1st Monitoring Report
3738 - TRIUNFO DO XINGU GROUPED REDD+ PROJECT

Project title	Triunfo do Xingu Grouped REDD+ Project
Project ID	3738
Crediting period	31-Aug-2022 to 30-Aug-2052
Monitoring period	31-Aug-2022 to 15-Aug-2025
(CCB) GHG accounting period	31-Aug-2022 – 30-Aug-2052; 30-year total period
Original date of issue	03-Oct-2025
Most recent date of issue	03-Oct-2025
Version	1
VCS Standard version	v4.7
CCB Standards version	v3.1
Project location	Brazil, Altamira (PA)
Project proponent(s)	SYSTEMICA INTELIGÊNCIA EM SUSTENTABILIDADE S.A. Munir Younes Soares Rua. Frei Caneca, 1246 - cj 41 - Consolação, São Paulo (SP), Braszil, Postal Code:01307-002 munir@systemica.digital +55 11 5039-1080, https://systemica.digital/
Validation/verification body	Verifit S.A.S Contact person: Ricardo Ribeiro Lopes (General Director) CRA 30 # 7 AA - 207 - Torre Scaglia – Medellín – Antioquia – Colombia Tel +57

	312 260 0587; +55 11 99420-9030 Website: www.verifit.com.br; Email: ricardo@verifit.com.br
History of CCB Status	Under verification
Gold Level criteria	GL1. Climate Change Adaptation Benefits: The planned project activities shall assist the community and biodiversity in adapting to climate change by primarily providing four adaptation benefits. Firstly, Education and Access to Information, encompassing activities designed to improve education services, strengthen environmental and civic education, strengthen community communication, and improve energy security. Secondly, Biodiversity Conservation, consisting of activities aiming the permanence of biodiversity, through awareness workshops, technical training, monitoring, forest surveillance, maintenance of firebreaks, and wildlife and spring protection. The third planned benefit is Institutional Strengthening and Well-Being, encompassing activities aimed at strengthening community's governance, healthcare, access to water resources and their quality of life. Lastly, Employment and Income Generation, consisting of activities aimed at strengthening and diversifying the community's sources of income, as well as generating job opportunities. These adaptation benefits are expected to build resilience on both the community and biodiversity to the impacts of climate change. GL2. Exceptional community benefits: The Triunfo do Xingu Grouped REDD+ Project qualifies for the Community Gold Level criteria because it is generating short- and long-term well-being benefits that affect the Caboclo Village community including women youth and families living below the poverty line. During the monitoring period several capacity-building courses were conducted within the community including initiatives specifically designed for women providing knowledge and alternative opportunities to strengthen income generation. In addition, community members were hired to support field activities which created local employment opportunities and contributed to improved household income. The donation of educational materials together with the establishment of a school garden enhanced teaching conditions and provided a practical tool for environmental education. Governance activities were strengthened through the creation of communication channels and participatory meetings that established inclusive spaces for dialogue and decision making with participation of women. Training sessions on firebreak maintenance fire control

	sustainable water use sustainable livestock practices and biodiversity monitoring enabled community members to expand their skills and knowledge in sustainable land management and collective resource protection. Furthermore, the project-initiated dialogue with local education institutions which is expected to result in future cooperation to improve the provision of basic educational services in the community. Through these integrated actions the project is fostering greater social cohesion, enhancing quality of life and empowering the community thereby meeting the Gold Level criteria for exceptional community benefits. GL3. Exceptional Biodiversity Benefits: The project meets the Gold status of High Biodiversity Conservation by the vulnerability KBA qualifying criteria, conserving the endangered (EN) trigger species Ateles marginatus (white-cheeked Spider Monkey). With activities to protect the project area, raise environmental awareness and reduce human-fauna conflicts, the project will contribute to the maintenance and permanence of the local population of the trigger species Ateles marginatus, also contributing to the conservation of other species of fauna and flora that are present in the project area, at some level of threat.
Prepared by	Systemica Inteligência em Sustentabilidade S.A.

CONTENTS

LIST OF FIGURES

LIST OF TABLES

1 SUMMARY OF PROJECT BENEFITS

1.1 Unique Project Benefits

This section highlights some Triunfo do Xingu Grouped REDD+ Project's (TdX project) important benefits, aligned with the Theory of Change, that is not captured by the standardized benefit metrics. Table 1.1 bellow brings for each outcome or impact the net benefits the project has achieved during the monitoring period covered by this report and since this is the project's first verification report, it's also the same benefits achieved since the beginning of the project lifetime.

Table 1.1. TdX project Unique Benefits.

Outcome or Impact	Achievements during the Monitoring Period	Section Reference	Achievements during the Project Lifetime
1) Community empowerment	Considering the activities developed to strengthen community governance, up to this point, all 12 communication channels with the community have been established, which allowed broad and effective communication between the community and the TdX project team. Furthermore, participatory meetings, with a focus on governance resulted in the average participation of 13 people in the meetings (24.5% of the total residents in Caboclo Village), where these people were able to actively participate in the development and implementation of the project, advocating for their own opinions. According to the community itself, 87.5% believe that the project allows people to	4.3.1 and 4.1.3	Considering that this is the first monitoring of the TdX project, the results achieved during this monitoring are, so far, the results achieved throughout the project's lifetime.

Outcome or Impact	Achievements during the Monitoring Period	Section Reference	Achievements during the Project Lifetime
	participate equally, and 93.8% believe that the decision-making process is inclusive.		
2) Promotion of gender equality	All the project's activities have been designed with a focus on the specific needs of the women's group and, so far, there was an improvement in income opportunity through the temporary hiring of two women for project activities, improvement in teaching conditions for the two school's female teachers (representing 100% of the school faculty), and also, an improvement in active participation of women in the project was observed. Women represented an average of 52.2% of participants in the governance meetings, and governance meetings have already mobilized 89% of the women from Caboclo Village, who have participated in at least one meeting. All these short-term results contribute to the long-term reduction of gender inequality.	4.3.1	Considering that this is the first monitoring of the TdX project, the results achieved during this monitoring are, so far, the results achieved throughout the project's lifetime.
3) Increased resilience to climate change	Increased resilience to climate change has been fostered through concrete activities implemented during the monitoring period. Firebreak maintenance and training on	2.1.1, 3.3.1 and 4.3.1	Considering that this is the first monitoring of the TdX project, the results achieved during this monitoring are, so far, the results

Outcome or Impact	Achievements during the Monitoring Period	Section Reference	Achievements during the Project Lifetime
	fire control contributed to maintaining all 10,704.58 ha of forest in the project area, preventing the spread of fires and reducing the risk of regional savannization. These actions are essential for conserving microclimatic conditions that support biodiversity and community well-being. Complementary efforts such as regular patrolling of the project area and remote monitoring for early detection of fire outbreaks further strengthen forest protection and biodiversity conservation, both of which are directly linked to climate resilience. In addition, a workshop on the sustainable use of water resources was carried out, raising awareness among community members about the importance of protecting springs and riparian areas. Together, these initiatives contribute to reducing immediate climate risks, maintaining High Conservation Values (HCVs), and reinforcing the adaptive capacity of the community and ecosystems in the project area.		achieved throughout the project's lifetime.

1.2 Standardized Benefit Metrics

The values for each metric are shown in Table 1.2 bellow, and since this is the project's first verification report, it's also the same metrics results achieved since the beginning of the project lifetime. Where the metric does not apply it's written "not applicable" and where the metric does apply but there were no means of quantification, the metric is classified as "data not available".

Table 1.2. Standardized Benefit Metrics Table.

Category	Metric	Achievements during Monitoring Period	Section Reference	Achievements during the Project Lifetime
GHG emission reductions & removals	Net estimated emission removals in the project area, measured against the without-project scenario	Not applicable	Not applicable	Not applicable
	Net estimated emission reductions in the project area, measured against the without-project scenario	352,240.94 t CO_2e	3.2.4	352,240.94 t CO_2e
Forest[1] cover[1]	For REDD[2] projects: Number of ha of reduced forest loss in the project area measured against the without-project scenario	10,704.58	3.2.1	10,704.58
	For ARR[3] projects: Number of ha of forest cover increased in the project area measured against the without-project scenario	Not applicable	Not applicable	Not applicable
Improved land management	Number of ha of existing production forest land in which IFM[4] practices have occurred as a result of the project's activities, measured against the without-project scenario	Not applicable	Not applicable	Not applicable

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

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

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

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

Category	Metric	Achievements during Monitoring Period	Section Reference	Achievements during the Project Lifetime
	Number of ha of non-forest land in which improved land management has occurred as a result of the project's activities, measured against the without-project scenario	Not applicable	Not applicable	Not applicable
Training	Total number of community members who have improved skills and/or knowledge resulting from training provided as part of project activities	71 people	4.3.1	71 people
	Number of female community members who have improved skills and/or knowledge resulting from training provided as part of project activities of project activities	35 women	4.3.1	35 women
Employment	Total number of people employed in of project activities[5], expressed as number of full time employees[6]	2 people[7]	4.3.1	2 people
	Number of women employed in project activities, expressed as number of full time employees	0 women	4.3.1	0 women
Livelihoods	Total number of people with improved livelihoods[8] or income generated as a result of project activities	2 people	4.3.1	2 people
	Number of women with improved livelihoods or income generated as a result of project activities	0 women	4.3.1	0 women

[5] Employed in project activities means people directly working on project activities in return for compensation (financial or otherwise), including employees, contracted workers, sub-contracted workers and community members that are paid to carry out project-related work.
[6] Full time equivalency is calculated as the total number of hours worked (by full-time, part-time, temporary and/or seasonal staff) divided by the average number of hours worked in full-time jobs within the country, region or economic territory (adapted from UN System of National Accounts (1993) paragraphs 17.14[15.102];[17.28])
[7] The value presented is the number of full-time workers hired, the 8 individuals hired for the project (Table 4.2) equate to 2 full-time equivalent.
[8] Livelihoods are the capabilities, assets (including material and social resources) and activities required for a means of living (Krantz, Lasse, 2001. *The Sustainable Livelihood Approach to Poverty Reduction*. SIDA). Livelihood benefits may include benefits reported in the Employment metrics of this table.

