer a high, but not absolute, level of assurance.

Versa Expertos en Certificación S.A.S. identified that, according to the review of the evidence provided by ***Fundación Cataruben*** *and during the field visit, from the beginning of the initiative the* ***ORINOCO2*** *project has generated contributions to the Sustainable Development Goals (SDGs 6,13 and 15 defined by the project). This is applicable for the components (Quantification of GHG Emission Reductions) according to the relevant criteria and indicators.*

Versa Expertos en Certificación S.A.S. verified that the project presents the procedures related to the monitoring of co-benefits for the special categories Wax Palm, described in the "BioCarbon_joint Validation and verification Report ". These co-benefits are listed below:

- *Biodiversity*
- *Community*
- *Gender equity*

Versa Expertos en Certificación S.A.S based on the results of the activities developed, it declares for all intended users that the ***ORINOCO2*** *project of* ***Fundación Cataruben*** *in 2024, complies with the principles established by ISO 14064-2:2019, ISO 14064-3:2019 and the GHG Biocarbon Standard program, are within the level of material assurance and importance and is free from material errors. This statement is issued and addressed to Biocarbon Standard and other interested parties.*

11 Annexes

Annex 1. Competence of team members and technical reviewers

Provide documentation to demonstrate the required competence of validation team members and technical reviewers.

Full Name	*Role*	*Activities to Develop*
Diana Rauchwerger	*Lead Auditor (Round 1)*	*The lead auditor has predestined activities which are:* *-Document review* *-Creation of audit plan* *-Carry out the field audit according to regulations* *-Make findings corresponding to the audit*
Helena Villanueva	*Technical Expert (Round 1)*	*The technical expert has predestined activities which are:* *-Document review* *-Carry out the field audit according to regulations* *-Make findings corresponding to the audit*

Lucas Rivera	*Lead Auditor (Round 2)*	*The lead auditor has predestined activities which are:* *-Document review* *-Creation of the audit plan* *-Make findings corresponding to the audit* *- Delivery of verification report*
Joaquin Emilio Montealegre	*Technical Reviewer*	*The technical reviewer has predestined activities which are:* *Carry out the review of the final documents.* *Issue technical review document.*
Camilo Montaña	*Issuer of the Validation and Verification opinion*	*Accreditation in: ISO/IEC STANDARD 17029;2019* *ISO 14064-1* *ISO14064-2* *ISO 14064-3* *ISO/IEC STANDARD 17065;2012*

Diana Rauchwerger:

Is an Agricultural Engineer specialized in environmental and local development, with studies in Biodiversity Conservation and Use. She has over 7 years of experience in the formulation, evaluation, and oversight of environmental projects. She has been part of teams responsible for designing and implementing sustainable strategies in sectors such as OIL&GAS, mining, electricity, and infrastructure.

She worked as a contractor at the Ministry of Environment and Local Development, specifically in the Climate Change Mitigation group. Additionally, she serves as a lead auditor and technical expert for various entities involved in the carbon credit market, climate

change, validation and verification of greenhouse gas (GHG) projects, and accreditation processes for validator/verifier bodies (VVB) in GHG offset initiatives.

Helena Villanueva

Forest Engineer, with knowledge and experience in the development of REDD+, CDM projects, in the improvement of mathematical and spatial models of deforestation, with extensive knowledge in the development of calculations and analysis of emissions of carbon through the implementation of guides IPCC 2000, 2003 and 2006 for inventories of greenhouse gases, analysis of land use change and evaluation of carbon content for the different changes in coverage, implementation of REDD+ projects with verra 003, 007, 009, 0015, 0037 methodology, 0042 and their respective modules. With international academic recognition for his research contributions on the trapeze Amazonian.
Leadership capacity and disposition for interdisciplinary work and commitment to activities that promote sustainable development. Ability to handle computer packages statisticians as meets Minitab and Infostat, and of interpretation of images satellite, radar and aerial photography for spatial analysis and production cartographic.

Lucas Rivera
Forestry engineer with a master's degree in environmental management, he has worked for private companies, public companies, and multilateral organizations for the last fifteen years on GHG emissions reduction projects for AFOLU sector projects. His roles are based on forestry carbon project developer and auditor.

Consultant with more than thirteen years of international experience in REDD+, ARR, transportation, waste and energy for its formulation, validation, verification and issuance of carbon credits. With Master's training in Environmental Management, Master's Degree in Financial Administration and Forestry Engineering. Carbon Footprint and GHG Auditor.

Joaquin Emilio Montealegre Villanueva

Forestry Engineer, Specialist in Renewable Natural Resource Management, with experience in coordination, implementation, and environmental monitoring. I obtained my degree in Forestry Engineering in 1990, initially working for Maderas de Urabá S.A. – Maduraba, based in Urabá Chocoano, in forest inventories, followed by experience in environmental consulting until 2003.
Senior Coordinator in Environmental, Industrial Safety, and Community relations in the oil & gas industry, focusing on exploration and oilfield development projects in the departments of Putumayo, Casanare, and Meta. I led the design and execution of compensation and environmental investment plans from 2003 to 2013.
From January 2014 onward, I served as a Biotic Reviewer at the National Environmental Licensing Authority – ANLA of the Ministry of Environment. During 2019 and 2020, I held roles as Technical Lead and Biotic Reviewer in the Environmental Licensing Evaluation Subdirectorate (SELA) at ANLA for the Hydrocarbons Group. In the second half of 2023, I

served as a technical lead for a pilot group addressing environmental complaints, established within the Environmental Licensing Monitoring Subdirectorate of ANLA.
Forest expert in certification processes for accessing Carbon Credits in REDD+ projects with the certification company VERSA, working in the Caquetá River Basin with the Huitora and Coropoya Indigenous communities in Solano Municipality, Caquetá Department, Colombian Amazon; as well as with Indigenous and Afro communities of Alto Baudó in the municipalities of Quibdó, Istmina, and Baudó in Choco Department, Colombia, and for REDD+ AWIA TUPARRO +9, in the Amazon and Orinoquia Regions, covering the departments of Casanare, Guainía, and Vichada, Colombia.

Camilo Andres Montaña Salamanca:
Mechanical engineer and project manager with over 12 years of experience in conformity assessment and monitoring of technical regulations. Former head of the technical regulations group at the Superintendence of Industry and Commerce. He has completed the courses for lead formulators for the validation and verification of greenhouse gas (GEI) mitigation projects provided by Asocarbono-Asocec. Currently serving as the General Director of Versa Expertos en Certificación SAS.

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

If VERSA EXPERTOS EN CERTIFICACIÓN S.A.S. identifies issues that require correction, improvement or clarification to ensure that the project/inventory complies with the applicable GHG program guidelines, non-conformity findings shall be raised, according to the following categorization:

***CAR:** Corrective action request*

Corrective action requests (CARs) are major non-conformities that must be raised when there is non-compliance with a requirement of the standard, national regulation or GHG program. CARs can arise from (among others):

- *Material misstatement: a material misstatement is one that may affect the decision of the intended user of the GHG inventory or project (ISO 14064-3:2019).*
- *Any situation that may influence the ability of the project or inventory to achieve quantification, reduction and/or removal of actual, measurable and verifiable GHG emissions.*
- *Any situation of risk that GHG emissions, reductions and/or removals cannot be monitored and/or calculated.*

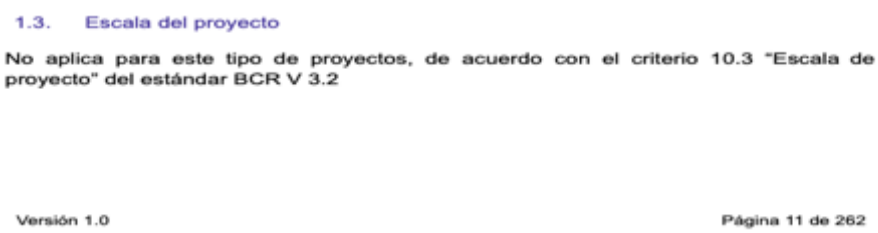
***CL:** Clarification request*

Clarifications are minor non-conformities that should be raised when there are non-material misstatements in the PDD or Corporate GHG Inventory Report, monitoring report or corporate GHG inventory information that make the rationale in these documents insufficiently clear or insufficient to determine whether the applicable requirements have been met.

***FAR**: Future action request*

Request for future action. Finding related to the implementation of future actions, which guarantee the veracity of the project/monitoring of the inventory that is required to be reviewed during the first verification.

Nº Finding :	*1*	*Finding Type:*	*CAR*	*X*	*CL*	
Description :	*The project is not aligned with:* *1. BCR Standard From differentiated responsibility, to common responsibility V 3.2, numeral 2. Version.*					

	2. Methodological Document Sector AFOLU/BCR0002 Quantification of GHG Emission Reductions from REDD+ Projects Version 3.1. 15 September 2022. Methodology of GHG emission reduction BCR 0002 projects. V3.1, numeral 2. Version. *3. Methodology for activities that avoid land use change in natural savannas BCR 0005 V 1.0, numeral 2. Version.*
Objective Evidence	*The project is not aligned with:* *The project holder does not use the latest versions of all documents that make up the BCR program available to date.*  1.3. Escala del proyecto No aplica para este tipo de proyectos, de acuerdo con el criterio 10.3 "Escala de proyecto" del estándar BCR V 3.2 Versión 1.0 Página 11 de 262 *The Project Holder must use version 2.1 of the BIOCARBON TEMPLATE- GHG-Projects document, version 2.1.*
Action plan:	*Version 2.2, sections, styles and content are updated.* *Note: BIOCARBON TEMPLATE V 2.2 on its page 2 has the following clarification: "The instructions in this template only serve as a guide and do not automatically represent a complete list of the information that the project holder shall provide in each section of the template".* *Likewise PDD and RM are updated to version 3.3 of March 1, 2024 of the Biocarbon standard.*
OVV Evaluation:	*The project developer provides documentary evidence to bring closure to the finding.*

Conclusion:	*Close finding*	*X*	*Maintain finding*		*FAR*	

Nº Finding:	*2*	*Finding Type:*	*CAR*	*X*	*CL*	
Description :	*The project is not aligned with:* *1. BIOCARBON TEMPLATE V 2.1, numeral 2.3 Project activities.* *2. BCR Standard From differentiated responsibility, to common responsibility V 3.2, numeral 10.1.2. REDD+ activities.* *3. National Interpretation of social and environmental safeguards for REDD+ projects in Colombia, No: B2 and D10.* *4. Methodological Document Sector AFOLU/BCR0002 Quantification of GHG Emission Reductions from REDD+ Projects Version 3.1. 15 September 2022.*					

	Methodology of GHG emission reduction BCR 0002 projects. V3.1, numeral 2. Version. *5. Methodology for activities that avoid land use change in natural savannahs BCR 0005 V 1.0, numeral 10.* *6. National interpretation of social and environmental safeguards for REDD+ projects in Colombia, No B2. TRANSPARENCY AND ACCESS TO INFORMATION*
Objective Evidence	***ROUND 1*** ***Validation:*** *1. In the approach to project activities in section 2.4.1 of the PdD, the responsibilities and roles for each of the actors involved in the implementation of project activities are not defined. For example, the role played by Ecopetrol as a financing partner was not found within these activities. This was corroborated in the field during interviews with beneficiaries, who stated that they recognize Ecopetrol as part of the project, but are not clear about its role within the project.* *Accordingly, it is necessary for the project owner to clearly define the roles, responsibilities and commitments of the different project participants.* *This information must be included in the PdD and it is essential to establish mechanisms to ensure that all stakeholders can access the information easily and that it is clear, transparent and complete.* ***Verification:*** *1. During the field visit, interviews revealed that beneficiaries and other stakeholders involved with the project are not clear about the activities described in the Monitoring Report. In this regard, the project should ensure that it has defined mechanisms to ensure that all stakeholders have transparent, accessible and timely information related to REDD+ actions.* ***ROUND 2*** ***Validation:*** *1. The Channels of attention to PQRS and other components of the Governance Model should be updated (under development): Devise a governance model that promotes the active participation of stakeholders in decision making.*
Action plan:	***Validation**:* *1. To define clearly the roles, responsibilities and commitments of the various project participants, Section 2.3.8.1. is updated. Design of Project Activities as follows:*

	a. The alliance model developed by Cataruben Foundation is related to the design of the activities where the role of Cataruben Foundation, Ecopetrol and the land owners is described in greater detail.

Image. Three-party alliance model for the ORINOCO2 CARBONO DEL ORINOCO project.

	a. The responsibilities of the project stakeholders were added in each of the project activities, oriented to the fulfillment of the objective in each action. Thus highlighting that it is the ally Ecopetrol, who allows consolidating the enabling conditions to ensure the generation of economic benefits.

In order to clearly define and describe the roles, responsibilities and commitments of the different project participants, the following texts will be included in the PDD V2.0:

	a. ***In the general description of the project:*** *In the design and development of the project, Cataruben Foundation serves as project owner, Ecopetrol as strategic ally and the landowners as ecosystem managers or project participants. Cataruben and Ecopetrol are responsible for generating the enabling conditions of the project as well as leading the monitoring, reporting, validation management, verifications, carbon credit trading and distribution of economic benefits procedures. This approach ensures effective collaboration between the Cataruben Foundation, Ecopetrol and the landowners, promoting transparency and active participation in the implementation of climate change mitigation measures. Each party plays a key role in the success of the project, working together to achieve the goals of emissions reduction and ecosystem conservation. This synergy between actors allows the potential of multiple private properties to be*

	harnessed, thus maximizing environmental and social benefits, separating them in a model of cooperation and shared responsibility that strengthens the sustainable management of ecosystems and contributes to climate change mitigation. b. ***In section 5.3, Other project participants:*** *"For the establishment of the enabling conditions of the project, Ecopetrol provided technical and financial support within the sustainability strategy and decarbonization plan, this support is given with the objective of enabling the supply of carbon certificates for voluntary offsets in the framework of the company's decarbonization. This project partner ensures the generation of economic benefits for project participants, which facilitates the execution of project activities and the permanence of reductions and removals".* *Finally, to ensure easy and transparent access to information, we have established a Transparency and Access to Information Mechanism for the ORINOCO2 CARBONO DEL ORINOCO project. This mechanism includes the following tools:* a. *Communication System: We have several communication channels, such as telephone lines, e-mail, social networks and face-to-face service.* b. *Digital Platforms: We have 2 platforms, (see Cataruben Foundation website) and see (Orioco2 Geoportal). These digital spaces allow us to publish relevant information about the project, accessible to all interested parties.* c. *PQRS System: It is a system that allows receiving and managing requests, complaints, claims and suggestions in a transparent and efficient manner (See 6.5.1.3.2.2.2.6. PQRS System).* d. *Governance Model (under development): Devise a governance model that promotes the active participation of stakeholders in decision making. (See ID-G-4.1).* *These mechanisms are previously defined in section 12 of the PDD v2.0, table 47.* ***Verification:*** ***In accordance with the Transparency and Access to Information Mechanism established for the project, the monitoring report describes how this mechanism has been implemented, from safeguard B2, contained in section 11.2 of the Monitoring Report v2.0.*** *As an attention mechanism for some landowners who did not understand 100% of the project activities to be monitored, meetings were held with the ecosystem managers, whose main objective was to review two specific aspects in detail.* a. *In the first place, we sought to strengthen knowledge regarding project activities, emphasizing effective articulation among stakeholders in order to meet the objectives of the ORINOCO2 CARBONO DEL ORINOCO*

	project, focused on reducing deforestation, degradation and land use change in the corresponding area. *b. Secondly, emphasis was placed on reviewing and strengthening the responsibilities and roles assigned to stakeholders in the project. The purpose of this approach was to ensure that project implementation is carried out in a clear, transparent and efficient manner, thus promoting effective collaboration among all stakeholders.* *The evidence related to these meetings can be found in the following link: Strengthening project activities and roles.*					
OVV Evaluation:	*FAR does the project developer, who shall guarantee the update of the governance model for the next verification, provide left in accordance with the documentation and supports.*					
Conclusion:	*Close finding*		*Maintain finding*		*FAR*	*X*

Nº Finding:	*3*	*Finding Type:*	*CAR*	*X*	*CL*	
Description:	*The project is not aligned with:* *1. BIOCARBON TEMPLATE V 2.1, numeral 2.3 Project activities.* *2. BCR Standard From differentiated responsibility, to common responsibility V 3.2, numeral 10.1.2. REDD+ activities.* *3. National Interpretation of Social and Environmental Safeguards for REDD+ projects in Colombia, No: B2 and D10.* *4. Methodological Document Sector AFOLU/BCR0002 Quantification of GHG Emission Reductions from REDD+ Projects Version 3.1. 15 September 2022. Methodology of GHG emission reduction BCR 0002 projects. V3.1, numeral 2. Version.* *5. Methodology for activities that avoid land use change in natural savannahs BCR 0005 V 1.0, numeral 10.* *6. National interpretation of social and environmental safeguards for REDD+ projects in Colombia, No B2. TRANSPARENCY AND ACCESS TO INFORMATION.*					

Objective Evidence	***Round 1*** ***Validation:*** *During the field visit, during interviews with different stakeholders (project beneficiaries, Ecopetrol and Cormacarena) and during the document review, the audit team found no evidence related to the development of numeral c) consultation mechanisms for the definition of project activities and aspects of participatory construction.* *In order to comply with the national interpretation of the safeguards, it is essential that the project ensures that stakeholders exercise their right to effective, free, full and informed participation. In addition, adequate mechanisms must be established to facilitate this participation, allowing stakeholders to be an integral part of the decision-making process that will benefit them.*
Action plan:	*Validation:* *Within the PDD V2.0, section 2.3.8.1 Design of project activities Table 19. Adjustment of paragraph c) consultation mechanisms for the definition of project activities as follows:* - *- Initial meetings: The purpose of these meetings was to consolidate, jointly with the landowners, the project activities (See 6.1.4.1.1.1. Initial meetings).* - *- Letters of intent: These show the willingness of the landowners to participate in a conservation and climate change mitigation project (See 2.1.1 Letters of intent).* - *- Linkage contract: This is the document through which the initial intention is formalized (See 2.1.2. Binding contracts).* - *- Property implementation plans: Document through which the construction of the project activities was carried out in conjunction with the owners of the properties (See 6.5.1.1.2.2. Property Implementation Plans).* *To continue, ensure and strengthen the right of stakeholders to exercise their right to effective, free, full and informed participation, the following mechanisms have been established to facilitate the ongoing participation of owners and other stakeholders:* a. *PQRS System: It is a tool that allows receiving and managing requests, complaints, claims and suggestions in a transparent and timely manner (See 6.5.1.3.2.2.6. PQRS System).*

	b. *Geoportal: A platform was developed to facilitate access to information and participation of the ecosystem managers integrated to the project (See Orioco2 Geoportal).* c. *Governance model (under development): We are creating a governance model that allows us to establish structures and processes that promote transparency, inclusion and accountability of the parties involved in the project. (See ID-G-4.1).* d. *Stakeholder consultation: This is a periodic consultation to gather opinions and suggestions from stakeholders. (See 4.1 Stakeholder consultation).* *This ensures that stakeholders are an integral part of the decision-making process that will benefit them.*
OVV Evaluation:	*The project developer provides documentary evidence to bring closure to the finding.*
Conclusion:	*Close finding* | *X* | *Maintain finding* | | *FAR* |

№ Finding:	*4*	*Finding Type:*	*CAR*	*X*	*CL*		
Description:		*The project is not aligned with:* *1. BIOCARBON TEMPLATE V 2.1, numeral 2.3 Project activities.* *2. BCR Standard From differentiated responsibility, to common responsibility V 3.2, numeral 10.1.2. REDD+ activities.* *3. National Interpretation of Social and Environmental Safeguards for REDD+ projects in Colombia, No: B2 and D10.* *4. Methodological Document Sector AFOLU/BCR0002 Quantification of GHG Emission Reductions from REDD+ Projects Version 3.1. 15 September 2022. Methodology of GHG emission reduction BCR 0002 projects. V3.1, numeral 10 Causes and drivers of deforestation/degradation.* *5. Methodology for activities that avoid land use change in natural savannas BCR 0005 V 1.0, numeral 9 Drivers that generate changes in land use.*				
Objective Evidence		***Validation:*** 1. *No evidence was found related to the identification and description of the drivers that generate land use changes in the project area in the PdD.* 2. *In accordance with the above, the holder must explain and justify how the design of the project activities originates from the analysis of the identified drivers and a participatory construction process among all stakeholders involved with the GHG project.* ***Verification:***				

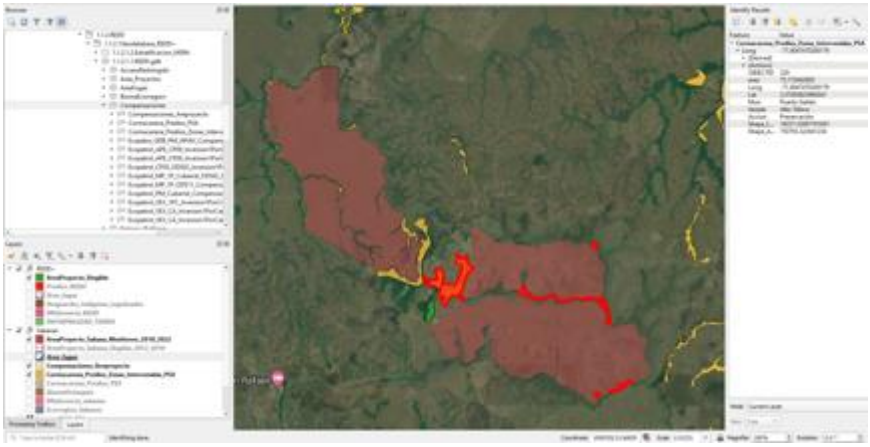
	1. *During the field visit through interviews with project beneficiaries, it was found that they are not clear about the activities that were subject to monitoring.* ***ROUND 2*** ***Validation:*** *1. The spatial limits reported in; 2.3.2. Spatial and temporal dimensions, do not correspond to the values reported by the project:* *"...According to the spatial dimensions of the project, the area comprised covers an area of 119,243.6 ha distributed in 27,793.1 ha of Forest and 91,450.5 ha of natural Savannas"* *The temporal boundaries should comply with BC002 V3.1, paragraph 10.1, to allow understanding of deforestation and forest degradation in terms of historical background, current dynamics and likely future behavior (historical period of forest degradation and deforestation).* *2.* *2.3.2.3 Economic Context* *The development plan of Gobernación del Vichada, 2016 and Gobernación del Meta, 2016 are related, however, these entities have development plans that account for information up to 2023, which serves to understand the recent economic context of the region. Therefore, the project developer should make use of information available for the period of analysis in these development plans.* ***Verification:*** *In the interviews with the communities conducted on Friday, April 5, 2024, the communities indicated the role of the different stakeholders in the project.*
Action plan:	***Validation*** 1. *In compliance with the criteria established in the numeral "10 Causes and Agents of deforestation/degradation" of the BCR 0002 methodology and in the numeral "9 Drivers that generate changes in land use" of the BCR 0005 methodology, the analysis is carried out to identify the causes and agents of deforestation, forest degradation and transformation of natural savannas. For this purpose, the methodologies recommended by the United Nations Environment Program are used, which are: "Drivers of Deforestation and Forest Degradation" and "Conceptual and methodological guidelines for the characterization of causes and agents of deforestation in Colombia". The identification and description of the drivers that generate changes in land use and Causes and Agents of deforestation/degradation were developed within the PDD in section 2.3.1 Analysis of causes and agents*

	of deforestation and transformation of natural savanna cover, 2.3.6 Relationships and synergies, 2.3.7 Chain of events 2. *The design of activities is developed in section 2.3.8.1. Design of Project Activities where the information required in paragraph 11 of the Methodological Document Sector AFOLU/BCR0002 Quantification of GHG Emission Reductions of REDD+ Projects Version 3.1 and paragraph 10 of the Methodology activities that avoid land use change in natural savannas BCR 0005 V 1.0 is described. In this sense, the construction from the drivers is done in relation to the direct or underlying cause and the participation of the owners is framed within the consultation mechanisms for the identification of activities. This is evidenced by the letters of intent, the free and informed voluntary agreements signed between owners of private properties and the implementation plan of each property. For greater clarity in compliance, the row corresponding to the consultation mechanism and identification of objectives and definition of activities is adjusted and links to the relevant annexes are inserted.* ***Verification*** *The Cataruben Foundation has implemented various mechanisms to ensure transparency and accessibility of information related to REDD+ actions. This includes socialization activities and contextualization of the project prior to the signing of letters of intent and the elaboration of Predial Implementation Plans in collaboration with the ecosystem managers (See initial socializations and 2.1.1 LETTERS OF INTENTION). In order to improve the quality of the information, ecosystem managers with communication difficulties were identified, to whom support was provided through field visits and virtual strengthening of project activities. This approach seeks to get the managers actively involved in the conservation actions in their properties and to understand their responsibilities within the framework of the project (see 6.5.1.2.3.STRENGTHENING ACTIVITIES AND ROLES).* *As evidence of compliance with the aforementioned, a photographic record, attendance lists, meeting minutes, documents, and the implementation plans are attached. These supports guarantee compliance with the requirements of the transparency and access to information (B2) and participation (D10) safeguards.* ***ROUND 2*** ***Validation:*** *1. The respective adjustment is made to the text to clarify that the analysis period used is for the determination of causes and agents. Thus, the proposed activities are designed based on this analysis. The study focuses on the period between 2009 and 2018, since during these years it is feasible to obtain official information that allows for a more precise identification of the causes and agents behind*

	deforestation, forest degradation and land use change in natural savannas. This approach facilitates the understanding of land use changes and their possible evolution, while at the same time contributing to the formulation of measures to help mitigate these trends, thus influencing the design of project activities. It is worth mentioning that, although section 10.1 of BC002 V3.1 does not establish a specific time period, it has been chosen to use the project start year and go back nine years, mainly due to the availability of official information. This approach seeks to ensure certainty in the analysis, allowing to understand the dynamics of degradation, deforestation and land use change in the context of identifying causes and agents. *2. Economic context* *The information is updated taking into account the updated development plans.*
OVV Evaluation:	*The spatial boundaries reported in 2.3.2. Spatial and temporal dimensions do not correspond to the values reported by the project. As well as, The temporal limits of the project and the information of the 2.3.2.3 Economic context.* *Likewise, in interviews conducted with local stakeholders on Friday, April 5, 2024, the role of the different organizations involved in the project was corroborated with these stakeholders. For this reason, the finding is closed, as the project developer has complied with it.*

Conclusion:	*Close finding*	*X*	*Maintain finding*		*FAR*	

Nº Finding:	*5*	*Finding Type:*	*CAR*	*X*	*CL*	
Description:	*The project fails to explain:* *Resolution 1447 of 2018, Articles: 20 and 37.*					
Objective Evidence	***ROUND 1*** ***Validation:*** *During the documentary review and the field visit to the PDD, the project fails to demonstrate that the proposed actions to avoid deforestation lead to a real reduction in carbon dioxide emissions, as no evidence was found to show that it is not counting as a reduction what is already in the national regulations or that it is an obligation. In this sense, it was not found how the project justifies and explains that the reductions or removals are due to the effect of the project and not due to legal restrictions such as EOT or POT, forestry or environmental compensation plans, among others.* ***ROUND 2*** *The project developer provides a geodatabase with shapefile of offsets and payment for environmental services, where it is evident that there is no overlap between project areas and offset areas (yellow) and with diagonal flattening, see screenshot below;*					

	 *Source: Cataruben, 2024.* *In the documentation provided by the project developer on April 2, 2024, by email; Cataruben Ecopetrol Agreement Profile in FORM GCO-F-011 - AGREEMENT PROFILE and Ecopetrol Agreement Start Act, the origin of the resources is indicated as strategic, which differs from the mandatory nature of compliance.* *Likewise, on Wednesday, April 3, 2024, a meeting was held with ECOPETROL, which corresponds to a "Technical and financial ally that allows consolidating the enabling conditions to ensure the generation of economic benefits that facilitate the execution of project activities", with the ECOPETROL responsible for this project, Mr. Diego Puentes. It was validated that the project resources come from ECOPETROL's voluntary investment lines and not from mandatory investments of 1%.*
Action plan:	*According to Resolution 1447 of 2018:* *Article 20 scopes of GHG emissions and removals accounting rules: article explaining the scope of the accounting rules.* *"Article 37 Additionality Criteria for GHG Mitigation Sectoral projects: those GHG emission reductions or removals that the holder of the GHG Mitigation Sectoral project demonstrates that would not have occurred in the absence of the GHG Mitigation initiative, and that generate a net benefit to the atmosphere with respect to its baseline, are considered additional."* *"Likewise, GHG removals resulting from the implementation of GHG Removal forestry activities that are developed in areas other than natural forest and that demonstrate a positive net change in carbon deposits in the area of development of the activity and the other additionality criteria defined by the Ministry of Environment and Sustainable Development are also considered additional." In*

	this sense, it is clarified that Orinoco2 CARBONO DEL ORINOCO is an emission reduction project. *"GHG emission reductions or removals resulting from compensation activities of the biotic component derived from the impacts caused by projects, works or activities within the framework of environmental licenses, concessions, requests for permits for the sole use of forest resources due to changes in land use, and requests for definitive subtraction of national and regional forest reserves are not considered additional.* *- In this sense, the project corroborated with cartographic base information provided by Ecopetrol (See Annex 1.Emissions/1.1.GDB/1.1.1.GDB /feature class/Compensations).* *"Emission reductions or GHG removals resulting from presentation and restoration activities in areas of strategic ecosystems for which payments for environmental services for GHG reduction and capture are accessed in accordance with the provisions of Chapter 8 of Title 9 of Part 2 of Book 2 of Decree 1076 of 2015 shall not be considered additional."* *"GHG reductions or removals generated from the date of compliance with the legal terms of the offsets mentioned in this article, or completion of payments for environmental services for GHG reduction and capture are considered additional".* *- With regard to this criterion it is clarified and evidenced that none of the areas linked to the project is within a scheme of payments for environmental services in Annex 1.Emissions/1.1.GDB/1.1.3.Compensations there is cartographic information corresponding to the PES of the department of Meta and Vichada.* *"The holders of sectoral GHG mitigation projects must apply in all their actions and procedures the additionality criteria established in this article, in a complementary manner to the additionality criteria established by the carbon standard GHG Certification program in which it is subscribed."* - *- The PDD V2.0 section 3.3. Identification and description of the baseline scenario and section 3.4. Additionality in accordance with the BCR baseline and additionality tool the baseline and additionality criteria are developed in a complementary manner to the following criteria described in Article 34 of Resolution 1447 of 2028. In addition, section 2.3.2.2.1.2 biophysical environment describes the characteristics of land use and land use conflicts in the region where the project is being developed so that the project activities do not go against the land uses established in the EOTs of the municipalities where the project is being developed. On the contrary, they help reduce land use conflicts that have been occurring and that could increase according to the baseline scenario, thanks to the*

	fact that they promote the conservation of forests and natural savannahs as well as sustainable production.					
OVV Evaluation:	*The project developer provided cartographic and documentary support to close the finding regarding the scope of the GHG emissions and removals accounting rules, as well as the additionality criteria for sectoral GHG mitigation projects.*					
Conclusion:	*Close finding*	*X*	*Maintain finding*		*FAR*	

№ Finding:	*6*	*Finding Type:*	*CAR*	*X*	*CL*	
Description:	*The project fails to explain:* *1. Biocarbon Template-GHG-Projects. Item 2.2 and 2.4* *2. BCR Standard From differentiated responsibility, to common responsibility V 3.2, numeral 2.3 PROJECT ACTIVITIES.*					
Objective Evidence	***Validation:*** *Section 2.3.1.1.1.2 Biophysical environment does not include a description of the environmental variables directly related to the fulfillment of the project's objectives, such as a description of the vocation and taxonomy of the soils present and the agrological conditions of the territory. Considering that one of the objectives of the project is the following:* *¨Reduce deforestation, forest degradation and land use change in natural savannas, in private properties, in the departments of Meta and Vichada, through the implementation of conservation, restoration and sustainable soil use activities, to generate climate change mitigation results. ¨*					
Action plan:	*Validation* *A description of land cover and land use classification, land use conflicts and vocation and uses is included in the PDD v2.0 numeral 2.3.2.1.2 Biophysical Environment..*					
OVV Evaluation:	*The project developer provides documentary evidence to bring closure to the finding.*					
Conclusion:	*Close finding*	*X*	*Maintain finding*		*FAR*	

№ Finding:	*7*	*Finding Type:*	*CAR*	*X*	*CL*	
Description:	*The project is not aligned with:* *BIOCARBON TEMPLATE V 2.1, numeral 2.5 Additional information about the GHG Project.*					

Objective Evidence	*It was not found within the PoD how the project responsible included the development of numeral 2.5 Additional information about the GHG Project of BioCarbon Template V2.1.* *According to the above, the project holder must provide all additional information about the project in the PoD that it considers relevant with supporting evidence.*					
Action plan:	*Section 2.5 Additional information about the GHG Project is developed.* *BIOCARBON TEMPLATE V 2.1. mentioning that there is no additional information about the project.*					
OVV Evaluation:	*The project developer provides documentary evidence to bring closure to the finding.*					
Conclusion:	*Close finding*	*X*	*Maintain finding*		*FAR*	

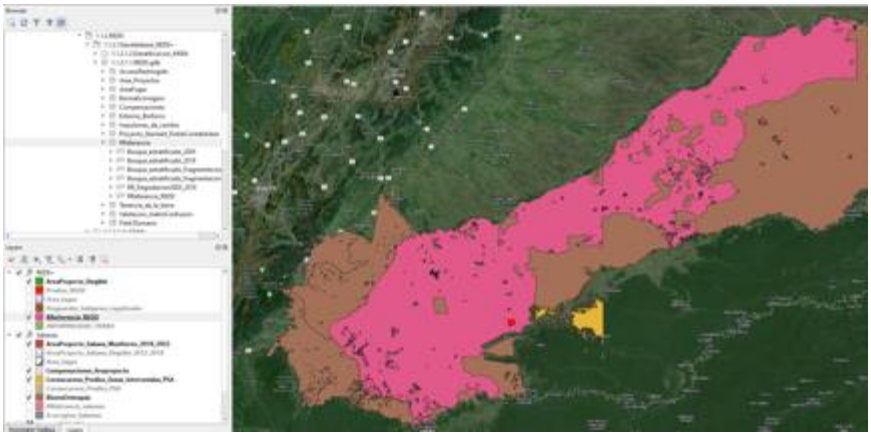
№ Finding:	*8*	*Finding Type:*	*CAR*	*x*	*CL*	
Description:	*The project is not aligned with:* *BIOCARBON TEMPLATE V 2.1, numeral 3.1.2 Methodology deviations (if applicable)*					
Objective Evidence	*No evidence was found related to the development of the contents of the project in section 3.1.2 of BIOCARBON TEMPLATE V 2.1.*					
Action plan:	*Section 3.1.2 is included in the PDD, according to BIOCARBON TEMPLATE V 2.2.*					
OVV Evaluation:	*The project developer provides documentary evidence to bring closure to the finding.*					
Conclusion:	*Close finding*	*X*	*Maintain finding*		*FAR*	

№ Finding:	*9*	*Finding Type:*	*CAR*	*x*	*CL*	
Description:	*The project is not aligned with:* 1. *GHG emission reduction methodology BCR 0002 projects 2. V3.1, numeral 4. Conditions of applicability.* 2. *Methodology for activities that avoid land use change in natural savannahs BCR 0005 V 1.0, numeral 4, Conditions of applicability.* 3. *BIOCARBON TEMPLATE V 2.1, numeral 3. Quantification of GHG emissions reduction*					
Objective Evidence	***ROUND 1***					

	The project manager fails to describe how the initiative complies with the established applicability conditions of the methodologies BCR 0002 version 3.1 and BCR 0005 version 1.0. *In Table 17, which addresses the compliance with the requirements of the methodologies under 3.1.1. Conditions of Applicability, submitted by the PdD holder, the description of compliance is limited to stating that these are met, but does not include a justification of how they satisfy all the conditions of applicability. In addition to the above, no evidence was found to support the statements described in the POA.* *The project owner should explain and justify how it meets one by one the applicability conditions of the BCR 0002 and BCR 0003 methodologies and should also provide ample, current evidence of recognized origin to support its assertions.* ***ROUND 2*** *3.1.1. applicability conditions in Table 21. Compliance with conditions for the application of methodologies, presents the following typographical errors that should be corrected;* *...forest for colombia [sic.] corresponds to....* *... The quantification of [sic.] GHGs other than...* *... of 3.2.1. herbazales and 3.2.2. arbustales, which are considered as sábanas [sic.]...*

Action plan:	*Section 3.1.1. applicability conditions of the PDD v2.0 is adjusted, including justifications on compliance with each of the applicability conditions presented by the BCR 0002 V3.1 and BCR 0005 V1.0 methodologies. Additionally, the corresponding sections of the PDD are listed, detailing the aspects contemplated by the project to ensure compliance.*					
OVV Evaluation:	*The project developer provides documentary evidence to bring closure to the finding.*					
Conclusion:	*Close finding*	*X*	*Maintain finding*		*FAR*	

№ Finding:	*10*	*Finding Type:*	*CAR*	*x*	*CL*	
Description:	*The project is not aligned with:* *1. BCR Standard From differentiated responsibility, to common responsibility V 3.2, numeral 7.2 principle of FULL COVERAGE and numeral 7.5 TRANSPARENCY.*					

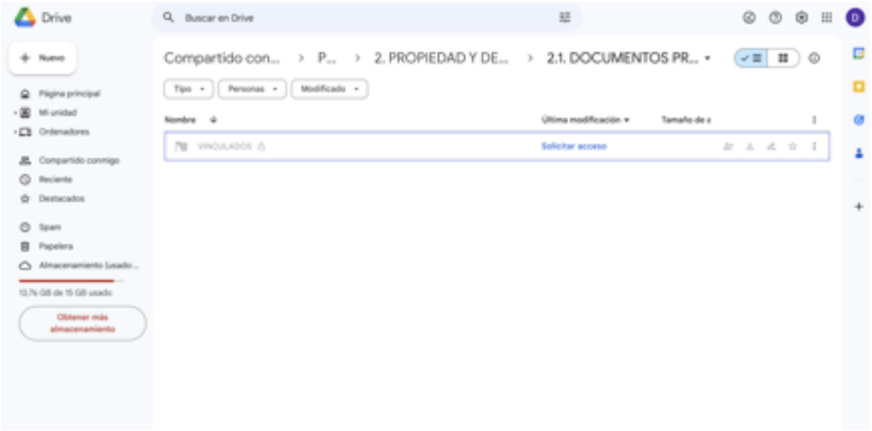
	2. BIOCARBON Standard BCR 0002, numeral 8 Temporal and spatial limits, section 8.2 Reference region for baseline estimation. *3. BIOCARBON Standard BCR 0005,* *4. BIOCARBON TEMPLATE V 2.1, numeral 3.2 Project boundaries, sources and GHGs*
Objective Evidence	***ROUND 1*** *The project manager fails to describe how the initiative complies with the BCR 0002 version 3.1 and BCR 0005 version 1.0 methodologies established applicability conditions.* *In Table 18, which addresses compliance with the criteria for the establishment of the reference region, under numeral 3.2.2. Carbon reservoirs and GHG sources, submitted by the PdD holder, the description of compliance is limited to stating that these are met, but does not include a justification of how they meet all applicability conditions. In addition to the above, no evidence was found to support compliance with these conditions.* *The project owner must explain and justify how it complies with the criteria for the establishment of the reference region within numeral 3.2.2 of BCR 0002 and BCR 0003 methodologies and must also provide ample evidence, current and of recognized origin, to support its claims.* ***ROUND 2*** *The project developer geographically relates the reference region for forests and savannahs; the information is included in 3.2.1.2. Reference Region for the estimation of the PD v2.0 Baseline, as well as the justification in Table 22. Criteria for the establishment of the reference region, as well as a complementary geodatabase, see image below;*  *Source: Project developer.*

Action plan:	*The PDD v2.0 complements section 3.2.1.2. Reference Region for Baseline estimation by improving the description, justification and provision of evidence of compliance with the criteria established in section 3.2.2. of the BCR 0002 and BCR 0003 methodologies for the establishment of the reference region.*					
OVV Evaluation:	*The project developer provides documentary and cartographic evidence to support closure to the finding.*					
Conclusion:	*Close finding*	*X*	*Maintain finding*		*FAR*	

Nº Finding :	*11*	*Finding Type:*	*CAR*	*x*	*CL*	
Description :	*The project is not aligned with:* *ISO 14064-2: 2019 Numeral 6.2 project description.* *BIOCARBON Standard BCR 0002, numeral. 8.4 Time limits and periods of analysis* *BIOCARBON Standard BCR 0005, numeral 7.1.5 Time limits and analysis periods.*					
Objective Evidence	*During the documentary review, the following was found:* *3.4.3. Periodos de monitoreo* Los periodos de monitoreo corresponden a las plan de monitoreo del proyecto, dentr del periodo de acreditación de 20 años. *In this regard the project proponent must describe the project and its context in a GHG project plan that includes: k) the chronological plan or actual dates and justification of the following aspects:* *1) Start date of project activities.* *2) Period of the GHG baseline* *3) Project completion date* *4) Frequency of project monitoring and reporting, as well as the project period, including relevant project activities at each stage of the GHG project cycle.* *5) Frequency of validation and verification.* *As stated above, the project proponent must comply with all eligibility requirements set forth in the defined criteria. Consequently, a clearly defined monitoring period is required.*					