Category	Metric	Achievements during Monitoring Period	Section Reference	Achievements during the Project Lifetime
Health	Total number of people for whom health services were improved as a result of project activities, measured against the without-project scenario	Data not available	4.3.1	Data not available
	Number of women for whom health services were improved as a result of project activities, measured against the without-project scenario	Data not available	4.3.1	Data not available
Education	Total number of people for whom access to, or quality of, education was improved as a result of project activities, measured against the without-project scenario	40 people	4.3.1	40 people
	Number of women and girls for whom access to, or quality of, education was improved as a result of project activities, measured against the without-project scenario	20 women	4.3.1	20 women
Water	Total number of people who experienced increased water quality and/or improved access to drinking water as a result of project activities, measured against the without-project scenario	Data not available	4.3.1	Data not available
	Number of women who experienced increased water quality and/or improved access to drinking water as a result of project activities, measured against the without-project scenario	Data not available	4.3.1	Data not available

Category	Metric	Achievements during Monitoring Period	Section Reference	Achievements during the Project Lifetime
Well-being	Total number of community members whose well-being[9] was improved as a result of project activities	60 people	4.3.1	60 people
	Number of women whose well-being was improved as a result of project activities	29 women	4.3.1	29 women
Biodiversity conservation	Change in the number of ha significantly better managed by the project for biodiversity conservation,[10] measured against the without-project scenario	10,704.58	5.1.3	10,704.58
	Number of globally Critically Endangered or Endangered species[11] benefiting from reduced threats as a result of project activities,[12] measured against the without-project scenario	3	5.1.1	3

2 PROJECT DETAILS

2.1 Summary Description of the Implementation Status of the Project

2.1.1 Summary Description of the Project (VCS, 2.1, 3.6; CCB, G1.2)

The Triunfo do Xingu Grouped REDD+ Project (TdX project) is located within the Brazilian Amazon, in the municipality of Altamira. The project falls under the category of Reducing Emissions from Deforestation and Forest Degradation (REDD), using the VM0048 methodology for reducing emissions from deforestation and forest degradation (VERRA, 2023). Two main activities were developed as conservation measures for the project area: Patrolling and surveillance of strategic checkpoints and Maintenance of firebreaks.

[9] Well-being is people's experience of the quality of their lives. Well-being benefits may include benefits reported in other metrics of this table (e.g. Training, Employment, Health, Education, Water, etc.), but could also include other benefits such as empowerment of community groups, strengthened legal rights to resources, conservation of access to areas of cultural significance, etc.
[10] Biodiversity conservation in this context means areas where specific management measures are being implemented as a part of project activities with an objective of enhancing biodiversity conservation.
[11] Per IUCN's Red List of Threatened Species
[12] In the absence of direct population or occupancy measures, measurement of reduced threats may be used as evidence of benefit

The first activity involves patrolling routes pre-established with the owners, every 3 months, and recording the route and possible sightings or tracks of fauna. A guide to processes and good practices was prepared by Systemica and agreed with the owners. In addition, training was also carried out with property managers and employees responsible for patrol and surveillance, during visit in September 2023 and November 2023[13]. The patrolling and surveillance activities started on January 2024[14].

The second activity, in turn, aims to plan and maintain firebreaks and fight fires in the project areas. Also in this case, alignment meetings were held with the owners, with a schedule for maintenance of these areas every year. In addition, equipment necessary to fight the fire was purchased by the landowners as part of this activity[15].

The overarching objective of the TdX project is to preserve 10,704.58 ha of tropical forest based on scientific methodologies, remote and terrestrial monitoring and, above all, through territory socio-environmental dynamics transformation over time. To achieve that, the project has specific climate, community, and biodiversity objectives, as follow:

Climate: Reduce emissions and, to cause exceptional climate benefits, promote climate resilience for the community and biodiversity that are part of the project by improving access to water resources. The net GHG emission reduction, for the monitoring period (31st August 2022 to 15th August 2025) was 352,240.94 t CO_2e.

Community: Promote direct and indirect investments that result in an improvement in the quality of life and social well-being of 100% of the community (especially for vulnerable groups) and sustainable development through transformations in land use and occupation practices over time. Also, to cause exceptional community benefits the project aim, in long term, poverty reduction, especially for those living below the poverty line, improvement of gender equality and the improvement of the political culture and collective identification in the community.

Biodiversity: Maintain species richness and maintain or slightly increase the populations of all endangered species, endemic species and trigger species of fauna and flora identified in the project area. In addition, promote environmental awareness and reduce conflicts between humans and wild animals, also, to cause exceptional biodiversity benefits, conserve the populations of the endangered (EN) trigger species *Ateles marginatus* (white-cheeked Spider Monkey).

2.1.2 Audit History (VCS, 4.1)

[13] 231011_ReportFieldWorkandAnexxes.zip
[14] 231205_MonitoringTraining.zip
[15] 240416_ProjectAreaMonitoringEvidence.zip

Table 2 Audit History.

Audit Type	Period	Program	VVB Name	Number of years
Validation	31-Aug-2022 to 30-Aug-2052	VCS VM0015	Earthood Services Private Limited (ESPL)	30
Validation	31-Aug-2022 to 30-Aug-2052	VCS VM0048	Verifit S.A.S	30
Validation	31-Aug-2022 to 30-Aug-2052	CCB	Verifit S.A.S	30
Verification	31-Aug-2022 to 15-Aug-2025	VCS/CCB	Verifit S.A.S	2 years, 11 months, and 15 days

2.1.3 Sectoral Scope and Project Type (VCS, 3.2)

This project is a grouped project. Project category and activity type are shown in Table 2.1.

Table 2.1. Information for AFOLU projects.

Sectoral Scope	The TdX project is within the sectorial scope number 14 – Agriculture, Forestry and Other Land Use (AFOLU).
AFOLU Project Category	The project category is Reduced Emissions from Deforestation and Forest Degradation (REDD).
Project Activity Type	Avoiding Unplanned Deforestation (AUDD). This category includes activities that reduce net GHG emissions by stopping deforestation and/or degradation of degraded to mature forests that would have occurred in any forest configuration.

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

The project proponent detailed information is shown Table 2.2.

Table 2.2. Project proponent information.

Organization name	Systemica Inteligência em Sustentabilidade S.A.
Contact person	Munir Younes Soares
Title	Director

Address	Rua Frei Caneca, nº 1246, cj- 41, Consolação, São Paulo, Bazil, postal code: 01307-002
Telephone	+55 (11) 5039-1080
Email	munir@systemica.digital

The entities involved detailed information is shown in Table 2.3, Table 2.4 and Table 2.5.

Table 2.3. Byblos Agronegócio Holding LTDA entity detailed information.

Organization name	Byblos Agronegócio Holding LTDA
Role in the project	Landowner and partner in the project activity implementation
Contact person	Rafael Bemerguy Sefer
Title	Owner of the Patacho and Campo Lindo farms
Address	Tv SOL D'Oeste, S/N, Sala C, Bom Planalto, Marabá (PA), Brasil, postal code: 68.501-730
Telephone	+55 (91) 9353 1020
Email	rafaelsefer@hotmail.com

Table 2.4. Santa Maria Pecuaria e Agronegocio LTDA entity detailed information.

Organization name	Santa Maria Pecuaria e Agronegocio LTDA
Role in the project	Landowner and partner in the project activity implementation
Contact person	Rafael Bemerguy Sefer
Title	Owner of the Belcon, Santa Marta, Retiro Encantado and Vó Lina farms
Address	Av. SOL D'Oeste, S/N, Sala B, Liberdade, Marabá (PA), Brasil, postal code: 68.501-730
Telephone	+55 (91) 9353 1020
Email	rafaelsefer@hotmail.com

Table 2.5. Didácio Milhomens Barros entity detailed information.

Organization name	Didácio Milhomens Barros

Role in the project	Landowner and partner in the project activity implementation
Contact person	Didácio Milhomens Barros
Title	Owner of the Nossa Senhora Aparecida farm
Address	QSC 19, Chácara 25, Conjunto F, Lote 11, Taguatinga, Distrito Federal, Brazil, postal code: 72.017-221
Telephone	+55 (61) 8406 5165
Email	didmilhomens@yahoo.com.br

2.1.5 Project Start Date (VCS, 3.8)

The TdX project started on the 31st of August 2022 (Table 2.6). This date represents the effective date on which the project began generating GHG emissions reduction in the project area when additional activities have started to avoid unplanned deforestation.

Table 2.6. Project start date and justification.

Project start date	31st August 2022
Justification	Despite prior discussions with landowners and a thorough analysis of project viability[16], 31st of August 2022 marks the beginning of the local activities initiated by Systemica, with the first REDD+ training for capacity building. This training addressed topics such as: how REDD+ projects work, the importance of emission reduction, the Sustainable Development Goals (SDGs), how to increase forest carbon stocks, actions for controlling climate change and global warming, and the importance of community participation to achieve the goals of the Triunfo do Xingu Grouped REDD+ Project[17]. Some the participants in the REDD+ training, as well as being from Caboclo village, are also workers from Nossa Senhora Aparecida Farm, owned by Didácio. The other participants are workers, relatives, or landowners of farms located within the project's Leakage Belt and live in the Caboclo village. This first action showed the commitment of the participants, especially from the workers, who at the time and still today work at Didácio's farm and participated in the REDD+ training, as they were involved in the initiation and continuity of project activities,

[16] 240516_FPIC_Landowners.zip
[17] 230515_REDD+_Capacity_Building.zip

	particularly in "Patrolling and Surveillance," of which the training is a part. The REDD+ training for capacity building was not an isolated action, but part of the activities planned by the proponent based on the social diagnosis conducted in Caboclo village and with workers from the project area, which took place parallel to the Start Date. The REDD+ training for capacity building is part of the "Patrolling and Surveillance" activity since it involves project workers, and "Contact with neighboring communities" activity since it involves Caboclo village. Also, the project is in the process of validation by the Climate, Community, and Biodiversity Standard (CCB), involving Caboclo village as the project community, the status of the CCB validation can be checked on the website of VERRA. Consequently, it is due to the importance of these actors that the first activity was directed towards the local community and workers. This increased awareness can create consciousness about forest conservation and the importance of sustainable practices, and even influence the behavior of deforestation agents, ultimately contributing to the prevention of unplanned deforestation. Hence, this date represents the effective date on which the project began generating GHG emissions reduction in the project area.

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

The project crediting period has a period of 30 years, starting on the 31st of August 2022 to 30th of August 2052, this is the period to the GHG emission accounting period and to the project activities for climate, community and biodiversity benefits (Table 2.7).

Table 2.7. Project Crediting Period.

Crediting Period	The TdX project crediting period has a period of 30 years, and it conforms with the VCS Program requirements. According to the VCS Standard v4.7 – Section 3.9.3: “For all AFOLU projects other than such ALM projects described in 3.9.2, the project crediting period shall be a minimum of 20 years up to a maximum of 100 years, which may be renewed at most four times, with a total project crediting period not to exceed 100 years.”
Start Date of First or Fixed Crediting Period	31-August-2022 to 30-August-2052
Total Number of Years of Crediting Period	30 years

CCB Benefits Assessment Period	The time period over which changes in climate change adaptive capacity and resilience, biodiversity and community well-being resulting from project activities will be monitored its 30 years.

2.1.7 Project Location (VCS, 3.11; CCB, G1.3)

The Triunfo do Xingu Grouped REDD+ Project's area is situated in Altamira municipality, Pará state, Brazil. This municipality is 832 km from Belém, the capital of the state of Pará. Its estimated population, based on the IBGE estimates of 2021, is around 117 thousand inhabitants, and its territorial area averages 160 thousand square kilometers, equivalent to 1,6 x 10^9 ha.

Following the VCS Methodology VM0048 (VERRA, 2023), the project area may only include areas composed of forest for a minimum of ten years prior to the project start date, a definition that also includes secondary forests. Therefore, satellite images between 2012 and 2022 were analyzed and classified and the areas within the property that were defined as forests were separated and utilized to compose the project area. In addition, some non-forest areas were also excluded, such as rivers, rocks, and non-forest vegetation.

The definition used for forest areas is the one given by the Food and Agriculture Organization of the United Nations (Ramírez & Morales, 2021): "land spanning more than 0.5 ha with trees higher than 5 meters and a canopy cover of more than 10 percent, or trees able to reach these thresholds in situ. It does not include land that is predominantly under agricultural or urban land use".

Table 2.8 contains the location of each property part of the TdX project first instance (TdX-I1), it also describes the size of total property area and eligible forest area.

Table 2.8. TdX-I1: Properties centroid's locations coordinates and areas.

Ownership	Properties	Area (ha)	Project Area/Eligible Forest (ha)	Centroid location coordinates	
				Longitude	Latitude
Rafael Bemerguy Sefer	Belcon Farm	2,197.53	1,858.69	-53°39′32,400″	-5°37′58,800″
	Campo Lindo Farm	2,443.14	1,771.06	-53°31′26,400″	-5°42′36,000″
	Patacho Farm	2,135.16	1,920.25	-53°39′28,800″	-5°39′18,000″
	Retiro Encantado Farm	2,342.88	1,255.89	-53°32′45,600″	-5°43′19,200″
	Santa Marta Farm	2,450.34	1,357.00	-53°35′16,800″	-5°43′19,200″
	Vó Lina Farm	2,364.57	1,115.17	-53°39′3,600″	-5°44′2,400″
Didácio Milhomens Barros	Nossa Senhora Aparecida Farm	1,880.19	1,426.51	-53°24′39,600″	-6°7′58,800″

Ownership	Properties	Area (ha)	Project Area/Eligible Forest (ha)	Centroid location coordinates	
				Longitude	Latitude
Total		15,813.81	10,704.58		-

Geodetic coordinates of all the project locations have been submitted in the annex[18] as a KML file. The properties boundaries are also available in Figure 2.1. The six properties up north are owned by Rafael Sefer, the seventh southernmost is from Didácio Barros. The reddish areas are the eligible forests that compose the project area of its first instance.

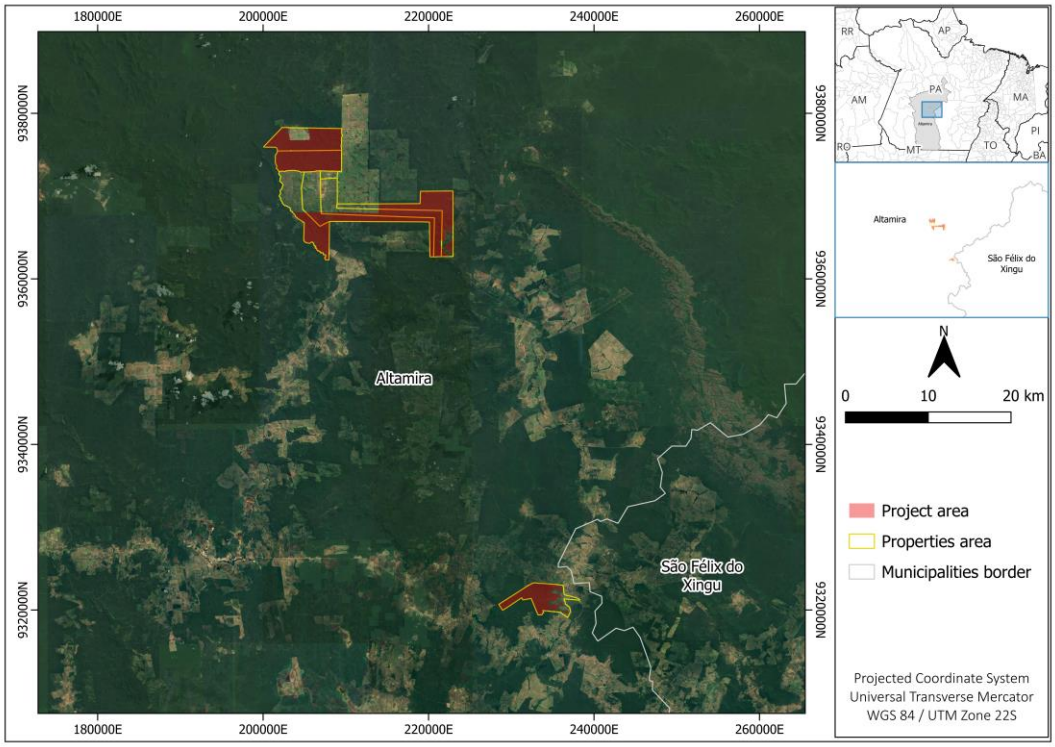


Figure 2.1. Map with both properties area perimeter in yellow and project area in red.

2.1.8 Title and Reference of Methodology (VCS, 3.1)

The Table 2.9 bellow provide the title, reference and version number of the methodologies applied to the project and also include the title and version number of the tools applied by the project.

[18] TdX_Project_Area_V2.kml

Table 2.9. Methodologies and tools applied to the project.

Type (methodology, tool, module)	Reference ID (if applicable)	Title	Version
Methodology	VM0048	VM0048 Reducing Emissions from Deforestation and Forest Degradation	1.0
Tool	T-SIG	Tool for testing the significance of GHG emissions in A/R CDM project activities	1.0
Tool	VT0001	VT0001 Tool for the Demonstration and Assessment of Additionality in VCS Agriculture, Forestry and Other Land Use (AFOLU) Project Activities	3.0
Tool	VT0007	VT0007 Unplanned Deforestation Allocation (UDef-A)	1.0
Tool	NPRT	AFOLU Non-Permanence Risk Tool	4.2
Module	VMD0055	VMD0055 Estimation of Emission Reductions from Avoiding Unplanned Deforestation	1.1
Module	VMD0001	VMD0001 Estimation of Carbon Stocks in the Above- and Belowground Biomass in Live Tree and Non-tree Pools (CP-AB)	1.2
Module	VMD0013	VMD0013 Estimation of Greenhouse Gas Emissions from Biomass and Peat Burning (E-BPB)	1.2

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

Emission Trading Programs and Other Binding Limits

The GHG emissions reduction from project activities is not and will not be used for compliance under any other trading program or mechanisms. The TdX project is independent of any other carbon project, therefore, no double counting has occurred.

Other Forms of Environmental Credit

The TdX project has not sought or received another form of GHG-related environmental credit or renewable energy certificates, during this monitoring period. There are no other programs under which the project will create another form of GHG-related environment credit.

Participation under Other GHG Programs

The TdX project has not been registered under any other GHG program.

As described in the VCS PDD there is no double counting or double claiming between the TdX project and the Jurisdictional REDD+ Program. The TdX project and its activities focused on reducing emissions from the AUDD category are solely aimed at generating credits under Verra's VCS program.

2.1.9.1 No Double Issuance

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

☐ Yes ☒ No

2.1.9.2 Registration in Other GHG Programs

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

☐ Yes ☒ No

2.1.9.3 Projects Rejected by Other GHG Programs

Has the project been rejected by any other GHG programs?

☐ Yes ☒ No

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

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

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

☐ Yes ☒ No

2.1.10.2 No Double Claiming with Other Forms of Environmental Credit

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

☐ Yes ☒ No

2.1.10.3 Supply Chain (Scope 3) Emissions

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

☐ Yes ☒ No

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

☐ Yes ☒ No

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

☐ Yes ☒ No

2.1.11 Sustainable Development Contributions (VCS, 3.17)

In the Sustainable Development Report 2023 (Jeffrey D. Sachs et al., 2023), Brazil ranks 50 out of 193 countries, with a score of 73.7 out of 100, of achievements of the 17 Sustainable Development Goals (SDGs) (ONU, 2022). According to the UN Brazilian Annual Report (ONU, 2022), the country has 4 priority development axes, by which the country organizes its efforts to achieve the SDGs: People; Planet; Prosperity, and Peace. The TdX project has aligned its activities in such a way that, at the local level, progress is being made towards meeting some of the targets of the 2030 Agenda (Table 2.10). Brazilian Indicators for the Sustainable Development Goals[19] was a guide for the indicators. The adaptation of the SDG indicators was necessary to ensure their applicability within the communities involved in the project. These adaptations involved the inclusion or exclusion of specific elements to better align the indicators with the local context.

Table 2.10 shows which SDGs the project synergizes with and how this alignment occurs. Some indicators do not yet have results for this monitoring period because they are being developed and implemented; see more information in APPENDIX: Sustainable Development Contributions and Sections 4.3.1 about communities, 3.1.3 about climate, and 5.3.1 about biodiversity.

[19] Available in: https://odsbrasil.gov.br/objetivo/objetivo?n=3

Table 2.10. Sustainable Development Contributions of project TdX.