Action plan:	*Taking into account that ISO 14064-2: 2019 Numeral 6.2 project description. literal k includes the following Note : "These parameters may be specified in a GHG program". Therefore, the parameters were established according to:* *1. BCR Standard V3.3 Section 10.5 time limits and analysis periods: Section 3.3.2 of the PDD describes the quantification periods according to the type of project (REDD+ and Afolu Sector) establishing 40 years.* *2. BIOCARBON Standard BCR 0002, numeral. 8.4 Temporal limits and analysis periods and BIOCARBON Standard BCR 0005, numeral 7.1.5 Temporal limits and analysis periods: Describes that the temporal limits and analysis periods correspond to the periods during which the project activities avoid changes in land use and for which GHG emission reductions/removals are quantified, The temporal limits must be defined considering the following* *a) Project start date: October 1, 2018 described and justified in PDD sections 3.2.3.1 Project start date evidencing the participation of landowners from the beginning, the formal sending of letters of intent to be part of the project and the participatory formulation of land use implementation plans.* *b) Period for quantification of reductions: 40 years from the project start date.* *c) Monitoring periods: These are established in section 17 of the PDD within the monitoring plan.* *Also to complement the information requested in the BCR V3.2 standard:* ***A.** Historical period of deforestation: Period used to determine the deforestation in the reference region and the area of leakage (see section 3.7.3.1.1).* ***B.** Historical period of land use change: Period used to determine land use change in natural savannas (See section 3.7.3.1.2).* ***C.** Project start date: Date on which the landowner's intention to reduce deforestation, forest degradation and land use change in natural savannas began, as well as the beginning of the structuring of land use implementation plans focused on reducing forest fire risks and conserving natural ecosystems (see section 3.2.3.1).*

	D. *Project quantification period: 40 years, thus complying with the criteria established for REDD+ projects and AFOLU Sector projects described in section 10.5 of BCR Standard V3.3.* ***E.*** *Monitoring Periods: These are monitoring periods foreseen during project implementation within the quantification period. As a result of the monitoring, monitoring reports are prepared for each monitored period. An initial monitoring period of 4.25 years is established and subsequently every 2 years (see section 17).* ***F.*** *Validation and/or verifications: Periods established for conducting validation and verification and subsequent validations and verifications. the project is validated in 2024 simultaneously the monitoring period from the project start date to December 31, 2022 is verified. Followed by a verification in 2025 of the monitoring period 2023-2024 and every two years thereafter.*					
OVV Evaluation:	*The project developer provides documentary evidence to support closure to the finding.*					
Conclusion:	*Close finding*	*X*	*Maintain finding*		*FAR*	

Nº Finding:	*12*	*Finding Type:*	*CAR*	*x*	*CL*	*2*
Description:	*The project is not aligned with:* *1. BCR Standard From differentiated responsibility, to common responsibility V 3.2, numeral 7.2 principle of FULL COVERAGE and numeral 7.5 TRANSPARENCY.* *2. BIOCARBON Standard BCR 0002, numeral 8 Temporal and spatial limits, section 8.2 Reference region for baseline estimation.* *3. BIOCARBON Standard BCR 0003,* *4. BIOCARBON TEMPLATE V 2.1, numeral 3.2 Project boundaries, sources and GHGs* *5. ISO 14064-3:2019 numeral 5.4.2. Sufficiency of information.*					
Objective Evidence	***ROUND 1*** *It was not possible to validate the information reported in the PdD on the project start date as the audit team was unable to access the letters of intent in the folder 2.1 Documents Predios.*  ***ROUND 2*** *The letters of intent for the following properties are dated after the project start date;* 1. *Algarrobo.* 2. *El Gran Marco Polo.* 3. *Hacienda Nuevo Mururito.* 4. *La Castellana.* 5. *La Esperanza.* 6. *La Flor.* 7. *La Mariposa.* 8. *La Provincia.*					

	9. *Los Alcornocos.* 10. *Lote Tres Cielos.* 11. *Providencia.* *Therefore, the project developer must support why these letters of intent have dates after the project start date, since this information does not correspond to the information of the start date recorded in the contracts of these properties. Likewise, the project developer must take into account that the calculations of emissions reductions of the project start from October 2018, reason why, the calculations of emissions reductions of the project must coincide with the start date of the project and therefore in the total areas at the start date of the project.*
Action plan:	*The information was reviewed and uploaded to the folder assigned for the auditor's review, in folder 2.1.1.1 letters of intent for linked properties.* ***ROUND 2*** *The information uploaded corresponds to the current information of the project owners once the ownership and carbon rights have been monitored; however, changes and/or updates in land tenure occur within the framework of the project, which may include inheritance and/or purchase and sale, which are formalized and duly recorded in the corresponding document in accordance with national regulations.* *In this sense, the project requested new letters of intent when these updates occurred. As evidence, the old letters of intent are uploaded and the following clarifications are made for each property.* 1. *Algarrobo: The father and husband of the current owners passed away in 2022, the succession was formalized in 2022, therefore they sent a new letter of intent in 2022 to reaffirm the permanence in the project. The previous letter of intent is uploaded.*

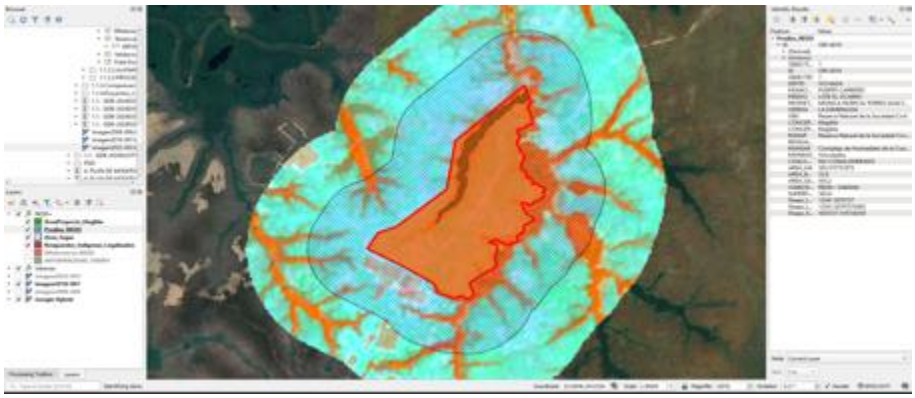
	2. *El Gran Marco Polo: The father of the current owners passed away in 2018, the succession was formalized in 2019, they sent a new letter of intent reaffirming the intention to be part of the project.* 3. *Hacienda Nuevo Mururito: They are the same owners since 2011. In the year 2021 the company ceded to the other through "contribution to society" to Sapaju S.a.s, therefore they sent a new letter of intent reaffirming the intention to be part of the project despite the change of corporate name.* 4. *La Castellana: The current owners before the purchase operated the property and sale was formalized; once it was formalized, they sent a letter of intent to reaffirm that they were still interested in being part of the project.* 5. *La Esperanza: the current owners exercised the property since 2016, as evidenced by documents evidencing ownership, the letter of intent attached in folder is dated August 2018.* 6. *La Flor: In 2018 the owner began the process of purchasing the property from Sociedad Inversiones Ganaderas El Luque S.A.s. to be part of the project, they sent a letter of intent from the representative of the company. Later in 2020, the legal business is finally formalized and to reaffirm the intention to continue with the project, a new letter is sent.* 7. *La Mariposa: The mother of the current owner passed away in 2021, the succession was formalized in 2021, and therefore a new letter of intent was sent reaffirming the commitment to continue with the project.* 8. *La Provincia: The owner had been in possession since 2018 but in 2019 the purchase was formalized, and at that time a new letter of intent updated to the date of formalization was sent to reaffirm the intention to remain in the project.* 9. *Los Alcornocos: Incoder as stated in Resolution No. 3112 of 2012 awarded the owner the property on November 30, 2012. However, the owner received a new resolution from the ANT, No. 28060 of 2020, through which the property was also awarded and registered with the Office of Public Instruments of the latter, therefore a new letter of intent was sent reaffirming the commitment to continue in the project.* 10. *Lot Tres Cielos: The property was exploited by the current owners before the purchase-sale was formalized in 2019, therefore a new letter of intent was sent which attests to what was stated and annexed documents that support it.*

	11. Providencia: The property was exploited and the current owner exercised possession, once the purchase was formalized, a new letter of intent was sent reaffirming the commitment to continue with the project. *Accordingly, this data is updated in section 7 Carbon Ownership and Rights of the Monitoring Report V 2.1.*					
OVV Evaluation:	*Keep the finding open until the signature date information of the eleven properties is corrected.*					
Conclusion:	*Close finding*	*X*	*Maintain finding*	*X*	*FAR*	

Nº Finding:	13	Finding Type:	CAR	x	CL	3
Description:	The project is not aligned with: 1. BCR Standard From differentiated responsibility, to common responsibility V 3.2, numeral 7.2 principle of FULL COVERAGE and numeral 7.5 TRANSPARENCY. 2. BIOCARBON Standard BCR 0002, numeral 8 Temporal and spatial limits, section 8.2 Reference region for baseline estimation.					
Objective Evidence	***ROUND 1*** *In the GDB provided by the owner of the ORINOCO 2 project, it does not allow visualizing:* *1. The base information layers and the base information.* *2. It is not possible to determine which are the agents of deforestation and degradation.* *3. The figures of the land.* *4. It is not possible to identify the roads and drainage.* *5. The procedure carried out for the determination cannot be determined and it does not meet the criteria FULL COVERAGE and TRANSPARENCY that guarantee that the process can be replicated.* *6. The attached document does not describe the procedure for determining the reference region for the determination of the baseline.* ***ROUND 2*** *1. Base information layers and base information: The geodatabase sent by the project developer shows the following information;* *Overlapping of leakage area (forest and savanna) with savanna and forest project area.*					

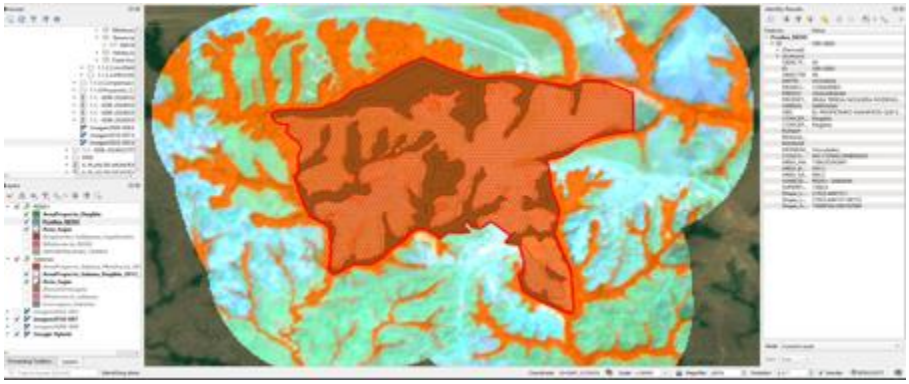
Source: Project developer.

According to the geodatabase provided by the project developer, the area of forest leakage corresponds to the diagonal flattening of the image, which overlaps with the information of forest area at the beginning of the project, where it is evident that the area of leakage includes other coverages different from forests, see image below;



Source: Project developer.

There are project areas that do not have leakage areas, see image below;



Source: Project developer.

Therefore, the forest leakage area must comply with Numeral 8.3 Leakage area of BCR0002 V3.1 below;

8.3 **Leakage area**

Area of a forest[14] where deforestation or forest degradation activity may be displaced, outside the REDD+ project holder's control. That is, areas to which deforestation or forest degradation agents may be displaced due to project activities.

The leakage area is delimited based on the following criteria:

(a) all areas in the forest that are a range of mobility of the agents identified in section **¡Error! No se encuentra el origen de la referencia.** (below).[15]

(b) exclude areas of restricted access to deforestation and forest degradation agents.

[14] The forest area shall meet the same eligibility criteria as the project area.
[15] The mobility distance of the agents can be determined from secondary studies or from the collection of primary information (participatory rural appraisal).

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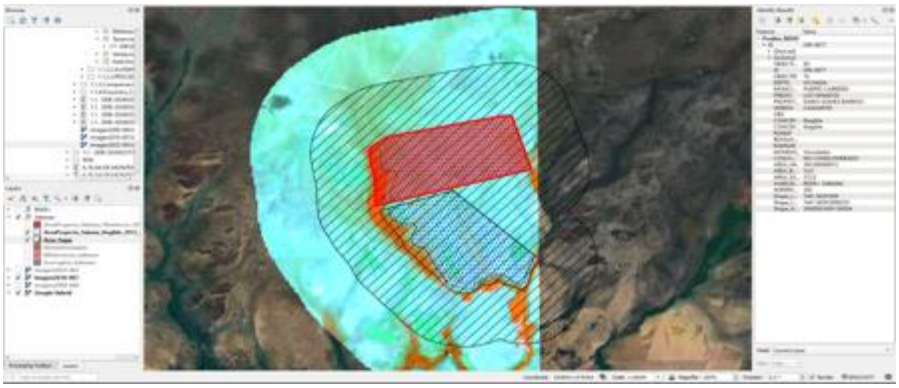
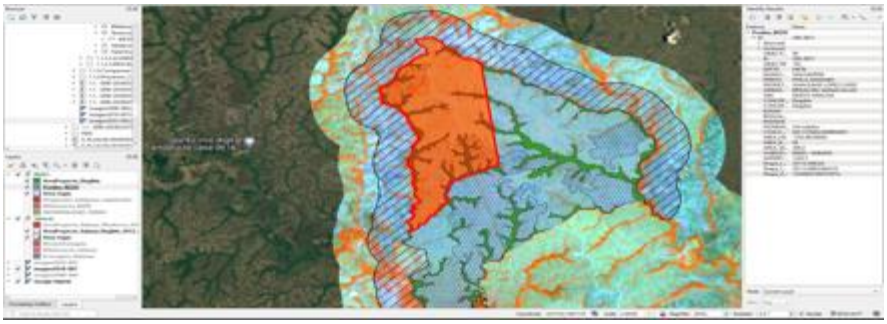
Source: Biocarbon Standard , 2022.



Source: Project developer.

Forest and savanna leakage areas overlap, therefore, the criteria established by each methodology must be met for each type of area;



Source: Project developer.

Therefore, the sheet leakage area must comply with BCR0005 V1.0 Numeral 7.1.4 Leakage Area V1.0 below;

7.1.4 **Leakage area**

Areas corresponding to the categories of herbaceous and shrublands, in the savanna biome, to which activities that generate land use changes may be displaced to, beyond the project holder's control. That is, the areas to which the agents that generate land-use change may be displaced as a consequence of project activities.

The leakage area is delimited on the basis of the following criteria:

a) all areas of herbaceous and shrubland that are within the mobility range of the agents identified in section 9 (below) should be included.

b) exclude areas of restricted access to agents that generate changes in land use.

7.1.5 **Temporal limits and analysis period**

The Project's temporal limits correspond to the periods during which project activities avoid land use changes, and GHG emission reductions are quantified.

Project temporal boundaries should be defined considering the following:

[9] Region geográfica con determinadas características en cuanto a clima, geología, hidrología, flora y fauna. https://www.worldwildlife.org/biomes

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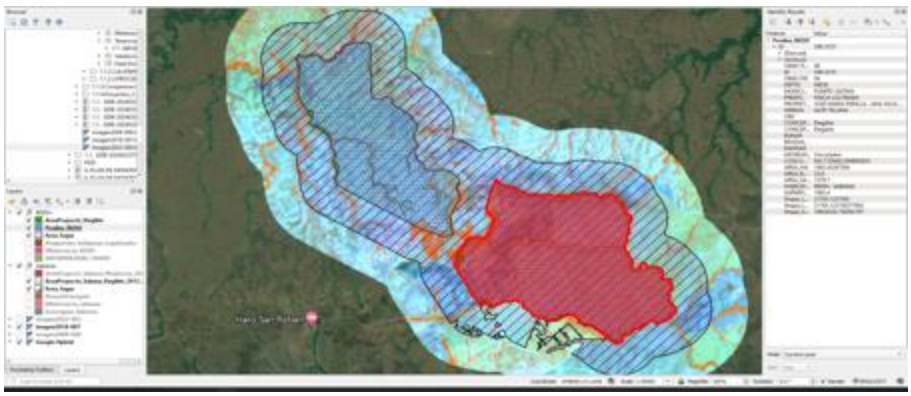
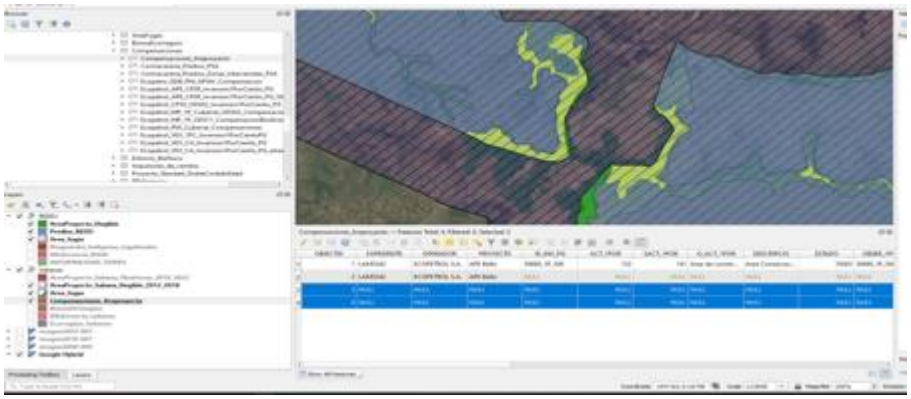
Source: Biocarbon Standard , 2022.

There is an overlap between project areas and leakage areas for forests and savannas. Therefore, the developer must ensure that the leakage areas meet the referenced criteria.

	 *Source: Project developer..* *Leakage areas overlap with compensation areas, which are excluded from intervention. Therefore, the developer must ensure that the leakage areas meet the referenced criteria.*  *Source: Project developer..*
Action plan:	To ensure that the audit team does not have complications with the visualization, the following procedure is described: a. Download the geodatabase for REDD+ and natural savannahs that are found independently. b. After downloading, unzip it. c. Visualization can be done from ArcGIS Desktop, ArcGIS Pro, QGIS or DivaGIS GIS software. d. To perform the opening in ArcGIS, look for the location of the geodatabase in the ArcCatalog of the same software, this allows visualizing the cartographic information. Meanwhile, to deploy the information in QGIS, we go to the navigation panel of the software and locate the geodatabase; this allows the visualization of the cartographic information stored in the same.

	Now, in relation to the information to be consulted within the savannah gdb and the forest gdb 1. *Base information layers and base information: the two gdb include the feature classes for REDD+ (Restricted Access, Leakage Area, Project Area, Biomes, Drivers of Change, Reference and Land Tenure). Sabanas Naturales features class (Restricted Access, Leakage Area, Project Area, Ecoregion Biome, Corine Land Cover, Drivers of Change, Plots, Reference Region and Land Tenure)* 2. ***The agents of deforestation and degradation cannot be determined:*** *They are represented in the vectorial information called "multitemporal analysis of savanna cover change 2009 - 2018".* 3. *Land figures: the layer from IGAC and SIPRA (Information System for Rural Agricultural Planning), corresponding to land informality. Information is also provided in the feature class "Restricted access - collective territories" has the layers (Community councils of black communities "CNT", community councils, Legalized and Intended Indigenous Reserves "RILP", categories of the National Register of Protected Areas "RUNAP", Peasant Reserve Zones (ZRC)), this feature class stores the figures of land, private properties, reserves, communities, natural areas.* 4. ***Roads and drains cannot be identified:*** - *Corresponds within the GDB to the feature class Change Drivers, vector information corresponding to roads and drainage.* 5. ***The procedure performed for the determination cannot be determined and does not meet the criteria of FULL COVERAGE and TRANSPARENCY to ensure that the process can be replicated:*** - *The procedure for land cover interpretation under the Corine Land Cover methodology is attached.*

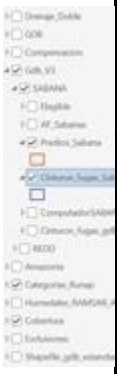
6. ***The annexed document does not describe the procedure for determining the reference region for baseline determination:***

   - *Section 3.2.1.1.2. Reference Region for Baseline Estimation The procedure for determining the reference region based on compliance with criterion 8.2 of BCR 0002 methodology and criterion 7.1.3 of BCR 0005 methodology is presented.*

ROUND 2

Adjustments were made to the overlapping areas in accordance with paragraphs 8.3 and 7.14 of methodologies BCR0002 V3.1 and BCR0005 V1.0 corresponding to the Leakage Area, and the activity data were updated in the quantification of project emissions.

1. *Adjustments were made in the areas where overlaps were detected, as well as in the REDD+ Sabanas geodatabases, specifically in the "Leakage Area" Feature Dataset and the "REDD+ Leakage Belt" and "Sabanas Leakage Belt" Feature Classes. It is important to note that the project encompasses properties that contain either the Sabanas component or the REDD+ component, or both. In this context, the leakage belt may have some overlap, but the leakage areas for forest and savanna do not overlap.*

REDD+	*Sabana*
	

Adjustments were made to the project areas. However, in this particular case, ORI-0019 includes the REDD+ Sabanas component, as well as the leakage belt. REDD and Sabanas areas converge within the same geographic space, but without overlap between them.

REDD+ Sabana

Leakage areas were incorporated according to the project delimitation. ORI-0083 borders on its eastern end with the legalized indigenous reserves "Cholobobo Matatu" and "Guacamayas Mamiyare", whose territories are not included as leakage areas because they have restricted access for deforestation/degradation agents and generate changes in land use.

REDD+ Sabana

Adjustments were made to avoid overlap between REDD+ Sábanas leakage areas and offset areas.

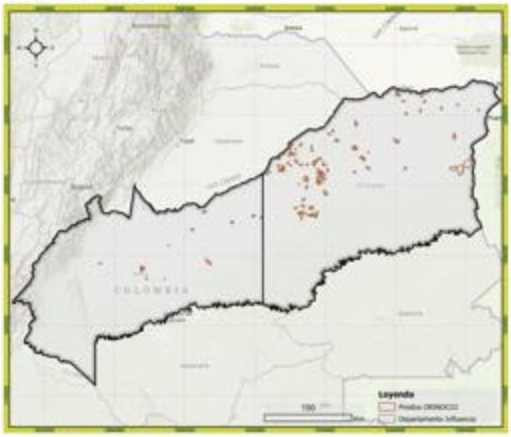
	REDD+ Sabana 
OVV Evaluation:	The finding is closed, given that the project developer complies with the adjustment of overlapping areas in accordance with paragraphs 8.3 and 7.14 of methodologies BCR0002 V3.1 and BCR0005 V1.0 corresponding to the Leakage Area and updates the activity data for the quantification of project emissions.

Conclusion:	Close finding	X	Maintain finding		FAR	

Nº Finding:	*1 4*	*Finding Type:*	*CAR*	*x*	*CL*	
Description:	*The project is not aligned with:* *Resolution 471 of 2020. ¨Through which the minimum technical specifications that the products of the official basic cartography of Colombia must have¨ are established.* *ISO 14064-2:2019. Numerals 4.4 CONSISTENCY, 4.7 CONSERVATIVE ATTITUDE.*					

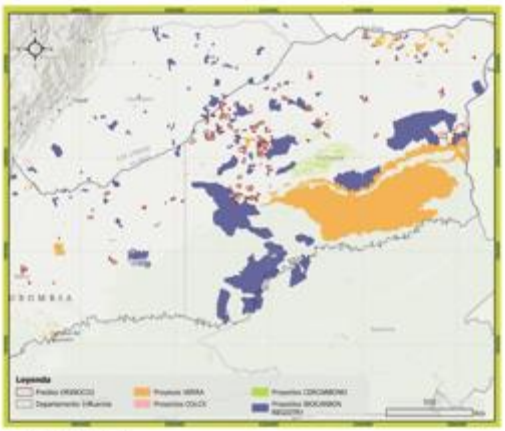
Objective Evidence	1. *The presentation of the graphic outputs in some sections of the PdD and the Monitoring Report are not consistent with resolution 471 of 2020 of the IGAC. Article 4. General technical guidelines, ii. Level of detail.*

Figura 13. Localización del proyecto



Fuente: Elaboración propia

Figura 2. Ubicación de las áreas del proyecto frente a otros estándares.



Fuente: Elaboración propia.

As can be seen in these figures the scale is empty, the project holder must ensure that the presentation of its base cartography complies with the technical specifications defined by resolution 471 of 2020.

2. *The scale presented in numeral 2 is not conservative; currently the IGAC has secondary information on the department of Vichada with greater*

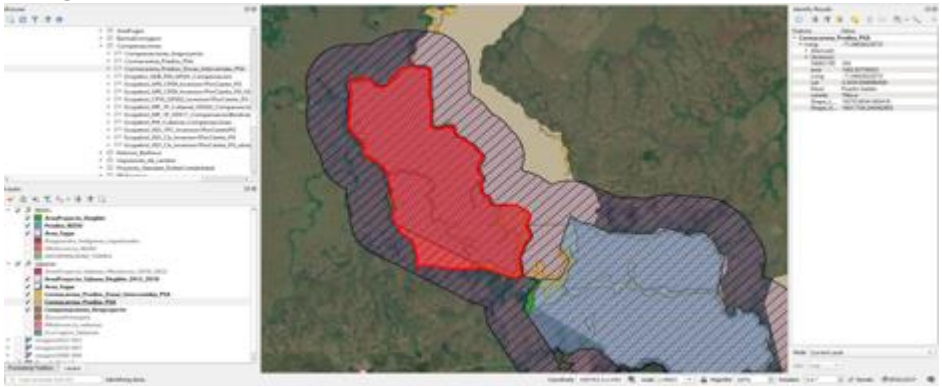
	detail than that presented in the PdD and in the Monitoring Report.  **Fuente:** Datos abiertos Cartografía y geografía. IGAC Elaboración Propia.
Action plan:	1. *We made the adjustments in accordance with Resolution 471 of 2020. Article 4. General technical guidelines, ii. Level of detail. The figures corresponding to the maps in the PDD v2.0 and Monitoring Report v2.0 are updated.* 2. *To improve the scale, the decision was made to place a working scale (cartography) of 1:100,000 and its representation in the bar chart. The cartographic information is found in 1.Emissions/1.1.GDB/1.1.1.1.Sabanas and 1.1.2.REDD. The information presented in the PDD and Monitoring Report is obtained from official sources such as: Colombia OT (https://www.colombiaot.gov.co/), IGAC (https://geoportal.igac.gov.co/contenido/datos-abiertos-agrologia), Colombia en mapas (https://www.colombiaenmapas.gov.co/),IDEAM(http://www.siac.gov.co/catalogo-de-mapas), Geonetwork Instituto von Humboldt (http://geonetwork.humboldt.org.co/geonetwork/srv/spa/catalog.search#/home). RUNAP (https://runap.parquesnacionales.gov.co/cifras), National Land Agency (https://data-agenciadetierras.opendata.arcgis.com/). SIPRA (https://sipra.upra.gov.co/nacional).*
OVV Evaluation	*The project developer provides documentary and cartographic evidence to bring closure to the finding.*

Conclusion :	*Close finding*	*X*	*Maintain finding*		*FAR*	

Nº Finding:	*15*	*Finding Type:*	*CAR*		*CL*	

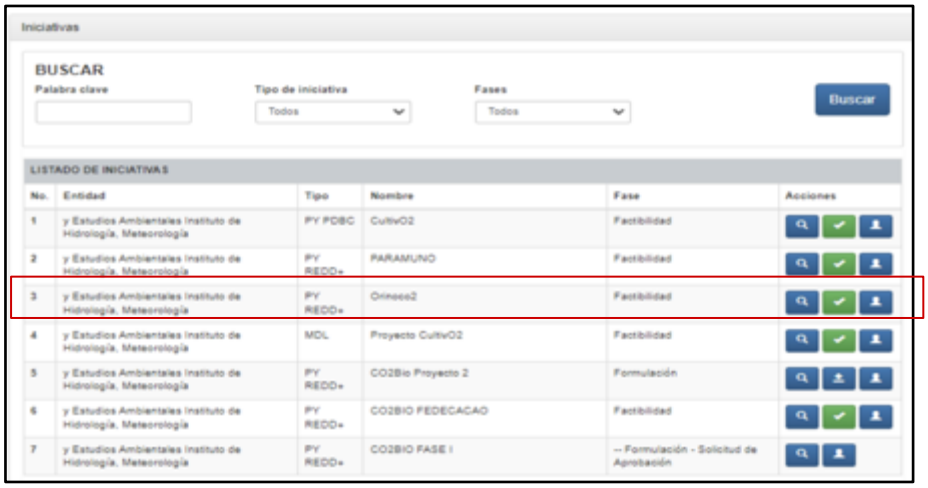
Description:	*The project is not aligned with:* *BIOCARBON Standard BCR0005 ,7 Project boundaries, 7.1 Temporal and spatial boundaries, section 7.1.3 Reference Region for baseline estimation.*					
Objective Evidence	*Within the reference region with the baseline, it is not possible to determine how the reference area was determined, it is not possible to see the baseline information, the GDB does not make it possible to access the information to determine the reference region. The attached PDF does not describe the baseline determination process, it does not meet the replicability criterion, it does not meet the criterion of other characteristics of similarity of climate, geology, hydrology, flora and fauna.*					
Action plan:	*The availability of access to information within the gdb is verified, so that the replicability criteria can be ensured..* - *In this sense, it is verified that the information is stored in the geodatabases of Sabanas and REDD+ 1.* - *Emissions/1.1.1.1. Gdb Savannah and 1.1.2.1. REDD+ 1.1.2.1.* *Compliance with the criteria for the definition of the reference region is described in section 3.2.1.2. Reference Region for Baseline estimation. Describing, justifying and evidencing compliance with each of them.* *Finally, given that the reference region and the project areas are part of the same ecoregion and taking into account that an ecoregion is a "Geographic Region with certain characteristics in terms of climate, geology, hydrology, flora and fauna. It can be determined that if characteristics of similarity of climate, geology, hydrology, flora and fauna are met. As described in footnote 19 of the BCR 005 methodology.*					
OVV Evaluation:	*The project developer provides documentary and cartographic evidence to bring closure to the finding.*					
Conclusion:	*Close finding*	*X*	*Maintain finding*		*FAR*	

Nº Finding :	*16*	*Finding Type:*	*CAR*	*X*	*CL*	*4*
Description:	*The project is not aligned with:* *BIOCARBON Standard BCR0005, 7 Project boundaries, 7.1 Temporal and spatial boundaries, section 7.1.4 Leakage area.*					
Objective Evidence	***Round 1***					

	Within the spatial limits, the leakage area does not meet the criteria included in numeral 9, in the context of 9.2, which involves the biophysical environment, the socio-cultural context, the economic context, and the historical context, key actors, economic activities and their importance, it does not meet the criterion of displacement of activities that generate pressures on the savanna ecosystem. ***ROUND 2*** *The criteria of; Numeral 8.3 Leakage area of BCR0002 V3.1 and Numeral 7.1.4 Leakage area of BCR0005 V1.0 are not being met, since there are overlapping areas and the selection criteria are not fully met.* *The following are the leakage areas for forests and savannas, where there is overlap between them, as well as with project areas and areas excluded from management, such as compensation areas. The cover type criteria must also be met for each leakage area;*  *Source: Project developer..*
Action plan:	*According to BIOCARBON Standard BCR 0005, 7 Project boundaries, 7.1 Temporal and spatial boundaries, section 7.1.4 Leakage area, states:* ***"Area corresponding to the categories of grasslands and shrublands, in the savanna biome, to which displacement of land-use change activities may occur, and which is beyond the control of the GHG project holder. That is, areas to which land-use change agents may be displaced as a result of project activities".*** *It also defines two criteria for delimiting the leakage area:*

	a. All areas of grasslands and shrublands that are within the range of mobility of the agents identified in section 9 (Drivers that generate land use change) must be included: *- In this regard, a buffer was established around the project areas totaling in 2018 (project start date) 70,476.5 ha of savannas and 25,921.5 ha forests which are monitored to determine if emissions are being displaced to these areas. As described in section 3.2.1.3. Leakage area* *b. Exclude areas of restricted access to agents that generate changes in land use.* *- Exclude areas defined as collective territories (Legalized and Intended Indigenous Reserves, RUNAP conservation categories), areas linked to other payment for results projects in the carbon market (see Annex 1.1. GDB).* ***ROUND 2*** *In compliance with the criteria in 8.3 Leakage area of BCR0002 V3.1 and 7.1.4 Leakage area of BCR0005 V1.0, the areas with identified overlaps are adjusted. Consequently, the activity data for the leakage area within the emissions calculation is updated. Additionally, the REDD+ Sabanas geodatabases are updated, specifically in the Feature Dataset "Leakage Area" and the Feature Classes "REDD Leakage Belt" and "Sabanas Leakage Belt".*					
OVV Evaluation:	*The finding is closed, given that the project developer complies with the numerals 8.3 Leakage area of BCR0002 V3.1 and Numeral 7.1.4 Leakage area of BCR0005 V1.0, and performs the adjustment of areas with identified overlaps.*					
Conclusion:	*Close finding*	*X*	*Maintain finding*		*FAR*	

Nº Finding:	*17*	*Finding Type:*	*CAR*		*CL*	
Description:	*The project is not aligned with:* *1. BCR Standard from differentiated responsibility, to common responsibility V 3.2, numeral 10.7 Compliance with applicable legislation.* *2. Resolution 1447 of 2018 Articles: 18, 47 and 50.* *3. Social and environmental safeguards for REDD+ in Colombia. 1A Correspondence with national legislation*					
Objective Evidence	***Validation:*** *1. There is no evidence related to how the ORINOCO2 CARBONO DEL ORINOCO Orinoco Carbon project defines activities to articulate with the BIOCARBONO Orinoquia sustainable low carbon landscapes project, which is a REDD+ program of the Ministry of Agriculture, in this sense the*					

	holder must demonstrate that the GHG project is not in a state of non-compatible overlap. ***Verification:*** *1. There is no evidence related to how the ORINOCO2 CARBONO DEL ORINOCO Orinoco Carbon project for the monitoring period was articulated with the BIOCARBONO Orinoquia low carbon sustainable landscapes program, which is a REDD+ program of the Ministry of Agriculture.*
Action plan:	*VALIDATION* *The corroboration of any type of overlap according to resolution 1447 of 2018 requires the implementation of the RENARE platform, which is not currently operational. However to reduce the risk of incompatible overlaps, it is relevant to clarify that:* *a. The Orinoco2 CARBONO DEL ORINOCO project has a registered start on October 1, 2018 and was incorporated into the RENARE in 2022, where up to that time progress was made in the feasibility stage, subsequently the platform stopped functioning in 2022 to date.*  Iniciativas BUSCAR Palabra clave Tipo de iniciativa Todos Fases Todos Buscar LISTADO DE INICIATIVAS No. Entidad Tipo Nombre Fase Acciones 1 y Estudios Ambientales Instituto de Hidrología, Meteorología PY PDBC CultivO2 Factibilidad 2 y Estudios Ambientales Instituto de Hidrología, Meteorología PY REDD+ PARAMUNO Factibilidad 3 y Estudios Ambientales Instituto de Hidrología, Meteorología PY REDD+ Orinoco2 Factibilidad 4 y Estudios Ambientales Instituto de Hidrología, Meteorología MDL Proyecto CultivO2 Factibilidad 5 y Estudios Ambientales Instituto de Hidrología, Meteorología PY REDD+ CO2Bio Proyecto 2 Formulación 6 y Estudios Ambientales Instituto de Hidrología, Meteorología PY REDD+ CO2BIO FEDECACAO Factibilidad 7 y Estudios Ambientales Instituto de Hidrología, Meteorología PY REDD+ CO2BIO FASE I -- Formulación - Solicitud de Aprobación *b. The Orinoquia Biocarbon Emissions Reduction Program was recently formulated, as evidenced in the program document available at the following link: Link to document. This program presents its projected results from 2024 to 2029.*

2. OBJETIVOS DEL PRE BIOCARBONO

El PRE Biocarbono tiene como objetivo principal la implementación de acciones dirigidas a la región, con el propósito de lograr una reducción potencial de emisiones de hasta **50.861.179 tCO_2e^{-1}** en la Orinoquia Colombiana. Esta reducción se busca alcanzar en un lapso mínimo de **seis años (2024-2029)**, al respaldar actividades de reducción de emisiones de GEI asociadas a las principales fuentes de emisión en la región.

In this regard, Article 50 of Resolution 1447 mentions that:

"The overlap shall be non-compatible in the event that a REDD+ Program seeks to enroll in the feasibility phase, in a geographic area in which there is a REDD+ project enrolled in the implementation phase for the same period and for the same activities in accordance with the provisions of Article 18.

The holder of a REDD+ program in non-compatible overlapping status with one or more redd+ projects, shall proceed to offer the status of implementing partner for those redd+ projects that are in the implementation phase and that wish to opt for such status. This in accordance with its implementing partner involvement plan mentioned in article 33 and in accordance with the provisions of article 51 of this resolution. In case such condition is not accepted, the REDD+ program holder shall exclude the enrolled Redd+ project area from the implementation phase."

Therefore, given that Orinoco2 CARBONO DEL ORINOCO has a start date prior to the Emission Reduction Program, it should be the Emission Reduction Program who proceeds to offer the status of implementing partner, or exclude the areas. Actions that have not been taken by the Program in principle due to difficulties in the implementation of the Renare platform.

However, in order to prevent any potential non-compatible overlap from the Orinoco2 CARBONO DEL ORINOCO project, in the framework of the stakeholder and stakeholder consultation, the Biocarbon project was asked to exclude the Orinoco2 CARBONO DEL ORINOCO project areas from the future emission reduction program (see ANNEX 4.3 Exclusion Request).

	These data underscore the importance of activating the RENARE platform for the proper assessment of any potential overlap. *VERIFICATION 2018-2022* *Similarly for the 2018-2022 monitoring period the Biocarbon Emission Reduction Program did not exist. Therefore given that there is no overlap in periods and yes in activities, the potential overlap would be of a compatible type according to Article 18 overlap of GHG mitigation initiatives, option 1 as follows;* - *1. Compatible in the event that a GHG mitigation initiative is intended to be registered in the feasibility phase, in a geographic area in which there is an initiative registered in the implementation phase for the same period or for the same GHG mitigation activities.* *However, it is clear that the implementation of the platform is necessary to demonstrate the above. Once again these data underline the importance of the activation of such a platform for the evaluation of any possible overlap.*
OVV Evaluation:	*The project developer shall ensure that there is no overlapping of any kind according to the regulations in force during each verification.*

Conclusion:	*Close finding*		*Maintain finding*		*FAR*	*X*

Nº Finding:	*18*	*Finding Type:*	*CAR*	*x*	*CL*	
Description:		*The project is not aligned with:* 1. *BCR standard from differentiated responsibility, to common responsibility V 3.2, numeral 10.7 Compliance with applicable legislation.* 2. *Social and environmental safeguards for REDD+ in Colombia. 1A Correspondence with national legislation*				

Objective *Evidence*	*The Social and Environmental Safeguards, Law 274 of 2023 national development plan, in Article 230, paragraph 2 :* *"The holders of greenhouse gas mitigation initiatives shall comply with the provisions of the regulations on environmental, social and economic matters and, in the case of greenhouse gas mitigation initiatives in the Agriculture, Forestry and Other Land Use -AFOLU sector, comply with the social and environmental safeguards defined by the United Nations Framework Convention on Climate Change -CMNUCC, and aPDDted by the country through its National Interpretation of Social and Environmental Safeguards. It includes free and informed prior consultation, if applicable, when the project involves areas with the presence of indigenous, black, Afro-Colombian, Raizal and Palenquero communities, and the other tools, conditions, criteria and requirements that are defined within the framework of the National System of Safeguards. All mitigation initiatives within their Monitoring, Reporting and Verification system must monitor, report and verify the implementation of environmental, social and economic regulations, and if applicable, the implementation of social and environmental safeguards, during all phases, which will be subject to conformity assessment.* ***Validation:*** 1. *The project manager must ensure full compliance and correlation of the project with the most recent and current policy and regulations in Colombia in relation to climate change. In the documentary analysis conducted, it was not observed how the project is integrated with certain relevant milestones within the Colombian legal framework applicable to this area. These milestones include the approval of the RAMSAR Convention (Law 357 of 1999), the National Plan to Combat Desertification (2005), the National Policy for the Management of Biodiversity and Ecosystem Services (2012), the "TERRITORIES OF LIFE FORESTS" strategy (2017), the update of the Nationally Determined Contributions (NDC) in 2020 and Law 2294 of 2023, among others. It is imperative that the project is aligned and adjusted to these legal frameworks to ensure its coherence and compliance with the relevant regulatory provisions on climate change in the Colombian context.* 2. *In Table 32. Normative provisions of the project, it is necessary to include a deeper and more complete analysis on how the initiative is articulated with the regulations aimed at climate change management in Colombia.*

	PROYECTOS DE MITIGACION GEI	Resolución 1447 de 2018 - Sistema de Monitoreo, reporte de emisiones de GEI	Tiene por objeto reglamentar el Sistema de Monitoreo, Reporte y Verificación de las acciones de mitigación a nivel nacional, en lo relacionado con el Sistema de contabilidad de Reducción y Remoción de Emisiones de gases de efecto invernadero y el Registro nacional de Reducción de las Emisiones de Gases de Efecto Invernadero (GEI), el cual incluye el Registro Nacional de Programas y Proyectos de acciones para la Reducción de las Emisiones debidas a la Deforestación y la Degradación Forestal de Colombia (REDD+).	Esta resolución estableci procedimiento para el re nacional de emisiones de ORINOCO2 se encu registrado en la fase de factibi dejando constancia cumplimiento de la resol 1447.