Row number	SDG target	SDG indicator	Net impact on SDG indicator	Current project contributions	Contributions over project lifetime
1)	1.2	Proportion of the population living below the national poverty line, by sex	Priority Axis 1 People: The project expects to contribute to social development, especially by reducing the poverty of the project communities. It is expected that the hiring of local assistants and community agents to assist with project activities will increase the average per capita income and reduce poverty in Caboclo Village. There hasn't been a reduction in poverty during this monitoring period; however, the temporary and permanent hires of community members to work on project activities were made and demonstrated an increase of 1.5% in family income with the people hired. Furthermore, although there hasn't been a reduction in poverty, it's worth noting that 12.5% of the population living below the poverty line in the community has had increased access to opportunities and income diversification through project activities.	Data not available.	Data not available.

Row number	SDG target	SDG indicator	Net impact on SDG indicator	Current project contributions	Contributions over project lifetime
2)	4.3	Participation rate of youth and adults in formal or non-formal education and training in the previous months, by sex	Priority Axis 5 Prosperity: The project contributes to reducing socio-economic and territorial inequalities, especially through of the professional qualification, with special attention to people in situations of greater vulnerability. In the first monitoring period, training sessions in forest and fauna inventory were conducted, with 8.7% of the community population participating. Also, courses in Artificial Insemination and Baking were held, involving 47.8% of the community. Some community members participated in more than one course or training, and in total, 52% of the community was engaged in non-formal education. Women were the majority in participation. Certificates were provided for both the training sessions and courses offered.	43% male 100% female	43% male 100% female

Row number	SDG target	SDG indicator	Net impact on SDG indicator	Current project contributions	Contributions over project lifetime
3)	4.7	Content and tools for global citizenship education and education for sustainable development are being integrated into teacher and student training.	Priority Axis 1 People and 6 Peace: The project expects to contribute to social development, through access to quality services in education, and the promotion of a peaceful, just, and inclusive society. Through the implementation of the school garden and alignment with teaching staff to use the garden as a pedagogical tool, the project is on track to contribute to education for sustainable development in teacher and student training. Up to this point, the project has no results for this indicator because there have been no activities for global citizenship education.	Data not available.	Data not available.
4)	6.1	6.1.1 Proportion of the population using safely managed drinking water services	Priority Axis 2 Planet: The project expects to contribute to participatory governance to combat climate change and its adverse effects, through the improved access to drinking water for the community.	Data not available.	Data not available.

Row number	SDG target	SDG indicator	Net impact on SDG indicator	Current project contributions	Contributions over project lifetime
5)	13.0	Tonnes of greenhouse gas emissions avoided or removed	Priority Axis 2 Planet: The project expects to contribute to combat climate change and its adverse effects, through forest protection activities, such as surveillance and patrolling of the project area, and the maintenance of firebreaks, help protect the 10,704.58 ha of forest area that comprises the project, thus preventing the emission of greenhouse gases.	381,594.29 t CO_2e.	381,594.29 t CO_2e.
6)	16.7	Proportion of the population who believe decision-making is inclusive in the project	Priority Axis 6 Peace: The project contributes to the promotion of a peaceful, just, and inclusive society through social participation, transparency, and governance, in the implementation of community governance meetings and participatory activities with the community gave the community a perception of unity among the population and that participation in the project's decision-making processes was inclusive. In this monitoring period, the implementation of community governance meetings and participatory activities with the community gave the community a perception of unity among the population and that participation in the project's decision-making processes was inclusive. Through the governance activities carried out so far, 100% of the community members who have answered the representative survey believe that the project is inclusive in the decision-making processes, and 81.8% believe that the project allows equal participation by all members.	90.9%	90.9%

Row number	SDG target	SDG indicator	Net impact on SDG indicator	Current project contributions	Contributions over project lifetime
7)	17.8	17.8.1 Proportion of individuals using the Internet	Priority Axis 1 People and 2 Planet: The project expects to contribute to social development, especially access to quality collective assets and services through improved access to the internet in the communities.	Data not available.	Data not available.

2.2 Project Implementation Status

2.2.1 Implementation Schedule (VCS, 3.2; CCB, G1.9)

Table 2.11. Implementation Schedule.

Date	Milestone(s) in the project's development and implementation
August to September 2022	Carrying out the social diagnosis, focusing on Caboclo Village.
August 2022	The project start date when local activities started to be implemented by Systemica Inteligência em Sustentabilidade S.A. Presential meetings were done to present the TdX project, to bring elements of environmental education to local communities near the project areas, develop REDD+ capacity building activities and to understand their opinion about it.
August 2022 - so far	Prospect of new PAIs for inclusion in the grouped project, and feasibility studies.
October 2022	Signing of an agreement between Systemica Inteligência em Sustentabilidade S.A. and the owner of Nossa Senhora Aparecida Farm to develop projects and generate certified carbon assets.
October 2022	Signing of the agreement for project development and generation of certified carbon assets between Systemica Inteligência em Sustentabilidade S.A. and the owner of the Santa Marta farm complex.
March 2023	Monitoring Project Areas training
March 2023	Meeting with the SEMMAS (Municipal Secretariat for the Environment and Mining of São Félix do Xingu) via video call. Meeting to present the project and audit dates.
March 2023	Meeting with the APA (Environmental Protection Area) Triunfo do Xingu Management Council via video call. Meeting to present the project and audit dates.
March 2023	Meeting with the ITERPA (Pará Land Institute) via video call. Meeting to present the project and audit dates.
1March 2023	Meeting with the SEMMA (Altamira Municipal Department of Environmental Management via video call).

Date	Milestone(s) in the project's development and implementation
	Meeting to present the project and audit dates.
April 2023	Carrying out a forest biomass inventory in the project areas and training of local agents and contracting to carry out the forest biomass inventory in the project areas. Training and execution of carbon inventory techniques - Floristic inventory techniques of carbon biomass in natural Amazonian Forest.
April 2023	Meeting with SESMA (Altamira Municipal Health Department) via video call. Meeting to present the project and audit dates. This meeting presented the project's health-related activities in detail and discussed the partnership between the project and the Secretariat.
April 2023	Meeting with SEMAS (Pará State Secretariat of Environment and Sustainability) via video call. Meeting to present the project and audit dates.
April 2023	Meeting with STTR (Union of Rural Workers and Family Farmers of the Municipality of Altamira) via video call. Meeting to present the project and audit dates.
June 2023	The first community governance strengthening event with Caboclo Village and the presentation and dissemination of the Communication Procedure containing mechanisms to deal with conflicts and grievance.
June 2023	An open lecture about the environment and sustainable development for Caboclo Village. The lecture was held for the Caboclo Village community on the environment, sustainable development, and biodiversity, ministrated by Bioama, a company hired by Systemica Inteligência em Sustentabilidade S.A. to carry out the fauna survey in the project areas.
June to July 2023	Carrying out the fauna inventory in the project areas, training of local agents and contracting to carry out the fauna inventory in the project areas.
July 2023	Meeting with SEMED (Municipal Department of Education of Altamira) via video call. Meeting to present the project and strategies to sign the cooperation agreement between the secretariat and the project.

Date	Milestone(s) in the project's development and implementation
July 2023	Meeting with SEPLAN (Municipal Planning Department of Altamira) via video call. Meeting to present the project and strategies to sign the cooperation agreement between the secretariat and the project.
September 2023	Signing of the cooperation agreement between the project and SEMED (Altamira Municipal Secretariat of Education).
September 2023	Training local assistants to carry out specific project activities.
September 2023	Training the administrator of Nossa Senhora Aparecida Farm to carry out field monitoring and surveillance rounds in accordance with the Field Monitoring Operating Procedure
September 2023	Development of a participatory impact assessment of the project's activities with Caboclo Village. Two assessments were carried out, one especially for the women of Caboclo Village and the other for all the members of Caboclo Village.
October 2023	Hiring community members to act as local assistants to the project, supporting its main activities.
November 2023	Provision of school materials for the local school
November 2023	Workshop on the ecological functions of fauna and sustainable activities for community school students
November 2023	Preventive safety training for professionals working in the field
November 2023 – so far	Installation of trap cameras to monitor wildlife
November 2023 to October 2023	Pilot monitoring campaigns of focal species of fauna and flora; camera trap monitoring of threatened, vulnerable and endemic species
December 2023	Trap Camera Installation and Maintenance Training Report
December 2023	Preventive safety training with professionals who will be working on the project's implementation activities
December 2023	Monitoring Project Areas training
December 2023	Ecological functions workshop

Date	Milestone(s) in the project's development and implementation
December to January 2024	Publication for public comment period on the VERRA register
January 2024	Hiring community members to act as local assistants to the project, supporting its main activities.
January 2024 – so far	Camera trap monitoring in project area
January 2024 - so far	Patrolling and monitoring of the project areas
January 2024	Publicizing of the CBB validation and verification audit
January 2024 - so far	Social monitoring
January 2024	Face-to-face meeting to structure community governance
January 2024	Lecture and construction of working group on information and questions of interest about land regularization
January 2024	Lecture and construction of working group on sustainable development and conservation of water resources
January 2024	Supply (donation) of materials for the implementation and maintenance of the school garden
January to April 2024	Implementation of a school vegetable garden to improve student nutrition and environmental education
March 2024	Trap Camera Installation and Maintenance Training Report
March 2024	Preventive safety training with professionals who will be working on the project's implementation activities
May 2024	Training/awareness about hunting practices
May 2024	Donation of a new projector to the Novo Pacto Municipal School.
September 2024	Donation of sports materials to the Novo Pacto Municipal School.
September 2024	Photography, bakery and artificial insemination trainings/courses.
October 2024	Trap camera monitoring training, project area patrol and field security

Date	Milestone(s) in the project's development and implementation
January 2025	Contract renewal with community agents
February 2025	Monitoring Project Areas training
April 2025 – so far	Implementation of weekly communication for updates and alignments with community agents
June 2025	Donation of complete uniform for community women's soccer team
June 2025	Donation of 2 computers to the Novo Pacto Municipal School.
July 2025	Forest brigade training for employees and community workers at Sefer property
July 2025	Community Photography Contest
July 2025 – so far	Cleaning, maintenance and planting in the school garden.
August 2025	Donation of 4 backpacks to the São Felix do Xingu Fire Department
August 2025	Community training provided by the São Félix do Xingu Fire Department
Future events	Maintenance of firebreaks; provision of workshops and lectures on climate, environmental conservation and sustainable development; provision of structure for access to drinking water implemented in the community.
Future events	Provision of school materials for the local school; provision of training courses; installation and maintenance of photovoltaic panels for the Caboclo Village school and health center; provision of materials for the local health center; holding face-to-face meetings to structure community governance; installation, provision and maintenance of internet for the community; implementation of a community space for Caboclo Village; attempts at cooperative discussions held with local authorities to improve mobility infrastructure; awareness and engagement campaigns to strengthen environmental and citizen education carried out.
Future events	Workshops on the ecological functions of fauna and sustainable activities; protection of riparian zones of the Caboclo Stream; attempts at cooperative discussions conducted with local authorities to structure and implement wildlife protection programs for rural landowners.
Future events	VCS and CCB validation and verification audit and subsequent correction of findings.

2.2.2 Baseline Reassessment (VCS, 3.2.6, 3.2.7)

Did the project undergo baseline reassessment during the monitoring period?

☐ Yes ☒ No

2.2.3 Methodology Deviations (VCS, 3.20)

No methodological deviations were made in the design and development of the monitoring report until the completion of this document. The project has already undergone validation through the VM0015 methodology, as can be verified on the Verra website. However, the project decided to migrate to the new VM0048 methodology to seek the best techniques for applicability, additionality, and calculation, with further details available in Section 2.2.5.

2.2.4 Minor Changes to Project Description (CCB Program Rules, 3.5.6)

There were no community or biodiversity changes to project design that occurred during this monitoring period compared with the validated project description.

2.2.5 Project Description Deviations (VCS, 3.21; CCB Program Rules, 3.5.7 – 3.5.10)

The project has already undergone validation through the VM0015 methodology, as can be verified on the Verra website. However, the TdX project decided to migrate to the new VM0048 methodology to seek the best techniques for applicability, additionality, and calculation. The VM0048 methodology ensures the integrity of greenhouse gas accounting for individual projects within jurisdiction and allows for the use of the most up-to-date science, data, and technologies.

VM0015 is a methodology that estimates greenhouse gas emissions from areas where unplanned deforestation occurs and quantifies the emission reductions achieved by curbing deforestation. VM0015 is among the older REDD+ methodologies that account for most REDD+ credits on the market, but these older methodologies will not be assessed by ICVCM and credits issued under them will not be able to receive the CCP (Core Carbon Principles) label. In contrast, VM0048 is the new REDD methodology that will strengthen the VCS Program for issuing carbon credits to Avoided Unplanned Deforestation projects and has been approved by the Integrity Council for the Voluntary Carbon Market as meeting the requirements of the Core Carbon Principles Assessment Framework. Under VCS' new VM0048, project developers no longer set their own baselines based on self-selected reference areas, as VCS has agreed to establish project baselines based on jurisdictional deforestation data combined with an assessment of deforestation risk in the specific area. This represents a significant improvement since VM0048 improved the baseline methods, a change that will likely substantially reduce the very high levels of over-crediting found in previous methodologies. Verra requires operational Avoiding Unplanned Deforestation REDD+ projects using the older methodologies to transition across to VM0048, ensuring higher standards and integrity in carbon credit generation moving forward.

2.2.6 Grouped Projects (VCS, 3.6; CCB, G1.13-G1.15, G4.1)

2.2.6.1 New Project Areas and Communities (VCS, 3.6; CCB, G1.13)

There are no new project areas and communities included during the period described in this monitoring report. Therefore, no additional process for stakeholder identification and analysis was performed.

2.2.6.2 Removed Project Areas and Communities (CCB, G1.13)

There are no removed project areas and communities during the period described in this monitoring report.

2.2.6.3 Eligibility Criteria for Grouped Projects (VCS, 3.6.14; CCB, G1.14)

Not applicable during the period described in this monitoring report.

2.2.6.4 Risk Mitigation for Grouped Projects (VCS, 3.6; CCB, G1.15)

Not applicable during the period described in this monitoring report.

2.2.6.5 Project Zone Map (CCB, G1.13)

Not applicable during the period described in this monitoring.

2.2.6.6 Changes to Management (CCB, G4.1)

There were no changes in the management structure, roles, and/or responsibilities resulting from the entry of new entities into the project during the period described in this monitoring report.

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

The likely natural and human-induced risks to the expected climate, community, and biodiversity benefits were analyzed using the approved tool “Non-Permanence Risk Report: VCS Version 4.2”, therefore, the complete description of these risks as well as the mitigation measures adopted are described in this document. The additional risks identified, which are related to CCB activities are described in the table in Table 2.12, together with the actions needed to mitigate the risk.

Table 2.12. Project Risks Table.

Identified Risk	Potential impact of risk on climate, community and/or biodiversity benefits	Actions needed and designed to mitigate the risk
Logistical difficulties caused by poor road conditions.	The poor road conditions hinder the logistics for carrying out project activities, including governance meetings and fauna and flora monitoring campaigns.	Based on the risk identified that the project's activities could be affected by the loss of working hours due to road conditions, as a mitigation measure, a longer travel time is planned for all field trips and an effort has been made to improve mobility between the Village and Altamira, together with the Municipal Department of Works, Roads and Infrastructure (SEMOVI), to establish a Technical Cooperation Agreement, This is also motivating the creation of a Mobility Working Group (WG) together with the community, which is also expected to organize the community's demands on the subject on a territorial basis[20].
Lack of community engagement in project activities.	Project-related activities involving training, workshops, and lectures may have their effectiveness reduced if the community does not engage in these activities. Additionally, the lack of engagement may result in landowners around Caboclo Village showing little interest in participating in wildlife protection programs and actions to safeguard the riparian zone of Caboclo stream.	Up to this point, all communication channels with the community have been established, and participatory meetings, with a focus on governance, have been organized at different times[21]. Therefore, the activities carried out allowed the community to actively participate in the development and implementation of the project, advocating for their own opinions collectively and minimizing potential conflicts. These results demonstrate that, gradually, the community becomes engaged, so that through the years, they are organized and capable of managing their own development goals.

[20] 03_Governance.zip (and in subfolder03_Mobility)
[21] CommunityCommunications.zip

2.2.8 Benefit Permanence (CCB, G1.11)

The maintenance and enhancement of the climate, community, and biodiversity benefits beyond the project lifetime have been guaranteed through the TdX project activities, which were designed with the purpose of breaking the vicious cycle of illegal deforestation and its effects, which result in the maintenance of the community's low quality of life. To reverse this scenario, therefore, the main measures implemented to maintain and enhance the climate, community, and biodiversity benefits beyond the project lifetime, were the development of community governance, environmental education, biodiversity conservation, improving access to water, and income increase activities.

A description of each stage of the activities already developed and their evidence and results up to this monitoring report, can be consulted in Section 4.3.1 of this document. Likewise, the risks identified by the project and the mitigation measures adopted to generate and maintain project benefits within and beyond the life of the project are described in Section 2.2.7 above.

Among the activities developed or under development, actions to strengthen governance and community communication have allowed the community to actively participate in the development and implementation of the project, advocating for their own opinions collectively and minimizing potential conflicts. These results demonstrate that, gradually, the community becomes engaged, so that by the end of the project, they will be able to cooperate over time for mutual benefit, coordinating with various institutions and managing resources and conflicts that arise in these situations, independently.

Finally, the project also has activities that include the participation of public institutions, such as activities that involve cooperation with the departments of health, education, and infrastructure (see Section 4.3.1), in this way, the project seeks to facilitate and influence public policies targeted at rural communities, increasing the possibility of scaling the benefits of the project activities, as well as the sustainability of these benefits.

2.3 Stakeholder Engagement & Safeguards

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

There were no new stakeholders identified during this monitoring period.

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

The complete project documentation is publicly available through electronic communication channels[22] such as the Systemica Inteligência em Sustentabilidade S.A. and on VERRA's website[23], with a link also provided by Systemica. on the website itself. In addition, whenever there is an update, such as after the annual verification audits, the documents on these channels will also be updated.

[22] 240208_ProjectDocumentsDissemination.zip
[23] 240208_ProjectDocVerraWebsite.pdf

To ensure that all stakeholders in the project have access to the full project documentation, emails were sent out[22] with links to the channels where these documents are disseminated. In the case of the community, the links to the project documentation were shared[22], and it was pointed out to the community that they could access the full project documentation and summaries presented in Portuguese on these channels. These occasions served as opportunities for the public to seek clarification, express concerns, or offer suggestions about the project.

Systemica Inteligência em Sustentabilidade S.A. is attentive to suggestions for new channels for disseminating documents, and the community agents, hired as project workers by Systemica Inteligência em Sustentabilidade S.A. also have access to project documentation, and act as a communication channel between the project team and the community.

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

The project's description summary and summary information on monitoring results were disseminated to the community in the form of printed documents, in Portuguese and accessible language, as well as, in digital format through Systemica Inteligência em Sustentabilidade S.A.'s electronic communication channels[24] and exclusive communication channels with the community, and orally through face-to-face meetings with the community in 2024 and 2025[25]. All these means of communication are updated, and the community is notified whenever there is a need to update the project's summary documentation and with each new result of the monitoring plan.

All the dissemination channels can be accessed at any time and by anyone. In the case of in-person meetings, whenever they take place, they are also opportune moments for community members to ask questions about the project, as well as offer suggestions, raise grievances, or pose questions. The community agents hired as project workers by Systemica Inteligência em Sustentabilidade S.A. have access to summary project documents and have been trained[26] to help with this dissemination or to act as a communication channel between the community and the Systemica Inteligência em Sustentabilidade S.A. team whenever necessary.

In August 2025, the results obtained up to that point were disseminated within the community through a summary pamphlet[27], which presented an overview of all ongoing activities as well as those already completed. In September 2025, communication and availability of information about the project[28],[29] with other stakeholders took place by sending an e-mail with a letter and summary of the monitoring results[30]. On the same date, the documents were also provided in digital format through WhatsApp community groups, broadening access and facilitating their circulation among residents[31]. This multi-layered

[24] 231019_CommunicationProcedureAnnexes.zip
[25] 240208_ProjectDocumentsDissemination.zip
[26] 231011_ReportFieldWorkandAnexxes.zip
[27] 250416_Folder_communication_stakeholders.pdf
[28] 250915_Resumo_Projeto.pdf
[29] 250915_Resumo_RelatorioMonitoramento.pdf
[30] 250917_Dissemination_OtherStakeholders.pdf
[31] 250917_Dissemination_Community_Whatsapp.pdf

communication strategy ensured that information was circulated not only among external stakeholders but also within the local community in an accessible and participatory manner.