Verification:

1. *The project must ensure that it followed up on the most recent climate change policy and regulations in force in Colombia for the monitoring period. It is not clear because ORINOCO2 CARBONO DEL ORINOCO's legal compatibility matrix is more complete than the one reported in the PdD, however, it is clarified that it is not up to date.*

Action plan:

Validation:

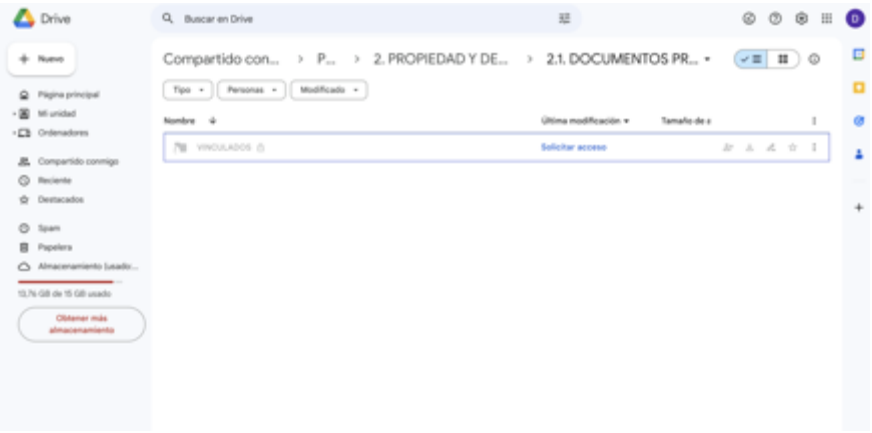
1. *Initially, environmental and social safeguards had been reported in section 12 of the PDD. Now, they have been moved to section 11 of the Monitoring Report v2.0, where compliance will be reported. For safeguard A, which deals with alignment with national forest programs and international agreements, Table 8 has been established. This table details how compliance with this safeguard was carried out (See 6.5.1.1.3.1.2. Legal Compatibility Matrix - Orinoco2 CARBONO DEL ORINOCO . A review of the legal and regulatory requirements related to climate change associated with the Orinoco2 CARBONO DEL ORINOCO project was carried out. This process included a detailed adjustment of current regulations to evaluate their specific applicability to the context of the project.*

2. *A thorough update and analysis of Table No. 32 of the Orinoco2 CARBONO DEL ORINOCO project document, designed to interpret and apply the legal requirements related to climate change in the context of the project, was carried out.*

	Verification: 1. *Cataruben has a procedure within its Integrated Information Management System called GJP-14 Management of Legal Requirements, through which it follows up on the updating and validity of the legal regulations on climate change, in order to update the matrix that compiles the information applicable to the project. Accordingly, the regulations were verified and updated in the matrix as well as in the PDD and MR.*
OVV Evaluation:	*The project developer submits the necessary documentation and supporting attachments to close the finding.*

Conclusion:	*Close finding*	*X*	*Maintain finding*		*FAR*	

Nº Finding:	*19*	*Finding Type:*	*CAR*	*x*	*CL*	*5*
Description:	*The project is not aligned with:* 1. *BCR Standard From differentiated responsibility, to common responsibility V 3.2, numeral 12. Ownership and rights over carbon.*					

Objective Evidence	***ROUND 1*** ***Validation:*** *During the documentary review phase, it was not possible to corroborate information related to land tenure on the properties where the GHG project activities are carried out.*  ***Verification:*** 1. *During the documentary review in numeral 7. Ownership and carbon rights of the MR, no evidence was found on how the project carried out monitoring activities on the current status of ownership and carbon rights, including tracking of agreements and documents that ensure compliance with carbon rights requirements during the monitoring period.* ***ROUND 2*** ***Validation:*** *The project developer lists for each of the properties the documentation related to the land tenure of the properties on which the GHG project activities are developed, see image below.* 

	Source: Project developer.. *Contracts:* *The seventeenth clause differs with the project duration of forty (40) years consigned in literal D. Project Quantification Period of numeral 3.2.3. Time Limits and Periods of Analysis of the PDD V2.0. Said clause is indicated as follows;* *"SEVENTEENTH. Term of Duration. This CONTRACT has a term of fifteen (15) years from the execution of this contract and a maximum crediting period of twenty (20) years, starting in 2018."* ***Verification:*** *No evidence on how the project conducted monitoring activities on the status of carbon ownership and rights was found in numeral 7 of the Monitoring report.*
Action plan:	***Validation*** 1. *In attention to numeral 5 of the project document, the information was reviewed and uploaded in the folder assigned to achieve the auditor's review, in the folder property and carbon rights/documents properties/linked.* ***Verification*** 1. *In each folder of the linked properties, the document called Title Study was uploaded, which compiles the information on the tenure of the property and its identification according to the documents provided by the owners and analyzed by Cataruben, in order to determine the ownership of carbon according to paragraph 7 of the Monitoring Report.* ***ROUND 2*** ***Validation:***

	Section 3.2.3 of the PDD V2.1. is updated and adjusted for time limits and analysis periods, specifically in the quantification periods, thus establishing renewable quantification periods with a duration of 10 years from the start date of the project. *Likewise, with respect to contracts, their duration and the quantification period, the following is clarified:* ***Periods of quantification in contracts.*** 1. *According to BCR standard V3.3 Numeral 12. Ownership and carbon rights: "Project holders shall demonstrate carbon rights with agreements and documents that ensure that the requirement is met with at least the following information:* *- Parties signing the agreement,* *- Purpose of the agreement,* *- Date of agreement* *- Name of the project* *-Period of quantification,* *- Responsibility, obligations and rights of each of the signatory parties.* *Regarding the quantification period, in accordance with BCR standard V3.3 Numeral 10.5 Project Duration and Quantification Periods. The project holder must select the type of quantification period when applicable according to the type of project;* *In this regard, for REDD type projects, it establishes:* *"b). Renewable quantification periods, with a maximum of 10 years and will be renewed at least 3 times, with a minimum duration of 40 years.* *In this sense, the "SEVENTEENTH" clause was agreed within the bonding agreement. Term of duration. This CONTRACT has a term of fifteen (15) years as of the execution of this contract and a maximum crediting period of twenty (20) years, as of 2018."*

	However, to meet the requirements of the standard, Cataruben and the ecosystem managers may renew the quantification periods, with a maximum of ten years each and renewable at least three times, with a total minimum duration of forty years. *To ensure the duration of the project in a minimum of forty years, it is contemplated to extend the accreditation period up to three times between the parties, as established in the standard. This allows compliance within the project with the project duration requirements and ensures its continuity in the long term.* ***Verification:*** *Given that the validation and first verification of the project is performed simultaneously, the detailed analysis of carbon ownership and rights is performed prior to the validation and verification process ensuring compliance and ensuring carbon ownership and rights from the project start date to the validation date. Likewise, within the monitoring report, section 7 Ownership and rights is updated for the 2018-2022 monitoring period.*
OVV Evaluation:	*Close the finding, given that the project developer established the criteria that guarantee the homogeneity of the information consigned in paragraph D. Project quantification period of numeral 3.2.3. Time limits and analysis periods of the PDD V2.0, as well as what is required by the BCR standard in its numeral 10.5 Project duration and quantification periods and within the monitoring report updates section 7 Ownership and rights over carbon.*

Conclusion:	*Close finding*	*X*	*Maintain finding*		*FAR*	

Nº Finding:	*20*	*Finding Type:*	*CAR*	*x*	*CL*	
Description:	*The project is not aligned with:* *1. BCR Standard From differentiated responsibility, to common responsibility V 3.2, numeral 12. Ownership and carbon rights.* *2. BIOCARBON TEMPLATE V 2.1, numeral 5.2 Other project participants and 5.3 Agreements related to carbon rights*					
Objective Evidence	***ROUND 1***					

Validation:

No related evidence was found in the PDD on how the project developed items 5.2 and 5.3 of the BIOCARBON TEMPLATE V 2.1 template.

Verification:

Project beneficiaries are not clear about ECOPETROL's role in the GHG project.

ROUND 2

Validation:

The project developer includes information that allows to establish the project participants;

5.2. Participantes del proyecto - Gestores del Ecosistema

Tabla 42. Participantes del proyecto - Gestores del Ecosistema.

Individuo U Organización	Persona Contacto	Rol	Dirección	Teléfono	Email
LAURA JIMENA ALFONSO MORENO	N/A	Propietario (s)	Cl 11 10 56	3112536862	lauramaestria2016@gma
JAVIER HUMBERTO CARDENAS PERILLA	N/A	Propietario (s)	Vereda Camareta	3008908619	malipo0424@outlook.es
LUIS ARCADIO SANDOVAL ESCOBAR	N/A	Propietario (s)	CR 7 89 63	3125494139	edelmiragomezdomingo m
MARISOL FERNANDEZ GARCIA/ OCTAVIO DE JESUS PEREZ CANO	N/A	Propietario (s)	CL 1 C 8 25	3042528730	fernandezgarciamarisol /octadeje@hotmail.com
SOCIEDAD LA TIGRA META SAS	ALFONSO RIASCOS VILLEGAS	R/L	CR 38 A 5 A 109 CS 410 TO B	3155500000	alfonso.riascos.admon@ .co
BARIAS SAS	ALFONSO RIASCOS VILLEGAS	R/L	CR 38 A 5 A 109 CS 410 TO B	3155500000	alfonso.riascos.admon@ .co
CLARA ISABEL HERRERA VALENCIA	N/A	Propietario (s)	CL 14 C 64 B 90 AP 301 A	3155500000	clara.isabel.herrera@gma
MOBARIAL SAS	ALFONSO RIASCOS VILLEGAS	R/L	Cra 38 a 5 a 109 cs 410 TO B	3155500000	mobarialsas@gmail.com
MARINA ESTELA VILLEGAS RAMIREZ	N/A	Propietario (s)	Cl 56 N 7 N 56	3155500000	friascos3@yahoo.com
ADIELA JIMENEZ ADAN	N/A	Propietario (s)	Carrera 5Z Nº 49G Sur - 24	3505579732	alexandral89@gmail.co

Verification:

In the interviews with the communities conducted on Friday, April 5, 2024, the communities indicated the role of the different actors in the project. In this sense, the information related to ECOPETROL is included in the DpP V2.0 and monitoring report V2.0.

Action plan:	*Validation*

Section 5.2. Project Participants within PDD V.2.0 in accordance with the BIOCARBON TEMPLATE V 2.2 guidelines which states "Provide contact information for GHG project participants" and adds the following table:

5.2 Other project participants

Provide contact information for GHG Project participants (add rows if necessary).

Individual or organization
Contact person
Job position
Address
Phone number
Email

In addition, in PDD V2.0 it adds section 5.2.1 Other important stakeholders in the project - Ecopetrol. Describing Ecopetrol S.A.'s participation in the project and contact information: One of the fundamental project activities in charge of the Cataruben Foundation consisted of the search for a strategic ally to provide financial and technical resources. The objective of this collaboration was to generate the necessary enabling conditions to carry out the validation and first verification of the project, as well as to anticipate the identification of a final buyer for the carbon credits to be generated by the project.

On the other hand, for the 5.3 . Agreements related to carbon rights. Access to evidence of compliance was ensured.

VERIFICATION:

The role of Ecopetrol is described in section 5.2.1 of the PDD, and it is also clarified that Ecopetrol's role is established in the agreements signed freely, voluntarily and informed by the project participants, specifically in clause 13 of the agreement. This commitment has been systematically reiterated in our communications with the landowners participating in the project.

To address the lack of clarity that has been observed among some property owners, especially those located in geographic areas with communication limitations, meetings were held with property owners. (See 6.5.1.2.3.STRENGTHENING ACTIVITIES AND ROLES) As part of the reinforcement measures, we provided project participants with a detailed graphic description (evidence 6.5.1.2.3.1 Evidence) of the roles and activities involved in the project.

	In addition, within risk management (section 7.1 of the DpP v2.0), we have identified mitigation actions aimed at avoiding loss of communication with some of the owners, recognizing the importance of maintaining an efficient and transparent flow of information. *In summary, we are committed to ensuring a clear and consistent understanding of Ecopetrol's role in the project, and have implemented concrete actions, such as field visits and explanatory graphic material, to address any lack of clarity with some stakeholders and strengthen communication with all of them, especially those in geographically challenging areas.*					
OVV Evaluation :	*The project developer presents the corresponding documentation, supports, as well as virtual meetings with communities to bring closure to the finding.*					
Conclusion :	*Close finding*	*X*	*Maintain finding*		*FAR*	

Nº Finding:	*21*	*Finding Type:*	*CAR*	*x*	*CL*	
Description:	*The project is not aligned with:* *BCR Standard From differentiated responsibility, to common responsibility V 3.2, numeral 10.8.*					
Objective Evidence	***ROUND 1*** ***Validation:*** *Not found within the PbD:* *1. How the proponent in general sustains with robust and clear criteria that its assertions around the contribution that the actions raised by the project are articulated with real and credible climate change adaptation actions.* *2. In the development of numeral a) it must identify the strategic line of the national policy with which the project articulates its measures aimed at adaptation to climate change.* ***ROUND 2*** ***Validation:*** *Adaptation to Climate Change of the PDD v 2.0 where compliance measures are established in terms of actions, which must be demonstrated in each verification period.*					

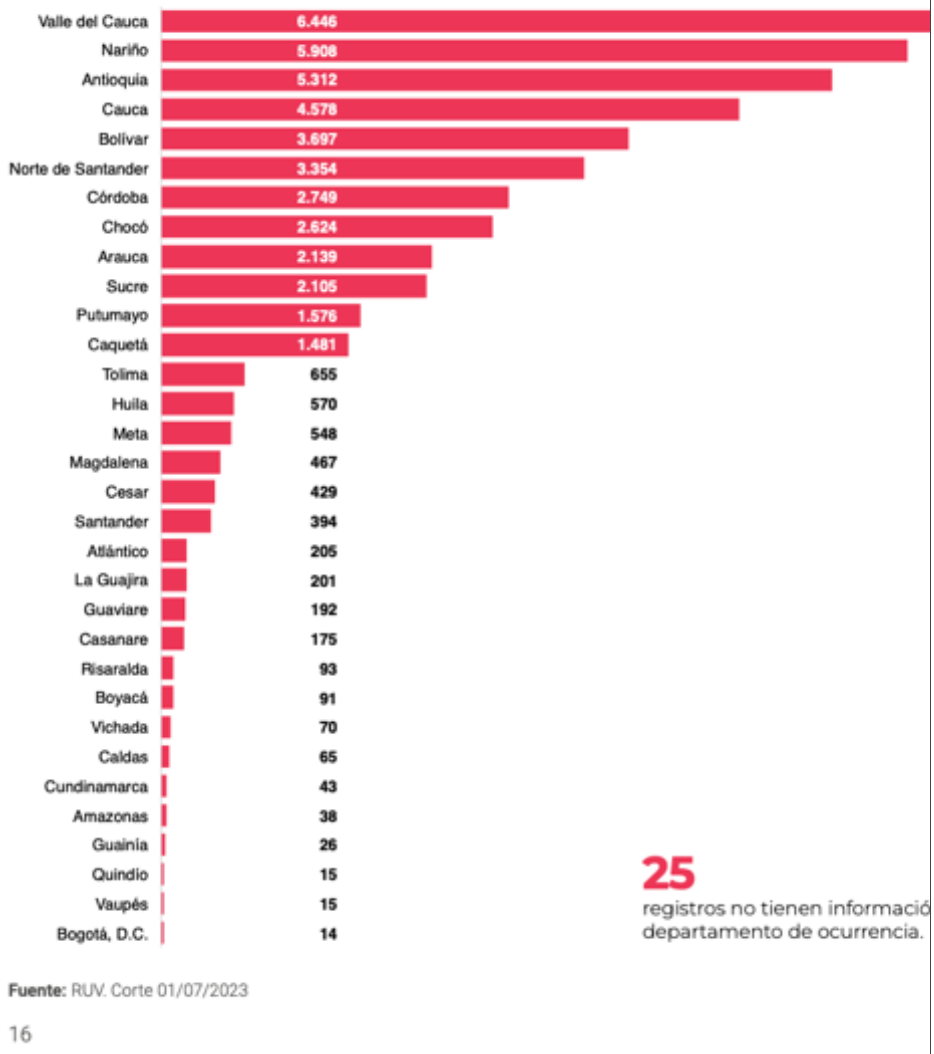
Action plan:	***Validation:*** *BCR Standard From differentiated responsibility, to common responsibility V 3.2, numeral 10.8 Adaptation to Climate Change describes the contribution to adaptation as follows:* *"In this sense, in addition to having robust and clear criteria to demonstrate their contribution in MITIGATION OF GHGs, Project holders must carry out actions related to ADAPTATION TO CLIMATE CHANGE, demonstrating that these are derived from GHG project activities."* *From the above it can be concluded that, in addition to the robust and clear compliance presented by the Orinoco2 CARBONO DEL ORINOCO project in terms of GHG mitigation by reducing emissions from deforestation, forest degradation and avoiding land use change in natural savannah (described justified and evidenced throughout the Project Document), it must carry out actions of Adaptation to climate change and these actions must derive from the project activities.* *In this sense, section 6. Adaptation to Climate Change of the PDD v 2.0 establishes an analysis of how the project addresses compliance with the criteria, justifying and evidencing the relationship with the project activities from which these actions of adaptation to climate change derive. This is based on an analysis of the national climate change policy and planned adaptation actions.*					
OVV Evaluation:	*The project developer submits the corresponding documentation and supports to close the finding.*					
Conclusion:	*Close finding*	*X*	*Maintain finding*		*FAR*	

Nº Finding:	*22*	*Finding Type:*	*CAR*	*x*	*CL*	
Description:	*The project is not aligned with:* *BCR Standard From differentiated responsibility, to common responsibility V 3.2, numeral 13 Risk management.* *BIOCARBON TEMPLATE V 2.1, numeral 7. Risk management*					
Objective Evidence	***ROUND 1*** *Validation:* *The risks identified in table 32. Risk Analysis. do not correspond to the risks identified by the audit team in the field, such as, for example, the following:*					

	3. *Little active participation of landowners in project activities, the risk was classified as low. However, during the interviews, some beneficiaries stated that they are several hours away from internet signal points and that compliance with training activities is sometimes subject to environmental conditions since they do not have roads and in case of rain, it would be impossible to attend.* 4. *Loss of efficient communication among project participants was classified as medium. Some of the beneficiaries stated that contact with the Cataruben Foundation was exclusively by telephone and that they have not had visits from the project owner on their properties, in many cases they reported having a poor telephone signal. The risk is high.* 5. *Forced displacement due to security conditions was categorized as low. However, this scenario does not correspond to the current situation where the rates of forced displacement and insecurity have increased in a generalized manner throughout the country.* 6. *The landowners stated that one of the risks they often face and which generates the most conflict are invasions by neighbors (in many cases from indigenous reserves), who sometimes cause intentional fires, hunt on their land, and cut down trees without authorization. This risk is high and was not identified.* 7. *Overlaps with other initiatives (double counting) at present, the RENARE platform, which allows identifying this type of problem, is not operational. Therefore, this is a high risk, taking into account that some program platforms and standards do not make public the limits of the registerd projects.* 8. *Overlap with the Orinoco BioCarbon program. This is a high risk that was also not identified.* 9. *Loss of control over controlled burns carried out by beneficiaries is a high risk that was not identified.* ***ROUND 2*** *The document ANNEX 5.1. ORINOCO2 CARBONO DEL ORINOCO-VF Financial Model should reflect the duration of the project. The current version of the model includes only half of the annual flows to be generated by the project on sheet 1. Inventory sheet 8. Inventory should reflect the amount of credits currently generated by the project during the life of the project.*
Action plan:	***Validation:*** *Within the PDD V2.0 section 7. Risk management, a risk reassessment is performed following the guidelines of section 13 RISK MANAGEMENT of the BCR V 3.3 standard and the use of the Permanence and Risk and management tool V1.0 section 2. In this sense, many of the observations are integrated, including new mitigation measures and the following clarifications are made:* *1. Little active participation of landowners in project activities, the risk was classified as low.*

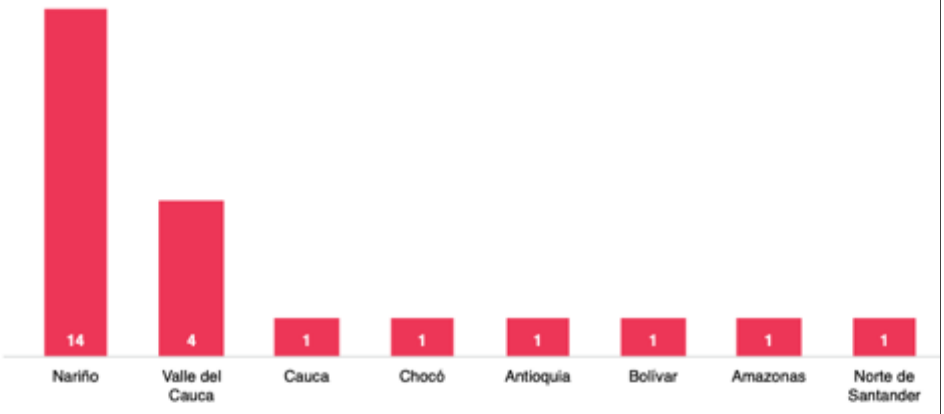
	The project group multiple properties (PDD v.2.0, Section 5.2 Project Participants) and it comprises multiple activities (PDD V2.0, Section 2.3.8.1 Design of Project Activities). *The assessment of the risk linked to the low active participation of the owners is performed in line with the rating system established in the corresponding section of the PDD. In this context, the impact of low participation is determined to be high. The likelihood of this scenario is supported by the audit team's verification, which evidenced that some beneficiaries face significant challenges, such as being several hours away from internet signal points and exposure to adverse environmental conditions that make it difficult for them to attend training activities, especially when lacking road access or in situations of heavy rain. Consequently, on a scale of 1 to 3, this risk is rated at a level 2, resulting in an overall rating of medium risk.* *In response to this assessment, mitigation measures have been put in place to counteract the risk of low landowner participation in project activities.* *These measures include:* *a.) On-site training and follow-up in remote properties with low road and telecommunications connectivity: Specific strategies, such as face-to-face sessions, have been designed to address low connectivity and lack of access to telecommunications in remote properties, thus ensuring effective participation of landowners even in challenging conditions.* *b). Ongoing monitoring system to the implementation of the predial implementation plans. The establishment of a continuous monitoring system contributes significantly to reducing this risk by providing constant supervision of project activities, ensuring the active participation of landowners.* *c). Clearly established responsibility agreements in the linkage contracts: The aim is to ensure mutual understanding and clear allocation of responsibilities among the participants through contractual agreements.* *d). Governance model for risk prevention and mitigation: The implementation of a sound governance model not only prevents adverse situations, but also acts as a mitigating element in the face of possible challenges to participation.* *These comprehensively structured measures are implemented with the objective of ensuring the success of the project and mitigating any obstacles associated with the low participation of some of the owners in the planned activities.*

	2. ***Loss of efficient communication among project participants was classified as medium.*** *The project groups multiple properties (PDD v.2.0, section 5.2 Project Participants), most of them have had efficient communication as expressed in the audit meetings (video audit), given that they are owners that are frequently in populated areas with telecommunications connection and accessible roads for field views.* *In this sense, the impact is rated 3 given the importance of effective communication between the parties and the probability is 2 because only some may be affected by the lack of road access and poor telephone signal, so the risk is medium, and mitigation measures are planned.* *In order to avoid further loss of effective communication, mitigation measures are generated such as the identification of properties with telephone signal and limited access roads, which in the framework of the audit indicated that they had not been visited, and a reinforcement is made in everything related to activities and roles (Strengthening of Activities and Roles).* ***3. Forced displacement due to security conditions was categorized as low. However, this scenario does not correspond to the current situation where the rates of forced displacement and insecurity have increased in a generalized manner throughout the country.*** *To determine the risk of displacement in the context of the project, a thorough review of the Forced Displacement Report 2023 was conducted, accessible through the link: Displacement Report 2023. The report indicates that, although displacement events have been registered in Colombia, they tend to be concentrated in departments other than Meta and Vichada. It is relevant to note that in Vichada, where most of the project areas are located, individual displacements are low. Similarly, in Meta, where the lowest rates of individual displacement are registered, the incidence is low (see graph below).*



Now, if we evaluate joint forced displacement (forced displacement of ten (10) or more households, or fifty (50) or more people), which is the one that would affect the project the most in general terms. In the departments of Vichada and Meta, no such events were recorded. In contrast, other departments such as Nariño, Valle del Cauca, Cauca, Chocó, Antioquia, Bolívar, Amazonas and Norte de Santander have experienced significant events in this category.

Gráfica 11. Número de eventos de desplazamientos masivos por departamento



Fuente: RUV. Corte 01/07/2023

Mapa 4. Eventos masivos de desplazamiento forzado por municipio

Los desplazamientos masivos ocurrieron en **13 municipios,** de los cuales **6 pertenecen a la costa pacífica nariñense.** Los cinco municipios donde ocurrió el mayor número de eventos son Olaya Herrera (5), Buenaventura (4), Tumaco (3), Magüi Payán (2) y Roberto Payán (2).

Fuente: RUV. Corte 01/07/2023

It is important to note that, to date and during the execution of the project, no individual or mass displacement events have been reported in the intervention areas through the mail systems, telephone lines, web page designed for the project, as well as in communications with landowners.

In this context, the risk associated with displacement is assessed as low. However, constant risk identification is maintained to monitor the evolution of conditions and ensure a proactive response to any changes in the situation.

	4. The landowners stated that one of the risks they often face and which generates the most conflict are the invasions by neighbors (in many cases from indigenous reserves), who sometimes cause intentional fires, hunt on their land and cut down trees without authorization. *The burning of savannahs on some properties by members of indigenous communities had been considered as part of the risks associated with forest fires because these burns, if not controlled by the owners in a timely manner, could turn into major forest fires. However, in this update, it was decided to separate these aspects, recognizing that the burns could exacerbate the normal historical conflicts between the indigenous communities and some private landowners, given that there are differences in the development vision of the project participants and the indigenous communities.* *In order to mitigate this risk, during the current monitoring period, the project has initiated approaches and socialization processes with the indigenous communities. This initiative aims to reduce the potential risk through dialogue and mutual understanding. This proactive approach seeks to establish a common understanding between landowners and indigenous communities, promoting cooperation and reducing the potential for future conflict. The ongoing interaction and implementation of preventive measures demonstrates the project's commitment to effectively address and manage the identified challenges, thus contributing to harmony and sustainability in the region. (3.2.2 Ethnic Community Working Groups)* *Although during the monitoring period there have been burns at some points caused by some members of the indigenous communities, it is important to note that the owners of the participating properties have duly controlled them. This preventive control of forest fires is part of the project's planned activities, demonstrating the landowners' commitment to risk management.* ***5. Overlaps with other initiatives (double counting), the RENARE platform, which allows identifying this type of inconvenience, is not currently operational. Therefore, this is a high risk, considering that some program platforms and standards do not make public the limits of the projects that are registered.*** *It is included as a financial risk and establishes as a mitigation measure the monitoring of carbon standard databases which, according to BIOCARBON TEMPLATE V 2.2, is fully developed in the PDD v2.0 Section 16. Based on the review it was determined that for the current monitoring period there are no overlaps with the project areas.* ***6. Overlap with the Orinoco BioCarbon program. This is a high risk that was not identified either.*** *Biocarbono is a mitigation initiative like others, as was communicated by the program itself in the framework of the stakeholder consultation and response to a PQRS filed by Cataruben, see finding 17. However, given the magnitude of the future*

	program in the framework of the stakeholder consultation, a request was made to exclude areas, thus mitigating the risk of overlapping with biochar (see finding 17). ***7. Loss of control over controlled burns carried out by beneficiaries is a high risk that was not identified.*** *The loss of control over controlled burns is identified as a potential risk of forest fire and includes catastrophic fire events, whether natural or anthropogenic in origin. The risk and mitigation measures are set out in the CPD V2.0 Section 7.1 risk identification and management, table: Risk management. In this regard, during the current monitoring period, thanks to these activities, no forest fires were recorded in the project areas.* ***Finally, section 14.1.2. Monitoring and Risk Management is developed within the 2018-2022 Monitoring Report v2.0. Updating the assessment and mitigation actions within the adaptive management framework.*** ***ROUND 2*** ***The financial model is updated in the following components*** ***a.*** *Time: The inventory is projected for 10 years from the project start date, in compliance with the criterion of duration of the first quantification period of the project.* *b. The inventory is updated with the emission reduction results for the 2018-2022 period and complemented with the 2023-2028 projections of the baseline scenario with project....* *c. Given that the revenues from the sales of carbon credits generated by the monitoring period of 2027 and 2028 will be generated in 2030 and 2031, the financial model is projected to 2031. It is important to emphasize that this model will be updated as the project progresses, adjusting its components according to the adaptive management of the project in the risk management framework.* *d. Costs and expenses are updated according to the expected monitoring periods.* *e. Sales flows are defined according to the experience of the project owner and the agreements being worked with the preliminary client (Ecopetrol).*
OVV Evaluation:	*The finding is closed as the project developer adjusts the financial analysis in terms of timing, GHG emission reductions, revenues, costs and expenses, as well as sales flows.*

Conclusion:	*Close finding*	*X*	*Maintain finding*		*FAR*	

Nº Finding:	*23*	*Finding Type:*	*CAR*	*x*	*CL*	
Description:		*The project is not aligned with:* *1. BCR Standard From differentiated responsibility, to common responsibility V 3.2, item 13 Risk management and 13.1.* *2. BIOCARBON TEMPLATE V 2.1, numeral 7. Risk management* *3. BCR_Monitoring-Report-Format. V 1.0, Numeral 14.1 Implementation status of the project*				
Objective Evidence		***ROUND 1*** ***Validation:*** *1. The information supporting the project's actions could not be corroborated with respect to how the project ensures that the GHG project is sustained over time.* *2. No evidence was found of the Conclusion of expected risks (direct and indirect) and consideration or mitigation measures as part of adaptive management. For example, one of the permanence risks identified in the field by the audit team is: scheduled fires out of control, which was not considered within this analysis.* ***Verification:*** *No related evidence was found on how the project monitors and manages:* *▪ Leakage and Non-permanence risk factors.* *▪ Provides descriptions on uncertainty management, applying the criteria and guidelines to comply with uncertainty management associated with models for estimating GHG emission reductions/removals in GHG Projects.* *▪ Reports possible relevant changes.* ***ROUND 2*** ***Validation:*** *▪ ▪ It was possible to corroborate the information supporting the project actions with respect to how the project ensures that the GHG project is sustained over time in section 13.1.3 Leakage and non-permanence risk monitoring of the Monitoring Report.* *▪ ▪ Evidence of Conclusion of expected risks (direct and indirect) and consideration or mitigation measures as part of adaptive management was found within section 7. Risk Management of the updated PDD V2.0.* ***Verification:*** *In section 14.1.3. Monitoring and Risk Management of Leakage and Non-permanence, section 16.3 Leakage of the V2.0 monitoring report states the following;* *Initially, forest loss was assessed in the temporal boundaries of the REDD+ component baseline (2008 - 2018), using data from the Global Forest Change Global Forest Watch.*				

	However, the information in the information source link provided by the project developer (https://storage.googleapis.com/earthenginepartners-hansen/GFC-2022-v1.10/download.html), indicates the following; While the resulting map data are a largely viable relative indicator of trends, care must be taken wher comparing change across any interval. Applying a temporal filter, for example a 3-year moving avera useful in discerning trends. However, definitive area estimation should not be made using pixels cour the forest loss layers. The Intergovernmental Panel on Climate Change (IPCC) provides guidance on reporting areal extent change of land cover and land use, requiring the use of estimators that neither over or underestimate to the degree possible, and that have known uncertainties. The maps provided by GLAD do not have properties. However, the maps can be leveraged to facilitate appropriate probability-based statistical deriving statistically valid areas of forest extent and change. Specifically, the maps may be used as a targeting forest extent and/or change by a probability sample. The team at GLAD has demonstrated approaches using the GLAD forest loss data in sample-based area estimation (Tyukavina et al., ERL, Turubanova et al., ERL, 2019, and Potapov et al., RSE, 2019, among others). *Therefore, the information related by the project proponent must comply with;* ▪ *literal a) BCR Standard in the most recent version, of section 5 normative references of the BCR 0002 V3.1 methodology,* ▪ *As well as literal c) of applicable national legislation on GHG projects,* ▪ *Article 41 on the establishment of baselines for REDD+ projects of the Resolution of 1447 of 2018. Specifically the project developer shall ensure that the project baseline reconstruction methodology complies with the consistent use of the variables employed by the NERF;* ▪

	Artículo 41. Establecimiento de líneas base para Proyectos REDD+. El tit Proyecto REDD+ deberá establecer su línea base a partir del NREF más actualiza haya sido sometido formalmente por Colombia y evaluado por la CMNUCC, y que in área geográfica del proyecto, así como actividades REDD+, periodos y depósitos de c en los cuales se pretenda implementar la iniciativa. El establecimiento de la línea base del Proyecto REDD+ a partir del NREF consist reconstrucción metodológica del NREF sobre el área del proyecto demostrando cons con el mismo. La reconstrucción metodológica es el cálculo de las emisiones esperadas en el área del Proyecto REDD+ con el uso consistente de las variables emp en el NREF, a partir de la información suministrada por el SMByC: la definición de b los potenciales de calentamiento global, los factores de emisión por tipo de bosque, lo históricos de deforestación para el área del Proyecto y su método de estimación emisiones y su proyección en el tiempo. **Parágrafo 1.** El titular de un Proyecto REDD+ que haya validado su línea base previa a la expedición de la presente Resolución deberá acogerse a las disposiciones del A 40 sobre el potencial máximo de mitigación de GEI objeto de contabilidad nacio reducción de emisiones y remoción de GEI para el periodo comprendido entre enero d y diciembre de 2019, para las actividades REDD+ y depósitos de carbono incluidos NREF sometidos por Colombia ante la CMNUCC. **Parágrafo 2.** Con el objeto de realizar la verificación de reducciones de emisio remociones de GEI generadas desde enero de 2020 en adelante, el titular del Pr REDD+ que haya validado su línea base previamente a la expedición de la pr Resolución, deberá ajustar y validar su línea base a partir del NREF más actualiza ajuste de la línea base consiste en la reconstrucción metodológica del NREF más actua aplicable al proyecto, sobre el área geográfica del mismo. ▪ *Regarding the NERF 2024 document, the project developer must establish the baseline with section 8 that deals with the Construction of the reference level of national forest emissions. This document establishes the scale of the information, deforestation activity data with the Galindo et. al. (2014) Protocol, masking filters, as well as the algorithms used to reconstruct the reference level.* *In the event that the project developer is unable to access the NERF algorithms, he/she must demonstrate that he/she has arranged with the corresponding entity to obtain this information.* *However, the project developer can also make use of open access platforms such as GitHub where the IDEAM SMByC publishes the algorithms used for the analyses; https://github.com/SMByC where AcATaMa is located and has been used by the project developer.*
Action plan:	*Validation* 1. *The information contained in the annexes is verified to be consulted by the audit team.* 2. *Within the PDD V2.0 section 7. Risk management a risk reassessment is performed following the guidelines of section 13 RISK MANAGEMENT of the BCR V 3.3 standard and the use of the Permanence and Risk and*

	management tool V1.0 section 2. Many of the observations, including new mitigation measures, are integrated into the adaptive management framework. *Verification* 1. *Section 13.1.3 Monitoring of leakage and non-permanence risks is developed in the Monitoring Report.* 2. *Section 13.1.4.1 Uncertainty of activity data is developed in the Monitoring Report. Incorporating more clearly the descriptions of the uncertainty management associated with the models for estimating reductions. The Instructions for Supervised Classification Processing, item 14 validation of the classification model sets out the results, in addition the AcATaMa Instructions; Inventory Design Procedure and the validation of the classification model from field data are annexed.* 3. *Section 13.2 Deviation request applied to this monitoring period is developed. Clarifying that no methodological deviations are presented for the present monitoring period. nor changes requested against the project document, given that this is presented simultaneously.* *ROUND 2* *The base Lb is updated according to the methodological requirements BCR002, of the BCR V3.1 standard and normative (article 41 of resolution 1447 of 2018) regarding the reconstruction of the reference level. It is clarified that, a request was made to the Forest and Carbon Monitoring System - SMBYC of the Ecosystems and Environmental Information Subdirectorate that is managed from IDEAM, inquiring about the algorithm used for the classification of forest and non-forest cover (Radicado IDEAM 20249910046184).* *The response (20245000028221) indicates that the SMByC uses certain algorithms https://github.com/SMByC under the PDI protocol for the quantification of deforestation in Colombia (Protocolo de procesamiento digital de imágenes para la cuantificación de la deforestación en Colombia. V2.0, Galindo et al 2014.) But from the Set of algorithms none performs the classification of non-forest forest.* *It was decided to use Machine Learning techniques using the Random Forest (RF) classifier. This choice is based on the abundant scientific literature that points out that RF outperforms most classifiers due to its robustness, ease of parameterization and speed (Kawzoglu, 2017). Moreover, studies such as those by Fagua et al. (2021), Olofsson et al. (2006), Fauvel et al. (2022), Mudereri et al. (2019) and Kpienbaareh et al. (2021) show that RF offers high accuracy and is widely recommended for classification of thematic series or satellite imagery. Therefore, this choice satisfies that criterion.*

	From the set of algorithms available in Git hub (https://github.com/SMByC), AcATaMa is used to evaluate the accuracy of the maps and determine the level of uncertainty. *Likewise, the baseline is updated in accordance with the BCR standard V 3.3 update of March 1 in relation to numeral 10.2 Duration and quantification periods. In this regard, with respect to REDD type projects, it establishes that:* *"b). Renewable quantification periods, with a maximum of 10 years and will be renewed at least 3 times, with a minimum duration of 40 years. Therefore the quantification is established for the period 2018-2028. (10 years, first quantification period).* *Kavzoglu, T., (2017). Object-Oriented Random Forest for High Resolution Land Cover Mapping Using Quickbird-2 Imagery. In: Handbook of Neural Computation, edited by Samui, P., Roy, S.S., and Balas, V.E. Elseiver, Amsterdam.* *Fagua, J., Jantz, P., Burns, P., Massey, R., Buitrago, J., Saatchi, S., Hakkenberg, C., Goetz, S. (2021). Mapping tree diversity in the tropical forest region of Chocó-Colombia. Environmental Research Letters, http://dx.doi.org/10.1088/1748-9326/abf58a* *Olofsson, P., Holden, C. E., Bullock, E. L., & Woodcock, C. E. (2016). Time series analysis of satellite data reveals continuous deforestation of New England since the 1980s. Environmental Research Letters, 11(6), 064002* *Fauvel, K., Fromont, E., Masson, V., Faverdin, P., & Termier, A. (2022). XEM: An explainable-by-design ensemble method for multivariate time series classification.Data Mining and Knowledge Discovery, 36(3), 917-957.* *Mudereri, B. T., Dube, T., Adel-Rahman, E. M., Niassy, S., Kimathi, E., Khan, Z., & Landmann, T. (2019). A comparative analysis of PlanetScope and Sentinel-2 space-borne sensors in mapping Striga weed using Guided Regularised Random Forest classification ensemble. International Archives of the Photogrammetry, Remote Sensing and Spatial Information Sciences, 42(2/W13).* *Kpienbaareh, D., Sun, X., Wang, J., Luginaah, I., Bezner Kerr, R., Lupafya, E., & Dakishoni, L. (2021). Crop type and land cover mapping in northern Malawi using the integration of sentinel-1, sentinel-2, and planetscope satellite data. Remote Sensing, 13(4), 700.*					
OVV Evaluation :	*The finding is closed, since the project developer demonstrates through documentary and methodological evidence, that he established the project baseline adhering to the requirements of methodological BCR002, of the BCR V3.1 standard and normative (article 41 of resolution 1447 of 2018) regarding the reconstruction of the reference level.*					
Conclusion:	*Close finding*	*X*	*Maintain finding*		*FAR*	