Figure 2.2 Dissemination of summaries of monitoring results and activities to the community through face-to-face explanations with residents, using a printed summary pamphlet.

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

The informational meetings with communities and local stakeholders aim to enable the circulation of information and mutual dissemination of content regarding the TdX project and Caboclo Village. The meetings are publicized in advance to the community through the communication channels specified in

the Communication Procedure[32] of Systemica Inteligência em Sustentabilidade S.A. with the community, and with other stakeholders through email, phone, or WhatsApp, according to the preference of the respective stakeholder.

As instructed by the Communication Procedure, the local assistants hired by the project work to publicize the Systemica team's visits and meetings in Caboclo Village as well as using other communication channels[33].

Up to the present moment, several meetings with the community have been conducted in person during six different field visits[34]:

- between August and September 2022 - marking the start of the project.
- In April 2023 - audit to validate the TdX VCS project description.
- In June 2023 - to hold the first meetings related to the community governance structure, to apply questionnaires with the community, among other dissemination and research activities involving the population; and
- In September 2023 - for participatory impact assessment with the community and training of local agents.
- In November 2023 - for training local agents and delivering materials.
- In January 2024 - for carrying out participatory activities with the community, especially governance meetings and training.
- In September 2024 - a meeting was held with the Caboclo Village community at the Novo Pacto Municipal School to discuss community governance. The purpose of the meeting was to reintroduce the project, reinforce the Climate, Community, and Biodiversity pillars, clarify doubts, and ensure that new participants understood the concepts.
- In August 2025 - Alignment with social agents and presentation of monitoring results.

With local institutional stakeholders, numerous online meetings were also conducted, serving different purposes and occurring at various times. These stakeholders include the municipal departments of environment, health, and education, representatives from the Altamira and São Félix do Xingu municipalities, as well as state-level institutions from Pará responsible for forests, biodiversity, and the regularization of public areas. These meetings occur as needed throughout the project. For instance, meetings were held with these stakeholders because of the audit process initiated in April 2023[35] and because of some project's activities, which are detailed bellow[36]:

[32] 231019_CommunicationProcedureAnnexes.zip
[33] 240220_PublicizingFieldVisits.pdf
[34] 240220_Pictures.pdf
[35] 231006_On-siteAuditPlanTdXv3.pdf
[36] 240402_OtherStakeholdersMeetings.zip

- in March 2023 – meeting with SEMMAS, ATX, ITERPA and SEMMA, via video call to present the project and audit dates.
- in April 2023 - meeting with SESMA, SEMAS and STTR, via video call to present the project and audit dates.
- in July 2023 - meeting with SEMED and SEPLAN, via video call to present the project and strategies to sign the cooperation agreement between the secretariat and the project.
- In May 2024 – meetings with SEMMA, SEMOVI, SESMA, and SEMED, face-to-face and via video call to present the project, sharing project documentation, and initiate a dialogue on a possible cooperation agreement between the secretariats and the project.
- In June 2024 – meeting with SEMMA, via video call to present the project again and to continue the dialogue on the establishment of a possible cooperation agreement.
- In July 2024 – Participation in the III Environmental Concert in Altamira included an informative presentation of the TdX project and the work carried out by Systemica, attended by various stakeholders and potential future stakeholders[37].

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

Based on the potential risks and negative impacts identified for the community (see sections 4.2.1 and 4.5.3 of the TdX Project Description), mitigation measures were defined and implemented during this monitoring period. These risks and the actions taken are described in the table below (Table 2.13).

[37] OtherStakeholdersCommunications.zip

Table 2.13. Risks from the project and mitigation measures.

Identified Risk	Potential impact of risk on climate, community and/or biodiversity benefits	Actions needed and designed to mitigate the risk
Greater susceptibility to cybercrimes and access to disinformation	This is a potential negative impact that may be caused by the improvement of access to technology, information, and leisure activity, which includes the provision of internet network for the school, the health post, and the community space. Access to the internet, while bringing great benefits, can also facilitate the actions of criminals, posing a risk of digital scams and the spread of false information, especially if this access is not accompanied by digital education initiatives. Such a risk can escalate or intensify conflicts within the community and adversely affect community members financially and psychologically.	As the activity to improve internet access has not yet been implemented, no mitigation measures were taken during this monitoring period. During the development of the said activity, mitigation measures will be followed as described in the Project Description of this project (see Section 4.2.2).
Decrease in the quality of public services after the end of the cooperation agreement	This is a potential negative impact that may be caused by the cooperation with the public authorities to improve education and healthcare activities. Cooperation agreements with public entities, while bringing great benefits, can also generate a misunderstanding of the objective of the agreements on the part of public institutions and the community, thinking that they can replace the role of the state and suspend the current supply that local institutions do the school and health post. This can cause greater vulnerability of the population and a great dependence on the success of the project.	Mitigation measures were implemented upon the completion of the cooperation agreement with the Education Department of Altamira (SEMED), however, they have not been implemented for the cooperation agreement with the Health Department of Altamira (SESMA) since, in this case, the agreement has not yet been concluded. As mitigation, a meeting involving Systemica and representatives from the community school was conducted with the aim of clarifying any doubts among the parties, reducing community concerns about the supply

Identified Risk	Potential impact of risk on climate, community and/or biodiversity benefits	Actions needed and designed to mitigate the risk
		of materials under the secretariat's responsibility, and reaffirming the responsibilities of each party[38].
Increased community mistrust, with fears that the project could increase land inspections	This is a potential negative impact that may be caused by the strengthening of community governance and communication, which involve holding lectures and evaluating how to contribute to land regulation, can also generate distrust in the community, with fears that the project could increase land inspections. This can cause great harm to the population's quality of life, as well as the continuity of the benefits of the project.	To address the potential negative impact of increased community distrust, with fears that the project may increase land inspections, a working group on land issues and how the project will assist the community in the land regularization process has been conducted[39], reducing insecurity on the part of the community as results presented in section 4.3.1.
Lack of community engagement in project activities.	Project-related activities involving training, workshops, and lectures may have their effectiveness reduced if the community does not engage in these activities. Additionally, the lack of engagement may result in landowners around Caboclo Village showing little interest in participating in wildlife protection programs and actions to safeguard the riparian zone of Caboclo stream.	Up to this point, all communication channels with the community have been established[40], and participatory meetings, with a focus on governance, have been organized at different times[41]. Therefore, the activities carried out allowed the community to actively participate in the development and implementation of the project, advocating for their own opinions collectively and minimizing potential conflicts. These results demonstrate that, gradually, the community becomes engaged, so that through

[38] 240208_GardenMeetingSchoolStaff.zip
[39] 240220_LandIssuesReport.zip
[40] 240301_ImplementationCommunicationChannels.pdf
[41] 240229_AllProjectGovernanceMeetings.zip

Identified Risk	Potential impact of risk on climate, community and/or biodiversity benefits	Actions needed and designed to mitigate the risk
		the years, they are organized and capable of managing their own development goals.

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

Relevant information regarding potential costs, risks, and benefits for the community was participatory and transparent since the beginning of the project, as will be shown below. During the social diagnosis construction process, the team from Systemica Inteligência em Sustentabilidade S.A. engaged with the residents of Caboclo Village to address any questions they might have had regarding the carbon project, as well as to investigate their perceptions of potential risks and benefits at that time[42].

In alignment with the Theory of Change development and project activities (see Section 2.1.8 of the TdX Project Description), subsequent meetings were held with the community, allowing them to provide input on the project activities. These inputs were then used to adjust the activities to better align with the benefits expected by the community. For example, a face-to-face meeting on June 19th, 2023[43], resulted in project activity adaptations based on the community's reported priorities.

The TdX project does not impose any costs on the community. All risks and benefits identified by the project team were presented to the community via video and later reinforced in a face-to-face meeting for them to provide input or seek clarification. Additionally, in the same fieldwork on September 24th, 2023[44], the project team, in collaboration with Caboclo Village, conducted a participatory impact assessment activity, ensuring that all impacts (risks, costs, benefits) identified by the community are integrated into the Theory of Change, with mitigation measures outlined by the project.

It's important to emphasize that no project activity that could directly impact the community was undertaken before they were fully informed about the potential risks, costs, and benefits of the project and willingly consented to voluntary participation in the project.

2.3.7 Information to Stakeholder on Verification Process (VCS, 3.18.6, 3.19; CCB, G3.3)

Systemica Inteligência em Sustentabilidade S.A. ensures that the community and other stakeholders are informed about the CCB validation and verification process. This process was clearly explained to the community by means of a YouTube video[45], widely shared on the WhatsApp channel with the community, allowing time for people to ask questions and for the Systemica Inteligência em Sustentabilidade S.A. team to clarify doubts. Also, in accordance with the Communication Procedure[46], publicity is being carried out in Caboclo Village through face-to-face meetings[47], through local assistants hired by the project and by pasting posters in strategic locations in the village[48]. As for the other stakeholders, informative letters were shared via email, in different moments[49].

[42] 231023_SocialDiagnosisAnnexes.zip
[43] 231019_ReportGovernanceMeeting.zip
[44] 231011_ReportFieldWorkandAnexxes.zip
[45] https://youtu.be/hiSzPoqFzZ0?si=ODVgMrYUD6-ZLESx
[46] 231019_CommunicationProcedureAnnexes.zip
[47] 240209_GovernanceMeetingJanuary2024.zip
[48] XXXXXX_AuditInformationsCommunity.zip
[49] 240207_AuditInformationsOtherStakeholders.zip

Both for the community and other stakeholders, communication regarding the occurrence of these processes is being made in advance, always emphasizing the key points of the visits, such as meetings that the audit may require. Furthermore, Systemica Inteligência em Sustentabilidade S.A. communication channels have been and remain open for any stakeholder to get in touch with potential inquiries about these processes.

2.3.8 Site Visit Information and Opportunities to Communicate with Auditor (VCS, 3.18.6, 3.19; CCB, G3.3)

The visits by auditors for the verification and validation processes of the TdX CCB project are being communicated in advance to the community and other stakeholders. An assurance that this prior communication is made by Systemica Inteligência em Sustentabilidade S.A. is the validation process of the TdX VCS Project Description that took place in April 2023. As previously outlined, the community and other stakeholders were informed before the visit, as seen in the attached evidence[50,51,52]. The information about the current CCB audit and validation processes has been shared with the project stakeholders, and they are aware of the procedure for notifying them of future auditor visits by Systemica Inteligência em Sustentabilidade S.A. (see Section 2.3.7), as well as the possibility of independent communication with the auditors, and that Systemica Inteligência em Sustentabilidade S.A. can and will be facilitating[53,54]. This information is always being reiterated prior to the auditor's visit process.