Nº Finding:	*24*	*Finding Type:*	*CAR*	*x*	*CL*	
Description:	*The project is not aligned with:* *1. BIOCARBON TEMPLATE V 2.1, numeral 9. Socio-economic aspects* *2. BCR_Monitoring-Report-Format. V 1.0, Item 9. Socio-economic aspects*					
Objective Evidence	***Validation:*** *The owner does not include within this analysis risks that during the interviews conducted as part of the validation activities the audit team identified. For example:* *1. It was found that the owners stated that one of the risks they often face and that generates more conflict are the recurrent invasions of their neighbors (in many cases they are indigenous reserves) in their properties, which sometimes cause intentional fires, hunt in their properties and cut down trees without authorization.* *This conflict generates a negative impact, as the situation could worsen in order to comply with the commitments assumed in the implementation of project activities and was not considered as part of the analysis.* *2. The landowners perceive the Jaguar (tiger) as an imminent risk to their livestock and stated that it was necessary to kill them.* ***Verification:*** *1. The project must ensure that it has defined mechanisms in place to monitor the identified impacts that the project may generate in the community at large.*					
Action plan:	*Validation:* *1. Within section 8 and 9 of the PDD V. 2.0, there is the matrix of environmental and socioeconomic impacts (See 5.1. ORINOCO2 CARBONO DEL ORINOCO Environmental Assessment Matrix), this matrix was adjusted, for which the environmental and socioeconomic impacts were consolidated into a single matrix. This matrix now incorporates the analysis of possible conflicts that could increase the relationship between neighbors (Indigenous communities and Ecosystem Managers), in addition, it is included in its social, financial and environmental dimension, along with mitigation actions following the strategy of dialogue and non-intervention in indigenous reserves.* *2. In section 8 and 9 of the PDD V. 2.0, there is a matrix of environmental and socioeconomic impacts (See 5.1. ORINOCO Environmental Assessment Matrix), which now incorporates the possible environmental impact derived from the interaction with the jaguar, as perceived by the ecosystem managers. Based on this, the biodiversity*					

	team has formulated mitigation actions such as the use of appropriate enclosures to control the births in a more hygienic space to prevent the jaguar from being attracted to these spaces, as well as communication channels between the territorial entities that manage the diversity, all of which is included in a management plan (See 6.5.1.3.5.4. Management plan for felines). *Verification:* **1.** *Within the analysis of the matrix of environmental and socioeconomic aspects (See 5.1. ORINOCO Environmental Assessment Matrix), 2 negative environmental impacts were identified, especially related to the conservation of natural ecosystems and biodiversity.* *In this sense, the mechanism used to mitigate and monitor these negative impacts is through the safeguards monitoring plan tool, which is found in section 11 of the Monitoring Report v2.0, (See 6.2 Safeguards Monitoring Plan), specifically in relation to safeguard E, which deals with the conservation of forests and their biodiversity.*
OVV Evaluation:	*The project developer relates the information and supporting documentation to respond to each of the points established in the finding, which generates its closure.*

Conclusion:	*Close finding*	*X*	*Maintain finding*		*FAR*	

Nº Finding:	*25*	*Finding Type:*	*CAR*	*x*	*CL*	
Description:	*El proyecto no está alineado con:* *1. PLANTILLA BIOCARBÓN V 2.1, numeral 10. Consulta con las partes interesadas (stakeholders).* *2. BCR_Monitoring-Report-Format. V 1.0, 10. Consulta con las partes interesadas (stakeholders).*					
Objective Evidence	***Validation:*** *1. It was not possible to interview the relevant stakeholders of the project, such as Corporinoquia and the BioCarbon program.* *2. It was not possible to corroborate the comments received as part of this exercise during the field visit and document review.* ***Verification:*** *1. We were not able to interview relevant stakeholders such as: Corporinoquia and the BioCarbon program.*					
Action plan:	*Validation - Verification*					

	1. *According to BIOCARBON TEMPLATE V 2.2, numeral 10. Consultation with interested parties (stakeholders). and BCR_Monitoring-Report-Format. V 1.1, 10.* 2. *Consultation with interested parties (stakeholders). Describe the process and results of ongoing stakeholder communication conducted prior to verification. Include details on the procedures or methods used to engage local stakeholders, document the results of stakeholder feedback and the mechanism for ongoing communication with local stakeholders."* - *In this regard, section 10 of the PDD v 2.0 established the procedure related to stakeholder consultation.* *On the other hand, with respect to local stakeholders particularly mentioned in the nonconformity, the following is clarified:* ***CORPORINOQUIA:** The corporation has been invited to comment on the project or to meet with us and so far the corporation has not commented, we will continue to approach the corporation to participate and articulate the project. The following is the evidence of the presentation of the project and the invitation for comments.* *- 14/07/2023-02/01/2024: Within the framework of the stakeholder consultation, a letter was sent to the Vichada Sectional CE 23-538 - Corporación Autónoma Regional de la Orinoquia. pdf, later a request for PQRs was sent which has not been answered yet. (corres a corporación)* *- 29/11/2023: Mail is sent to the director of climate change of the corporation (Mail to Julie Paez Corporation).* *From the foundation we have shared different spaces with the corporation and we hope to continue establishing closer ties to articulate and generate synergies that improve the results of climate change mitigation in the framework of project implementation.* ***PROGRAMA BIOCARBONO*** *Consultations with Biocarbono have taken place in the framework of avoiding transplants that are not compatible with the future program once it has started. In this sense, Finding No. 17 describes how Biocarbon has been taken into account in the execution of the Orinoco2 CARBONO DEL ORINOCO project.*					
OVV Evaluation:	*The project developer relates the information and supporting documentation to respond to each of the points established in the finding, which generates its closure.*					
Conclusion:	*Close finding*	*X*	*Maintain finding*		*FAR*	

№ Finding:	*26*	*Finding Type:*	*CAR*	*x*	*CL*	
Description:	*The project is not aligned with:* *1. BIOCARBON TEMPLATE V 2.1, numeral 11. ODS.* *2. BCR_Monitoring-Report-Format. V 1.0, numeral 11.ODS*					
Objective Evidence	***Validation:*** *1. The description of activities to comply with the SDGs in the PdD fails to demonstrate compliance with this requirement. The relevant criteria and indicators defined by the project owner to comply with the SDGs are not clear.* *2. No evidence was found on how the project implemented the tool for determining contributions to the SDGs in the PDD.*					
Action plan:	*Validation:* *1. In the PDD v2.0, section 11 Sustainable Development Goals is developed using the two tools Sustainable Development Goals (SDG) Version 1.0 and the SDG Tool (2023). In this regard, it describes how some of the project activities contribute to the achievement of SDG 6, 13 and 15 targets. In addition, the following clarifications are made regarding SDG 6 and 15:* - *SDG 6: A modification has been made to project activity G7, related to the creation of a "Plan for the Efficient Use and Saving of Water in Households (PUEAA)". This activity has been relocated and merged into activity G2 and S2, focused on: "Technical Capacity Building Plan" and "Implementation of Sustainable Productive Practices in Natural Savannas", in order to optimize compliance with SDG 6 indicator 6.1.1. This adjustment seeks to ensure greater alignment with the targets set and strengthen the impact of the project in terms of quality, preservation and efficient use of water resources.* - *-SDG15: Whose main objective is to protect, restore and promote the sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, halt and reverse land degradation and halt biodiversity loss, through the protection, restoration and sustainable use of terrestrial ecosystems and biodiversity. The project contributes to the goals:* - *15.1 focused on the conservation, restoration and sustainable use of terrestrial and inland freshwater ecosystems and their services.* - *15.5 which focuses on aPDDting measures to reduce the degradation of natural habitats along with avoiding biodiversity loss and 15.6 which focuses on the conservation and restoration of natural habitats.*					

	- *15.a which focuses on mobilizing financial resources to conserve biodiversity and its ecosystems.* - *In this sense, the project activities that directly contribute to the SDG targets are G2, G5, S2, B1, B2 and B3. These activities revolve around the delimitation of strategic ecosystems, as well as the identification and monitoring of HCVs present in the project area along with globally threatened species, adding the economic effect and resource mobilization, which go hand in hand and help to meet both SDG 15 and its goals and targets.* 2. *In Section 11 of the PoD V2.0 the evidence of the use of the tool is presented, as well as described:* - *Clarification of how the SDG Tool was applied (Excel)* - *Results of the application of the tool, contributing to the SDGs (6, 13 and 15),* - *The project activities contributing to them, the scope of the contribution, the periodicity, the unit of measurement and the evidence of the contribution.* *On the other hand, after reviewing in detail the PDD V2.0, the monitoring report V2.0 and the documentation provided, it is assured that the SDG 2023 tool has been used to assess and determine the project's direct contributions to the specified SDGs and their corresponding indicators.*					
OVV Evaluation:	*The project developer relates the information and supporting documentation to respond to each of the points established in the finding, which generates its closure.*					
Conclusion:	*Close finding*	*X*	*Maintain finding*		*FAR*	

Nº Finding:	*27*	*Finding Type:*	*CAR*	*x*	*CL*	
Description:	*El proyecto no está alineado con:* 1. *BIOCARBON TEMPLATE V 2.1, numeral 12. Salvaguardas REDD+ (para Proyectos REDD+).* 2. *BCR_Monitoreo-Informe-Formato. V 1.0, numeral 12. Salvaguardas REDD+ (para Proyectos REDD+*					
Objective Evidence	***Validation:*** 1. *The description of activities to comply with the national interpretation of safeguards fails to demonstrate compliance with this requirement.* 2. *No evidence was found to support compliance with the interpretation of the safeguards in the PDD.*					

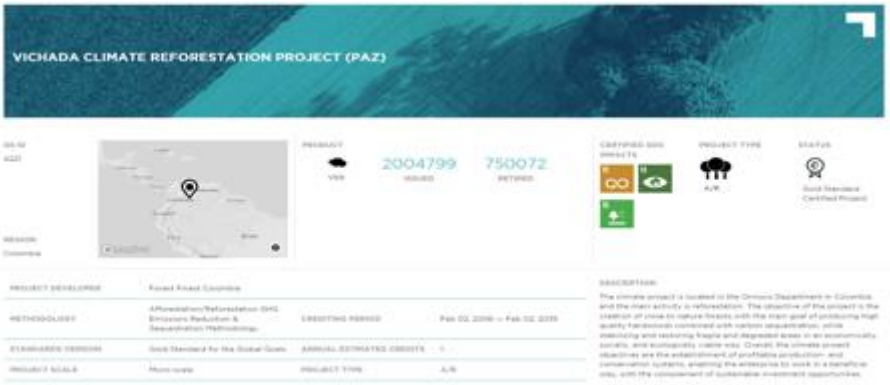
	Verification: *1. The description of the activities developed during the monitoring period is not sufficient to ensure that the project complied with the guidelines of the national interpretation of the safeguards.* *2. No evidence was found to support compliance with the interpretation of the safeguards in the MR.*
Action plan:	*Validation:* *1. Section 12 Safeguards of the PDD V2.0 was adjusted, adding a table for each safeguard, clearly explaining how the project activities will contribute to the fulfillment of each one of them, as follows:* *- Table 46. Projection of Safeguard A approach,* *- Table 47. Projection of Safeguard B approach,* *- Table 48. Projection of Safeguard C approach,* *- Table 49 Projection of Safeguard D approach,* *- Table 50 Projection of Safeguard E approach,* *- Table 51 Projection of Safeguard F approach,* *- Table 52 Approach projection for Safeguard G)* *2. With the objective of ensuring compliance with the national interpretation of safeguards Within these tables 46-52, the relationship between the Cancun Safeguards and each of the elements of the national interpretation of the safeguards for Colombia is presented. It also details how each of these elements will be addressed in the framework of project implementation..* *Verification:* *1. n section 11 of the Monitoring Report v2.0, the numerals 11.1, 11.2, 11.3, 11.4, 11.5, 11.6 and 11.7 have been integrated; with the objective of being able to specifically develop the activities or actions that led to demonstrate compliance with the safeguards, in conjunction with the elements of the national interpretation during the monitoring period.* *2. Tables 8, 10, 12, 12, 14, 14, 16, 18 and 20 of section 11 of the Monitoring Report v2.0 contain the evidence that demonstrates compliance with the safeguards and their elements of the corresponding national interpretation.* *Tables 9, 11, 13, 15, 15, 17, 18 and 19 of the same section report the percentage of progress made in complying with each of the safeguards.* *A safeguards monitoring plan and report was also prepared, which shows how safeguards compliance monitoring and reporting will be carried out (See 6.2. SAFEGUARDS MONITORING PLAN AND REPORT).*

OVV Evaluation:	*The project developer relates the information and supporting documentation to respond to each of the points established in the finding, which generates its closure*					
Conclusion:	*Close finding*	*X*	*Maintain finding*		*FAR*	

№ Finding:	*28*	*Finding Type:*	*CAR*	*x*	*CL*	
Description:	*The project is not aligned with:* *Resolution 1447 of 2018 chapter 1 paragraph 3, chapter 2 article 10.*					
Objective Evidence	***Validation:*** *No evidence was found regarding the mechanisms and processes contemplated by the project manager to follow up on the supports to be submitted to RENARE in the PDD.* ***Verification:*** *No evidence was found regarding the mechanisms and processes contemplated by the project manager to follow up on the supports to be submitted to RENARE in the RM.*					
Action plan:	***Validation:*** ***In compliance with Article 10 of Resolution 1447 of 2018 which deals with the duty to register the project in the RENARE platform, such management is addressed in the PDD Section 16. avoiding double counting. Where it is described, justified and evidenced that the RENARE platform is not operational since 2022, but the project is registered. and is included within the risk management section with mitigation actions, such as constant monitoring to the evolution and implementation of the platform, while monitoring GHG project registration platforms to avoid any type of non-compatible overlap.*** ***Verification:*** ***The monitoring of the information to be uploaded to RENARE is mentioned in PDD Section 16.2, where it is described, justified and evidenced that the RENARE platform has not been operational since 2022. Therefore the risk management mechanism of monitoring the implementation of the platform continues.***					

	The project developer relates the information and supporting documentation to respond to each of the points established in the finding, which generates its closure.					
Conclusion:	*Close finding*	*X*	*Maintain finding*		*FAR*	

Nº Finding :	*29*	*Finding Type:*	*CAR*	*x*	*CL*	
Description:	*The project is not aligned with:* *BCR Standard From differentiated accountability, to common accountability V 3.2, numeral 26. Double counting.* *BIOCARBON TEMPLATE V 2.1, numeral 16. Double counting avoidance*					
Objective Evidence	***ROUND 1*** ***Validation:*** *No related evidence was found on how the project has procedures to ensure that it does not present double counting in the PDD and implements the BCR Tool "Avoiding Double Counting (ADC)".* ***Verification:*** *No related evidence was found on how the project performed procedures to follow up and ensure that it does not present double counting in the RM and implements the BCR Tool "Avoiding Double Counting (ADC)".* ***ROUND 2*** *The PDD V2.0 indicates the following in section 16.2 Review of other projects;* *systematic search of the standards present in the region of influence is carried out. VERRA, COLCX, CERCARBONO and BIOCARBONO REGISTRY 1.4.4.1. Cartographic information. Following the identification, the cartographic information of each carbon project present in the area is downloaded directly from the website of the corresponding standard. This information is organized in shapefiles for vector analysis.* *However, there are other records such as Gold Standard, where the following projects are found for the department of Vichada, municipalities of Cumaribo and*					

	https://registry.goldstandard.org/projects/details/1806  *https://registry.goldstandard.org/projects/details/4104*  *Therefore, the project developer must ensure that the project site areas do not overlap with other project areas in other carbon registries.*
Action plan:	*Validation* *Section 16. Avoiding Double Counting is developed, implementing the BCR Tool "Avoiding Double Counting (ADC)". In this sense, it is determined that the project can reduce the risk of double counting by registering the project in Renare, but since the platform is not operational, a systematic sweep of GHG mitigation projects in the different registration platforms is performed, demonstrating and evidencing that the project does not have any incompatible overlap with other initiatives.* *Verification*

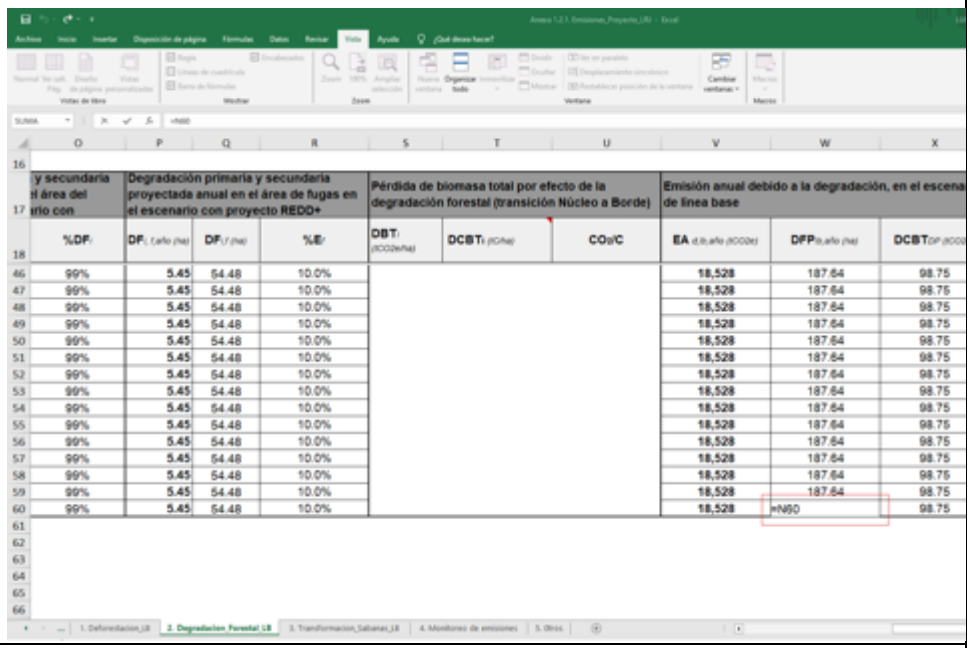
	Since validation and verification are presented simultaneously, the PDD information corresponds to the verification-monitoring period. *ROUND 2* *We searched for maps or shapes of project areas in the gold standard registry; however, the standard does not publish this type of information. A review of the project documents of those projects was carried out and no properties were found with names similar to those that are part of our project; however, it is clarified that for double accounting to exist, there must be a non-compatible overlap, i.e. the project activities must be the same and/or the periods must be the same. In this sense, Gold's standard projects are AR type activities and Orinoco2 CARBONO DEL ORINOCO has REDD+ type activities (reducing emissions from deforestation and forest degradation), therefore the risk of double counting is practically nil.*					
OVV Evaluation:	*The finding is closed, given that the project developer provides information showing that there is no double counting in different carbon registries related to project activities, therefore carbon pools and eligible land areas.*					
Conclusion:	*Close finding*	*X*	*Maintain finding*		*FAR*	

№ Finding:	*30*	*Finding Type:*	*CAR*	*x*	*CL*	
Description:	*The project is not aligned with:* *Resolution 1447:2018. Articles 34 and 39.*					
Objective Evidence	***ROUND 1*** ***Validation:*** *No related evidence was found on how the project has procedures in place to ensure that the uncertainty does not exceed 10%.* ***Verification:*** *No related evidence was found on how the project implemented procedures during monitoring activities to ensure that the uncertainty was not greater than 10%.* ***ROUND 2*** *The project developer shall ensure that the baseline reconstruction in accordance with the NERF is complied with to ensure that the uncertainty does not exceed 10%.*					
Action plan:	*Validation:*					

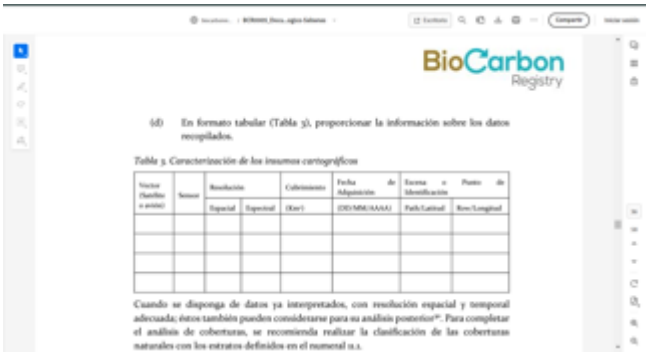
	In accordance with resolution 1447:2018. *Article 34: Use of methodologies for the formulation of sectoral GHG mitigation projects: Holders of sectoral GHG mitigation projects shall use methodologies that comply with one of the following characteristics.:* 1. *Be one of the methodologies proposed and approved to be used under the UNFCCC GHG mitigation mechanisms applicable to Colombia.* 2. *Be one of the methodologies elaborated by GHG certification programs or carbon standards.* 3. *Be a methodology developed by a national public entity that has been reviewed by the Technical Committee of the intersectoral commission on climate change.* - *In this sense, according to option 2, the project complies since it uses methodologies developed by a certification program..* *Article 39: Use of Methodologies for the formulation and implementation of REDD+ projects. The REDD+ project holder shall use methodologies that comply with the following characteristics.* 1. *Follow UNFCCC guidelines related to REDD+.* 2. *Have a mechanism in place to manage the risk of leakage of GHG emission reductions.* 3. *Have a mechanism for managing the risk of non-permanence of emission reductions.* 4. *To have a mechanism for managing uncertainty in the quantification of baseline and mitigation results.* - *The methodology used is BCR 0002 which incorporates together with the BCR V 3.3 standard all the characteristics of article 39 of resolution 1447 of 2018. Likewise, the criteria related to these characteristics are described, justified and evidenced in the PDD V2.0..* *Now, in relation to the uncertainty management applied by the project, section 3.5 Uncertainty management of the PDD v2.0 is adjusted, relating the procedures for the calculation of uncertainty in the emission factors and calculation of the accuracy of the maps used* *Verification:* *Section 13.1.4 uncertainty management of the 2018-2022 Monitoring Report is adjusted, detailing the application of the procedures for assessing uncertainty in the data sources used.* *ROUND 2*

	It is verified that the baseline construction complies with the NERF deconstruction methodology over the project areas.					
OVV Evaluation:	*The finding is closed, given that the project developer demonstrates that it complies with the NREF baseline reconstruction procedures to ensure that the uncertainty does not exceed 10%. Since in numeral 3.5. Uncertainty management of the PD establishes that the accuracy results for forest-non-forest maps were as follows: 2008 (96%), 2018 (95%) and 2022 (94%), as well as for savannah coverages the accuracy result was 98% and the emission factors for natural savannahs registered a value of 9%. For forests, the project developer applied the emission factors presented in the country's reference level.*					
Conclusion:	*Close finding*	*X*	*Maintain finding*		*FAR*	

Nº Finding:	*31*	*Finding Type:*	*CAR*	*x*	*CL*	
Description:	*The project is not aligned with:* *ISO 14064-2:2019 numerals 6.3 and section A.3.2;*					
Objective Evidence	***ROUND 1*** ***Validation:*** *The documentary review shows that the PDD does not explain or justify which GHG SRFs were identified as relevant to the project.* *No evidence was found regarding the criteria and procedures established to identify which GHG FSRs are controlled by the project, which are related and which would be affected by the GHG project.* *The explanation and justification of the criteria and procedures for determining the GHG baseline according to the identified FSRs is not clear. No evidence was found regarding the availability, reliability and limitations of the data.* ***Verification:*** *The documentary review shows that the PDD does not explain or justify which GHG SRFs were identified as relevant to the project.* *No evidence was found regarding the criteria and procedures established to identify which GHG FSRs are controlled by the project, which are related and which would be affected by the GHG project.* *The explanation and justification of the criteria and procedures for determining the GHG baseline according to the identified FSRs is not clear. No evidence was found regarding the availability, reliability and limitations of the data.*					

	ROUND 2 ***Validation:*** *The quantification of emissions and reductions should be adjusted for the last year according to the number of months the project operates in the last year, in a similar way as it is adjusted for the first year with 3 months.* 
Action plan:	*ROUND 1* *Section 3.2.2. Carbon pools and GHG sources of the PDD, which describes the carbon pools and GHG sources applicable to the project, is adjusted. This selection was made taking into account the guidelines of methodologies BCR0002 V3.1 (section 7) and BCR0005 V1.0 (section 7.2), and the internal procedure FC-GOP-23 Inventory design procedure for biomass growth monitoring (section 7.1). In this sense, the identified carbon pools are mainly considered as Controlled, since the conservation activities proposed by the project may directly influence their carbon levels.* *Similarly, section 3.7.3 Emission Reduction/Removals in the Baseline scenario of the PDD describes in detail the procedures applied and data sources used to determine the baseline GHG emissions, according to the selected carbon pools.* *ROUND 2* *The project's quantification period is adjusted according to the guidelines of BCR Standard V 3.3 (section 10.5). Thus, a period of 9.25 years (01/10/2018 - 31/12/2027) is established. Consequently, in the spreadsheet for the first quantification period, the months are adjusted in year 1 (3 months). (Annex 1. Emissions / 1.2. Quantification of emissions / Annex 1.2.1. Emissions_Project / Sheet 1. Deforestation_LB; Sheet 2. Degradation_Forest_LB and Sheet 3. Deforestation_LB).*

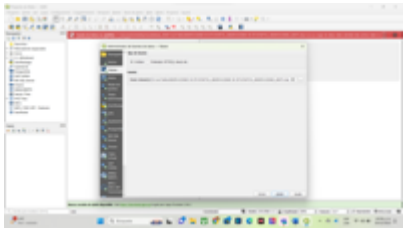
OVV Evaluation:	*Keep open until the quantification of emission reductions is adjusted in the final year to the number of months the project operates.*					
Conclusion :	*Close finding*	*X*	*Maintain finding*		*FAR*	

Nº Finding:	*32*	*Finding Type:*	*CAR*	*X*	*CL*	
Description:	*BIOCARBON Standard BCR 0005 ,11 Quantification of GHG emission reductions, 11.2 Activity data; 11.2.1 Estimation of land use changes.*					
Objective Evidence	***Validation y Verification:*** *The project is not aligned with:* *a. Collect the data used to analyze land use changes over land covers over savanna vegetation covers, during the historical reference period between the project boundaries. It is a good practice to do it at least in three points in time, with 3 to 5 years of difference, the information of the satellite images used for the generation of the extra layer that does not correspond to those of IDEAM of Corine Land Cover of 2010 - 2012, 2018 was not found. Without knowing the source images, it is not clear how the image processing was performed, it is not found within the PDD.* *b. Select medium resolution spatial data (from 10 meters to a maximum of 30 meters spatial resolution), from optical and radar sensor systems, such as (but not limited to) Landsat, SPOT, ALOS, AVNIR2, ASTER, Sentinel 1 and 2, among others. It covered the last 5 - 10 years, and display them in tabular format (Table 3), provide the information on the data collected, within the PDD, the table requested by the standard, called Characterization of cartographic inputs, is not registered within the PDD.*  *Tabla de caracterización de insumos* *a. Collect high resolution data from remote sensing (less than 5 x 5 meters per pixel) and/or direct field observations for validation of field maps. Describe the type of data, coordinates and the sampling design used to collect it, within the PDD, the information of the description of the high resolution*					

satellite images was not found. The GDB delivered does not allow to visualize the layers, does not allow to see the structure of the information, there is no evidence of the existence of the validation of the quality of the layer. Quality control.

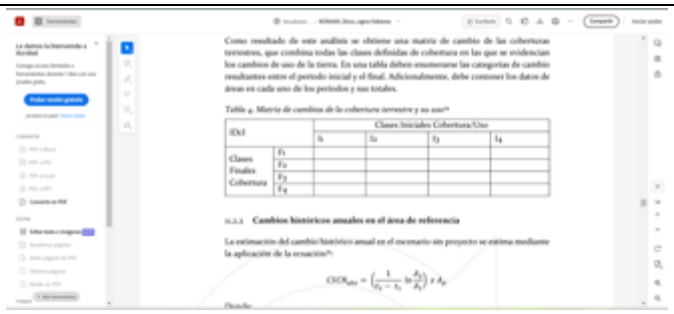
b. *The validation processes for the treatment of satellite images and geographic data should be supported by international standards such as ISO, OGC or the American Society for Photogrammetry and Remote Sensing. Within the PDD there is no evidence of treatment and processing of images of any kind, there is no evidence of images, processing or description of how the coverage was generated.*

Layers delivered in the GDB folder are not allowed to be uploaded,



Does not allow to see the GDB wi REDD

a. *Inside the GDB, it is not possible to visualize the information delivered, it is empty when loading, it does not comply with the ISO 19131 standard, technical specifications of the product according to the specifications of the data product.*
b. *There is no compliance with ISO 19115-1 Geographic Metadata, there is no relation of the metadata, nor evidence of the presence of these formats filled out for each of the layers that cannot be visualized.*
c. *There is no evidence of compliance with the ISO 19157 data quality standard; the data delivered cannot be viewed.*
d. *There is no compliance with ISO 19157 Data quality, the quality processing used for this process is not clear, it is not understood how the coverages were defined, which is the classification criteria, an explanation is required not only to deliver standard procedures, which are part of quality protocols, but do not correspond to the requirements of the certifying program.*
e. *Within the PDD and the annexes delivered in the GDB folder, in the procedures described there is no indication of the type of image, its source, and date of acquisition of the remote sensing data, geometric, radiometric and other types of corrections made (combination of bands used, indices used are not evident in the protocols delivered, there is no evidence of the estimation of the geometric correction.*
f. *Land cover and land use classes, categories of change, classification approach, ground truthing data, were not found in the PDD, nor described in the procedures.*

	 *Matriz de cambios de la cobertura terrestre*
Action plan:	*Section 11.2.1. Estimation of changes in land use changes is updated:* *a. The numeral indicates that the project owner must perform the land use analysis for the years 2009 and 2018, using as input the available cartographic information such as land cover maps, Corine Land Cover-IDEAM methodology (http://www.siac.gov.co/catalogo-de-mapas). It also recommends doing the analysis for at least 3 to 5 points in time. This analysis is performed in the project areas. Geodatabase/1.1.1.1.1.1.Sabana Feature Dataset Reference region and project areas.* *b. The spatial data were of medium resolution, the Sentinel 2AB sensor was used. Geodatabase/1.1.1.1.1.1.Sabana Feature Dataset project areas and Corine Land Cover Interpretation, in the attribute table the code/nomenclature of the image used is listed.* *c. Field data were used, i.e. direct observations on the territory for the year 2022, so it was not necessary to corroborate with higher resolution images. The information is available in section 1.1.1.3.3 Field Formats. The format contains coordinates, coordinate type and coverages. This information is also found in the .Geodatabase/1.1.1.1.1.Sabana Feature Dataset Validation Confusion Matrix, Sampling points field.shp.* *d. The characterization of cartographic inputs was carried out in the monitoring period, that is, in the elaboration of the land cover map for the year 2022, which is related to 14.1.4.1 Uncertainty of activity data. Table 39 Characterization of cartographic inputs. National inputs were used to generate eligibility.* *e. According to the information provided by you, it is not that it is empty. It happens that the method you use in QGIS is not ideal to open a geodatabase. The following information is provided: In the browser panel of QGIS, go to the location of the destination folder, click on the folder, which will display the cartographic information, by this method it, will not be possible to see the feature dataset, ie the folders of the geodatabase, on the contrary you will see all the vector information loaded. The use of ArcMap - ArcGIS Pro is recommended.* *f. Since it was not possible to access the cartographic information of the different geodatabase, it is not possible to show the metadata. Therefore, it is recommended to open gdb as explained in item e.*

	g. *Perform the opening according to item e. The data present a spatial reference system, with Transversa Mercato cartographic projection, also called CTM 12, aPDDted for Colombia. The cartographic information has a tabular file containing the information of the geographic entities. The cartographic information has topological analysis and verification of geometric errors, as well as their validation.* h. *Instructions on how to classify land cover according to the Corine Land Cover methodology adapted for Colombia. The adaptation for Colombia defines the land covers in the national territory. Under this adaptation, the methodology defines the land cover pertaining to natural savannahs such as grasslands and shrublands. In item 1.1.1.1.2. Procedures, there are the instructions developed to interpret coverages at the required scale, the characterization of inputs, the information validation matrix.* i. *The PDD indicates that the data used are those generated by IDEAM, specifically the Corine Land Cover 2009 and 2018 land cover maps. The attached instructions indicate that according to the Corine methodology it is not necessary to make environmental corrections to the image (because the terrain is flat), in these instructions are the necessary steps to identify coverages. Additionally, the characterization of the inputs used can be found in the monitoring report, where the type of satellite used is listed by nomenclature.* j. *Changes in land use in natural savannas, Matrix of changes in land cover and land use.*
OVV Evaluation:	*The project developer provides documentary evidence to bring closure to the finding.*

Conclusion:	*Close finding*	*X*	*Maintain finding*		*FAR*	

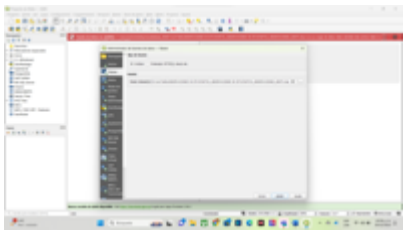
No. Finding:	*33*	*Finding Type:*	*CAR*		*CL*	
Description:	*BIOCARBON Standard BCR0005 ,11 Quantification of GHG emission reductions, 11.2 Activity data; 11.2.1 Estimation of land use changes.*					
Objective Evidence	*Verification* *The project is not aligned with:* a. *Collect the data used to analyze land use changes over land covers over savanna vegetation covers, during the historical reference period between the project boundaries. It is a good practice to do it at least in three points in time, with 3 to 5 years of difference, the information of the satellite images used for the generation of the extra layer that does not correspond to those of IDEAM of Corine Land Cover of 2010 - 2012, 2018 was not found. Without knowing the source images, it is not clear how the images were processed, it is not found within the PDD.*					

b. *Select medium resolution spatial data (from 10 meters to a maximum of 30 meters spatial resolution), from optical and radar sensor systems, such as (but not limited to) Landsat, SPOT, ALOS, AVNIR2, ASTER, Sentinel 1 and 2, among others. It covers the last 5 - 10 years, and display them in tabular format (Table 3), provide information about the data collected, within the PDD, I am not found within the PDD, registered the table requested by the standard, called Characterization of cartographic inputs.*

Tabla de caracterización de insumos

a. *Collect high resolution data from remote sensing (less than 5 x 5 meters per pixel) and/or direct field observations for validation of field maps. Describe the type of data, coordinates and the sampling design used to collect it, within the PDD, the information of the description of the high resolution satellite images was not found. The GDB delivered does not allow to visualize the layers, does not allow to see the structure of the information, there is no evidence of the existence of the validation of the quality of the layer. Quality control.*
b. *The validation processes for the treatment of satellite images and geographic data should be supported by international standards such as ISO, OGC or the American Society for Photogrammetry and Remote Sensing. Within the PDD there is no evidence of treatment and processing of images of any kind, there is no evidence of images, processing or description of how the coverage was generated..*

No se permite el cargue de capas, entregadas en la carpeta GDB,

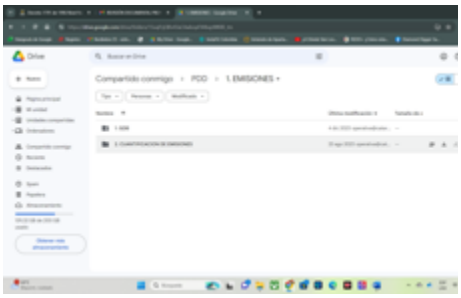
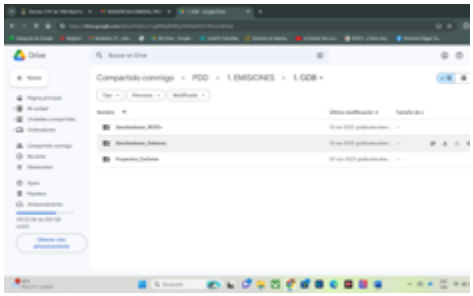
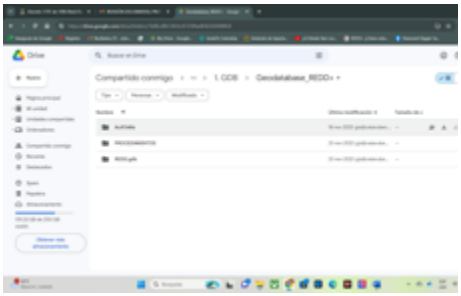
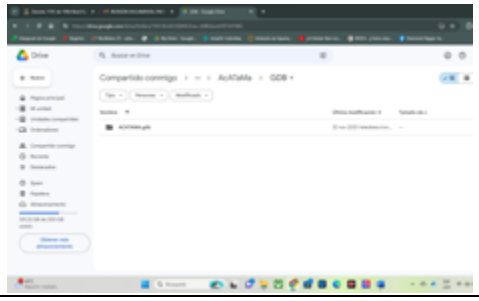
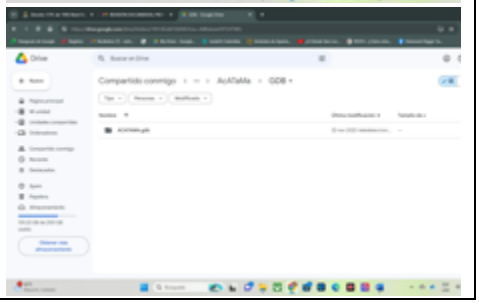


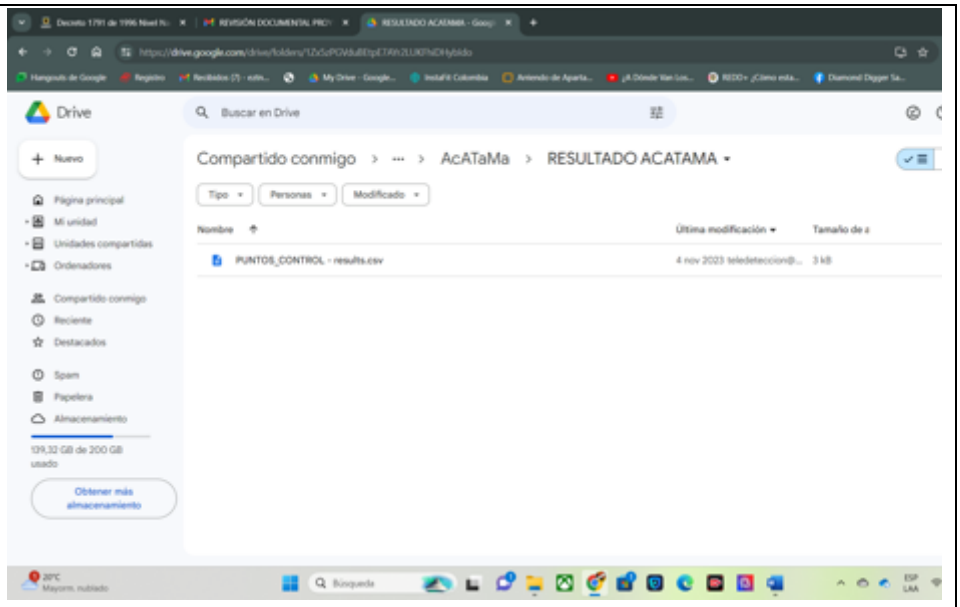
Does not allow to see the GDB wi REDD

	a. *Inside the GDB, it is not possible to visualize the information delivered, it is empty when loading, it is not in compliance with the ISO 19131 standard, technical specifications of the product according to the specifications of the data product.* b. *There is no compliance with ISO 19115-1 Geographic Metadata, there is no relation of the metadata, nor evidence of the presence of these formats filled out for each of the layers that cannot be visualized.* c. *There is no evidence of compliance with the ISO 19157 data quality standard; the data delivered cannot be viewed.* d. *There is no compliance with ISO 19157 Data quality, the quality processing used for this process is not clear, it is not understood how the coverages were defined, which is the classification criteria, an explanation is required not only to deliver standard procedures, which are part of quality protocols, but do not correspond to the requirements of the certification program.* e. *Within the PDD and the annexes delivered in the GDB folder, in the procedures described, it is not found what type of image corresponds, what is its source, and date of acquisition of the remote sensing data, geometric, radiometric and other types of corrections made (combination of bands used, indices used are not evident in the protocols delivered, there is no evidence of the estimation of the geometric correction.* f. *Land cover and land use classes, categories of change, classification approach, ground truthing data were not found neither in the PDD, nor in described in the procedures..*  *Matriz de cambios de la cobertura terrestre*
Action plan:	a. *The numeral indicates that the project owner must perform the land use analysis for the years 2009 and 2018, using as input the available cartographic information such as land cover maps, Corine Land Cover-IDEAM methodology (http://www.siac.gov.co/catalogo-de-mapas). It also recommends doing the analysis for at least 3 to 5 points in time. This analysis is performed in the project areas. Geodatabase/1.1.1.1.1.1.Sabana Feature Dataset Reference region and project areas.* b. *The spatial data were of medium resolution, the Sentinel 2AB sensor was used. Geodatabase/1.1.1.1.1.1.Sabana Feature Dataset project areas and Corine Land Cover Interpretation, in the attribute table the code/nomenclature of the image used is listed.*

	c. *Field data were used, i.e. direct observations on the territory for the year 2022, so it was not necessary to corroborate with higher resolution images. The information is available in section 1.1.1.3.3 Field Formats. The format contains coordinates, coordinate type and coverages. This information is also available in the .Geodatabase/1.1.1.1.1.Sabana Feature Dataset Validation Confusion Matrix, Sampling points field.shp.* d. *The characterization of cartographic inputs was carried out in the monitoring period, that is, in the elaboration of the land cover map for the year 2022, which is related to 14.1.4.1 Uncertainty of activity data. Table 39 Characterization of cartographic inputs. National inputs were used to generate eligibility.* e. *According to the information provided by you, it is not that it is empty. It happens that the method you use in QGIS is not ideal to open a geodatabase. The following information is provided: In the browser panel of QGIS, go to the location of the destination folder, click on the folder, which will display the cartographic information, by this method it, will not be possible to see the feature dataset, ie the folders of the geodatabase, on the contrary you will see all the vector information loaded. The use of ArcMap - ArcGIS Pro is recommended.* f. *Since it was not possible to access the cartographic information of the different geodatabase, it is not possible to show the metadata. Therefore, it is recommended to open gdb as explained in item e..* g. *Perform the opening in accordance with item e. The data present a spatial reference system, with a Transeral Mercato cartographic projection also called CTM 12, aPDDted for Colombia. The cartographic information has a tabular file containing the information of the geographic entities. The cartographic information has topological analysis and verification of geometric errors, as well as their validation.* h. *Instructions on how to classify land cover according to the Corine Land Cover methodology adapted for Colombia. The adaptation for Colombia defines the land cover in the national territory. Under this adaptation, the methodology defines what are the land covers pertaining to natural savannahs such as grasslands and shrublands. In item 1.1.1.1.2. Procedures, there are the instructions developed to interpret coverages at the required scale, the characterization of inputs, the information validation matrix.* i. *The PDD indicates that the data used are those generated by IDEAM, specifically the Corine Land Cover 2009 and 2018 land cover maps. The attached instructions indicate that according to the Corine methodology it is not necessary to make environmental corrections to the image (because the terrain is flat), in these instructions are the necessary steps to identify coverages. In addition, the characterization of the inputs used in the image is made in the following steps.* j. *Changes in land use in natural savannas, Matrix of changes in land cover and its use.*
OVV Evaluation :	*El promotor del proyecto aporta pruebas documentales y cartográficas para respaldar el cierre del hallazgo.*