2.3.9 Stakeholder Consultation (VCS, 3.18; CCB, G3.4)

Since the beginning of the TdX project, when Systemica Inteligência em Sustentabilidade S.A. mapped and identified the involved stakeholders (see section 2.1.6 of the TdX Project Description), they were encouraged to suggest ideas, contribute, or inquire about any existing doubts regarding the project's development if they identified any. There is a significant logistical challenge in the project area region, making it so that all initial contacts with other stakeholders were conducted online[55]. In the case of Caboclo Village, the initial contact was in person and maintained through online communication, as well as during periodic visits of the Systemica Inteligência em Sustentabilidade S.A. to the community.

So far, the project has only received public comments through its communication channels on January 29, 2024, regarding document 231215_CCB_Project_Description_TdX_CCBv3.0.pdf posted in the pipeline, and these were answered[56,57].

On the other hand, ADEPARÁ - Agricultural Defense Agency of the State of Pará technicians have been essential stakeholders in providing secondary data that aided in identifying rural communities in the project area. Also, Altamira's Municipal Education have signed a cooperation agreement with the project

[50] 230513_AuditWarningPosters.pdf
[51] 230306_StakeholdersEmailInstitutional.pdf
[52] 230306_StakeholdersEmailITERPA.pdf
[53] 240207_AuditInformationsOtherStakeholders.zip
[54] XXXXXX_AuditInformationsCommunity.zip
[55] 220930_OtherStakeholdersConsultation.pdf
[56] 240208_ProjectDocumentsDissemination.zip
[57] 240228_ResponsePublicComments.pdf

for the development of activities that take place within the scope of their respective areas of responsibility, especially by granting access to the Novo Pacto Municipal School[58].

In terms of the community, there have been contributions from the population towards project activities. Initially, through an activity in which the population indicated their priority themes for improving community quality of life[59]. The results of this activity served as the starting point for defining community-related project activities, which were later supported by SWOT Analysis and Theory of Change (see Section 2.1.8 of the TdX Project Description). Furthermore, after outlining the activities and presenting them to the community, they suggested some changes that[60], following joint analysis, were accepted and are now part of the project's new activity structure. It should be noted that throughout the participatory impact assessment[61], the community also expressed its perceptions and opinions regarding the project's activities, which were taken into account. Also, the community gave feedback on the action plan implemented in the first year, through a consultative meeting[62].

The project documentation, as well as the PD summary and monitoring results, were also shared with the community and other project stakeholders (see Sections 2.3.2 and 2.3.3), allowing for suggestions and potential updates to the project and/or monitoring results. The record of these consultations can be found in Table 2.14 and Table 2.15.

Table 2.14. Record of the consultation on the PD summary.

Ongoing consultation	According to the communication procedure of the TdX project, the summary of the PD was shared with the community through established communication channels, both in Portuguese and in accessible language.
Date(s) of stakeholder consultation	24th September 2023; September 2025
Communication of monitored results	The sharing of the printed summary of the PD took place during an in-person meeting with the community held on September 24th, 2023[63], and subsequently shared in digital format through WhatsApp groups with the community and with the women of Caboclo Village[64]. Following an update to this document (addition of the project summary table), it was again shared in print during a governance meeting with the community on January 27th, 2024[65], and

[58] 230906_CooperationAgreementSEMED.pdf
[59] 231023_SocialDiagnosisAnnexes.zip
[60] 231019_ReportGovernanceMeeting.zip
[61] 231011_ReportFieldWorkandAnexxes.zip
[62] 240209_GovernanceMeetingJanuary2024.zip
[63] 231011_ReportFieldWorkandAnexxes.zip
[64] 240208_ProjectDocumentsDissemination.zip
[65] 240209_GovernanceMeetingJanuary2024.zip

	later, also in digital format through community groups. The link to access the project documents on the Verra website, including the project summary, was shared with the community through WhatsApp groups on February 15th, 2024[66]. The same actions were carried out in September 2025.
Consultation records	There were no community outcomes regarding the consultation on the summary of the PD.
Stakeholder input	No community input emerged during the consultation; therefore, no updates to the project design were necessary thus far.

Ongoing consultation	According to the communication procedure of the TdX project, the summary of the PD was shared with other stakeholders through established communication channels, both in Portuguese and in accessible language.
Date(s) of stakeholder consultation	07th February 2024, September 2025
Communication of monitored results	Summarized information about the TdX project was shared with other stakeholders via email, initially on August 31, 2023[67]. Subsequently, on February 7, 2024, and September 2025 new information was shared, along with the summary document of the PD in Portuguese, also via email[68]. The link to access the project documents on the Verra website, including the project summary, was shared with other stakeholders, also on these two occasions.
Consultation records	There were no other stakeholders' outcomes regarding the consultation on the summary of the PD.
Stakeholder input	No other stakeholders' input emerged during the consultation; therefore, no updates to the project design were necessary thus far.

[66] 240208_ProjectDocumentsDissemination.zip
[67] 240208_ProjectDocumentsDissemination.zip
[68] 240208_ProjectDocumentsDissemination.zip

Table 2.15. Record of consultation on summary of monitoring results.

Ongoing consultation	According to the communication procedure of the TdX project, the summary of monitoring results was shared with the community through established communication channels, both in Portuguese and in accessible language.
Date(s) of stakeholder consultation	27th January 2024, 8th March 2024, 11th August 2025 and September and October 2025
Communication of monitored results	During an in-person meeting with the community on January 27th, 2024[69], information regarding the project monitoring process, adopted methodologies, and progress in project activities were shared with the community. Subsequently, on March 8th, 2024[70], and subsequently 11th August 2025, a summary pamphlet of the monitoring results was distributed to households in Caboclo Village, where the Systemica team took the opportunity to address questions and gather suggestions. The pamphlet contained a link to an explanatory video of this pamphlet and other information on the project's YouTube channel. Also in October 2025, a meeting with the community was carried out to share again the results of the monitoring with the community. The project's results summary, pamphlet, and links to access the project documentation were digitally shared via WhatsApp community groups at different times, including in September 2025.
Consultation records	There were no community outcomes regarding the consultation on monitoring results.
Stakeholder input	No community input emerged during the consultation; therefore, no updates to the project design were necessary thus far.

Ongoing consultation	According to the communication procedure of the TdX project, the summary of monitoring results was shared with

[69] 240209_GovernanceMeetingJanuary2024.zip
[70] 240208_ProjectDocumentsDissemination.zip

	other stakeholders through established communication channels, both in Portuguese and in accessible language.
Date(s) of stakeholder consultation	18th March 2024 and September 2025
Communication of monitored results	A document with information about the project monitoring process, methodologies adopted, and the complete table of the results obtained was shared with other stakeholders via email, on March 18th, 2024[71] and September 2025. The link to access the project documents on the Verra website was also shared again.
Consultation records	There were no other stakeholders' outcomes regarding the consultation on the monitoring results.
Stakeholder input	No other stakeholders' input emerged during the consultation; therefore, no updates to the project design were necessary thus far.

The TdX project, therefore, has demonstrated and continues to show interest in receiving suggestions, critiques, and other contributions from any of the stakeholders. For this purpose, communication channels are available throughout the project's lifespan[72].

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

As demonstrated in Section 2.3.9 above, the TdX project, since its inception, encourages the stakeholders to provide suggestions and any opinions about the project, and whether have received suggestions in meetings held with the community and public comments regarding document 231215_CCB_Project_Description_TdX_CCBv3.0.pdf, through its communication channels on January 29, 2024. From the public comments received, some points were clarified in the Project Description in its most up-to-date version. These comments and the actions taken as a result of them are described in Table 2.16.

To facilitate this, various communication channels have been made available and shared with stakeholders, ensuring this is an ongoing action. It has also been shown that the project has been adapted based on stakeholder influences.

The communication procedure of the TdX project[73] formalizes the process of receiving a suggestion from the stakeholders, the time required by the team for analyzing the suggestion as presented in the Project Description.

[71] 240208_ProjectDocumentsDissemination.zip
[72] 231019_CommunicationProcedureAnnexes.zip
[73] 231019_CommunicationProcedureAnnexes.zip

Table 2.16. Public comments related to the CCB PD and actions taken by the project.

Summary of comments received	Actions taken
The VCS PD does not bring the specific activities that will be developed in the leak management area.	Details of the activities carried out in the leakage management area are described in the VCS PD. However, details of the activities carried out in the leakage management area were developed in the corrected version. Briefly, in the Triunfo do Xingu Grouped REDD+ Project, the proactive measures to combat leakage sources will be: (i) identified neighbors in the leakage region to propose partnerships and passively avoid deforestation, (ii) supported by a collaborative effort with regional stakeholders to advance a new strategy for the region's land use and forestry, and (ii) mapping by satellite for monitoring interventions in the areas surrounding the project (the Leakage Belt). In this project, reducing carbon stocks from deforestation or increasing emissions from increased grazing operations are not part of leakage prevention activities. Therefore, the current project activity does not entail reducing carbon stocks or increasing GHG emissions linked to activities to avoid leakage.
Secondary data from Nogueira et al (2015) are used, which aggregates averages by forest type from other older studies, most from 2008, more than 10 years before the year the project started. Although the article shows in detail the list of studies that originated each average, no effort was made to try to obtain more localized estimates, limiting itself to using global averages. However, an uncertainty analysis is carried out for the averages of the forest typologies in the project area and a conservative discount is applied in accordance with the Methodology. The PD	The project used ex ante secondary data from Nogueira et al. (2015), which consolidates averages by forest type from previous studies. However, an uncertainty analysis is performed for the averages of forest typologies within the project area, and a cautious discount is applied according to the methodology (lower range of the confidence interval). It is planned to carry out forest inventories in the project area. The data will be used for the monitoring report.