Conclusion:	*Close finding*	*X*	*Maintain finding*		*FAR*	

No. Finding:	*34*	*Finding Type:*	*CAR*		*CL*	
Description:	*BIOCARBON Standard BCR0002, v3.1 Numeral 13 GHG emission reductions from REDD+ activities.* *BIOCARBON Standard BCR0005, v1.0. Numeral 11 quantification of GHG emission reductions.*					
Objective Evidence	*No information on how forest stratification is determined in the PDD, nor in the monitoring report, nor in the GDB of REDD+ or savannas.*   *PDD document, provided by Catarruben* *Information route*    					

	 *Information route where there is no evidence of how the project was stratified.*
Action plan:	*Section 3.7.2 Stratification of the PDD is adjusted, describing the criteria applied for the stratification of eligible project areas. Thus, based on the methodological documents and the coverages to be managed, two components are established: Natural Savannas and Forests.* *Now, the forest is stratified according to the NREF proposal for the period 2023 - 2027, delimiting Core Edge and Forest Edge areas using the Morphological Spatial Patterns Analysis (MSPA) algorithm. Technical details are described in section 3.7.2. The stratification mapping information is found in the respective REDD Geodatabase, and 1.1.2.1.1.2. Stratification, the inputs (National non-forest forest maps 2005, 2018) and the parameters of the stratification through the MSPA algorithm are available.* *As for savannas, it was not stratified because there are no significant differences between the carbon contents of the Herbazal and Arbustal. Therefore, the cover with the greatest presence in the territory is the grassland and not the shrubland.* *GDB / 1.1.1.1.1.1. Savannas and 1.1.2.REDD, features class project area/eligible areas.*
OVV Evaluation :	*Project developer provides documentary, Morphological Spatial Patterns Analysis (MSPA) algorithm and cartographic evidence to support closure to the finding.*

Conclusion:	*Close finding*	*X*	*Maintain finding*		*FAR*	

No. Finding:	*35*	*Finding Type:*	*CAR*	*X*	*CL*	

Description:	*Article 40 of Resolution 1447 of 2018.* *BIOCARBON Standard BCR0002, v3.1, numerals: 13.3 Emission factors, section 13.3.2 Degradation.* *BIOCARBON Standard BCR0005, v1.0, numeral 11.3 emission factors.*					
Objective Evidence	*The emission factors must be aligned with Article 40 of Resolution 1447 of 2018, where it is established that the emission factors for REDD+ projects, currently the emission factors are not aligned with the current NREF. The value presented by the project holders is higher than that presented by the NREF.*					
Action plan:	*The emission factors for REDD+ activities are adjusted based on the proposed reference level of forest emissions for Colombia for the period 2023-2027, specifically the estimated values for the Orinoco biome, where the project is being developed (Ministry of Environment and Sustainable Development - IDEAM, 2024).*					
OVV Evaluation:	*The project developer provides documentary evidence to close the finding.*					
Conclusion:	*Close finding*	*X*	*Maintain finding*		*FAR*	

No. Finding:	*36*	*Finding Type:*	*CAR*		*CL*	
Description:	*BIOCARBON Standard BCR0002, v3.1. Numeral: 13 reduction of GHG emissions from REDD+ activities.* *BIOCARBON Standard BCR0005, v1.0. Numeral 11 quantification of GHG emission reductions.*					
Objective Evidence	*Deforestation calculations are not found, a comprehensive methodology is found in the PDD, but there is no report of deforestation, and as seen in finding 20, there are no documents.*					
Action plan:	*ROUND 1* *Sections 3.7.3 and 3.7.4 of the PDD are adjusted, including estimated deforestation values. The detailed breakdown of the calculations is described in Annex 1. Emissions / 2. Quantification of emissions / 2.1. Emissions_Orinoco2 CARBONO DEL ORINOCO Orinoco Carbon / Sheet 1. Deforestation_LB.* *ROUND 2* *Calculations for the deforestation component are adjusted, considering the national guidelines for REDD+ projects (Resolution 1447 of 2018, Article 41). For the 2018-2022 period, the baseline projection and emissions monitoring follow the NREF 2020 guidelines. For the period 2023-2027, the baseline projection uses the NREF 2024 (under evaluation), adjusting aspects such as stratification, emission factors and national conditions. These projections will be revised in the next verification if the NREF conditions are updated.*					

	On the other hand, following the guidelines of the BCR V 3.3 standard and the applicability range of the national reference levels, a quantification period of 9.25 years (01/10/2018 - 31/12/2027) is established. Accordingly, in the spreadsheet for the first quantification period, months are adjusted in year 1 (3 months). (Annex 1. Emissions / 1.2. Emissions quantification / Annex 1.2.1. Emissions_Project / Sheet 1. Deforestation_LB).					
OVV Evaluation:	*Keep open until the quantification of emission reductions is adjusted in the final year to the number of months the project operates.*					
Conclusion:	*Close finding*	*X*	*Maintain finding*		*FAR*	

No. Finding:	*37*	*Finding Type:*	*CAR*		*CL*		
Description:		*BIOCARBON Standard BCR0002, v3.1, clause 13.3 Emission factors, section 13.3.2 Degradation.* *BIOCARBON Standard BCR0005, v1.0, numeral 11.3 emission factors.*					
Objective Evidence		*Within the PDD, the project's emission factors, it is not clear how the sampling intensity was determined for the clusters, there is no evidence of how the sampling intensity is determined (see finding 20), for the calculation of the emission factors.*					
Action plan:		*Section 3.7.3.2 Emission factors was adjusted in the project's PDD, specifying the procedure for calculating the sample size for savanna ecosystems. Likewise, the spreadsheet detailing the step-by-step calculation is listed (Annex 1.2.2.2.3.1 calculation of the number of clusters).* *In the case of forests, under the BCR0002 methodology, the information is not included, taking into account that the emission factors are established from reference data.*					
OVV Evaluation:		*The project developer provides documentary evidence to close the finding.*					
Conclusion:		*Close finding*	*X*	*Maintain finding*		*FAR*	

No. Finding:	*38*	*Finding Type:*	*CAR*		*CL*	
Description:		*BIOCARBON Standard BCR0002. V3.1, clauses 14.6.1 review of information processing and 14.6.2 data recording and archiving system.*				
Objective Evidence		***Validation:*** *No evidence was found related to the development of items 14.6.1 and 14.6.2 Quality Control Procedures.* ***Verification:***				

	No evidence was found related to the development of items 14.6.1 and 14.6.2 Quality Control Procedures.					
Action plan:	Evidence is uploaded to the corresponding folders.					
OVV Evaluation:	The project developer provides documentary evidence of data quality control to close the finding.					
Conclusion:	Close finding	X	Maintain finding		FAR	

Annex 3. Documentation review

No	Document Title / Version	Author	Organization	Document provider (if applicable)	Brief Description
/1	PDD V1	Cataruben	Cataruben	Desarrollador de proyecto	Documento de Description del diseño del proyectoProyecto (DdP) versión 2.4.
/2	PDD V2Reporte de Monitoreo (RM) versión 2.4.	Fundación Cataruben	Fundación Cataruben, Junio de 2024	Desarrollador de proyectoProject Holder	Documento del diseño del proyecto
/3	PDD V2.1Geodatabase del Proyecto para REDD y sabanas	Fundación Cataruben	Fundación Cataruben, Junio de 2024	Desarrollador de proyectoProject Holder	Documento del diseño del proyecto
/4	PDD V2.2Anexo 1.2.1. Emisiones_Proyecto	Fundación Cataruben	Fundación Cataruben, Junio de 2024	Desarrollador de proyectoProject Holder	Documento del diseño del proyecto
/5	PDD V2.3Factores de emisión Procedimientos y bibliografía Soportes de campo	Fundación Cataruben	Fundación Cataruben, Junio de 2024	Desarrollador de proyectoProject Holder	Documento del diseño del proyecto

	Análisis de datos Resultados de laboratorio				
/6	PDD V2.4Cartas de intención	Fundación Cataruben	Fundación Cataruben, Junio de 2024	Desarrollador de proyectoProject Holder	Documento del diseño del proyecto
/7	Predios vinculadosPDD V2.6	Fundación Cataruben	Fundación Cataruben, Junio de 2024	Desarrollador de proyectoProject Holder	Documento del diseño del proyecto
/8	Reporte de Monitoreo V1Matriz de Evaluación Ambiental y Socioeconomico/Medidas de Salvaguarda ORINOCO2	Fundación Cataruben	Fundación Cataruben, Abril de 2024	Desarrollador de proyectoProject Holder	Reporte de monitoreo del proyecto 2018-2023
/9	Reporte de Monitoreo V2Matriz de evaluación de aspectos socioeconómicos ORINOCO2	Fundación Cataruben	Fundación Cataruben, Febrero de 2024	Desarrollador de proyectoProject Holder	Reporte de monitoreo del proyecto 2018-2024
/10	Reporte de Monitoreo V2.1Consultas a partes interesadas	Fundación Cataruben	Fundación Cataruben, Junio de 2024	Desarrollador de proyectoProject Holder	Reporte de monitoreo del proyecto 2018-2025
/11	Reporte de Monitoreo V2.2Consulta pública	Fundación Cataruben	Fundación Cataruben, Noviembre de 2023	Desarrollador de proyectoProject Holder	Reporte de monitoreo del proyecto 2018-2026
/12	ReporteSolicitud de Monitoreo V2.3exclusión	Fundación Cataruben	Fundación Cataruben, Abril de 2024	Desarrollador de proyectoProject Holder	Reporte de monitoreo del proyecto 2018-2027

/13	*Modelo Financiero ORINOCO2-VFReporte de Monitoreo V2.4*	*Fundación Cataruben*	*Fundación Cataruben, Junio de 2024*	*Desarrollador de proyectoProject Holder*	*Reporte de monitoreo del proyecto 2018-2028*
/14	*Reporte de Monitoreo V2.6*	*Cataruben*	*Cataruben*	*Desarrollador de proyecto*	*ReportePlan de monitoreo delactividades de proyecto 2018-2029*
/15	*SabanaPlan de monitoreo salvaguardas*	*Fundación Cataruben*	*Fundación Cataruben, Abril de 2024*	*Desarrollador de proyectoProject Holder*	*La carpeta que reúne los resultados finales del análisis de áreas de proyecto y sabanas elegibles, así como del monitoreo continuo. Incluye una geodatabase (GDB), procedimientos documentados y una matriz de confusión, todos destinados a evaluar la calidad de las coberturas y los cambios en el uso del suelo, proporcionando una base completa para el análisis y seguimiento del proyecto.*
/16	*GDBHerramienta-ods-2023*	*Fundación Cataruben*	*Fundación Cataruben, Junio de 2024*	*Desarrollador de proyectoProject Holder*	*La geodatabase de sabanas contiene los archivos clave para el proyecto Orinoco, incluyendo la línea base, la región de referencia, y las áreas de proyecto. Dentro de esta geodatabase se encuentran las áreas elegibles y de monitoreo de sabana, organizadas de manera estructurada para facilitar el análisis y seguimiento de los cambios en el uso del suelo y la implementación del proyecto.*
/17	*Acceso restringidoAnalisis y gestion de riesgos*	*Fundación Cataruben*	*Fundación Cataruben, Mayo de 2024*	*Desarrollador de proyectoProject Holder*	*Feature Dataset: Representa áreas de protección nacional con restricciones de uso para preservar derechos comunitarios y proteger ecosistemas estratégicos mediante normativas que limitan actividades humanas.*

/18	Categorias RUNAP	ANT	ANT	N/A	Feature Class: RUNAP almacena información de áreas protegidas ingresada por autoridades ambientales, incluyendo su categoría, ubicación, extensión y objetivos de conservación, respaldados en actos administrativos. Radicado RENARE en Ministerio de Ambiente
/19	Consejos comunitarios comunidades Negras	ANT	ANT	N/A	Feature Class: Detalla las actividades para otorgar tierras baldías, adquiridas o donadas, a comunidades negras para facilitar su asentamiento y desarrollo étnico, respetando sus prácticas tradicionales de producción.Control y Aseguramiento de la Calidad
/20	Resguardos indígenas legalizadosAdditional documents	Resguardos indígenas legalizados Additional documents	ANT	ANT	N/A
/21	Solicitudes Expectativas AncestralesPROPOSED REFERENCE LEVEL OF FOREST EMISSIONS FROM DEFORESTATION IN COLOMBIA FOR PAYMENT FOR REDD+ RESULTS UNDER THE CMNUCC2018-2022	ANTMINISTRY OF ENVIRONMENT AND SUSTAINABLE DEVELOPMENT - ENVIRONMENT INSTITUTE OF HYDROLOGY, METEOROLOGY AND ENVIRONMENTAL	ANTMADS - IDEAM	N/ANA	Feature Class: solicitudes de expectativas ancestrales de comunidades indígenas reflejan sus demandas de reconocimiento y protección de sus territorios, prácticas culturales, gobierno autónomo y patrimonio espiritual, además de requerir consulta en decisiones que afecten sus tierras y recursos

		STUDIES - IDEAM			
/22	Solicitudes Consejos ComunitariosProposal for Colombia's forest emissions reference level for the period 2023-2027 as a mechanism to qualify for payment for REDD+ results under the UNFCCC.	ANTMINISTRY OF ENVIRONMENT AND SUSTAINABLE DEVELOPMENT - ENVIRONMENT INSTITUTE OF HYDROLOGY, METEOROLOGY AND ENVIRONMENTAL STUDIES - IDEAM	ANTMADS - IDEAM	N/ANA	Feature Class: creado por la Agencia Nacional de Tierras, es un archivo geoespacial que representa digitalmente las peticiones y delimitaciones de los consejos comunitarios en un formato estándar.
/23	Solicitudes Resgurados IndígenasSoil carbon storage potential of acid soils of Colombia's Eastern High Plains2022	ANTGlenn Hyman, Aracely Castro, Mayesse Da Silva,Miguel Arango, Jaime Bernal, Otoniel Pérez andIdupulapati Madhusudana Rao	ANTInternational Center for Tropical Agriculture (CIAT) - Colombian Corporation forAgricultural Research (AGROSAVIA)	N/ANA	Feature Class: creado por la Agencia Nacional de Tierras, es un archivo geoespacial que representa digitalmente las peticiones y delimitaciones territoriales de comunidades indígenas.
/24	Solicitudes Resgurados Indígenas colonialesNATURAL CARBON SINKS: A CASE STUDY IN	ANTDaniela Orozco-Hueje, Diana Milena Barreto-Rojas, Juan	ANTJournal of Agricultural and Environmental Research	N/ANA	Feature Class: clarificar la vigencia legal de los títulos de origen colonial o republicano, según el Decreto 1824 de 2020, necesarias para el estudio y

	MORICHALES OF THE HIGHLANDS COLOMBIANA2022	Manuel Trujillo-González, Amanda Silva-Parra, Marlon Serrano-Gómez , Edgar Fernando Castillo-Monroy, Marco Aurelio Torres-Mora			trámite de las solicitudes de las comunidades indígenas.
/25	Zonas de reserva campesina	ANT	CatarubenNA	Desarrollador de proyectoNA	Feature Class: detallan las acciones necesarias para verificar la vigencia legal de los títulos de origen colonial o republicano, según el Decreto 1824 de 2020, para el correcto estudio y trámite de las solicitudes de comunidades indígenas.Departmental Economic and Social Development Plan "Let's Make Meta Great" for the period 2020 – 2023
/26	Areas de ProyectoComprehensive Regional Climate Change Plan for the Orinoquía 2018	Cataruben Corporation for the Sustainable Development of the La Macarena Special Management Area (Cormacarena), Regional Autonomous Corporation of the Orinoquía (Corporinoquia),	CatarubenNA	Desarrollador de proyectoNA	Feature Dataset: Representa los predios asociados a un proyecto definido por la metodología de Biocarbon Standard, que incluye áreas elegibles dentro de la sabana para prácticas de manejo sostenible y conservación del carbono

		ECOPETROL and the International Center for Tropical Agriculture (CIAT)			
/27	*Areas Proyecto Sabana Elegible 2012-2018INSTITUTIONAL ACTION PLAN 2020 - 2023 WE ARE LIFE, WE ARE META CORMACARENA*	*Cataruben MINAMBIENTE*	*CatarubenNA*	*Desarrollador de proyectoNA*	*Feature Class: Las áreas elegibles para el proyecto ORINOCO2 son aquellas que mantienen su condición de ecosistema de sabana, con funciones naturales y vegetación nativa, y que cumplen con este criterio al inicio del proyecto y al menos cinco años antes de su inicio.*
/28	*Area Proyecto Sabana Monitoreo 2018-2022Cartilla Interpretación Nacional de Salvaguardas REDD+*	*Cataruben MINAMBIENTE*	*CatarubenNA*	*Desarrollador de proyectoNA*	*Feature Class: Las áreas de monitoreo de sabana se establecen mediante un seguimiento predio a predio, donde se identifican las zonas conservadas y posibles intervenciones internas ocurridas entre 2018 y 2022.*
/29	*Gestores del Ecosistemas SabanaBioCarbon Standard Version 3.4 June 28, 2024*	*Cataruben BioCarbon Standard*	*CatarubenBioCarbon Standard*	*Desarrollador de proyectoNA*	*Feature Class: áreas del proyecto de Sabana de ORINOCO2 identificando mediante la verificación en el catastro predial y/o plano topográfico por cada predio con sus repectivo propietario vinculado.*
/30	*Areas de FugasVALIDATION AND VERIFICATION MANUAL GREENHOUSE GAS PROJECTS Version 2.4 March 23, 2024*	*Cataruben BioCarbon Standard*	*CatarubenBioCarbon Standard*	*Desarrollador de proyectoNA*	*Feature Dataset: representa las zonas ique pueden generar un desplazamiento de la actividadad de deforestacion y degaradacion, que se encuentra fuera del control del titular del proyecto*

/31	Area Fugas Sabanas_2012BCR0002 GHG Emissions Reductions quantification. REDD+ Projects version 4.0, May 27, 2024.	Cataruben BioCarbon Standard	CatarubenBioCarbon Standard	Desarrollador de proyectoNA	Feature Class: El área de fugas de 2012 para el proyecto ORINOCO2 abarca zonas de sabana, herbazales y arbustales, identificadas con Corine Land Cover como coberturas vegetales naturales vulnerables a cambios de uso del suelo por actividades indirectas del proyecto.
/32	Area Fugas Sabanas_2012-2018	Cataruben	Cataruben	Desarrollador de proyecto	Feature Class: El área de fugas del proyecto ORINOCO2, analizada en el periodo 2012-2018, incluye zonas de sabana, herbazales y arbustales identificadas mediante Corine Land Cover. Estas áreas representan coberturas vegetales naturales que son vulnerables a cambios en el uso del suelo debido a actividades indirectas del proyecto.BCR0005 GHG Emission Reductions quantification. Activities that Prevent Land Use Change in Natural Savannas version 1.0, October 21, 2022
/33	Area Fugas Sabanas_2018-2022	Cataruben	Cataruben	Desarrollador de proyecto	Feature Class: l área de fugas del proyecto ORINOCO2, analizada en el periodo 2018-2022, incluye zonas de sabana, herbazales y arbustales identificadas mediante Corine Land Cover. Estas áreas representan coberturas vegetales naturales que son vulnerables a cambios en el uso del suelo debido a actividades indirectas del proyecto.
/34	Cinturo Fugas Sabana	Cataruben	Cataruben	Desarrollador de proyecto	Feature Class: áreas de fugas del proyecto ORINOCO2, en la que se podría generar un desplazamiento de las actividades que generan los cambios de uso del suelo y que se

					encuentran fuera de control del titular del proyecto.
/35	*Bioma Ecorregion*	*IDEAM*	*IDEAM*	*N/A*	*Feature Dataset: bioma y ecorregión de sabanas en Sudamérica abarca ecosistemas naturales de herbazales y arbustales, destacando su distribución y valor ecológico. Estos datos son clave para entender la biodiversidad y los servicios ambientales, como la regulación hídrica y el almacenamiento de carbono, propios de estas sabanas.*
/36	*Bioma Orinoquia*	*IDEAM*	*IDEAM*	*N/A*	*Feature Class: El bioma de la Orinoquía, ubicado en el centro y oriente de Colombia, es una vasta llanura que incluye sabanas, bosques de galería, ríos y humedales, extendiéndose hacia Venezuela. Alberga una biodiversidad adaptada a estaciones de lluvia y sequía, con especies emblemáticas como jaguares y capibaras. Los ríos Meta y Orinoco son clave para la conectividad y diversidad ecológica, destacando la importancia de su conservación para el equilibrio de estos ecosistemas únicos.*
/37	*Ecorregion Sabanas*	*IDEAM*	*IDEAM*	*N/A*	*Feature Class: ecosistema que se distingue por vastas llanuras predominantemente cubiertas de pastizales y hierbas, donde los árboles aparecen de manera dispersa o en pequeños bosquetes. Este entorno abierto favorece una rica biodiversidad, albergando una variedad de especies adaptadas a las condiciones de sequía y variabilidad estacional.*

/38	World Grassland Types	IDEAM	IDEAM	N/A	Feature Class: Los tipos de pastizales del mundo, como las sabanas sudamericanas, presentan estaciones secas y húmedas que dan lugar a una biodiversidad única, con herbívoros como capibaras y guanacos, y depredadores como jaguares y pumas. Estos ecosistemas son vitales para la economía local, ya que se utilizan en agricultura y ganadería sostenible, por lo que su conservación es esencial para preservar la biodiversidad y el equilibrio ambiental de la región.
/39	Compensaciones	ECOPETROL	ECOPETROL	N/A	Feature Dataset: Las compensaciones de Ecopetrol en Meta y Vichada se enfocan en mitigar el impacto ambiental a través de la restauración de ecosistemas y el apoyo a proyectos de desarrollo sostenible, promoviendo así la conservación de la biodiversidad y el equilibrio ambiental en la región.
/40	Compensaciones Area Proyecto	ECOPETROL	ECOPETROL	N/A	Feature Class: vinculación de predios para conservación en Meta y Vichada, creado por Ecopetrol, contiene información sobre los predios incluidos en sus programas de conservación. Este archivo geoespacial permite visualizar y analizar la distribución de estos predios, facilitando el monitoreo y evaluación de las iniciativas de conservación en la región.
/41	cormacarena predios PSA	ECOPETROL	ECOPETROL	N/A	Feature Class: El shapefile de vinculación de predios por pagos de servicios ambientales en Cormacarena es un archivo geoespacial que detalla la ubicación y

					características de los predios involucrados en programas de pagos por servicios ambientales. Utilizando el formato shapefile, permite visualizar y gestionar la información sobre su participación en iniciativas ambientales, facilitando la conservación de ecosistemas en la región.
/42	Cormacarena predios zonas intervenidas PSA	ECOPETROL	ECOPETROL	N/A	Feature Class: zonas intervenidas por pagos de servicios ambientales en Cormacarena detalla las áreas afectadas por la participación de predios en estos programas. Este archivo geoespacial, en formato shapefile, captura la geometría de las zonas y los atributos de las acciones realizadas, ofreciendo una representación visual de las transformaciones ambientales en la jurisdicción de Cormacarena.
/43	Ecopetrol_GDB_PM_APIAY_Compensacion	ECOPETROL	ECOPETROL	N/A	Feature Class: Zonas de compensación por Ecopetrol en los campos de producción de Apiay es un archivo geoespacial que contiene información cartográfica sobre las áreas designadas para compensación ambiental relacionadas con la producción de hidrocarburos. Este archivo utiliza el formato shapefile para almacenar datos sobre la ubicación y límites de estas zonas, facilitando la gestión ambiental por parte de Ecopetrol en la región.
/44	Ecopetrol_APE_CP09_InversionPorCiento_PG	ECOPETROL	ECOPETROL	N/A	Feature Class: zonas de compensación ambiental para la restauración y conservación de cobertura vegetal detalla áreas designadas en el contexto de la exploración petrolera. Este archivo geoespacial almacena

					información sobre ubicación, límites y atributos de estas zonas, facilitando la gestión, visualización y monitoreo de las obligaciones de compensación ambiental, así como la toma de decisiones informadas.
/45	*Ecopetrol_APE_CP09_Inversion1PorCiento_PG_OtrasCompensaciones*	*ECOPETROL*	*ECOPETROL*	*N/A*	*Feature Class: zonas de compensación ambiental para la restauración y conservación de cobertura vegetal es un archivo geoespacial que detalla las áreas designadas para compensación en el contexto de la exploración petrolera. Este archivo, que utiliza el formato shapefile, incluye datos sobre la ubicación, límites y atributos de las zonas, facilitando la gestión y visualización de las obligaciones de compensación ambiental derivadas de esta actividad y apoyando la toma de decisiones informadas.*
/46	*Ecopetrol_CP50_ODS02_Inversion1PorCiento_PG*	*ECOPETROL*	*ECOPETROL*	*N/A*	*Feature Class: compensación ambiental para la restauración y conservación de cobertura vegetal, contiene datos cartográficos sobre áreas designadas en el contexto de la exploración petrolera. Utilizando el formato shapefile, incluye información geográfica detallada, como límites y atributos de las zonas, y se orienta a cumplir con el ODS 2, que promueve la seguridad alimentaria y la agricultura sostenible.*
/47	*Ecopetrol_MP_1P_Cubarral_ODS02_CompensacionBiodiversidad*	*ECOPETROL*	*ECOPETROL*	*N/A*	*Feature Class: áreas de compensación de biodiversidad para la restauración y conservación de ecosistemas de cobertura vegetal, financiado con el 1% de la inversión en exploración petrolera. Usando el formato shapefile, contiene*

					datos geográficos sobre límites y atributos relacionados con la protección de la biodiversidad, alineándose con el ODS 2 sobre seguridad alimentaria y agricultura sostenible.
/48	*Ecopetrol_MP_1P_ODS11_CompensacionBiodiversidad*	*ECOPETROL*	*ECOPETROL*	*N/A*	*Feature Class: áreas de compensación de biodiversidad para la restauración y conservación de ecosistemas de cobertura vegetal, financiado con el 1% de la inversión en exploración petrolera. Estructurado en formato shapefile, contiene datos sobre límites y atributos relacionados con las acciones de restauración, alineándose con el ODS 11 sobre ciudades y comunidades sostenibles.*
/49	*Ecopetrol_PM_Cubarral_Compensaciones*	*ECOPETROL*	*ECOPETROL*	*N/A*	*Feature Class: áreas designadas para la compensación ambiental en la restauración y conservación vinculadas a la exploración petrolera. Estructurado en formato shapefile, incluye datos sobre límites y atributos de las iniciativas destinadas a mitigar los impactos ambientales en la región de Cubarral.*
/50	*Ecopetrol_VEX_1PC_Inversion1PorCientoPG*	*ECOPETROL*	*ECOPETROL*	*N/A*	*Feature Class: zonas designadas para la compensación ambiental en la restauración y conservación, financiada con el 1% de la inversión en exploración petrolera. Estructurado en formato shapefile, incluye datos sobre límites y atributos de las medidas para mitigar los impactos ambientales en los ecosistemas de las áreas de exploración.*

/51	Ecopetrol_VEX_CA_Inversion1PorCiento_PG	ECOPETROL	ECOPETROL	N/A	Feature Class: zonas para la compensación ambiental, financiada con el 1% de la inversión en exploración petrolera. Estructurado en formato shapefile, incluye datos sobre límites y atributos de las acciones para mitigar los impactos ambientales y conservar los ecosistemas en las áreas de exploración.
/52	Ecopetrol_VEX_CA_Inversion1PorCiento_PG_otrasCompensaciones	ECOPETROL	ECOPETROL	N/A	Feature Class: áreas designadas para compensaciones ambientales, financiadas con el 1% de la inversión en exploración petrolera. Estructurado en formato shapefile, contiene datos sobre límites y acciones para mitigar los impactos ambientales, centrando sus esfuerzos en la restauración y conservación de ecosistemas.
/53	Entorno Biofísico	Cataruben	Cataruben	Desarrollador de proyecto	Feature Dataset: conjunto de áreas espaciales que comprenden elementos naturales y físicos, como la geografía, la vegetación, el clima y los ecosistemas, utilizados para el análisis del área de referencia del proyecto Orinoco2. Este enfoque permite evaluar las interacciones entre los componentes ambientales y la influencia de las actividades humanas, facilitando la toma de decisiones informadas para la conservación y sostenibilidad del entorno.
/54	Capacidad Uso Clase	IGAC	IGAC	N/A	Feature Class: clasificación agrológica del IGAC, determina las áreas destinadas a la protección ambiental, el uso agrícola y el desarrollo humano. Esta clasificación es fundamental para orientar el

					manejo sostenible del territorio y garantizar un equilibrio entre la producción y la conservación de los recursos naturales.
/55	Clasificación climática	IDEAM	IDEAM	N/A	Feature Class: Este mapa combina las clasificaciones climáticas de Lang, que considera la variación de temperatura según la altitud y la relación entre precipitación y temperatura (P/T). Así, se identifican tipos de climas basados en la elevación, temperatura media anual y precipitación total, desarrollado por el IDEAM.
/56	Conflicto de uso	IGAC	IGAC	N/A	Feature Class: el conflicto de uso del suelo es un fenómeno complejo que surge de la competencia por recursos naturales y derechos territoriales, evidenciado por tensiones relacionadas con la expansión agrícola, la minería y la urbanización, según el Instituto Geográfico Agustín Codazzi (IGAC).
/57	Drenaje Doble	IGAC	IGAC	N/A	Feature Class: ed hidrográfica de Colombia que incluye ríos principales que fluyen hacia dos océanos: el Atlántico y el Pacífico. Este sistema de drenaje se caracteriza por la existencia de cuencas que drenan al océano Atlántico a través de ríos como el Magdalena y el Cauca, y al océano Pacífico
/58	Drenaje Sencillo	IGAC	IGAC	N/A	Feature Class: se caracteriza por una red de ríos secundarios o arteriales que recogen y canalizan el agua hacia los ríos principales de Colombia. Estos ríos secundarios son fundamentales para el sistema hidrográfico, ya que

					contribuyen a la recolección de aguas de escorrentía, nutrientes y sedimentos, alimentando ríos como el Magdalena y el Cauca. Este tipo de drenaje es esencial para el mantenimiento de los ecosistemas acuáticos y para la regulación del ciclo hidrológico en el país.
/59	Estaciones Hidrometeorológicas	IDEAM	IDEAM	N/A	Feature Class: El IDEAM ofrece un visor de estaciones hidrometeorológicas que incluye detalles como nombre, código, tipo, clase y ubicación de cada estación. Esta herramienta proporciona información confiable para la toma de decisiones y resalta la labor de los profesionales en los aeropuertos que aseguran la seguridad de la navegación aérea.
/60	Límites Administrativo	IGAC	IGAC	N/A	Feature Class: límites administrativos de los departamentos de Meta y Vichada, elaborado por el IGAC, ofrece una delimitación cartográfica precisa de sus divisiones político-administrativas. Este archivo geoespacial es fundamental para la gestión territorial y la planificación de proyectos en estas regiones.
/61	Precipitación Media Total	IDEAM	IDEAM	N/A	Feature Class: La distribución espacial de la precipitación media total anual en Colombia (1981-2010) se expresa en milímetros (mm) y se basa en datos de las estaciones meteorológicas del IDEAM. Este análisis clasifica la precipitación en 12 rangos significativos, desde 0 hasta más de 11,000 mm, abarcando

					tanto el territorio continental como el insular.
/62	Relieve	IDEAM	IDEAM	N/A	Feature Class: Cartografía vectorial topográfica de Colombia a escala 1:500,000, que abarca todo el país. Incluye información sobre pendientes y áreas superficiales, con modelados de zonas montañosas y llanuras, referida al sistema de coordenadas MAGNA-SIRGAS.
/63	Temperatura	IDEAM	IDEAM	N/A	Feature Class: El mapa de temperatura realizado por el IDEAM es una representación cartográfica que muestra la variación de la temperatura a lo largo del territorio colombiano. Este mapa se basa en datos recopilados de estaciones meteorológicas y modelos climáticos, permitiendo identificar patrones térmicos y tendencias a lo largo del tiempo. Su propósito es proporcionar información clave para la planificación y gestión ambiental, así como para el estudio de fenómenos climáticos en el país.
/64	Tipos Ecosistemas	IDEAM	IDEAM	N/A	Feature Class: El mapa de ecosistemas incluye dos enfoques: uno para los ecosistemas continentales y costeros, que integra información de geopedología, clima y coberturas de la tierra mediante análisis espacial; y otro para los ecosistemas marinos, que utiliza escalas detalladas y paisajes del fondo marino derivados de análisis geomorfológicos y oceanográficos.

/65	Uso del suelo Coberturas	IDEAM	IDEAM	N/A	Feature Class: El archivo geoespacial de usos del suelo, respaldado por el IGAC, presenta una clasificación y distribución detallada de diferentes coberturas de la tierra, como áreas urbanas, agrícolas y forestales. Estructurado en formato shapefile, permite un análisis espacial preciso de la estructura del suelo en la región, utilizando datos oficiales y actualizados del Instituto.
/66	Vias secundarias	IGAC	IGAC	N/A	Feature Class:Delimitación de vías secundarias en Meta y Vichada, respaldado por el IGAC, ofrece datos cartográficos detallados sobre la ubicación y características de estas carreteras. Estructurado en formato shapefile, proporciona una representación visual precisa de la red vial secundaria, incluyendo atributos como longitud y dirección, utilizando información oficial y confiable.
/67	Vias Nacionales Primarias	IGAC	IGAC	N/A	Feature Class: vías nacionales primarias en Meta y Vichada, respaldado por el IGAC, contiene datos cartográficos detallados sobre la ubicación y características de estas carreteras. Estructurado en formato shapefile, proporciona una representación visual precisa de la red vial principal, incluyendo información sobre extensión, dirección y otros atributos relevantes.
/68	Vocación de Uso	IGAC	IGAC	N/A	Feature Class: El mapa de Vocación de Uso de las Tierras, elaborado por la Subdirección de Agrología del IGAC, clasifica el territorio nacional en cinco

					categorías: agrícola, ganadera, agroforestal, forestal y de conservación/recuperación, basándose en matrices de decisión que consideran indicadores como clima, pendiente y características del suelo (erosión, humedad, fertilidad, entre otros). Publicado en 2016 a escala 1:100.000, establece el uso principal recomendado para cada clase.
/69	*Impulsores de Cambio*	*Cataruben*	*Cataruben*	*Desarrollador de proyecto*	*Feature Dataset: impulsores de cambio en el proyecto Orinoco, basado en interpretaciones de Corine Land Cover del IDEAM, describe los cambios en el uso del suelo en distintas temporalidades, identificando los factores que impulsan estas transformaciones en la región.*
/70	*Cambio coberturas 2012-2018*	*Cataruben*	*Cataruben*	*Desarrollador de proyecto*	*Feature Class: cambio de uso del suelo en la región Orinoco2 (Meta y Vichada) para 2012 y 2018, respaldado por el IDEAM y en formato shapefile, detalla las modificaciones en las coberturas de la tierra, como urbanización, agricultura y bosques, permitiendo analizar la dinámica de transformación del paisaje en esa área.*
/71	*Uso coberturas 2012*	*Cataruben*	*Cataruben*	*Desarrollador de proyecto*	*Feature Class: uso del suelo para el área de proyecto Orinoco2 en 2012 (Meta y Vichada), respaldado por el IDEAM y en formato shapefile, presenta una representación detallada de las coberturas de tierra, mostrando la distribución de áreas urbanas, agrícolas, forestales y otros usos específicos.*

/72	Uso coberturas 2018	Cataruben	Cataruben	Desarrollador de proyecto	Feature Class: uso del suelo para el proyecto ORINOCO2 en 2018, ubicado en Meta y Vichada, es un archivo geoespacial respaldado por el IDEAM, que clasifica las coberturas de la tierra, incluyendo áreas urbanas, agrícolas y forestales, proporcionando una representación precisa de su distribución en la región.
/73	Interpretación Corine Land Cover	Cataruben	Cataruben	Desarrollador de proyecto	Feature Dataset:La interpretación de Corine Land Cover según la metodología del IDEAM utiliza el enfoque PIAO para identificar y clasificar las coberturas del suelo en las áreas del proyecto Orinoco. Este proceso permite una caracterización precisa de las diferentes coberturas de la tierra, facilitando el análisis y monitoreo de los usos del suelo en la región.
/74	Corine 2012	Cataruben	IDEAM	Desarrollador de proyecto	Feature Class: coberturas de la tierra de 2012 para Meta y Vichada, elaborado por el IDEAM, clasifica detalladamente el uso del suelo (urbano, bosques, cultivos, cuerpos de agua, etc.) según una adaptación nacional de la metodología Corine Land Cover, permitiendo un análisis preciso del territorio en contexto colombiano.
/75	Corine 2018	Cataruben	IDEAM	Desarrollador de proyecto	Feature Class: coberturas de la tierra para 2018 en Meta y Vichada, desarrollado por el IDEAM, clasifica el uso del suelo (urbano, bosques, cultivos, cuerpos de agua, etc.) según una adaptación nacional de la metodología Corine Land Cover, proporcionando una representación precisa y

					contextualizada para el análisis ambiental y territorial.
/76	*Corine 2022*	*Cataruben*	*Cataruben*	*Desarrollador de proyecto*	*Feature Class: coberturas de la tierra para 2022 en Colombia, elaborado por la Fundación Cataruben mediante interpretación visual de imágenes Sentinel-2, clasifica detalladamente el suelo (urbano, vegetación, cuerpos de agua, etc.), ofreciendo una representación precisa de la distribución espacial en el país.*
/77	*Parcela*	*Cataruben*	*Cataruben*	*Desarrollador de proyecto*	*Feature Dataset: parcelas en los predios vinculados al proyecto Orinoco es fundamental para confirmar las coberturas de sabana, permitiendo un análisis detallado del suelo y la vegetación. Este proceso verifica la información sobre la cobertura del suelo y facilita decisiones informadas en la gestión ambiental y el uso sostenible de los recursos, contribuyendo a la planificación y monitoreo efectivo del proyecto en la región.*
/78	*Parcelas Sabana*	*Cataruben*	*Cataruben*	*Desarrollador de proyecto*	*Feature Class: parcelas de identificación de sabana en areas proyecto localizados en Meta y Vichada contiene información detallada sobre áreas estudiadas mediante análisis de suelo y muestreo en campo, permitiendo clasificar terrenos según sus características edáficas y de cobertura. Este archivo proporciona una representación cartográfica precisa para facilitar el análisis y la gestión de recursos naturales en la región.*

/79	*Proyectos Standard Doble contabilidad*	*Cataruben*	*Cataruben*	*Desarrollador de proyecto*	*Feature Dataset: Los proyectos estándar para el análisis de doble contabilidad, como BCR Estandar, Cercarbono, COLCX y Verra, establecen metodologías para garantizar que las reducciones de emisiones de carbono se contabilicen de manera única y no se reclamen en múltiples iniciativas. En el proyecto Orinoco, es crucial que las áreas no presenten doble contabilidad, ya que esto asegura la validez de los créditos de carbono generados, promueve la confianza entre las partes interesadas y refuerza los objetivos de conservación y sostenibilidad, contribuyendo efectivamente a la mitigación del cambio climático.*
/80	*Areas Proyecto BCR estandar*	*BCR STANDARD*	*BCR STANDARD*	*N/A*	*Feature Class: áreas de proyecto de Biocarbon Standard, en formato shapefile, proporciona información precisa sobre las ubicaciones de iniciativas de captura y almacenamiento de carbono a nivel nacional. Su uso es fundamental para evitar la doble contabilidad de proyectos de carbono, asegurando la transparencia y autenticidad de los esfuerzos de mitigación climática gestionados por Biocarbon Registry, y previniendo la duplicación de créditos de carbono.*
/81	*Areas Proyecto CERCARBONO estandar*	*CERCARBONO*	*CERCARBONO*	*N/A*	*Feature Class: áreas de proyecto de Cercarbono, en formato shapefile, detalla las ubicaciones de iniciativas para mitigar emisiones de carbono a nivel nacional. Su implementación busca evitar la doble contabilidad, garantizando que los beneficios climáticos generados sean auténticos y no se dupliquen en*

					otros registros de compensación.
/82	Areas Proyecto COLCX Estandar	COLCX	COLCX	N/A	Feature Class: áreas de proyecto de COLCX, en formato shapefile, detalla las ubicaciones de iniciativas de compensación de carbono a nivel nacional. Su uso busca evitar la doble contabilidad, asegurando que los beneficios climáticos generados sean auténticos y no se dupliquen en registros de otras entidades.
/83	Areas Proyecto VERRA estandar	VERRA	VERRA	N/A	Feature Class: áreas de proyecto del Estándar de Carbono Verificado - VERRA, en formato shapefile, detalla las ubicaciones de iniciativas de mitigación de carbono a nivel internacional. Su principal objetivo es evitar la doble contabilidad, asegurando que los créditos generados sean auténticos y no se registren simultáneamente en otras entidades de compensación.
/84	RReferencia	Cataruben	Cataruben	Desarrollador de proyecto	Feature Dataset: La delimitación de la región de referencia del componente de sabana en el proyecto Orinoco es esencial para establecer la línea base, identificando áreas que reflejan las características ecológicas de la sabana. Esto permite evaluar los cambios en la cobertura del suelo y las dinámicas de carbono, asegurando que las intervenciones sean efectivas y alineadas con los objetivos de conservación del proyecto.
/85	LB sabanas 2012	Cataruben	Cataruben	Desarrollador de proyecto	Feature Class: La región de referencia del proyecto Orinoco2, conforme a la metodología BCR0005 de

					Biocarbon Registry, es una herramienta geoespacial clave para planificar estrategias de mitigación de carbono en las sabanas de Meta y Vichada. Este shapefile permite identificar con precisión las áreas de sabana, asegurando una gestión adaptada a este ecosistema y garantizando la integridad de los datos para la compensación climática bajo estándares internacionales.
/86	LB sabanas 2012 - 2018	Cataruben	Cataruben	Desarrollador de proyecto	Feature Class: La región de referencia de sabanas para 2018, según la metodología BCR0005 de Biocarbon Registry, es un archivo geoespacial en formato shapefile que detalla las áreas clasificadas como sabanas en Meta y Vichada. Este archivo proporciona información geográfica específica, cumpliendo con los estándares de medición y monitoreo de carbono para proyectos de compensación climática, centrado en las características de las sabanas de la región.
/87	RReferencia Sabana	Cataruben	Cataruben	Desarrollador de proyecto	Feature Class: Los límites geográficos de la región de referencia del proyecto ORINOCO2, enfocados en las sabanas, se establecieron para evaluar datos históricos sobre cambios en el uso del suelo y definir una línea base. Esta región se diseñó a partir de los departamentos de Meta y Vichada, excluyendo resguardos indígenas, parques naturales y distritos de manejo especial.
/88	Tenencia de la tierra	UPRA	UPRA	N/A	Feature Dataset: La tenencia de la tierra en Vichada y Meta, donde se desarrolla el proyecto Orinoco, es diversa, con grandes extensiones dedicadas a la

					ganadería y agricultura, así como tierras comunitarias e indígenas. En Meta, conviven propiedades privadas y públicas, generando desigualdades y conflictos de acceso entre comunidades locales y empresas agropecuarias.
/89	*Informalidad Tierra*	*UPRA*	*UPRA*	*N/A*	*Feature Class: La Unidad de Planificación Rural Agropecuaria (UPRA) orienta la política de gestión del territorio agropecuario en Colombia, desarrollando lineamientos y criterios para el ordenamiento de la propiedad rural. Parte de su función incluye calcular el Índice de Informalidad en la tenencia de la tierra, lo que permite identificar áreas con informalidad y proporciona insumos para la planificación social y productiva del territorio.*
/90	*Validación Matriz de Confusión*	*Cataruben*	*Cataruben*	*Desarrollador de proyecto*	*Feature Dataset: La matriz de confusión evalúa la precisión de la interpretación de coberturas de la tierra comparando clases predichas con observadas. Esto permite medir la exactitud y confiabilidad de los datos generados.*
/91	*Corine Land Cover 2022*	*Cataruben*	*Cataruben*	*Desarrollador de proyecto*	*Feature Class: La cobertura de la tierra de 2022, creada por la Fundación Cataruben con imágenes Sentinel-2 y la metodología Corine Land Cover, clasifica detalladamente el suelo en Colombia en un archivo geoespacial shapefile.*
/92	*Puntos Muestreo Campo*	*Cataruben*	*Cataruben*	*Desarrollador de proyecto*	*Feature Class: Los puntos de muestreo en campo, ubicados aleatoriamente en áreas de proyecto en Meta y Vichada,*

					respaldan la validación de la interpretación de coberturas de la tierra mediante la matriz de confusión. Este archivo geoespacial permite verificar la precisión de la clasificación basada en imágenes satelitales.
/93	*Puntos Validacion*	*Cataruben*	*Cataruben*	*Desarrollador de proyecto*	*Feature Class: Los puntos de validación de coberturas de la tierra CLC 2022 en Meta y Vichada son un archivo geoespacial con ubicaciones estratégicas para verificar la precisión de las clasificaciones de coberturas generadas mediante imágenes satelitales, siguiendo el estándar CLC 2022.*
/94	*FC-GOG-23. Matriz de Confusion*	*Cataruben*	*Cataruben*	*Desarrollador de proyecto*	*La matriz de confusión es una herramienta clave para evaluar la precisión de las clasificaciones de coberturas de la tierra obtenidas por teledetección. Al comparar datos de referencia de campo con clasificaciones automáticas, permite identificar aciertos y errores (verdaderos y falsos positivos y negativos), proporcionando una validación cuantitativa que asegura la calidad del insumo en estudios ambientales y de planificación.*
/95	*FC-GOG-29. INSTRUCTIVO INTERPRETACIÓN DE CLC-ESCALA 100.000*	*Cataruben*	*Cataruben*	*Desarrollador de proyecto*	*El instructivo de interpretación de coberturas de la tierra a escala 1:100,000, basado en la metodología CORINE Land Cover adaptada para Colombia, estandariza la clasificación de áreas naturales y antrópicas del país, permitiendo una evaluación precisa del uso del suelo y apoyando la gestión ambiental y territorial.*

/96	GOG-01 Guía para verificación de áreas viables	Cataruben	Cataruben	Desarrollador de proyecto	La Guía orienta las evaluaciones de campo en proyectos de carbono, facilitando la identificación de zonas que cumplen con los requisitos para la captura de carbono. A través de esta guía, se verifican características clave del terreno y coberturas, asegurando la viabilidad de las áreas para cumplir con los objetivos del proyecto.
/97	GOG-04 Guía para el Reconocimiento del Predio	Cataruben	Cataruben	Desarrollador de proyecto	documento que orienta las actividades de campo para los proyectos de carbono, asegurando una evaluación precisa de las características del terreno. Esta guía permite verificar condiciones ambientales, límites y coberturas de la tierra, aportando información clave para la elegibilidad y seguimiento de áreas destinadas a proyectos de captura de carbono.
/98	GOP-13. Procedimiento en Sistemas de información Geográfica	Cataruben	Cataruben	Desarrollador de proyecto	El procedimiento define un mecanismo estandarizado para los proyectos que buscan evitar el cambio de uso del suelo en áreas de sabana. Este proceso organiza y documenta la información espacial en una geodatabase (GDB) con metadatos y atributos específicos, asegurando uniformidad y precisión en la gestión de datos dentro de la Unidad de Sistemas de Información Geográfica.
/99	Matriz validacion coberturas	Cataruben	Cataruben	Desarrollador de proyecto	carpeta que contiene la geodatabase (GDB) con los puntos de validación y los formatos de recolección de datos realizados en campo, basados en la metodología

					CORINE Land Cover. Esta carpeta sirve para asegurar la precisión en la clasificación de las coberturas y facilitar el análisis de la calidad de los datos obtenidos.
/100	GDB	Cataruben	Cataruben	Desarrollador de proyecto	GDB que incluye los puntos de validación y los resultados de la matriz de confusión aplicados a CORINE Land Cover, permitiendo evaluar la precisión de los insumos para determinar la elegibilidad de las sabanas en el proyecto.
/101	Formatos de campo	Cataruben	Cataruben	Desarrollador de proyecto	Los formatos de recolección de datos de campo permiten obtener información sobre cambios en el uso de coberturas y áreas de sabana, facilitando el análisis y monitoreo en proyectos de conservación y gestión territorial.
/102	Caracterización de insumos cartograficos para la generacion de CLC orinoco	Cataruben	Cataruben	Desarrollador de proyecto	Documento que incluye las imágenes utilizadas en el análisis, detallando el nombre del sensor, la fecha de adquisición y la resolución espacial de cada imagen. Esta información es clave para garantizar la precisión y consistencia de los datos cartográficos empleados en la elaboración de las coberturas de uso del suelo en el proyecto Orinoco.
/103	Redd	Cataruben	Cataruben	Desarrollador de proyecto	La carpeta que centraliza los resultados finales del análisis REDD en el proyecto Orinoco incluye las áreas elegibles del proyecto y el monitoreo continuo. Contiene una

					geodatabase (GDB) REDD, procedimientos documentados y ACATAMA para evaluar la precisión del insumo de BNB IDEAM. Además, incluye un análisis de similitud para asegurar que las zonas seleccionadas en la región de referencia del proyecto Orinoco sean coherentes en cuanto a ecosistemas naturales y características geográficas.
/104	*GDB*	*Cataruben*	*Cataruben*	*Desarrollador de proyecto*	*La GDB REDD contiene los archivos clave para el proyecto Orinoco, incluyendo la línea base, la región de referencia y las áreas del proyecto. Esta geodatabase incluye las áreas elegibles y de monitoreo de REDD, sirviendo como base para el análisis y seguimiento de las zonas seleccionadas, y garantizando la consistencia de los datos geoespaciales necesarios para la ejecución efectiva del proyecto.*
/105	*Acceso restringido*	*Cataruben*	*Cataruben*	*Desarrollador de proyecto*	*Feature Dataset: Representa áreas de protección nacional con restricciones de uso para preservar derechos comunitarios y proteger ecosistemas estratégicos mediante normativas que limitan actividades humanas.*
/106	*Categorias RUNAP*	*PNNC*	*PNNC*	*N/A*	*Feature Class: RUNAP almacena información de áreas protegidas ingresada por autoridades ambientales, incluyendo su categoría, ubicación, extensión y objetivos de conservación, respaldados en actos administrativos.*
/107	*Consejos comunitarios*	*ANT*	*ANT*	*N/A*	*Feature Class: Detalla las actividades para otorgar tierras baldías, adquiridas o donadas, a*

	comunidades Negras				*comunidades negras para facilitar su asentamiento y desarrollo étnico, respetando sus prácticas tradicionales de producción.*
/108	*Resguardos indígenas legalizados*	*ANT*	*ANT*	*N/A*	*Feature Class: Territorio de una comunidad indígena con propiedad colectiva inalienable y autónoma, regido por un estatuto especial y preservando sus tradiciones culturales.*
/109	*Solicitudes Expectativas Ancestrales*	*ANT*	*ANT*	*N/A*	*Feature Class: solicitudes de expectativas ancestrales de comunidades indígenas reflejan sus demandas de reconocimiento y protección de sus territorios, prácticas culturales, gobierno autónomo y patrimonio espiritual, además de requerir consulta en decisiones que afecten sus tierras y recursos*
/110	*Solicitudes Consejos Comunitarios*	*ANT*	*ANT*	*N/A*	*Feature Class: creado por la Agencia Nacional de Tierras, es un archivo geoespacial que representa digitalmente las peticiones y delimitaciones de los consejos comunitarios en un formato estándar.*
/111	*Solicitudes Resgurados Indígenas*	*ANT*	*ANT*	*N/A*	*Feature Class: creado por la Agencia Nacional de Tierras, es un archivo geoespacial que representa digitalmente las peticiones y delimitaciones territoriales de comunidades indígenas.*
/112	*Solicitudes Resgurados Indígenas coloniales*	*ANT*	*ANT*	*N/A*	*Feature Class: clarificar la vigencia legal de los títulos de origen colonial o republicano, según el Decreto 1824 de 2020, necesarias para el estudio y*

					trámite de las solicitudes de las comunidades indígenas.
/113	*Zonas de reserva campesina*	*ANT*	*ANT*	*N/A*	*Feature Class: detallan las acciones necesarias para verificar la vigencia legal de los títulos de origen colonial o republicano, según el Decreto 1824 de 2020, para el correcto estudio y trámite de las solicitudes de comunidades indígenas.*
/114	*Área Proyectos*	*Cataruben*	*Cataruben*	*Desarrollador de proyecto*	*Feature Dataset: al proyecto ORINOCO son zonas dedicadas a la reducción de emisiones por deforestación y degradación forestal, contribuyendo a la conservación de los ecosistemas y al cumplimiento de los objetivos de mitigación de carbono del proyecto.*
/115	*Area Proyecto Bosque Nucleo Monitoreo*	*Cataruben*	*Cataruben*	*Desarrollador de proyecto*	*Feature Class: áreas de proyecto bosque, utilizado en el monitoreo del proyecto ORINOCO2, mapea y analiza la fragmentación del bosque en Meta y Vichada, siguiendo la metodología del Biocarbon Registry. Este archivo geoespacial es esencial para evaluar el impacto de las actividades de conservación y la efectividad del proyecto en la reducción de emisiones de carbono asociadas a la deforestación.*
/116	*Area Proyecto Deforestación Bosque Nucleo Monitoreo*	*Cataruben*	*Cataruben*	*Desarrollador de proyecto*	*Feature Class: El área del Proyecto Orinoco destinada al monitoreo de la deforestación en el Bosque Núcleo se enfoca en identificar y evaluar las tasas de deforestación, permitiendo el seguimiento de cambios en el uso del suelo y garantizando la*

					efectividad de las estrategias de conservación implementadas.
/117	Area Proyecto Elegible	Cataruben	Cataruben	Desarrollador de proyecto	Feature Class: bosque estable en los predios vinculados al proyecto Orinoco, ubicadas en los departamentos de Meta y Vichada, son zonas determinadas para la conservación de bosques y la reducción de emisiones por deforestación, cumpliendo con los criterios establecidos para mitigar el cambio climático en el marco del proyecto.
/118	Área Proyecto Elegible Fragmentacion	Cataruben	Cataruben	Desarrollador de proyecto	Feature Class: Fragmentacion en Bosque elegible evalúa las zonas específicas para determinar el impacto de la deforestación y la degradación. Este monitoreo sigue las directrices del Biocarbon Standard, asegurando la protección de los ecosistemas y el cumplimiento de los objetivos de mitigación de carbono del proyecto
/119	Area Proyecto Monitoreo	Cataruben	Cataruben	Desarrollador de proyecto	Feature Class: Bosque Monitoreo en los predios vinculados al proyecto Orinoco, en Meta y Vichada, se utiliza para verificar la conservación de los bosques y asegurar que no haya cambios en el ecosistema forestal. Este monitoreo ayuda a garantizar la reducción de emisiones por deforestación, cumpliendo con los criterios de mitigación del cambio climático del proyecto.
/120	Area Proyecto Monitoreo Fragmentación	Cataruben	Cataruben	Desarrollador de proyecto	Feature Class: Fragmentacion en Bosque de monitoreo evalúa las zonas específicas para determinar el impacto de la deforestación y la degradación. Este monitoreo

					sigue las directrices del Biocarbon Standard, asegurando la protección de los ecosistemas y el cumplimiento de los objetivos de mitigación de carbono del proyecto
/121	Gestores Ecosistema REDD	Cataruben	Cataruben	Desarrollador de proyecto	Feature Class: predios vinculados al proyecto, asegurando la protección de los bosques y la reducción de emisiones por deforestación. Estos predios, considerados viables para REDD, cumplen con los criterios necesarios para mitigar el cambio climático a través de la conservación efectiva de los ecosistemas forestales.
/122	Área de Fugas	Cataruben	Cataruben	Desarrollador de proyecto	Feature Dataset: Áreas donde las actividades de deforestación o degradación podrían desplazarse debido a las medidas de mitigación implementadas en otras áreas del proyecto. Este análisis busca identificar y monitorear dichos desplazamientos para asegurar que las estrategias de conservación sean efectivas en la reducción de emisiones de carbono.
/123	AF Linea Base 2005	Cataruben	Cataruben	Desarrollador de proyecto	Feature Class: Las áreas de fuga de bosque para la línea base en 2005 son zonas donde la deforestación podría haberse desplazado debido a las intervenciones de conservación, estableciendo un punto de referencia para analizar los cambios en el uso del suelo y orientar las estrategias de mitigación en proyectos REDD.
/124	AF Linea Base 2018	Cataruben	Cataruben	Desarrollador de proyecto	Feature Class: Las áreas de fuga de bosque para la línea base en 2018 son zonas donde la

					deforestación podría haberse desplazado debido a acciones de conservación, proporcionando un punto de referencia para evaluar los cambios en el uso del suelo y mejorar las estrategias de mitigación en proyectos REDD.
/125	*AF Linea Base Degradacion 2005-2018*	*Cataruben*	*Cataruben*	*Desarrollador de proyecto*	*Feature Class: La degradación en áreas de fuga de bosque para la línea base (2005-2018) analiza el desplazamiento de la deforestación, evaluando los cambios en el uso del suelo y el impacto de las intervenciones de conservación en la degradación forestal.*
/126	*AF Linea Base Fragmentación 2005*	*Cataruben*	*Cataruben*	*Desarrollador de proyecto*	*Feature Class: Fragmentacion en área de fuga que se refiere al análisis de cómo la deforestación ha dividido los bosques en fragmentos más pequeños, afectando la conectividad y la biodiversidad. Este análisis proporciona una referencia inicial para comprender los patrones de fragmentación antes de las intervenciones de conservación.*
/127	*AF Linea Base Fragmentación 2018*	*Cataruben*	*Cataruben*	*Desarrollador de proyecto*	*Feature Class: La fragmentacion en áreas de fugas, analiza cómo la deforestación en el años 2018ha dividido los bosques, afectando la conectividad y biodiversidad, y permite comparar los cambios con los datos de 2005.*
/128	*AF Monitoreo 2018*	*Cataruben*	*Cataruben*	*Desarrollador de proyecto*	*Feature Class: las areas de bosque en fugas para el año 2018, evalúa la deforestación y degradación en zonas afectadas por el desplazamiento de actividades de conservación,*

					ajustando las estrategias de mitigación en áreas de fuga.
/129	*AF Monitoreo 2022*	*Cataruben*	*Cataruben*	*Desarrollador de proyecto*	*Feature Class: El área de monitoreo de bosque en fugas para 2022 se centra en evaluar los cambios en la deforestación y degradación forestal en zonas afectadas por el desplazamiento de actividades de conservación, permitiendo ajustar las estrategias de mitigación en áreas de fuga en ese periodo.*
/130	*AF Monitoreo Fragmentacion 2018*	*Cataruben*	*Cataruben*	*Desarrollador de proyecto*	*Feature Class: El área de fragmentación para bosque en 2018 en áreas de fuga analiza cómo la deforestación ha dividido los bosques en fragmentos más pequeños, afectando la conectividad y biodiversidad en las zonas donde la deforestación se ha desplazado debido a medidas de conservación.*
/131	*AF Monitoreo Fragmentacion 2022*	*Cataruben*	*Cataruben*	*Desarrollador de proyecto*	*Feature Class: El área de fragmentación para bosque en 2022 en áreas de fuga evalúa cómo la deforestación ha continuado fragmentando los bosques, afectando su conectividad y biodiversidad en las zonas donde la deforestación se ha desplazado debido a las medidas de conservación.*
/132	*Cinturo Fugas REDD*	*Cataruben*	*Cataruben*	*Desarrollador de proyecto*	*Feature Class: buffer del área de influencia externa, que identifica las zonas donde la deforestación puede desplazarse debido a las intervenciones de conservación. Este cinturón ayuda a monitorear y mitigar los impactos de las actividades de conservación fuera del área principal del proyecto.*

/133	*Bioma Ecorregion*	*IDEAM*	*IDEAM*	*N/A*	*Feature Dataset: bioma y ecorregión de sabanas en Sudamérica abarca ecosistemas naturales de herbazales y arbustales, destacando su distribución y valor ecológico. Estos datos son clave para entender la biodiversidad y los servicios ambientales, como la regulación hídrica y el almacenamiento de carbono, propios de estas sabanas.*
/134	*Bioma Orinoquia*	*IDEAM*	*IDEAM*	*N/A*	*Feature Class: El bioma de la Orinoquía, ubicado en el centro y oriente de Colombia, es una vasta llanura que incluye sabanas, bosques de galería, ríos y humedales, extendiéndose hacia Venezuela. Alberga una biodiversidad adaptada a estaciones de lluvia y sequía, con especies emblemáticas como jaguares y capibaras. Los ríos Meta y Orinoco son clave para la conectividad y diversidad ecológica, destacando la importancia de su conservación para el equilibrio de estos ecosistemas únicos.*
/135	*Ecorregion Sabanas*	*IDEAM*	*IDEAM*	*N/A*	*Feature Class: ecosistema que se distingue por vastas llanuras predominantemente cubiertas de pastizales y hierbas, donde los árboles aparecen de manera dispersa o en pequeños bosquetes. Este entorno abierto favorece una rica biodiversidad, albergando una variedad de especies adaptadas a las condiciones de sequía y variabilidad estacional.*
/136	*World Grassland Types*	*IDEAM*	*IDEAM*	*N/A*	*Feature Class: Los tipos de pastizales del mundo, como las sabanas sudamericanas, presentan estaciones secas y húmedas que dan lugar a una*

					biodiversidad única, con herbívoros como capibaras y guanacos, y depredadores como jaguares y pumas. Estos ecosistemas son vitales para la economía local, ya que se utilizan en agricultura y ganadería sostenible, por lo que su conservación es esencial para preservar la biodiversidad y el equilibrio ambiental de la región.
/137	Compensaciones	ECOPETROL	ECOPETROL	N/A	Feature Dataset: Las compensaciones de Ecopetrol en Meta y Vichada se enfocan en mitigar el impacto ambiental a través de la restauración de ecosistemas y el apoyo a proyectos de desarrollo sostenible, promoviendo así la conservación de la biodiversidad y el equilibrio ambiental en la región.
/138	Compensaciones Area Proyecto	ECOPETROL	ECOPETROL	N/A	Feature Class: vinculación de predios para conservación en Meta y Vichada, creado por Ecopetrol, contiene información sobre los predios incluidos en sus programas de conservación. Este archivo geoespacial permite visualizar y analizar la distribución de estos predios, facilitando el monitoreo y evaluación de las iniciativas de conservación en la región.
/139	cormacarena predios PSA	ECOPETROL	ECOPETROL	N/A	Feature Class: El shapefile de vinculación de predios por pagos de servicios ambientales en Cormacarena es un archivo geoespacial que detalla la ubicación y características de los predios involucrados en programas de pagos por servicios ambientales. Utilizando el formato shapefile, permite visualizar y gestionar la información sobre su

					participación en iniciativas ambientales, facilitando la conservación de ecosistemas en la región.
/140	*Cormacarena predios zonas intervenidas PSA*	*ECOPETROL*	*ECOPETROL*	*N/A*	*Feature Class: zonas intervenidas por pagos de servicios ambientales en Cormacarena detalla las áreas afectadas por la participación de predios en estos programas. Este archivo geoespacial, en formato shapefile, captura la geometría de las zonas y los atributos de las acciones realizadas, ofreciendo una representación visual de las transformaciones ambientales en la jurisdicción de Cormacarena.*
/141	*Ecopetrol_GDB_PM_APIAY_Compensacion*	*ECOPETROL*	*ECOPETROL*	*N/A*	*Feature Class: Zonas de compensación por Ecopetrol en los campos de producción de Apiay es un archivo geoespacial que contiene información cartográfica sobre las áreas designadas para compensación ambiental relacionadas con la producción de hidrocarburos. Este archivo utiliza el formato shapefile para almacenar datos sobre la ubicación y límites de estas zonas, facilitando la gestión ambiental por parte de Ecopetrol en la región.*
/142	*Ecopetrol_APE_CP09_Inversion1PorCiento_PG*	*ECOPETROL*	*ECOPETROL*	*N/A*	*Feature Class: zonas de compensación ambiental para la restauración y conservación de cobertura vegetal detalla áreas designadas en el contexto de la exploración petrolera. Este archivo geoespacial almacena información sobre ubicación, límites y atributos de estas zonas, facilitando la gestión, visualización y monitoreo de las obligaciones de compensación*

					ambiental, así como la toma de decisiones informadas.
/143	Ecopetrol_APE_CP09_Inversion1PorCiento_PG_OtrasCompensaciones	ECOPETROL	ECOPETROL	N/A	Feature Class: zonas de compensación ambiental para la restauración y conservación de cobertura vegetal es un archivo geoespacial que detalla las áreas designadas para compensación en el contexto de la exploración petrolera. Este archivo, que utiliza el formato shapefile, incluye datos sobre la ubicación, límites y atributos de las zonas, facilitando la gestión y visualización de las obligaciones de compensación ambiental derivadas de esta actividad y apoyando la toma de decisiones informadas.
/144	Ecopetrol_CP50_ODS02_Inversion1PorCiento_PG	ECOPETROL	ECOPETROL	N/A	Feature Class: compensación ambiental para la restauración y conservación de cobertura vegetal, contiene datos cartográficos sobre áreas designadas en el contexto de la exploración petrolera. Utilizando el formato shapefile, incluye información geográfica detallada, como límites y atributos de las zonas, y se orienta a cumplir con el ODS 2, que promueve la seguridad alimentaria y la agricultura sostenible.
/145	Ecopetrol_MP_1P_Cubarral_ODS02_CompensacionBiodiversidad	ECOPETROL	ECOPETROL	N/A	Feature Class: áreas de compensación de biodiversidad para la restauración y conservación de ecosistemas de cobertura vegetal, financiado con el 1% de la inversión en exploración petrolera. Usando el formato shapefile, contiene datos geográficos sobre límites y atributos relacionados con la protección de la biodiversidad, alineándose con el ODS 2 sobre

					seguridad alimentaria y agricultura sostenible.
/146	Ecopetrol_MP_1P_ODS11_CompensacionBiodiversidad	ECOPETROL	ECOPETROL	N/A	Feature Class: áreas de compensación de biodiversidad para la restauración y conservación de ecosistemas de cobertura vegetal, financiado con el 1% de la inversión en exploración petrolera. Estructurado en formato shapefile, contiene datos sobre límites y atributos relacionados con las acciones de restauración, alineándose con el ODS 11 sobre ciudades y comunidades sostenibles.
/147	Ecopetrol_PM_Cubarral_Compensaciones	ECOPETROL	ECOPETROL	N/A	Feature Class: áreas designadas para la compensación ambiental en la restauración y conservación vinculadas a la exploración petrolera. Estructurado en formato shapefile, incluye datos sobre límites y atributos de las iniciativas destinadas a mitigar los impactos ambientales en la región de Cubarral.
/148	Ecopetrol_VEX_1PC_Inversion1PorCientoPG	ECOPETROL	ECOPETROL	N/A	Feature Class: zonas designadas para la compensación ambiental en la restauración y conservación, financiada con el 1% de la inversión en exploración petrolera. Estructurado en formato shapefile, incluye datos sobre límites y atributos de las medidas para mitigar los impactos ambientales en los ecosistemas de las áreas de exploración.
/149	Ecopetrol_VEX_CA_Inversion1PorCiento_PG	ECOPETROL	ECOPETROL	N/A	Feature Class: zonas para la compensación ambiental, financiada con el 1% de la inversión en exploración petrolera. Estructurado en

					formato shapefile, incluye datos sobre límites y atributos de las acciones para mitigar los impactos ambientales y conservar los ecosistemas en las áreas de exploración.
/150	Ecopetrol_VEX_CA_Inversion1PorCiento_PG_otrasCompensaciones	ECOPETROL	ECOPETROL	N/A	Feature Class: áreas designadas para compensaciones ambientales, financiadas con el 1% de la inversión en exploración petrolera. Estructurado en formato shapefile, contiene datos sobre límites y acciones para mitigar los impactos ambientales, centrando sus esfuerzos en la restauración y conservación de ecosistemas.
/151	Entorno Biofísico	IDEAM	IDEAM	N/A	Feature Dataset: conjunto de áreas espaciales que comprenden elementos naturales y físicos, como la geografía, la vegetación, el clima y los ecosistemas, utilizados para el análisis del área de referencia del proyecto Orinoco2. Este enfoque permite evaluar las interacciones entre los componentes ambientales y la influencia de las actividades humanas, facilitando la toma de decisiones informadas para la conservación y sostenibilidad del entorno.
/152	Capacidad Uso Clase	IGAC	IGAC	N/A	Feature Class: clasificación agrológica del IGAC, determina las áreas destinadas a la protección ambiental, el uso agrícola y el desarrollo humano. Esta clasificación es fundamental para orientar el manejo sostenible del territorio y garantizar un equilibrio entre la producción y la conservación de los recursos naturales.

/153	*Clasificación climática*	*IDEAM*	*IDEAM*	*N/A*	*Feature Class: Este mapa combina las clasificaciones climáticas de Lang, que considera la variación de temperatura según la altitud y la relación entre precipitación y temperatura (P/T). Así, se identifican tipos de climas basados en la elevación, temperatura media anual y precipitación total, desarrollado por el IDEAM.*
/154	*Conflicto de uso*	*IGAC*	*IGAC*	*N/A*	*Feature Class: el conflicto de uso del suelo es un fenómeno complejo que surge de la competencia por recursos naturales y derechos territoriales, evidenciado por tensiones relacionadas con la expansión agrícola, la minería y la urbanización, según el Instituto Geográfico Agustín Codazzi (IGAC).*
/155	*Drenaje Doble*	*IDEAM*	*IDEAM*	*N/A*	*Feature Class: ed hidrográfica de Colombia que incluye ríos principales que fluyen hacia dos océanos: el Atlántico y el Pacífico. Este sistema de drenaje se caracteriza por la existencia de cuencas que drenan al océano Atlántico a través de ríos como el Magdalena y el Cauca, y al océano Pacífico*
/156	*Drenaje Sencillo*	*IDEAM*	*IDEAM*	*N/A*	*Feature Class: se caracteriza por una red de ríos secundarios o arteriales que recogen y canalizan el agua hacia los ríos principales de Colombia. Estos ríos secundarios son fundamentales para el sistema hidrográfico, ya que contribuyen a la recolección de aguas de escorrentía, nutrientes y sedimentos, alimentando ríos como el Magdalena y el Cauca. Este tipo de drenaje es esencial*

					para el mantenimiento de los ecosistemas acuáticos y para la regulación del ciclo hidrológico en el país.
/157	*Estaciones Hidrometeorológicas*	*IDEAM*	*IDEAM*	*N/A*	*Feature Class: El IDEAM ofrece un visor de estaciones hidrometeorológicas que incluye detalles como nombre, código, tipo, clase y ubicación de cada estación. Esta herramienta proporciona información confiable para la toma de decisiones y resalta la labor de los profesionales en los aeropuertos que aseguran la seguridad de la navegación aérea.*
/158	*Límites Administrativo*	*IGAC*	*IGAC*	*N/A*	*Feature Class: límites administrativos de los departamentos de Meta y Vichada, elaborado por el IGAC, ofrece una delimitación cartográfica precisa de sus divisiones político-administrativas. Este archivo geoespacial es fundamental para la gestión territorial y la planificación de proyectos en estas regiones.*
/159	*Precipitación Media Total*	*IDEAM*	*IDEAM*	*N/A*	*Feature Class: La distribución espacial de la precipitación media total anual en Colombia (1981-2010) se expresa en milímetros (mm) y se basa en datos de las estaciones meteorológicas del IDEAM. Este análisis clasifica la precipitación en 12 rangos significativos, desde 0 hasta más de 11,000 mm, abarcando tanto el territorio continental como el insular.*
/160	*Relieve*	*IDEAM*	*IDEAM*	*N/A*	*Feature Class: Cartografía vectorial topográfica de Colombia a escala 1:500,000,*

					que abarca todo el país. Incluye información sobre pendientes y áreas superficiales, con modelados de zonas montañosas y llanuras, referida al sistema de coordenadas MAGNA-SIRGAS.
/161	*Temperatura*	*IDEAM*	*IDEAM*	*N/A*	*Feature Class: El mapa de temperatura realizado por el IDEAM es una representación cartográfica que muestra la variación de la temperatura a lo largo del territorio colombiano. Este mapa se basa en datos recopilados de estaciones meteorológicas y modelos climáticos, permitiendo identificar patrones térmicos y tendencias a lo largo del tiempo. Su propósito es proporcionar información clave para la planificación y gestión ambiental, así como para el estudio de fenómenos climáticos en el país.*
/162	*Tipos Ecosistemas*	*IDEAM*	*IDEAM*	*N/A*	*Feature Class: El mapa de ecosistemas incluye dos enfoques: uno para los ecosistemas continentales y costeros, que integra información de geopedología, clima y coberturas de la tierra mediante análisis espacial; y otro para los ecosistemas marinos, que utiliza escalas detalladas y paisajes del fondo marino derivados de análisis geomorfológicos y oceanográficos.*
/163	*Uso del suelo Coberturas*	*IGAC*	*IGAC*	*N/A*	*Feature Class: El archivo geoespacial de usos del suelo, respaldado por el IGAC, presenta una clasificación y distribución detallada de diferentes coberturas de la tierra, como áreas urbanas, agrícolas y forestales.*

					Estructurado en formato shapefile, permite un análisis espacial preciso de la estructura del suelo en la región, utilizando datos oficiales y actualizados del Instituto.
/164	*Vias secundarias*	*IGAC*	*IGAC*	*N/A*	*Feature Class:Delimitación de vías secundarias en Meta y Vichada, respaldado por el IGAC, ofrece datos cartográficos detallados sobre la ubicación y características de estas carreteras. Estructurado en formato shapefile, proporciona una representación visual precisa de la red vial secundaria, incluyendo atributos como longitud y dirección, utilizando información oficial y confiable.*
/165	*Vias Nacionales Primarias*	*IGAC*	*IGAC*	*N/A*	*Feature Class: vías nacionales primarias en Meta y Vichada, respaldado por el IGAC, contiene datos cartográficos detallados sobre la ubicación y características de estas carreteras. Estructurado en formato shapefile, proporciona una representación visual precisa de la red vial principal, incluyendo información sobre extensión, dirección y otros atributos relevantes.*
/166	*Vocación de Uso*	*IGAC*	*IGAC*	*N/A*	*Feature Class: El mapa de Vocación de Uso de las Tierras, elaborado por la Subdirección de Agrología del IGAC, clasifica el territorio nacional en cinco categorías: agrícola, ganadera, agroforestal, forestal y de conservación/recuperación, basándose en matrices de decisión que consideran indicadores como clima, pendiente y características del suelo (erosión, humedad, fertilidad, entre otros).*

					Publicado en 2016 a escala 1:100.000, establece el uso principal recomendado para cada clase.
/167	Impulsores de Cambio	Cataruben	Cataruben	Desarrollador de proyecto	Feature Dataset: impulsores de cambio en el proyecto Orinoco, basado en interpretaciones de Corine Land Cover del IDEAM, describe los cambios en el uso del suelo en distintas temporalidades, identificando los factores que impulsan estas transformaciones en la región.
/168	Cambio coberturas 2012-2018	Cataruben	Cataruben	Desarrollador de proyecto	Feature Class: cambio de uso del suelo en la región Orinoco2 (Meta y Vichada) para 2012 y 2018, respaldado por el IDEAM y en formato shapefile, detalla las modificaciones en las coberturas de la tierra, como urbanización, agricultura y bosques, permitiendo analizar la dinámica de transformación del paisaje en esa área.
/169	Uso coberturas 2012	Cataruben	Cataruben	Desarrollador de proyecto	Feature Class: uso del suelo para el área de proyecto Orinoco2 en 2012 (Meta y Vichada), respaldado por el IDEAM y en formato shapefile, presenta una representación detallada de las coberturas de tierra, mostrando la distribución de áreas urbanas, agrícolas, forestales y otros usos específicos.
/170	Uso coberturas 2018	Cataruben	Cataruben	Desarrollador de proyecto	Feature Class: uso del suelo para el proyecto ORINOCO2 en 2018, ubicado en Meta y Vichada, es un archivo geoespacial respaldado por el IDEAM, que clasifica las coberturas de la tierra, incluyendo áreas urbanas, agrícolas y forestales, proporcionando una

					representación precisa de su distribución en la región.
/171	*Proyectos Standard Doble contabilidad*	*Cataruben*	*Cataruben*	*Desarrollador de proyecto*	*Feature Dataset: Los proyectos estándar para el análisis de doble contabilidad, como BCR Estandar, Cercarbono, COLCX y Verra, establecen metodologías para garantizar que las reducciones de emisiones de carbono se contabilicen de manera única y no se reclamen en múltiples iniciativas. En el proyecto Orinoco, es crucial que las áreas no presenten doble contabilidad, ya que esto asegura la validez de los créditos de carbono generados, promueve la confianza entre las partes interesadas y refuerza los objetivos de conservación y sostenibilidad, contribuyendo efectivamente a la mitigación del cambio climático.*
/172	*Areas Proyecto BCR estandar*	*BCR STANDARD*	*BCR STANDARD*	*N/A*	*Feature Class: áreas de proyecto de Biocarbon Standard, en formato shapefile, proporciona información precisa sobre las ubicaciones de iniciativas de captura y almacenamiento de carbono a nivel nacional. Su uso es fundamental para evitar la doble contabilidad de proyectos de carbono, asegurando la transparencia y autenticidad de los esfuerzos de mitigación climática gestionados por Biocarbon Registry, y previniendo la duplicación de créditos de carbono.*
/173	*Areas Proyecto CERCARBONO estandar*	*CERCARBONO*	*CERCARBONO*	*N/A*	*Feature Class: áreas de proyecto de Cercarbono, en formato shapefile, detalla las ubicaciones de iniciativas para mitigar emisiones de carbono a nivel nacional. Su implementación busca evitar la doble contabilidad,*

					garantizando que los beneficios climáticos generados sean auténticos y no se dupliquen en otros registros de compensación.
/174	Areas Proyecto COLCX Estandar	COLCX	COLCX	N/A	Feature Class: áreas de proyecto de COLCX, en formato shapefile, detalla las ubicaciones de iniciativas de compensación de carbono a nivel nacional. Su uso busca evitar la doble contabilidad, asegurando que los beneficios climáticos generados sean auténticos y no se dupliquen en registros de otras entidades.
/175	Areas Proyecto VERRA estandar	VERRA	VERRA	N/A	Feature Class: áreas de proyecto del Estándar de Carbono Verificado - VERRA, en formato shapefile, detalla las ubicaciones de iniciativas de mitigación de carbono a nivel internacional. Su principal objetivo es evitar la doble contabilidad, asegurando que los créditos generados sean auténticos y no se registren simultáneamente en otras entidades de compensación.
/176	RReferencia	Cataruben	Cataruben	Desarrollador de proyecto	Feature Dataset: La región de referencia para bosque en el proyecto Orinoco, en Meta y Vichada, define la línea base de las condiciones forestales para medir los cambios en deforestación y degradación, evaluando la efectividad de las estrategias de conservación del proyecto.
/177	RR Degradación 2005-2017	Cataruben	Cataruben	Desarrollador de proyecto	Feature Class: La degradación forestal en Meta y Vichada se refiere a áreas que eran núcleo en 2005 y pasaron a ser parches en 2017, según la fragmentación de esos años.

					Usando la metodología del Biocarbon Registry, este análisis geoespacial mapea los cambios en la calidad del bosque, evaluando el impacto de las actividades humanas en los ecosistemas forestales de la región.
/178	RR Fragmentacion bnb 2005	Cataruben	Cataruben	Desarrollador de proyecto	Feature Class: El bosque estratificado con fragmentación de núcleo y borde para Meta y Vichada en 2005 es un archivo geoespacial que representa la distribución del bosque usando la metodología NREF (mspa). Utiliza datos del monitoreo IDEAM y el formato shapefile, permitiendo analizar áreas fragmentadas y facilitando la planificación y conservación de los recursos forestales en la región.
/179	RR Fragmentacion bnb 2017	Cataruben	Cataruben	Desarrollador de proyecto	Feature Class: El bosque estratificado con fragmentación de núcleo y borde para Meta y Vichada en 2017 es un archivo geoespacial que representa la distribución del bosque usando la metodología NREF (mspa). Utiliza datos del monitoreo IDEAM y el formato shapefile, permitiendo analizar áreas fragmentadas y facilitando la planificación y conservación de los recursos forestales en la región.
/180	RReferencia bosque 2005	IDEAM	Cataruben	Desarrollador de proyecto	Feature Class: bosque en la región de referencia REDD para 2005 se basó en datos del IDEAM sobre cobertura de bosque y no bosque, procesados e integrados en un SIG. Se generó un Shapefile que representó la distribución del bosque, y se evaluaron métricas de fragmentación como tamaño, forma y conectividad,

					para analizar la fragmentación forestal en la región.
/181	*RReferencia bosque 2017*	*IDEAM*	*Cataruben*	*Desarrollador de proyecto*	*Feature Class: bosque en la región de referencia REDD para 2017 se basó en datos del IDEAM sobre cobertura de bosque y no bosque, procesados e integrados en un SIG. Se generó un Shapefile que representó la distribución del bosque, y se evaluaron métricas de fragmentación como tamaño, forma y conectividad, para analizar la fragmentación forestal en la región.*
/182	*RReferencia REDD*	*Cataruben*	*Cataruben*	*Desarrollador de proyecto*	*Feature Class: Los límites geográficos de la región de referencia del proyecto ORINOCO2 REDD+ fueron establecidos para evaluar los datos históricos de deforestación y degradación, con el fin de definir la línea base. Esta región abarca los departamentos de Meta y Vichada, en la región de Orinoquia, excluyendo resguardos indígenas, parques nacionales naturales y distritos de manejo especial dentro de su jurisdicción.*
/183	*Similitud Datos variables Físicas Gestores REDD*	*Cataruben*	*Cataruben*	*Desarrollador de proyecto*	*Feature Dataset: La similitud de datos y variables físicas en proyectos REDD+ consiste en comparar características ambientales, como la cobertura forestal y las condiciones climáticas, entre diferentes áreas del proyecto, lo que facilita la planificación, conservación y monitoreo de las acciones para reducir emisiones.*

/184	*AP Clasificación climáica CaldasLang*	*IDEAM*	*IDEAM*	*N/A*	*Feature Class: La clasificación climática de Caldas-Lang, realizada por el IDEAM, categoriza los climas de una región según temperatura, precipitación y otras variables. Esta clasificación permite identificar zonas con condiciones climáticas similares, facilitando el análisis de patrones ambientales en las áreas de proyecto para evaluar su similitud climática.*
/185	*AP Estratos Vegetación*	*IDEAM*	*IDEAM*	*N/A*	*Feature Class: Los estratos de vegetación agrupan las capas o niveles de vegetación según su altura y características. En el proyecto, se identifican estos estratos en las áreas de estudio para analizar su similitud y entender la distribución de especies vegetales en relación con factores ambientales.*
/186	*AP Gestores REDD*	*IDEAM*	*IDEAM*	*N/A*	*Feature Class: Los gestores REDD de los predios vinculados en Orinoco son las areas de proyecto que busca reducir la deforestación y promover la gestión sostenible, evaluando su similitud en el análisis de prácticas ambientales.*
/187	*AP Pendiente*	*IDEAM*	*IDEAM*	*N/A*	*Feature Class: Las pendientes representan la inclinación del terreno y se miden para identificar variaciones en la topografía de las áreas de proyecto. En el análisis de similitud, permiten evaluar cómo la inclinación del suelo influye en factores ambientales y de conservación.*
/188	*AP Precipitacion*	*IDEAM*	*IDEAM*	*N/A*	*Feature Class:La precipitación, según el IDEAM, es la cantidad de agua que cae en una región,*

					medida para evaluar patrones climáticos. En las áreas de proyecto, esta información se utiliza en el análisis de similitud para comparar condiciones ambientales y su impacto en los ecosistemas locales.
/189	*AP Suelos*	*IGAC*	*IGAC*	*N/A*	*Feature Class: El IGAC define los suelos como la capa superficial de la tierra que sustenta la vida vegetal, caracterizándolos según su composición y propiedades. En las áreas de proyecto, esta información permite analizar la similitud de condiciones del suelo y su influencia en el ecosistema.*
/190	*AP Temperatura*	*IDEAM*	*IDEAM*	*N/A*	*Feature Class: El IDEAM define la temperatura como una medida del calor en la atmósfera, clave para caracterizar el clima de una región. En las áreas de proyecto, esta variable se usa en el análisis de similitud para comparar condiciones climáticas y su efecto en el entorno.*
/191	*AP Vías*	*IGAC*	*IGAC*	*N/A*	*Feature Class: Las vías nacionales y departamentales, según las bases catastrales del IGAC, son infraestructuras de transporte que conectan regiones y facilitan la movilidad. En las áreas de proyecto, su identificación permite analizar la accesibilidad y comparar la influencia de estas vías en el desarrollo y uso del territorio.*
/192	*Similitud Datos variables Físicas RReferencia*	*Cataruben*	*Cataruben*	*Desarrollador de proyecto*	*Feature Dataset: La similitud de datos y variables físicas en la región de referencia del proyecto Orinoco implica comparar características ambientales, como la cobertura forestal y el clima, para apoyar*

					la conservación y el monitoreo efectivo del bosque.
/193	RReferencia Clasificación climáica CaldasLang	Cataruben	Cataruben	Desarrollador de proyecto	Feature Class: La clasificación climática de Caldas-Lang, realizada por el IDEAM, categoriza los climas de una región según factores como temperatura y precipitación. En el análisis de similitud, se usa para comparar las condiciones climáticas de la región de referencia y entender su impacto ambiental.
/194	RReferencia Estratos Vegetación	Cataruben	Cataruben	Desarrollador de proyecto	Feature Class: Los estratos de vegetación, definidos por el IDEAM, son niveles de cobertura vegetal que se diferencian por altura y estructura. En el análisis de similitud, se utilizan para comparar la composición vegetal de la región de referencia y evaluar su influencia en el ecosistema.
/195	RReferencia Pendiente	Cataruben	Cataruben	Desarrollador de proyecto	Feature Class: Las pendientes indican la inclinación del terreno en una región, afectando factores como erosión y drenaje. En el análisis de similitud, se utilizan para comparar la topografía de la región de referencia y su influencia en el paisaje y ecosistemas.
/196	RReferencia Precipitacion	Cataruben	Cataruben	Desarrollador de proyecto	Feature Class: La precipitación, según el IDEAM, es la cantidad de agua que cae en forma de lluvia, nieve u otros fenómenos en una región. En el análisis de similitud, se utiliza para comparar los patrones de lluvia de la región de referencia y evaluar su influencia en los ecosistemas locales.

/197	*RReferencia REDD*	*Cataruben*	*Cataruben*	*Desarrollador de proyecto*	*Feature Class: La identificación de bosque estable en la región de referencia se refiere a la presencia de ecosistemas forestales con una estructura y composición vegetal equilibrada y sostenibles a largo plazo. En el análisis de similitud, se usa para comparar la estabilidad ecológica de diferentes áreas y evaluar su conservación.*
/198	*RReferencia REDD exlusion AP gestores REDD*	*Cataruben*	*Cataruben*	*Desarrollador de proyecto*	*Feature Class: El bosque estable en la región de referencia, excluyendo las áreas del proyecto Orinoco, se refiere a ecosistemas forestales equilibrados. En el análisis de similitud, se compara su estabilidad ecológica con otras áreas para evaluar su conservación.*
/199	*RReferencia Suelos*	*Cataruben*	*Cataruben*	*Desarrollador de proyecto*	*Feature Class: El IGAC define el suelo como la capa superficial terrestre que sustenta la vegetación, clasificada por su composición y características. En el análisis de similitud, se utiliza para comparar los tipos de suelo en la región de referencia y su influencia en los ecosistemas locales.*
/200	*RReferencia Temperatura*	*Cataruben*	*Cataruben*	*Desarrollador de proyecto*	*Feature Class: La temperatura, según el IDEAM, se refiere al grado de calor en la atmósfera de una región. En el análisis de similitud, se utiliza para comparar los patrones térmicos de la región de referencia y evaluar su influencia en los ecosistemas locales.*
/201	*RReferencia Vías*	*Cataruben*	*Cataruben*	*Desarrollador de proyecto*	*Feature Class: Las vías nacionales, según las bases cartográficas del IGAC, son las principales infraestructuras de*

					transporte que conectan diversas regiones del país. En el análisis de similitud, se utilizan para evaluar la accesibilidad y la influencia de estas vías en el desarrollo y uso del territorio en la región de referencia.
/202	*Similitud input tool busqueda similitud*	*Cataruben*	*Cataruben*	*Desarrollador de proyecto*	*Feature Dataset: Los insumos para la herramienta de similitud incluyen las reclasificaciones de datos, las áreas de proyecto REDD+ y la región de referencia. Estos elementos permiten comparar y analizar las condiciones ambientales y geoespaciales, evaluando las similitudes entre las áreas de proyecto y la región de referencia para determinar su potencial de conservación y gestión sostenible.*
/203	*AP gestores REDD data Binario*	*Cataruben*	*Cataruben*	*Desarrollador de proyecto*	*Feature Class: La data binaria en áreas de proyecto REDD+ categoriza predios según su uso y características, como bosque, vegetación, agricultura y clima, para generar insumos que faciliten el análisis de similitud en la conservación y gestión sostenible.*
/204	*AP gestores REDD data similitud*	*Cataruben*	*Cataruben*	*Desarrollador de proyecto*	*Feature Class: La data de similitud en áreas de proyecto REDD+ compara predios según características como bosque, vegetación, uso agrícola, clima y pendientes, generando insumos para evaluar las similitudes ambientales en la gestión y conservación.*
/205	*RRreferencia Data similitud*	*Cataruben*	*Cataruben*	*Desarrollador de proyecto*	*Feature Class: La similitud en la región de referencia para áreas de proyecto REDD+ se evalúa considerando valores como bosque, vegetación herbácea,*

					forestal, agrícola, conservación, ganadería, pendientes, temperatura y precipitación, para comparar las condiciones ambientales y geoespaciales con las áreas elegibles para proyectos de conservación.
/206	*Similitud output tool busqueda similitud*	*Cataruben*	*Cataruben*	*Desarrollador de proyecto*	*Feature Dataset: Los resultados del análisis de similitud entre la región de referencia y los predios elegibles muestran comparaciones en vegetación, pendiente, precipitación, temperatura, suelos y bosque, lo que ayuda a identificar áreas con condiciones ambientales similares para apoyar la gestión sostenible y conservación.*
/207	*Análisis Similitud Estrato vegetacion*	*Cataruben*	*Cataruben*	*Desarrollador de proyecto*	*Feature Class: Los resultados del análisis de similitud por estrato de vegetación entre los predios viables para REDD+ y la región de referencia identifican áreas con características vegetales similares, apoyando la selección de zonas adecuadas para la conservación y gestión sostenible.*
/208	*Análisis Similitud General*	*Cataruben*	*Cataruben*	*Desarrollador de proyecto*	*Feature Class: Los resultados del análisis de similitud general entre los predios viables para REDD+ y la región de referencia comparan vegetación, pendientes, precipitación-temperatura, suelos y bosque, identificando áreas con condiciones similares para proyectos de conservación y gestión sostenible.*
/209	*Análisis Similitud Pendiente*	*Cataruben*	*Cataruben*	*Desarrollador de proyecto*	*Feature Class: Los resultados del análisis de similitud por pendiente entre los predios viables para REDD+ y la región de referencia comparan la inclinación del terreno,*

					evaluando su aptitud para la conservación y la gestión de la erosión en proyectos REDD+.
/210	Análisis Similitud precipitacion-temperatura	Cataruben	Cataruben	Desarrollador de proyecto	Feature Class: Los resultados del análisis de similitud por temperatura-precipitación entre los predios viables para REDD+ y la región de referencia comparan los patrones climáticos, evaluando su adecuación para proyectos de conservación.
/211	Análisis Similitud Suelos	Cataruben	Cataruben	Desarrollador de proyecto	Feature Class: Los resultados del análisis de similitud por suelos entre los predios viables para REDD+ y la región de referencia comparan las características del suelo, evaluando su aptitud para proyectos de conservación y manejo sostenible.
/212	Tenencia de la tierra	UPRA	UPRA	N/A	Feature Dataset: La tenencia de la tierra en Vichada y Meta, donde se desarrolla el proyecto Orinoco, es diversa, con grandes extensiones dedicadas a la ganadería y agricultura, así como tierras comunitarias e indígenas. En Meta, conviven propiedades privadas y públicas, generando desigualdades y conflictos de acceso entre comunidades locales y empresas agropecuarias.
/213	Informalidad Tierra	UPRA	UPRA	Desarrollador de proyecto	Feature Class: La Unidad de Planificación Rural Agropecuaria (UPRA) orienta la política de gestión del territorio agropecuario en Colombia, desarrollando lineamientos y criterios para el ordenamiento de la propiedad rural. Parte de su función incluye calcular el Índice de Informalidad en la tenencia de la tierra, lo que

					permite identificar áreas con informalidad y proporciona insumos para la planificación social y productiva del territorio.
/214	*Validación Matriz de Confusión*	*Cataruben*	*Cataruben*	*Desarrollador de proyecto*	*Feature Dataset: La matriz de confusión evalúa la precisión de la interpretación de áreas forestales de la tierra comparando clases predichas con observadas. Esto permite medir la exactitud y confiabilidad de los datos generados.*
/215	*Validacion ACATAMA*	*Cataruben*	*Cataruben*	*Desarrollador de proyecto*	*Feature Class: La validación de precisión de los modelos de bosque a través de la herramienta Acatama consiste en evaluar la exactitud de las predicciones realizadas por los modelos, comparando los resultados obtenidos con datos de referencia. Este proceso asegura que los modelos reflejan correctamente las características del bosque y son confiables para la toma de decisiones en proyectos de conservación.*
/216	*Estratificacion MSPA*	*Cataruben*	*Cataruben*	*Desarrollador de proyecto*	*La estratificación MSPA mediante la metodología NREF se utiliza para evaluar la deforestación y degradación forestal en el área de estudio, identificando y clasificando patrones espaciales del paisaje. Esto permite analizar la distribución y conectividad de los bosques, ayudando a comprender los procesos de cambio y su impacto ambiental.*
/217	*bnb 2005 result mspa*	*Cataruben*	*Cataruben*	*Desarrollador de proyecto*	*Los resultados de la estratificación MSPA mediante la metodología NREF para el bosque de 2005 en la región de*

					referencia y áreas de proyecto muestran la distribución y conectividad de los parches de bosque, identificando áreas continuas, fragmentadas y degradadas. Estos datos son clave para evaluar la deforestación y diseñar estrategias de conservación.
/218	*bnb 2017 result mspa*	*Cataruben*	*Cataruben*	*Desarrollador de proyecto*	*Los resultados de la estratificación MSPA mediante la metodología NREF para el bosque de 2017 en la región de referencia y áreas de proyecto muestran la distribución y conectividad de los parches de bosque, identificando áreas continuas, fragmentadas y degradadas. Estos datos son clave para evaluar la deforestación y diseñar estrategias de conservación.*
/219	*Acatama*	*Cataruben*	*Cataruben*	*Desarrollador de proyecto*	*Acatama es una herramienta utilizada para validar la precisión de los modelos de bosque, comparando sus resultados con datos de referencia. Calcula métricas como la exactitud global y el índice Kappa para evaluar la fiabilidad de los modelos en la representación de la cobertura forestal.*
/220	*Bosque GEE 2008*	*Cataruben*	*Cataruben*	*Desarrollador de proyecto*	*Modelos en Google Earth Engine para determinar el bosque en 2008, basados en imágenes satelitales Landsat 5, utilizan algoritmos de clasificación para identificar y mapear áreas de cobertura forestal, evaluando cambios en la vegetación y la extensión de los bosques en ese año.*

/221	*Bosque GEE 2018*	*Cataruben*	*Cataruben*	*Desarrollador de proyecto*	*Modelos en Google Earth Engine para determinar el bosque en 2018, basados en imágenes de Landsat 8, utilizan algoritmos de clasificación para identificar y mapear áreas forestales, evaluando cambios en la vegetación durante ese año.*
/222	*Bosque GEE 2022*	*Cataruben*	*Cataruben*	*Desarrollador de proyecto*	*Modelos desarrollados en Google Earth Engine para la determinación de bosque en 2022, utilizando imágenes satelitales Landsat 8, emplean algoritmos de clasificación para identificar y mapear áreas de cobertura forestal, permitiendo evaluar cambios en la vegetación y la extensión de los bosques durante ese año.*
/223	*Observaciones IN SITU*	*Cataruben*	*Cataruben*	*Desarrollador de proyecto*	*Las observaciones in situ de las coberturas forestales se realizan mediante formatos de campo y se registran en un shapefile de puntos con sus coordenadas, para verificar la información de las coberturas forestales a partir de las imágenes satelitales.*
/224	*colombia_submission_nref_2023_-_2027_vf*	*IDEAM*	*IDEAM*	*WEB*	*El procedimiento NREF, realizado por el IDEAM, presenta el tercer Nivel de Referencia de Emisiones Forestales de Colombia para el período 2023-2027, en el marco de la decisión 1/CP.16 de la CMNUCC. Este proceso busca que el país sea evaluado para optar a los pagos por resultados bajo el mecanismo REDD+, que promueve la reducción de emisiones, conservación de bosques y manejo forestal sostenible.*

/225	FC-GOG-24. Procedimientos_puntos_calor	Cataruben	Cataruben	Desarrollador de proyecto	
/226	GGP-05. Procedimiento de Clasificación Supervisada BNB ORINOCO2.docx	Cataruben	Cataruben	Desarrollador de proyecto	Procedimiento para establecer un procedimiento detallado y estandarizado para la generación de mapas de "bosque" / "no bosque" para el proyecto ORINOCO2, utilizando técnicas de clasificación supervisada en la plataforma Google Earth Engine (GEE).
/227	GOG-01 Guía para verificación de áreas viables.docx	Cataruben	Cataruben	Desarrollador de proyecto	La guía para la verificación de áreas elegibles viables implica cuantificar y mapear las áreas de bosque del IDEAM en los predios aspirantes al proyecto Orinoco, según los requisitos de la Fundación Cataruben. Este proceso incluye la consulta y verificación de los linderos para asegurar la elegibilidad de las áreas para la conservación y manejo forestal.
/228	GOG-04 Guía para el Reconocimiento del Predio.docx	Cataruben	Cataruben	Desarrollador de proyecto	La guía establece un instructivo para la correcta digitalización, delimitación y ajuste de linderos, como actividad clave para definir los límites geográficos de los predios vinculados a las siguientes iniciativas de conservación.
/229	GOG-19.Guía para la cuantificación de la deforestación histórica anual.docx	Cataruben	Cataruben	Desarrollador de proyecto	La guía Establece el proceso metodológico para la cuantificación de la deforestación histórica anual en la región de referencia, áreas del proyecto y área de fugas.

/230	GOG-26. Instructivo AcATaMa.docx	Cataruben	Cataruben	Desarrollador de proyecto	El instructivo AcATaMa proporciona herramientas para cumplir con normativas internacionales y mejores prácticas en el diseño de muestreo, estimación de áreas de uso del suelo y evaluación de modelos de bosque. Su implementación asegura la fiabilidad y consistencia de los análisis, favoreciendo la gestión sostenible de los recursos naturales.
/231	Validación del Modelo de Clasificación a partir de datos de campo	Cataruben	Cataruben	Desarrollador de proyecto	La validación del modelo de clasificación es clave para asegurar la precisión de los resultados en mapeo de coberturas de la tierra. Se realizó comparando los resultados del modelo con datos de campo, utilizando AcATaMa, un complemento de QGIS, para evaluar objetivamente la calidad del modelo.
/232	IDEAM_Respuesta Radicado_S20245000028221 Información algorimto mapa de bosque no bosque	IDEAM	IDEAM	N/A	La respuesta al radicado 20249910026184 del IDEAM detalla los procedimientos y parámetros del algoritmo de clasificación de mapa bosque/no bosque, fundamentales para validar y mejorar los modelos de mapeo forestal conforme a los estándares técnicos establecidos.
/233	Protocolo de PDI para la cuantificacion de la deforestacion en colombia v2_1_	IDEAM	IDEAM	N/A	Este documento presenta la segunda versión del "Protocolo de Procesamiento Digital de Imágenes para la Cuantificación de la Deforestación en Colombia", enfocada en la Escala fina del protocolo inicial. Define su objetivo, los lineamientos para su implementación y los aspectos técnicos clave de la nueva

					metodología. Además, se detallan los pasos para el pre-procesamiento, procesamiento de imágenes, detección de cambios en el bosque y evaluación de resultados.
/234	Radicado_20249910046184	IDEAM	IDEAM	N/A	La solicitud del radicado del IDEAM sobre los mapas de "Bosque/No Bosque" para los años 2012, 2013 y 2014 tiene como fin obtener datos oficiales sobre la cobertura forestal en Colombia, necesarios para analizar la deforestación y el uso del suelo en esas fechas. Esta información es clave para estrategias de conservación, manejo forestal y proyectos REDD+.
/235	Solicitud Algoritmo IDEAM 20249910046184	IDEAM	IDEAM	N/A	Solicitud del algoritmo para los mapas "Bosque/No Bosque" del IDEAM utiliza imágenes satelitales y técnicas de procesamiento para clasificar áreas forestales y no forestales, ayudando en el monitoreo de la cobertura del suelo y la deforestación. Emplea métodos de aprendizaje automático para generar mapas precisos y actualizados.
/236	Análisis de similitud	Cataruben	Cataruben	Desarrollador de proyecto	El análisis de similitud para validar la línea base en el proyecto Orinoco asegura que los límites de la región de referencia, sin superponerse con el área del proyecto, sean al menos un 80% similares en variables clave como precipitación, temperatura, vegetación, suelos, pendientes y vías de acceso. Este enfoque garantiza la coherencia geográfica para evaluar de manera precisa los impactos del proyecto.

/237	Análisis de similitud BCR0002	Cataruben	Cataruben	Desarrollador de proyecto	El análisis de similitud para validar la línea base en el proyecto Orinoco asegura que la región de referencia y el área del proyecto sean al menos un 80% similares en variables como precipitación, temperatura, vegetación, suelos, pendientes y vías de acceso. Los resultados de este análisis, incluyendo cada componente, están disponibles en un paquete de ArcGIS Pro, facilitando su evaluación geográfica precisa.
/238	Anexo 1.2.1. Emisiones_Proyecto.xlsx	Cataruben	Cataruben	Desarrollador de proyecto	Hoja de calculo de las emisiones del proyecto (ex ante y ex post) incorpora todas las formulas de las metodologías BCR 0005 y BCR 0002
/239	colombia_submission_nref_2023_-_2027_vf.pdf	IDEAM	IDEAM	N/A	Documento oficial del Nivel de Referencia Forestal Nacional 2023-2027
/240	Soil Carbon Storage Potential of acids soil in colombians Eastern High Plains	Glenn Hyman1, Aracely Castro, Mayesse Da Silva1, Miguel Arango, Jaime Bernal, Otoniel Pérez and Idupulapati Madhusudana Rao1	Frontiers	NA	Articulo cientifico que incluye valores de COS en la región de la altillanura
/241	GPP-22. Muestreo en conglomerados para biomasa aerea y suelo en pastizales y bosques (1).pdf	Cataruben	Cataruben	Desarrollador de proyecto	Procedimientos de campo para definir factores de emisiones

/242	GPP-23. Procedimiento diseño de inventario para el monitoreo de crecimiento de biomasa-V04.pdf	Cataruben	Cataruben	Desarrollador de proyecto	Procedimientos de campo para definir factores de emision de biomasa en sabanas
/243	SUMIDEROS NATURALES DE CARBONO: UN ESTUDIO DE CASO EN MORICHALES DE LA ALTILLANURA COLOMBIANA	Orozco-Hueje, D., Barreto-Rojas, D. M., González, J. M. T., Silva-Parra, A., Serrano-Gómez, M., Castillo-Monroy, E. F., & Torres-Mora, M. A	Revista de investion agraria ambiental	NA	Articulo cientifico que incluye valores de COS y biomasa area en la región de la altillanura
/244	1.2.2.2. Soportes de campo	Cataruben	Cataruben	Desarrollador de proyecto	Fotografias de campo durante el establecimiento de los conglomerados de sabana para determinar biomasa aerea
/245	1.2.2.3.1 Cálculo No. Conglomerados.xlsx	Cataruben	Cataruben	Desarrollador de proyecto	Hoja de calculo para determinar el numero de conglomerados necesarios
/246	1.2.2.3.2 Datos Sabanas.xlsx	Cataruben	Cataruben	Desarrollador de proyecto	Hoja de calculo con los datos del muestreo de campo para biomasa de sabanas naturales, incluye datos de calculo de incertidumbre
/247	1.2.2.3.3 INFORME DE CONTROL DE CALIDAD DE DATOS_SABANAS v2.docx.pdf	Cataruben	Cataruben	Desarrollador de proyecto	Documento de revision de calidad de los conglomerados de sabana natural

/248	Resultados_T2023-170 (1).pdf	Cataruben	Cataruben	Desarrollador de proyecto	Inorme de Laboratorio CIAT resultado de biomasa procedente de los conglomerados sabana
/249	2.1.2. PREDIOS VINCULADOS	Cataruben	Cataruben	Desarrollador de proyecto	Carpeta que contiene la informacion juridica de los 147 predios vinculados, por cada predio se encuentra: -Estudio de Titulos -Contrato de Vinculación, -Acuerdo de confidencialidad, -Acta de Veracidad de la información
/250	2.1.1. CARTAS DE INTENCION	Cataruben	Cataruben	Desarrollador de proyecto	Carpeta que contiene 147 cartas de intención en participar en el proyecto orinoco2
/251	2.2.2. Soportes solicitud procedencia consulta previa	Cataruben	Cataruben	Desarrollador de proyecto	Carpeta que contiene los documentos requeridos por el ministerio del interior para validar si el proyecto requiere realiza consulta previa
/252	Resolución Procedencia de Consulta Previa ST - 1666 de 2023.pdf	ALFONSO ENRIQUE JIMÉNEZ ECHEVERRÍA Subdirector Técnico de Consulta Previa (E)	Ministerio del Interior	Desarrollador de proyecto	Resulcion que resuelve la NO PROCEDENCIA de la consulta previa para la implementación del proyecto orinoco2
/253	3.1. Environmental Impact Assessment	Cataruben	Cataruben	Desarrollador de proyecto	Matriz en excel que evalúa los impactos ambientales ocasionados por la implementación de las actividades del proyecto. las acciones tomadas y el monitoreo constante

/254	3.2. Socioeconomic Impact Assessment.xlsx	Cataruben	Cataruben	Desarrollador de proyecto	Matriz en excel que evalúa los impactos socioeconomicos ocasionados por la implementación de las actividades del proyecto. las acciones tomadas y el monitoreo constante
/255	SOPORTES	Cataruben	Cataruben	Desarrollador de proyecto	Archivos de respaldo para la evaluación de impactos ambientales y socioeconómicos
/256	4.1.1. Actores Interesados	Cataruben	Cataruben	Desarrollador de proyecto	Base de datos de actores interesados idenficados por el titular del proyecto
/257	4.1.2. Cartas Enviadas	Cataruben	Cataruben	Desarrollador de proyecto	Carpeta con 154 invitaciones enviadas por el titular del proyecto invitando a la cosulta de partes interesadas
/258	Respuesta a su solicitud CE 23 – 931 del 18 de octubre de 2023	Cataruben	Cataruben	Desarrollador de proyecto	Respuesta programa regional a la solicitud de verificación de las areas del proyecto
/259	ANEXO 5.1.	Cataruben	Cataruben	Desarrollador de proyecto	Archivo de calculo que describe el modelo financiero del proyecto demostrando su sostenibilidad financiera a corto mediano y largo plazo, gracias a los recursos percibidos por la venta de los certificados de carbono
/260	6.1. PLAN DE MONITOREO ACTIVIDADES DE PROYECTO	Cataruben	Cataruben	Desarrollador del proyecto	Excel que contempla el plan y reporte de monitoreo 2018-2022. Las actividades del proyecto, indicadores, medición y avances con sus respectivos entregables
/261	Plan de Capacitación.pdf	Cataruben	Cataruben	Desarrollador del proyecto	Plan de capacitaciones proyecto ORINOCO2

/262	Reporte de capacitaciones	Cataruben	Cataruben	Desarrollador del proyecto	Reporte de capacitaciones
/263	Listados de asistencia	Cataruben	Cataruben	Desarrollador del proyecto	Anexos - Listados de asistencia
/264	ID-G-6.1 Figuras de conservación.pdf	Cataruben	Cataruben	Desarrollador del proyecto	Reporte figuras de conservación
/265	Anexos resoluciones	Cataruben	Cataruben	Desarrollador del proyecto	Anexos - Resoluciones figuras de conservación
/266	ID-R-1.1.pdf	Cataruben	Cataruben	Desarrollador del proyecto	Informe reporte de implementación de actividades para la gestión del fuego
/267	Anexo 1 .Emisiones_Proyecto - 4. Monitoreo de emisiones (1).pdf	Cataruben	Cataruben	Desarrollador del proyecto	Anexos del Informe reporte de implementación de actividades para la gestión del fuego
/268	ID-R-4.1.pdf	Cataruben	Cataruben	Desarrollador del proyecto	Informe donde se evidencia los predios que implementan bancos dendrogenergéticos, los que no y los que están interesados en adoptar esta práctica sostenible, detallando los departamentos, municipios y predios.
/269	ID-R-3.2.pdf	Cataruben	Cataruben	Desarrollador del proyecto	Informe con el porcentaje de los predios que implementan estufas ecoeficientes y tradicionales, detallando los predios, tanto para los de naturaleza jurídica, mixta o natural.
/270	ID-S-1.1 - IMPLEMENTACIÓN DE HERRAMIENTAS DE MANEJO DEL PAISAJE Y	Cataruben	Cataruben	Desarrollador del proyecto	Informe se puede evidenciar los porcentajes de los predios que implementan herramientas de manejo del paisaje

	PRÁCTICAS PRODUCTIVAS SOSTENIBLES EN SABANAS .pdf				
/271	ID-S-2.1 - Implementación de prácticas productivas sostenibles en sabanas naturales.pdf	Cataruben	Cataruben	Desarrollador del proyecto	Informe donde se detallan las prácticas productivas sostenibles en sabanas naturales, se incluyen actividad y el número de predios donde se implementan.
/272	Plan de Capacitación .docx	Cataruben	Cataruben	Desarrollador del proyecto	Plan de talleres y temáticas que se centrarán en el fortalecimiento de la agencia y la responsabilidad reconocida de las gestoras de ecosistemas
/273	Cronograma detallado de actividades en los predios.xlsx	Cataruben	Cataruben	Desarrollador del proyecto	Actividades desarrolladas en los predios, apartir del diseño participatiivo con la comunidad
/274	Soporte Implementación de actividades por predio	Cataruben	Cataruben	Desarrollador del proyecto	Anexos por predio sobre las actividades de desarrolladas a partir del diseño del plan de implementación predial
/275	6.2. PLAN DE MONITOREO SALVAGUARDAS	Cataruben	Cataruben	Desarrollador de proyecto	Archivo Excel que evidencia el monitoreo y reporte del cumplimiento de las salvaguardas REDD+, en concordancia con la interpretación nacional colombiana.
/276	6.5.1.3.1.1. Informe de Cumplimiento Salvaguarda A.docx	Cataruben	Cataruben	Desarrollador de proyecto	Archivo en Word sobre el informe de cumplimiento de la Salvaguarda A: acorde con los programas forestales nacionales y acuerdos internacionales.

/277	6.5.1.3.1.2. Matriz de Compatibilidad Legal - Orinoco2.xlsx	Cataruben	Cataruben	Desarrollador de proyecto	Archivo en Excel sobre el análisis de compatibilidad legal de las actividades del proyecto.
/278	6.5.1.3.1.3. Soportes Normatividad Legal	Cataruben	Cataruben	Desarrollador de proyecto	Documentos de respaldo de la matriz de compatibilidad legal
/279	6.5.1.3.2.1. Informe de Cumplimiento Salvaguarda B.docx	Cataruben	Cataruben	Desarrollador de proyecto	Archivo en Word sobre el informe de cumplimiento de la Salvaguarda B: transparencia y eficacia de las estructuras de gobernanza forestal
/280	6.5.1.3.2.2.1. Cuñas radiales	Cataruben	Cataruben	Desarrollador de proyecto	Cuñas radiales producidas para difundir la información del proyecto
/281	6.5.1.3.2.2.2. Comunicaciones	Cataruben	Cataruben	Desarrollador de proyecto	Documentos en PDF que demuestran la comunicación sostenida a través de correo electrónico y WhatsApp.
/282	6.5.1.3.2.2.3. Socializaciones presenciales y/o virtuales	Cataruben	Cataruben	Desarrollador de proyecto	Documentos en PDF que integran las evidencias de socialización del proyecto
/283	6.5.1.3.2.2.3. Socializaciones presenciales y/o virtuales	Cataruben	Cataruben	Desarrollador de proyecto	Documentos en PDF que integran las evidencias de socialización del proyecto
/284	6.5.1.3.2.2.4.1. Difusión redes sociales	Cataruben	Cataruben	Desarrollador de proyecto	Imágenes que demuestran la difusión de la información en las redes sociales.
/285	6.5.1.3.2.2.4.2. Flyers	Cataruben	Cataruben	Desarrollador de proyecto	Flyers mediante los cuales se realizaron diferentes invitaciones de interés sobre el proyecto.

/286	6.5.1.3.2.2.4.3. Plataformas	Cataruben	Cataruben	Desarrollador de proyecto	Imágenes que demuestran la publicación de la información en las diferentes plataformas digitales
/287	Portafolio Orinoco2.pdf	Cataruben	Cataruben	Desarrollador de proyecto	Archivo en PDF mediante el cual se da a conocer el proyecto Orinoco.
/288	Presentacion ORINOCO2-Socialización.pdf	Cataruben	Cataruben	Desarrollador de proyecto	Archivo en PDF sobre la presentación de apoyo del proyecto Orinoco.
/289	6.5.1.3.2.2.4.6. Reportes	Cataruben	Cataruben	Desarrollador de proyecto	Archivos en PDF sobre el reporte de emisión de los certificados de carbono y el estado de cuenta de los beneficios económicos
/290	6.5.1.3.2.2.4.7. Simulador financiero	Cataruben	Cataruben	Desarrollador de proyecto	Archivos en PDF sobre los simulador de beneficios económicos
/291	6.5.1.3.2.2.4.8. Videos	Cataruben	Cataruben	Desarrollador de proyecto	Videos explicativos o guías sobre los diferentes aspectos en el marco del proyecto
/292	Video Foro ABC.mp4	Cataruben	Cataruben	Desarrollador de proyecto	Video que integra los foros de biodiversidad, carbono y agua
/293	6.5.1.3.2.2.6. Sistema de PQRS	Cataruben	Cataruben	Desarrollador de proyecto	Archivos en PDF que respaldan el procedimiento, así como el canal para presentar peticiones, quejas, reclamos y sugerencias.
/294	6.5.1.3.2.2.7. Informes de gestión	Cataruben	Cataruben	Desarrollador de proyecto	Archivos en PDF sobre los boletines informativos de los avances y resultados del proyecto
/295	6.5.1.3.3.3 Informe de Cumplimiento	Cataruben	Cataruben	Desarrollador de proyecto	Archivo en Word sobre el informe de cumplimiento de la Salvaguarda C: respeto por el

	Salvaguarda C.docx				conocimiento tradicional y derechos de las comunidades.
/296	6.5.1.3.3.2.1 Inventario de comunidades étnicas	Cataruben	Cataruben	Desarrollador de proyecto	Archivo en Excel sobre el inventario de las comunidades presentes en el área de desarrollo del proyecto, así como las salidas gráficas donde se ubican.
/297	6.5.1.3.3.2.2 Mesas de trabajo comunidad étnica	Cataruben	Cataruben	Desarrollador de proyecto	Archivo en PDF que soporta las mesas de trabajo realizadas con las comunidades pertinentes en el área de desarrollo de Orinoco
/298	Registro de Asistencia.pdf	Cataruben	Cataruben	Desarrollador de proyecto	Archivo en PDF que demuestra la participación de los gestores del ecosistema en la consolidación de las actividades del proyecto.
/299	6.5.1.3.5.3. Informe de Cumplimiento Salvaguarda E .docx	Cataruben	Cataruben	Desarrollador de proyecto	Archivo en Word sobre el informe de cumplimiento de la Salvaguarda E: conservación y beneficios.
/300	6.5.1.3.5.4. Plan de manejo felinos.docx	Cataruben	Cataruben	Desarrollador de proyecto	Archivo en Word que contempla el plan de manejo para la conservación de los felinos.
/301	Salidas gráficas	Cataruben	Cataruben	Desarrollador de proyecto	Imágenes de los mapas de cada predio que evidencian la no conversion de bosques
/302	Salidas gráficas	Cataruben	Cataruben	Desarrollador de proyecto	Imágenes de los mapas de cada predio que evidencian el monitoreo de bosques.
/303	6.5.1.3.5.1.3 Monitoreo no conversión de bosque.xlsx	Cataruben	Cataruben	Desarrollador de proyecto	Documento en Excel que evidencia el monitoreo de la conservación de los bosques

/304	6.5.1.3.5.2.1 Certificaciones	Cataruben	Cataruben	Desarrollador de proyecto	Archivos en PDF sobre las certificaciones ambientales emitidas por las Corporaciones Autónomas Ambientales, donde se evidencia la no infracción o sanción.
/305	6.5.1.3.6.2 Informe de Cumplimiento Salvaguarda F.docx	Cataruben	Cataruben	Desarrollador de proyecto	Archivo en Word sobre el informe de cumplimiento de la Salvaguarda F: prevenir riesgos de reversión
/306	Minuta contrato proyecto OrinocO2- V3. 03-07-2023.pdf	Cataruben	Cataruben	Desarrollador de proyecto	Archivo en PDF sobre el contrato de vinculación, donde se contempla la cláusula del riesgo de reversión.
/307	6.5.1.3.7.1 Informe de Cumplimiento Salvaguarda G.docx	Cataruben	Cataruben	Desarrollador de proyecto	Archivo en Word sobre el informe de cumplimiento de la Salvaguarda G: evitar el desplazamiento de emisiones
/308	6.5.1.3.7. Análisis de fugas y causas	Cataruben	Cataruben	Desarrollador de proyecto	Salidas gráficas sobre el cinturón de fugas
/309	6.3. HERRAMIENTA-ODS.xlsx	Cataruben	Cataruben	Desarrollador de proyecto	Archivo en Excel que demuestra y reporta la contribución de las actividades del proyecto a los Objetivos de Desarrollo Sostenible: ODS 6 (agua limpia y saneamiento) ODS 13 (acción por el clima) ODS 15 (conservación de la biodiversidad)
/310	9.1.2 PCUEAAs	Cataruben	Cataruben	Desarrollador de proyecto	Documentos tecnicos PUEAA que detallan las actividades vinculadas al Objetivo de Desarrollo Sostenible (ODS) 6, enfocadas en optimizar el consumo de agua, reducir su desperdicio y fomentar prácticas sostenibles para

					asegurar su disponibilidad futura.
/311	9.1.1 Diagnóstico	Cataruben	Cataruben	Desarrollador de proyecto	Documento técnico que presenta el diagnóstico inicial de las actividades relacionadas con el ODS 6, con el objetivo de identificar las necesidades clave de la comunidad y proponer soluciones viables para mejorar la gestión del agua. y las intervenciones iniciales durante el periodo de monitoreo
/312	Anexo 1.2.1. Emisiones_Proyecto.xlsx	Cataruben	Cataruben	Desarrollador de proyecto	Hoja de cálculo que detalla las emisiones del proyecto, respaldando la contribución al ODS 13
/313	ODS-PdD.docx	Cataruben	Cataruben	Desarrollador de proyecto	Documento tecnico que describe las actividades alrededor del ODS 15, así como la crecación del AIDB o area de improtancia para la biodiversidad
/314	Informe B2.1 Cobeneficio Palma Cera (ORINOCO2).docx	Cataruben	Cataruben	Desarrollador de proyecto	Documento tecnico que describe las actividades alrededor del Cobeneficio de palma de cera.
/315	Informe B1.1 Cobeneficio Palma Cera (ORINOCO2).docx	Cataruben	Cataruben	Desarrollador de proyecto	Documento tecnico que describe las sobre los Altos Valores de Conservación alrededor del Cobeneficio de palma de cera, así como la informacion relacionada con proteccion de la biodiversidad relacionada con estas salidas.
/316	B3. Informe Restauración Palma Cera.docx	Cataruben	Cataruben	Desarrollador de proyecto	Documento tecnico que describe las actividades de restaruracion y conservacion de los recursos vegetales para el mantenimiento de los servicios ecosistemicos

/317	Plan de Capacitación .docx	Cataruben	Cataruben	Desarrollador de proyecto	Documento de plan de fortalecimiento y de capacidades del componente equidad de genero y avance en el periodo de monitoreo
/318	Política de Archivo Fundación Cataruben.pdf	Cataruben	Cataruben	Desarrollador de proyecto	Es la política de archivo que permite de una forma clara y coherente garantizar la organización y disponibilidad de la documentación e información.
/319	GAM-04. Manual Archivo.pdf	Cataruben	Cataruben	Desarrollador de proyecto	Este documento plasma las pautas para la aplicación de las transferencias documentales, consulta y préstamo de documentos, apertura de nuevos expedientes, estableciendo las políticas seguridad de la información y gestión documental junto con el manejo de documentos electrónicos.
/320	1. GAM-03. Manual de Seguridad de la Información.pdf	Cataruben	Cataruben	Desarrollador de proyecto	Este documento establece las medidas de seguridad y mecanismos de control de los activos de información de la FUNDACIÓN CATARUBEN, en el marco del Manual de Gestión de Seguridad de la Información.
/321	GPP-20. Lineamientos de Calidad para la Consolidación de la Información Jurídica, Técnica y Financiera en Base de Datos V02.pdf	Cataruben	Cataruben	Desarrollador de proyecto	Este documento establece lineamientos de la información jurídica, técnica y financiera de los predios vinculados
/322	GOP-07. Procedimiento para el monitoreo	Cataruben	Cataruben	Desarrollador de proyecto	Este documento establece los lineamientos para el monitoreo de emisiones por deforestación ocurridos

	de los límites del proyecto .docx.pdf				dentro de los límites del proyecto.
/323	GDN-08. Política Protección Datos Personales.pdf	Cataruben	Cataruben	Desarrollador de proyecto	Este documento establece directrices y procedimientos claros para garantizar el tratamiento adecuado, seguro y confidencial de la información personal.
/324	GDN-07. Política Propiedad Intelectual.pdf	Cataruben	Cataruben	Desarrollador de proyecto	Este documento establece un proceso de gestión y regulación interno y externo, activo, transparente y responsable a través de principios y lineamientos que permitan afianzar e incentivar la investigación científica y la creación de obras en la Fundación.
/325	GDN-01. Política Gestión Integral.pdf	Cataruben	Cataruben	Desarrollador de proyecto	Este documento establece un marco de acción para que la organización gestione de manera eficiente, sostenible y coherente los distintos sistemas de gestión implementados, como calidad, medio ambiente, seguridad y salud en el trabajo.
/326	GAP-10. Procedimiento de Gestión de Información Documentada.pdf	Cataruben	Cataruben	Desarrollador de proyecto	Este documento establece la metodología para la elaboración, identificación, revisión, actualización, aprobación, distribución, acceso, recuperación, almacenamiento, preservación, tiempo de retención y disposición de documentos y registros de origen interno y de origen externo
/327	Bcr0005 Quantification Of GHG Emissions	BIocarbon Standar	BIocarbon Standar	WEB	Metodología BCR

	Reduction Version 1.1				
/328	Quantification Of GHG Emission Reductions Redd+ Projects Bcr0002 Version 4.0	BIocarbon Standar	BIocarbon Standar	WEB	Metodología BCR
/329	Bcr Tool Sustainable Development Goals (Sdg) Version 1.0	BIocarbon Standar	BIocarbon Standar	WEB	Herramienta BCR
/330	Bcr Tool To Demonstrate Compliance With The Redd+ Safeguards Version 1.1	BIocarbon Standar	BIocarbon Standar	WEB	Herramienta BCR
/331	Bcr Tool Avoiding Double Counting (Adc), Version 2.0	BIocarbon Standar	BIocarbon Standar	WEB	Herramienta BCR
/332	Bcr Tool Monitoring, Reporting And Verification (Mrv), Version 1.0	BIocarbon Standar	BIocarbon Standar	WEB	Herramienta BCR
/333	Bcr Tool Sustainable Development Safeguards, Version 1.1.	BIocarbon Standar	BIocarbon Standar	WEB	Herramienta BCR
/334	Bcr Guidelines Baseline And Additionality, Version 1.3	BIocarbon Standar	BIocarbon Standar	WEB	Herramienta BCR

/335	Bcr Tool Permanence And Risk Management, Version 1.1	BIocarbon Standar	BIocarbon Standar	WEB	Herramienta BCR
/336	Biocarbon Estandar	BIocarbon Standar	BIocarbon Standar	WEB	Estandar
/337	Resolución 1447 de 2018	BIocarbon Standar	BIocarbon Standar	WEB	
/338	Soil carbon stocks and nitrous oxide emissions of pasture systems in Orinoquía region of Colombia: potential for developing land-based greenhouse gas removal projects.			WEB	Articulo scitifco que estabelce COS en sabanas de la orinoquia 79.9 tC/ha up to 30 cm.
/339	Orinoquía Region Characterization.	National university of Colombia. (2013, May).		WEB	-
/340	National Culture Information System.	National Cultural Informatio n System. (n.d.).		WEB	-
/341	"STRUCTURING OF THE SPORTS FISHING TOURISM PRODUCT FOR THE DEPARTMENT OF VICHADA" FIN REPORT	Nakusa Red Regional Tourist. (n.d.). PROJECT FNT-07-2014		WEB	-

/342	Social and Economic Development Plan "The META, Land of Opportunities. Inclusion - Reconciliation - Equity 2016-2019	Governance of Meta. (2016).		WEB	-
/343	Regional Economic Situation Report.	DANE		WEB	-
/344	Main Crops by Planted Area in 2017.	Ministry of Agriculture and Rural Development. (2018).		WEB	-
/345	The Zones of Interest for Rural, Economic and Social Development (ZIDRES) against the Colombian countryside	Macha , V. , Strong , A. , Martinez , J. H. , Cande , F. , & Mateus , L. (2016).		WEB	-
/346	The Development Plan "Let's Build Vichada 2016-2019"	Gobernacion del vichada		WEB	-
/347	Development Plan of Vichada for the period 2020-2023, "Work for all Vichada",	Gobernacion del vichada		WEB	-
/348	Cultural Aspects of the Department of Vichada	Gobernacion del vichada		WEB	-
/349	Bovine Census of Colombia 2018	ICA coombia	ICA	WEB	-

/350	Evaluaciónes municipales de agricultura	MDRD		WEB	
/351	Technical Bulletin Departmental Annual Accounts – Colombia Gross Domestic (GDP)	DANE	DANE	WEB	-
/352	Law 2294/2023	Congress of the Republic of Colombia	Congress of the Republic of Colombia	State Entity	-
/353	Law 2169/2021	Congress of the Republic of Colombia	Congress of the Republic of Colombia	State Entity	-
/354	ISO 14064-2:2019	International Organización for Standarización	Internacional Organización for Standarizatión	State Entity	Norma
/355	ISO 14064-3:2019	International Organización for Standarización	Internacional Organización for Standarizatión	State Entity	Norma
/356	Decree 926 of 2017	Ministry of Finance and Public Credit	Ministry of Finance and Public Credit	State Entity	
/357	Resolution 1447 of 2018	Ministry of Environment and Sustainable	Ministry of Environment and Sustainable Development	State Entity	

		Development			
/358	6.4. ANALISIS Y GESTION DE RIESGOS	Cataruben	Cataruben	State Entity	Archivo que consolidad el manejo de riesgos del proyecto, la toma de medidas para reducir y mitigar los riesgos asi como el constate monitoreo y reelvaluacion de los riegos.
/359	IPCC, Grasslands, in Guidelines for Greenhouse Gas Inventories. 2006, IPCC.	IPCC	IPCC	WEB	IPCC guidelines
/360	Mitigation of carbon emissions to the atmosphere by forest management. The Commonwealth Forestry Review, 80-91	Brown, S., Sathaye, J., Cannell, M., & Kauppi, P. E. (1996).		WEB	Documento que presenta información que soporta la elección de fuentes y reservorios
/361	Globally Rising Soil Heterotrophic Respiration over Recent Decades. Nature	Bond-Lamberty, B., Bailey, V. L., Chen, M., Gough, C. M., and Vargas, R. (2018).		WEB	Documento que presenta información que soporta la elección de fuentes y reservorios
/362	Protocol for the national and subnational estimation of biomass	Yepes A.P., Navarrete D.A., Duque A.J., Phillips J.F., Cabrera K.R., Álvarez, E., García, M.C., Ordoñez, M.F. (2011).	IDEAM	WEB	Documento que presenta información que soporta la elección de fuentes y reservorios

/363	*Protocols for the measurement, monitoring, and reporting of structure, biomass, carbon stocks and greenhouse gas emissions in tropical peat swamp forests*	*Kauffman et al. 2016*	*Center for International Forestry Research (CIFOR)*	*WEB*	*Documento que presenta información que soporta la elección de fuentes y reservorios*
/364	*Protocolo del invenrario Forestal nacional de Colombia*	*IDEAM*	*IDEAM*	*WEB*	
/365	*Ley 99 de 1993*	*MINISTERIIO DE MEDIO AMBIENTE*	*MINISTERIIO DE MEDIO AMBIENTE*	*WEB*	*por la cual se crea el Ministerio del Medio Ambiente, se reordena el Sector Público encargado de la gestión y conservación del medio ambiente y los recursos naturales renovables, se organiza el Sistema Nacional Ambiental, SINA, y se dictan otras disposiciones."*
/366	*Decreto 1791 de 1996*	*MINISTERIIO DE MEDIO AMBIENTE*	*MINISTERIIO DE MEDIO AMBIENTE*	*WEB*	*Por medio del cual se establece el régimen de aprovechamiento forestal.*
/367	*Resolución 128*	*MINISTERIIO DE MEDIO AMBIENTE*	*MINISTERIIO DE MEDIO AMBIENTE*	*WEB*	*Por medio de la cual se adoptan bases normativas*
/368	*Decreto 2372 de 2010*	*MINISTERIIO DE MEDIO AMBIENTE*	*MINISTERIIO DE MEDIO AMBIENTE*	*WEB*	*Por el cual se reglamenta el Decreto-ley 2811 de 1974, la Ley 99 de 1993, la Ley 165 de 1994 y el Decreto-ley 216 de 2003, en relación con el Sistema Nacional de Áreas Protegidas, las categorías de manejo que lo conforman y se dictan otras disposiciones.*

/369	CDM-UNFCC AR-TOOL-02	CDM	CDM	WEB	Combined tool to identify the baseline scenario and demonstrate additionality in A/R CDM project activities
/370	Validación Matriz de Confusión	Cataruben	Cataruben	Desarrollador de proyecto	Feature Dataset: La matriz de confusión evalúa la precisión de la interpretación de áreas forestales de la tierra comparando clases predichas con observadas. Esto permite medir la exactitud y confiabilidad de los datos generados.
/371	Validacion_RReferencia_2005	Cataruben	Cataruben	Desarrollador de proyecto	Feature Class: La validación de precisión de los modelos de bosque en la region de referencia a través de la herramienta Acatama consiste en evaluar la exactitud de las predicciones realizadas por los modelos, comparando los resultados obtenidos con datos de referencia. Este proceso asegura que los modelos reflejan correctamente las características del bosque y son confiables para la toma de decisiones en proyectos de conservación.
/372	Validacion_RReferencia_2017	Cataruben	Cataruben	Desarrollador de proyecto	Feature Class: La validación de precisión de los modelos de bosque en la region de referencia a través de la herramienta Acatama consiste en evaluar la exactitud de las predicciones realizadas por los modelos, comparando los resultados obtenidos con datos de referencia. Este proceso asegura que los modelos reflejan correctamente las características del bosque y son confiables para la toma de

					decisiones en proyectos de conservación.
/373	*validacion RReferencia 2005 Results*	*Cataruben*	*Cataruben*	*Desarrollador de proyecto*	*Resultados de la precision validad en acatama para el bosque en la region de referencia del año 2005*
/374	*validacion RReferencia 2017 Results*	*Cataruben*	*Cataruben*	*Desarrollador de proyecto*	*Resultados de la precision validad en acatama para el bosque en la region de referencia del año 2017*
/375	*Validación Matriz de Confusión*	*Cataruben*	*Cataruben*	*Desarrollador de proyecto*	*Feature Dataset: La matriz de confusión evalúa la precisión de la interpretación de coberturas de la tierra comparando clases predichas con observadas. Esto permite medir la exactitud y confiabilidad de los datos generados.*
/376	*Puntos Validacion RReferencia 2012*	*Cataruben*	*Cataruben*	*Desarrollador de proyecto*	*Feature Class: Los puntos de validación de la linea base de corine land cover para el año 2012 en la region de referencia localizado en Meta y Vichada son un archivo geoespacial con ubicaciones estratégicas para verificar la precisión de las clasificaciones de coberturas generadas mediante imágenes satelitales.*
/377	*Puntos Validacion RReferencia 2018*	*Cataruben*	*Cataruben*	*Desarrollador de proyecto*	*Feature Class: Los puntos de validación de la linea base de corine land cover para el año 2018 en la region de referencia localizado en Meta y Vichada son un archivo geoespacial con ubicaciones estratégicas para verificar la precisión de las clasificaciones de coberturas generadas mediante imágenes satelitales.*

/378	Matriz de confusion RReferencia 2012	Cataruben	Cataruben	Desarrollador de proyecto	Matriz de confusion de los resultados de las coberturas naturales par ala region de referencia validadas con clasificacion de imagenes satelitales para el año 2012
/379	Matriz de confusion RReferencia 2018	Cataruben	Cataruben	Desarrollador de proyecto	Matriz de confusion de los resultados de las coberturas naturales par ala region de referencia validadas con clasificacion de imagenes satelitales para el año 2018
/380	Acuerdos Cero Deforestación: La apuesta por producir protegiendo la biodiversidad	El espectador	El Espectador	WEB	Informe tecnico periodistico
/381	Política de deforestación en Colombia (CONPES 4021 de diciembre de 2020)	Ministerio del medio ambiente	Ministerio del medio ambiente	WEB	politica nacional
/382	Reconversión Ganadera y Sistemas Silvopastoriles en Sabanas	CIPÄV	CIPAV	WEB	Articulo con información científica y tecnica
/383	Ganadería Colombiana Sostenible ¿Como Vamos?	Fedegan	Fedegan	WEB	Articulo con información científica y tecnica
/384	CADENAS SOSTENIBLES ANTE UN CLIMA CAMBIANTELA GANADERÍA EN COLOMBIA	GIZ	GIZ	WEB	Articulo con información científica y tecnica

/385	Empresas Privadas	Geoportal DANE	DANE	WEB	Representa la ubicacion de diferentres empresas en la region donde se desarrolla el proyecto
/386	Agroindustria	IDEAM	IDEAM	WEB	Coberturas de la tierra 2022
/387	Tueky Test	Cataruben	Cataruben	Desarrollador de proyecto	Prueba estadistica comparacion cinturon fugas
/388	Produccion Local	SIPRA	SIPRA	WEB	Agricultura Familiar
/389	Factores Economicos	SIPRA	SIPRA	WEB	Mercado de Tierras y Frontera Agricola
/390	NREF Colombia 2018	IDEAM	IDEAM	WEB	niveles de referecia de emision por deforestación y degradación Forestal
/391	ID-R-8.1	Cataruben	Cataruben	Desarrollador del Proyecto	Informe que incluye incluye información sobre temáticas abordadas, objetivos, contenido teórico, correspondiente; así mismo, se presenta una matriz que relaciona, para cada sesión de capacitación. y los respectivos listados de asistencia.
/392	ID-R-3.1	Cataruben	Cataruben	Desarrollador del Proyecto	Informe de puntos de calor monitoerados que contribuyeron a generar las alertas tempranas con los propietarios de los predios
/393	Estrategia de Gobernanza Orinoco2.docx	Cataruben	Cataruben	Desarrollador del Proyecto	Documento rector de la gobernanza, el cual se implementará durante el periodo 2025 en adelante
/394	ID-R-6.1 Señalizácion de Areas de	Cataruben	Cataruben	Desarrollador del Proyecto	ocumento que evidencia la identificación de áreas de importancia biológica para los predios que hacen parte del

	importancia biologica				proyecto en conjunto con los propietarios de los predios. También incluye la planeación para realizar la respectiva señalización en el año 2025.
/395	ID-B-2.1 ODS15	Cataruben	Cataruben	Desarrollador del Proyecto	Carpeta que contine Plan de monitoreo biodiversidad participativo y anexos
/396	Delimitación del Cinturón de Fugas BCR0002 - BCR005 .pdf	Cataruben	Cataruben	Desarrollador del Proyecto	Proceso metodologico para definición del cinturon de fugas
/397	Deforestación Bosque Borde	Cataruben	Cataruben	Desarrollador del Proyecto	Representa la deforestacion en bosque borde en el periodo de monitoreo del proyecto
/398	MSPA_Guide	Comision Europea/ Bioeconomia. peter.vogt @ec.europa .eu 2023	Comision Europea	WEB	Guia ejecucion de Algoritmo degradacion MSPA - De acuerdo con Propuesta de nivel de referencia de las emisiones forestales de Colombia para el periodo 2023 - 2027 como mecanismo para optar al pago por resultados REDD+ bajo la CMNUCC (IDEAM, 2024)
/399	Morphological Segmentation of binary patterns.	Soille, P. Vogt, P. (2009)	Comision Europea	WEB	Conceptos, Metodos y utilizacion de MSPA
/400	Morphological spatial pattern analysis_open source release.	Soille P. and Vogt P. (2022)	Comision Europea	WEB	Conceptos, Metodos y utilizacion de MSPA
/401	Salvaguardas Ambientales y Sociales para REDD+ en Colombia	Camacho A., Lara I., Guerrero R. D. 2017. WWFColombia, ONU REDD	Ministerio de Ambiente y Desarrollo Sostenible	WEB	Interpretación nacional

		Colombia. Bogotá-Colombia			
/402	GGP-06 Procedimiento Geoespacial para la implementación de proyectos de Carbono_V.02-1.pdf	Cataruben	Cataruben	Desarrollador del Proyecto	Describe los diferentes procedimientos para el análisis de los datos de actividad en proyectos REDD
/403	Law 2294/2023	Congress of the Republic of Colombia	Congress of the Republic of Colombia	VERSA	La Ley 2294/2023, relacionada con un Plan de Desarrollo, promueve el crecimiento económico, social y sostenible a través de inversiones en infraestructura, el fomento de un desarrollo respetuoso con el medio ambiente, la inclusión de todas las comunidades, el impulso de la innovación y la tecnología, y la mejora de la educación y capacitación de la población. Su objetivo es asegurar que los beneficios del desarrollo sean equitativos y contribuyan al bienestar general.
/404	ISO 14064-2:2019	International Organización for Standarización	Internacional Organización for Standarización	VERSA	La norma ISO 14064-2:2019 proporciona directrices para la cuantificación, monitoreo y comunicación de reducciones de emisiones de gases de efecto invernadero (GEI) a nivel de proyectos. Establece procedimientos para definir los límites del proyecto, calcular las emisiones reducidas, realizar el seguimiento de las actividades y verificar los resultados, asegurando así la transparencia y credibilidad en los informes. Esta norma es fundamental para organizaciones que buscan gestionar sus emisiones de GEI efectivamente y contribuir a la mitigación del cambio climático

/405	ISO 14064-3:2019	International Organización for Standarization	International Organización for Standarization	VERSA	La norma ISO 14064-3:2019 ofrece directrices para la verificación y validación de informes de gases de efecto invernadero (GEI), asegurando la credibilidad y la transparencia en la cuantificación de las emisiones y reducciones de GEI. Esta norma establece un marco para evaluar si los informes cumplen con los requisitos establecidos en las normas ISO 14064-1 y 14064-2, proporcionando orientaciones sobre el diseño del proceso de verificación, la recopilación de información, la evaluación de datos y la elaboración de informes de validación.
/406	Decree 926 of 2017	Ministry of Finance and Public Credit	Ministry of Finance and Public Credit	VERSA	El impuesto al carbono es un mecanismo fiscal que grava la producción, distribución o consumo de combustibles fósiles para reducir las emisiones de gases de efecto invernadero. Al aumentar el costo de estos combustibles, busca desincentivar su uso, fomentar la adopción de energías renovables y generar ingresos que pueden financiar proyectos sostenibles. Además, promueve la eficiencia energética al incentivar tanto a empresas como a consumidores a optar por alternativas más limpias. Este impuesto se considera una herramienta efectiva en la lucha contra el cambio climático, aunque su implementación varía según el contexto de cada país.
/407	Resolution 1447 of 2018	Ministry of Environment and Sustainable	Ministry of Environment and	VERSA	La Resolución 1447 de 2018 establece lineamientos y regulaciones para el funcionamiento de un mercado de carbono en Colombia. Esta

		Development	*Sustainable Development*		*norma busca promover la reducción de emisiones de gases de efecto invernadero (GEI) mediante la implementación de mecanismos de comercio de derechos de emisiones. La resolución define el marco normativo para la asignación de unidades de carbono, facilitando que las empresas puedan comprar y vender derechos de emisión, lo que incentiva a aquellas que logran reducir sus emisiones a generar ingresos a través de la venta de sus derechos no utilizados. Además, busca fomentar proyectos de mitigación y promover la sostenibilidad ambiental, contribuyendo así a los compromisos de Colombia en la lucha contra el cambio climático.*
/408	*BIOCARBON CERT. 2024. BCR STANDARD. VERSION 3.4.*	*Biocarbon Standard*	*Biocarbon Standard*	*VERSA*	
/409	*ISO 14064-3:2019*	*International Organización for Standarization*	*Internacional Organización for Standarización*	*VERSA*	*La norma ISO 14064-3:2019 ofrece directrices para la verificación y validación de informes de gases de efecto invernadero (GEI), asegurando la credibilidad y la transparencia en la cuantificación de las emisiones y reducciones de GEI. Esta norma establece un marco para evaluar si los informes cumplen con los requisitos establecidos en las normas ISO 14064-1 y 14064-2, proporcionando orientaciones sobre el diseño del proceso de verificación, la recopilación de información, la evaluación de datos y la elaboración de informes de validación.*

/410	NATIONAL CLIMATE CHANGE POLICY 2017	Ministry of Environment and Sustainable Development	Ministry of Environment and Sustainable Development	VERSA	Nacional de Cambio Climático de Colombia 2017 establece un marco estratégico para abordar los desafíos del cambio climático en el país. Su objetivo principal es promover la adaptación y la mitigación de los efectos del cambio climático, protegiendo los recursos naturales y la biodiversidad, y garantizando el bienestar de la población. La política se centra en la gestión integral del riesgo climático, la promoción de energías renovables, la sostenibilidad en el uso de los recursos y el fortalecimiento de las capacidades institucionales. También busca impulsar la investigación y la educación ambiental, así como fomentar la participación de diferentes sectores y comunidades en la implementación de acciones climáticas. Con esta política, Colombia busca avanzar hacia una economía baja en carbono y resiliente al cambio climá
/411	Law 2169 2021	Ministry of Environment and Sustainable Development	Ministry of Environment and Sustainable Development	VERSA	La Ley 2169 de 2021 de Colombia establece disposiciones para la gestión integral de residuos, fomentando la economía circular y la sostenibilidad ambiental. Su objetivo principal es promover la reducción, reutilización y reciclaje de residuos, así como la responsabilidad extendida del productor en la gestión de los mismos. La ley incluye lineamientos para la promoción de prácticas sostenibles, incentivos para la innovación en el manejo de residuos, y la creación de condiciones para la participación de todos los actores en el proceso, incluidos consumidores y empresas. Además, busca mejorar la calidad de vida de las

					comunidades y la protección del medio ambiente, asegurando que la gestión de residuos sea una responsabilidad compartida entre el Estado, el sector privado y la sociedad.
/412	Approval of the RAMSAR Convention (Law 357), year 1999	Ministry of Environment and Sustainable Development	Ministry of Environment and Sustainable Development	VERSA	La Ley 357 de 1999 de Colombia aprueba la Convención de Ramsar sobre los Humedales de Importancia Internacional. Esta ley tiene como objetivo la conservación y el uso sostenible de los humedales, reconociendo su valor ecológico y social. La Convención promueve la protección de estos ecosistemas, que son esenciales para la biodiversidad, el control de inundaciones, la regulación del clima y la provisión de recursos hídricos. A través de la aprobación de esta ley, Colombia se compromete a implementar políticas y acciones que garanticen la preservación de sus humedales, asegurando su función como hábitat para diversas especies y su contribución al bienestar humano y al desarrollo sostenible del país.
/413	NDC Update, year 2020	Ministry of Environment and Sustainable Development	Ministry of Environment and Sustainable Development	VERSA	La actualización de las Contribuciones Nacionales Determinadas (NDC, por sus siglas en inglés) de Colombia en 2020 presenta el compromiso del país para enfrentar el cambio climático, alineándose con el Acuerdo de París. En esta actualización, Colombia establece un objetivo de reducción de emisiones de gases de efecto invernadero (GEI) de aproximadamente el 51% para el año 2030, en comparación con las proyecciones de emisiones de referencia de 2019. La NDC también destaca la importancia de la adaptación al cambio

					climático, reconociendo sectores vulnerables que requieren atención prioritaria, como la agricultura, los ecosistemas, la salud y la infraestructura. Además, la actualización refuerza el compromiso de Colombia con la sostenibilidad, la justicia social y la inclusión en la implementación de acciones que mitigen el cambio climático y promuevan el desarrollo sostenible.
/414	*Policy for the Consolidation of the National Protected Areas System, year 2021*	*DNP*	*DNP*	*VERSA*	*La Política para la Consolidación del Sistema de Áreas Protegidas Nacionales de Colombia, emitida en 2021, establece un marco estratégico para fortalecer y expandir la red de áreas protegidas del país. Esta política busca garantizar la conservación de la biodiversidad, proteger los ecosistemas estratégicos y promover el uso sostenible de los recursos naturales. Entre sus objetivos se incluyen la mejora de la gestión de las áreas protegidas existentes, la identificación de nuevas áreas para su inclusión en el sistema, y la promoción de la participación de comunidades locales y grupos indígenas en la conservación.*
/415	*Social and Environmental Safeguards for REDD+ in Colombia, year 2018*	*Ministry of Environment and Sustainable Development*	*Ministry of Environment and Sustainable Development*	*VERSA*	*Las Salvaguardias Sociales y Ambientales para REDD+ en Colombia, establecidas en 2018, son un conjunto de principios que aseguran la implementación sostenible y justa de las iniciativas de reducción de emisiones por deforestación y degradación de bosques. Estas salvaguardias protegen los derechos de las comunidades locales, incluidas las poblaciones indígenas, y*

					garantizan la conservación de la biodiversidad. Buscan prevenir impactos negativos en los medios de vida de las comunidades, promover su participación en la toma de decisiones y asegurar una distribución equitativa de los beneficios económicos. Además, establecen mecanismos de monitoreo para garantizar el cumplimiento de las normas ambientales y sociales, contribuyendo a un enfoque inclusivo en la lucha contra el cambio climático en Colombia.
/416	*National Legend of Land Cover. CORINE Land Cover methodology adapted for Colombia Scale 1:100,000. Institute of Hydrology, Meteorology and Environmental Studies. Bogotá, D.C.*	*IDEAM*	*IDEAM*	*VERSA*	*La "Leyenda Nacional de Cobertura de la Tierra", adaptada de la metodología CORINE Land Cover a una escala de 1:100,000 por el Instituto de Hidrología, Meteorología y Estudios Ambientales (IDEAM), clasifica y caracteriza el uso del suelo y la cobertura terrestre en Colombia. Su objetivo es facilitar la gestión ambiental y el desarrollo sostenible, proporcionando información clave para la planificación territorial, la conservación de la biodiversidad y la evaluación de impactos ambientales.*
/417	*Proposal for the Reference Level of forest emissions from deforestation in Colombia for results-based payment under REDD+ of the UNFCCC. Bogotá. 2018 and 2024*	*MADS & IDEAM (2024) and (2018)*	*MADS & IDEAM*	*VERSA*	*La "Propuesta para el Nivel de Referencia de las Emisiones Forestales por Deforestación en Colombia" establece un marco para calcular y reportar las emisiones de gases de efecto invernadero causadas por la deforestación, en el contexto del mecanismo REDD+ de la UNFCCC. Su objetivo es definir un punto de referencia que permita medir las reducciones de emisiones logradas a través de acciones de conservación y manejo sostenible de los*

					bosques, facilitando así el acceso a pagos por resultados.
/418	Forest and Carbon Monitoring System.	MADS & IDEAM	MADS & IDEAM		Monitoreo Forestal y de Carbono es una herramienta que evalúa y gestiona los recursos forestales y las emisiones de gases de efecto invernadero derivadas de la deforestación y degradación de bosques. Integra tecnologías de teledetección y métodos de muestreo para proporcionar datos precisos sobre la cobertura forestal, la salud de los ecosistemas y el almacenamiento de carbono.
/419	NATIONAL REPORT ON THE IMPLEMENTATION OF THE RAMSAR CONVENTION ON RAMSAR WETLANDS	Ministry of Environment and Sustainable Development	Ministry of Environment and Sustainable Developmen		El "Informe Nacional sobre la Implementación de la Convención de Ramsar" detalla las acciones, logros y desafíos de un país en la conservación y uso sostenible de humedales de importancia internacional. Incluye información sobre la identificación y designación de humedales Ramsar, la gestión integrada de estos ecosistemas, y las políticas adoptadas para su protección.

Annex 4. Abbreviations

list the abbreviations used in this report.

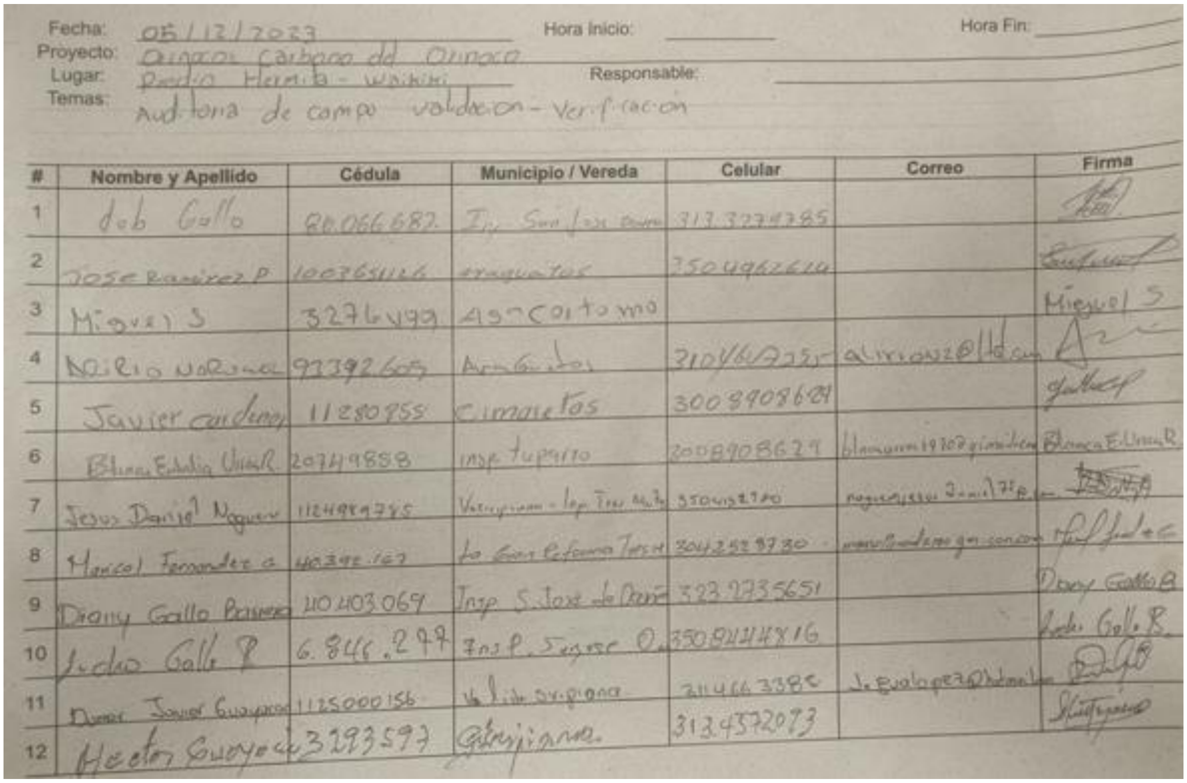
Abbreviations	Full texts
AFOLU	Agriculture, forestry and other land uses
BCR	Biocarbon Standard
CARs	Corrective action requests
CCV	Verified carbon certificates
CLs	Clarification requests
tCO2e	Tons of carbon dioxide equivalent
PDD	Project description document
FARs	Future recommendations
GEI	Greenhouse gases (Spanish abbreviation)
GHG	Greenhouse gases
IGAC	Instituto geográfico agusítn codazzi
ISO	International Organization for Standardization
MRV	Monitoring, reporting and verification
NREF	Reference level of forestry emissions
ODS	Sustainable Development Goals (Spanish abbreviation)
OEC	Conformity Assessment Body

Abbreviations	*Full texts*
PDI	*Digital image processing*
PMBOOK	*Guide to project management fundamentals*
PQRD	*Petition, complaint, grievance and denunciation*
REDD+	*Reducing emissions from deforestation and forest degradation*
RM	*Monitoring report*
SDGs	*Sustainable Development Goals*
AcATaMa	*Accuracy assessment of thematic maps*
SIG/GIS	*Geographic information systems*
SMByC	*Forest and carbon monitoring system*

Annex 5. Interview

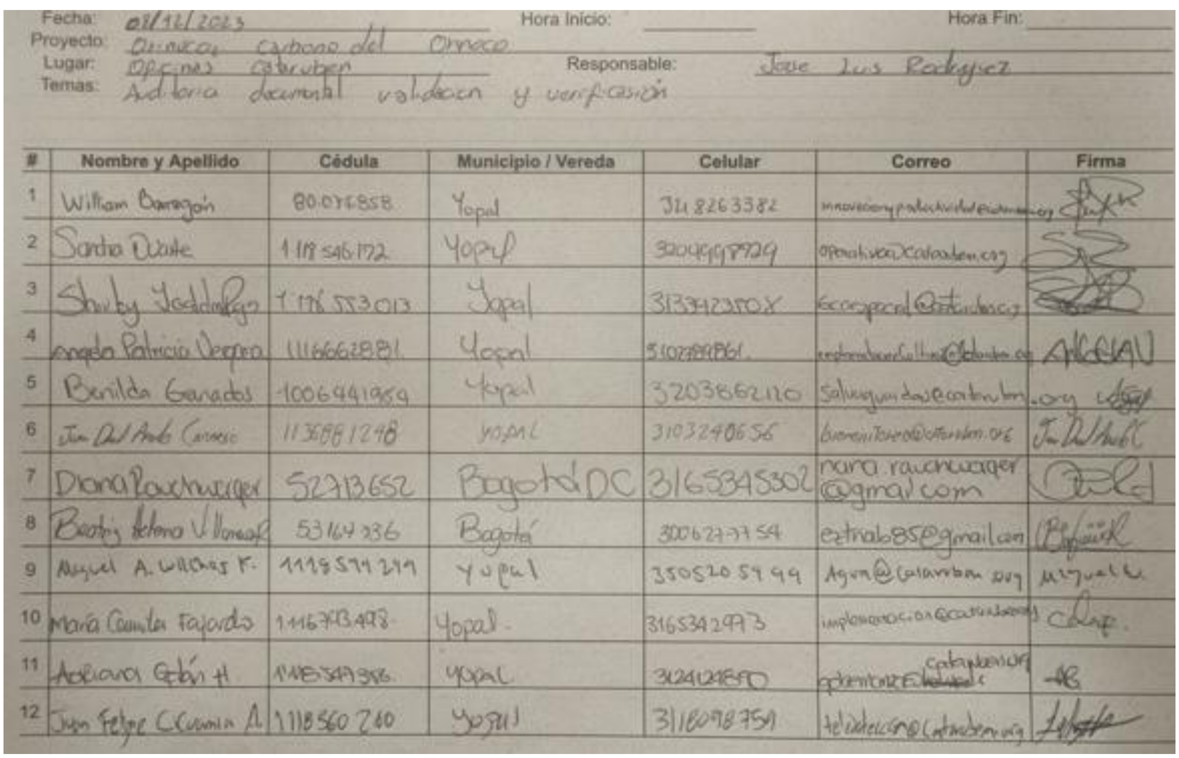
Fecha: 1/12/2023 Hora Inicio: 11:40 Hora Fin: 17:30
Proyecto: Cambio Carbono del orinoco
Lugar: Fundacion cataruben Responsable:
Temas:

#	Nombre y Apellido	Cédula	Cargo	Entidad	Firma
1	Adriana Gabán	1.116.347.358.	Lider unidad Gob.	Fund. Cataruben	AB
2	Angela Vergara	1116662881	Gestor implementación	Fun. Cataruben	[illegible]
3	María Camila Rojido.	1.116.793.498	Lider Unidad Implem.	Fund. Cataruben	[illegible]
4	Beatriz H. Villanueva	53164736	Experto técnico	Versu	[illegible]
5	Diana Rauchwager	5273365	A. Lider	VERSA.	[illegible]
6	Sandra Duarte Ch.	1118546172	Supervisor Carbono	Cataruben	[illegible]
7	Shirley Saldaña	1.118.553.013	Gerente Geoespacial	Cataruben	[illegible]
8					



Fecha: 05/12/2023 Hora Inicio: Hora Fin:
Proyecto: Orinoco carbono del Orinoco
Lugar: Predio Hermita - Waikiki Responsable:
Temas: Auditoria de campo validacion - Verificacion

#	Nombre y Apellido	Cédula	Municipio / Vereda	Celular	Correo	Firma
1	Jeb Gallo	80.066.682	Ins. San Jose [illegible]	313 3279785		[illegible]
2	Jose Ramirez P	1007651126	[illegible]	3504962614		[illegible]
3	Miguel S	3276499	Asn Caritomo			Miguel S
4	Dairio Noruega	93392605	[illegible]	3104642255	alirioaz@[illegible]	[illegible]
5	Javier cardenas	11280855	Cimarretas	3008908624		[illegible]
6	Blanca Edilia Urrea R	20749858	insp tupsito	3008908629	[illegible]	Blanca E. Urrea R
7	Jesus Daniel Noguera	1124989785	[illegible]	3504152740	[illegible]	[illegible]
8	Maricel Fernandez a	40392167	[illegible]	3042529730	[illegible]	[illegible]
9	Diany Gallo Barrera	110403069	Insp S. Jose de [illegible]	323 2735651		Dany Gallo B
10	Ledio Gallo R	6.846.277	Ins P. Sejose O.	3508414816		Ledio Gallo R.
11	Omar Javier Guayacan	1125000156	[illegible]	3114663385	J.guayacan[illegible]	[illegible]
12	Hector Guayacan	3293597	[illegible]	3134572073		[illegible]



Fecha: 08/12/2023 Hora Inicio: Hora Fin:
Proyecto: Orinoco carbono del Orinoco
Lugar: Oficinas Cataruben Responsable: Jose Luis Rodriguez
Temas: Auditoria documental validacion y verificación

#	Nombre y Apellido	Cédula	Municipio / Vereda	Celular	Correo	Firma
1	William Barragán	80.076858	Yopal	3148263382	[illegible]	[illegible]
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4	Angela Patricia Vergara	1116662881	Yopal	3102789861	[illegible]@cataruben.org	[illegible]
5	Benilda Granados	1006441959	Yopal	3203862120	salvaguardas@cataruben.org	[illegible]
6	Juan David Andes Carrasco	1136881248	yopal	3103240656	[illegible]@cataruben.org	[illegible]
7	Diana Rauchwerger	52713652	Bogotá DC	3165345302	nana.rauchwager@gmail.com	[illegible]
8	Beatriz Adriana Villarreal	53164336	Bogotá	3006277754	eztrab85@gmail.com	[illegible]
9	Miguel A. Willches F.	1118574249	Yopal	3505205999	Agua@cataruben.org	[illegible]
10	Maria Camila Fajardo	1116773498	Yopal	3165342973	implementacion@cataruben.org	[illegible]
11	Adriana Gelón H	1118549386	Yopal	3124124890	[illegible]@cataruben.org	[illegible]
12	Juan Felipe C.Guzman A	1118560260	Yopal	3118098759	[illegible]@cataruben.org	[illegible]

Fecha:	1/12/2023	Hora Inicio:	11:40	Hora Final:	12:30	Acta N°	
Lugar:	Fundacion Cataruben						
Objetivo:	Reunion Apertura de Auditoria						
Proyecto:	Orinoco: carbono del Orinoco						

Asistentes

Nombre y Apellido	Cargo	Entidad	Firma
Jose Luis Rodriguez	Director Orinoco	Fundacion Cataruben	[illegible]
Laura Sanabria	Lider Unidad Cuantificación	Fundación Cataruben	[illegible]
Juan David Arevalo	Lider Monitoreo Biodiversidad	Fundación Cataruben	[illegible]
Efraín Anepu	SC Biodiversidad	Fundación Cataruben	[illegible]
Benilda Granados	lider SOC	Fundación Cataruben	[illegible]

Fecha: 01/12/2023 Hora Inicio: 11:00 Hora Fin: 1:00 pm
Proyecto: Orinoco carbono del Orinoco
Lugar: Finca el Beul, San Toribio, Primavera Responsable:
Temas: Auditoria de campo validación - verificacion

#	Nombre y Apellido	Cédula	Municipio / Vereda	Celular	Correo	Firma
1	Luis Arcadio S.	17552548	Santarosalia	3204803725		[illegible]
2	Edelmira Gómez	41.250656	Flor Amarilla	3125494139	[illegible]@gmail.com	Edelmira Gómez
3	Susana Torres H	1077628893	La Ladera Sta Rosalia	3132016315	[illegible]	[illegible]
4	Vilmar Bogueya	18256178	Sta Rosalia Nazareth	3117332505		[illegible]
5	Pablo Colina	7760210	Santa Rosalia	3124424544		Pablo colina
6	Gonzalo Sanchez	1118257[illegible]	La Primavera	3222840042	gonzalsan221@gmail.com	[illegible]
7	José Leider Cabrera	18255541	Sta Rosalia	3125219615	jolecahi@hotmail[illegible]	[illegible]
8	Luis Enrique Castillo	79.960.151	La Primavera - Santodorio	3222352306	luisacastillo2777@gmail.com	[illegible]
9	Almes Perez	18255578	La Primavera	3104186500		Almes
10	Eyder Ortizcorea	7.760.492	Santa Rosalia Vereda La Ladera	3209909836	[illegible]3392@gmail[illegible]	[illegible]
11	Marida Santos	1123[illegible]	Santa Rosalia Flor amarilla	3123757367	Maridasantos1250@gmail[illegible]	Marida Santos
12	Samuel Perez P	18255330	Primavera	3118623240	Samueltoribio1909@	[illegible]

Annex 6. On Site Visit Evidence












	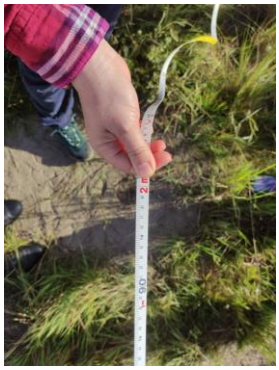	
 Carlos Jaramillo #3 BELLA VISTA LOS CLAVELES