states that forest inventories are planned to be carried out in the project area.	
A factor of 0.5 is used to convert carbon to biomass. The source of this factor is not reported and it is greater than the IPCC standard factor. No uncertainty estimate for this factor is provided nor is a discount applied.	The factor of 0.47 was used for carbon to biomass conversion. The source used was the most current IPCC report.
Regarding additionality, in the VCS PD, 3 land use scenarios are presented (i- continuation of land use without project implementation; ii- implementation of deforestation containment activities financed by landowners; iii- conducted logging through sustainable forest management), in the CCB PD, only 2 scenarios are presented, I and iii.	According to the comments, the additionality scenarios of the VCS PD and final version of the CCB PD were standardized.
In the PD VCS 2 communication channels were defined (e-mail and WhatsApp), however, it was not presented how these channels were constructed nor whether interested parties participated in this construction. The PD CCB mentions a communication procedure as an annex to the project, where the channels are	Regarding community comments, the CCB v.3.1 project description has used such as field reports, to detail the processes carried out regarding the construction of the communication procedure with the community and the consultation, response to feedback, and consent of the community to participate in the project. However, in response to comments and to

detailed. None of the PD versions (VCS and CCB) have evidence (photos, attendance list, etc.) of the consultation process.	provide even more transparency about these processes, they were detailed in the CCB PD and added as appropriate in the VCS PD.
Relevant information about the Triunfo do Xingu REDD+ Cluster Project: The Properties that make up the Project overlap with APA Triunfo do Xingu, as well as REDD+ Ateles 1 (ID 4034), however the proponent states that there are no land problems in the location, not even in overlapping areas. There is a need for more information on this situation.	Relevant information about overlapping other areas can be checked in VCS PD and CCB PD. More specifically, it can be seen in Figure 2.1 of the PD CCB that there is no overlap between the APA Triunfo do Xingu and the project area. Another point raised was the overlap with another REDD project. The Ateles REDD+ Project (4689) is being developed in the Municipality of São Félix do Xingú, southeast of the State of Pará. However, TdX project is composed of seven private rural properties located in the Municipality of Altamira, in the south region of the State of Pará.
Communication about the VCS validation process was made prior to the VVB visit. For CCB validation, this communication has not yet been made, but will be carried out before the VVB visit.	Regarding the communication of the audit process and the dissemination of the project summary to the community, the PD made it clearer that these processes have taken place or are underway.

2.3.11 Stakeholder Consultation Channels (CCB, G3.5)

The consultation process for the TdX project is ongoing, participatory and carried out directly with the project community and representatives of other stakeholders. Therefore, the project has an official communication procedure that outlines all the channels of direct communication between the Systemica Inteligência em Sustentabilidade S.A. team and the community, community groups, project workers and other stakeholders. Through these communication channels, stakeholders can suggest changes and improvements to project activities. Furthermore, whenever the TdX team needs to share any official information or project documents with stakeholders, it emphasizes that stakeholders are aware of the team's openness and the available channels for them to provide input and actively engage with the project. In the case of the community, this is also facilitated through in-person governance meetings.

The project provides evidence of the sharing of official documents with other stakeholders[74], containing project information, such as estimates of total greenhouse gas emission reduction, endangered wildlife species, project activities with the community, among other information such as audit dates and validation and verification processes. The available communication channels were also shared.

[74] 240208_ProjectDocumentsDissemination.zip

The field visit report from June 2023 attached[75], on the other hand, offers evidence of the sharing of the Communication Procedure[76] with the community, which includes all available communication channels, along with other relevant procedures that will be discussed in the sections of this document. In this annex, it is also possible to observe the information that was shared with the community on that occasion, and as shown in section 2.3.9, the information shared in community consultations generally relates to project design, implementation, and management. The sharing of project documents and information with stakeholders is not necessarily convergent, as there are agendas that are specific to the community and, therefore, are not shared with other stakeholders. Moreover, some information levels are only shared with the landowner, such as financial issues.

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

The TdX project ensures that the community participates in the decision-making and implementation processes of project activities. To accomplish this, the community is encouraged to take part in decision-making or governance meetings alongside Systemica Inteligência em Sustentabilidade S.A. During these meetings, everyone is updated on the progress of activities, the individuals involved, and any obstacles that may arise, justifying a new collective decision. So far, six initiatives for structuration the community governance were implemented, the first is the Working Group on Sustainable Agriculture; the second, the Initiative to Strengthen Associativism; the third, the Community's Own Governance; the fourth, the Working Group on Land Issues; the fifth, the Initiative for the Governance of the TdX Project; and finally, the Women's-Only Working Group within the community. As part of the last initiative, five face-to-face meetings were held focusing on the exclusive participation of women in structuring community governance[77]. In this way, with comprehensive information, the community is enabled to participate and engage in this process through any of the communication channels, which are known to the community and are fully operational[78].

It is important to emphasize that these spaces for decision-making and project progress discussion are participatory spaces, with extensive outreach and efforts to make them as representative as possible of the community. To clarify, to ensure cultural sensitivity in implementation and decision-making, the project has established a variety of communication channels, ranging from written documents and meetings held at appropriate times for the community to the creation of explanatory videos about the project, among other initiatives. On the other hand, to guarantee gender sensitivity, the project has set up exclusive communication channels with the women in the community[79], where they can actively participate and directly influence decisions regarding project activities. This also happens in face-to-face meetings, with exclusive meetings for women. The goal was to guarantee this group a voice and free

[75] 231019_ReportGovernanceMeeting.zip
[76] 231019_CommunicationProcedureAnnexes.zip
[77] 240229_AllProjectGovernanceMeetings.zip
[78] 240301_ImplementationCommunicationChannels.pdf
[79] 240229_WhatsAppChat-MulheresVilaCaboclo.zip

participation and to ensure that these groups also collaborate with the project and have equal access to project opportunities.

Figure 2.3 Governance meeting in Caboclo Village.

Figure 2.4 Womens's governance meeting.

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

The Systemica Inteligência em Sustentabilidade S.A., through its Code of Conduct[80], has as a company-level guideline the assurance of respecting the rights of communities, refraining from improper and abusive behaviors, as well as preventing sexual or moral harassment. Likewise, Systemica Inteligência em Sustentabilidade S.A. requires service providers to comply with specific codes of conduct for the activities they perform (see 2.4.3)Moreover, the workers hired by the landowners to carry out activities linked to the project have also signed the code of conduct stipulated by the project, as have the community agents hired by the project[81].

Furthermore, in a non-discriminatory manner, the communication procedure[82] of the TdX project team towards the community and other stakeholders addresses communication principles, which are: ethical treatment, clarity and transparency, communication safety, inclusion and promotion of equality, attention to vulnerable groups, communication governance, freedom of expression, engagement, and equality.

2.3.14 Grievances (VCS, 3.18.4; CCB, G3.8)

The project's communication procedure, which contains the description of the conflict resolution process, has already been shared with the community during an in-person meeting in June 2023[83], and this procedure was reinforced during the governance meeting in January 2024[84].

Conflict resolution aims to mitigate and sometimes eliminate the negative impacts of potential conflicts on the dynamics of interactions promoted by the project within a reasonable timeframe, following the established resolution stages. These stages can be found in the attached Communication Procedure[85].

To date, no formal notifications of conflicts or complaints have been received through the project's communication channels. However, a suggestion was submitted on October 30, 2024, requesting support for cleaning the stream in Caboclo village so that community members could use it for bathing. The proposal was considered viable but requires further discussion and joint efforts with the community. The project team responded through the main WhatsApp groups on November 13, 2024, and the matter will also be addressed in an upcoming in-person meeting.

The monitoring of the suggestion box has been permanent since its installation in 2023, with no complaints or questions, and only one suggestion has ever been recorded[86] (Table 2.17).

Even so, Systemica remains attentive to potential conflicts, complaints, and feedback, and is committed to acting transparently and in accordance with the communication procedure agreed with the community.

[80] 230905_SystemicaSACodeofConduct.pdf
[81] 240111_ConductAgreementsSigned.zip
[82] 231019_CommunicationProcedureAnnexes.zip
[83] 231019_ReportGovernanceMeeting.zip
[84] 240209_GovernanceMeetingJanuary2024.zip
[85] 231019_CommunicationProcedureAnnexes.zip
[86] SuggestionBox.zip

Table 2.17. Record of grievances and resolutions.

Grievances received	Resolution and outcome
No grievance was raised during the monitoring period.	No resolutions needed to be made during this monitoring period as no grievances were recorded.

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

Systemica Inteligência em Sustentabilidade S.A. is responsible for ensuring that all workers engaged in the project—whether directly hired or subcontracted, from local communities or external sources—receive appropriate training and guidance to perform their activities.

The company's internal team already has the technical capacity to conduct carbon project activities, supported by multidisciplinary expertise (see Section 2.4.2). All staff follow Systemica's Code of Ethics and Conduct, which requires knowledge transfer in cases of turnover, ensuring that skills and tools are not lost.

- Trainings conducted for project workers and community members include[87],[88],[89],[90]:
  - Community agents (directly and permanently hired):
  - Training to carry out the scope of planned tasks.
  - Specialized training in monitoring project areas.
  - Training in installation and maintenance of camera traps for fauna monitoring.
  - Preventive safety training for fieldwork.
  - Training in administering questionnaires
  - Training was provided on Regulatory Standard 31 for rural work (NR-31).

- Community agent (temporarily hired)
  - Training in administering questionnaires
  - Training was provided on Regulatory Standard 31 for rural work (NR-31).
  - Training for Digital Data Management of Camera Trap Images.

[87] 231011_ReportFieldWorkandAnexxes.zip
[88] 231205_MonitoringTraining.zip
[89] 231205_TrapCameraTraining.zip
[90] 231205_PreventiveSafetyTraining.zip

- Community members hired through subcontractors[91],[92]:
  - Biomass inventory (by TCF & Serviços): training and certification of six community members.
  - Fauna inventory (by BIOAMA): training community members for data collection in monitoring activities.
  - Training in Integrated Fire Management (Military Fire Department of the State of Pará): Training in first aid, fire prevention and firefighting techniques, with comprehensive practical experience in real-life firefighting simulations and donation of equipment to strengthen local response capabilities.

Figure 2.5 Training in first aid by Fire Department of the São Félix do Xingu.

[91] 230807_FinalForestInventoryReport.pdf
[92] 231214_ WildlifeMonitoringTraining.zip

Figure 2.6 Tarining in fire prevention and firefighting techniques.

Figure 2.7 Community members trained in first aid, fire prevention and firefighting techniques.

Whenever training needs fall outside Systemica's direct expertise, qualified third-party firms are engaged to provide the necessary capacity building, following the contractual requirement that subcontractors ensure proper training and comply with Systemica's ethical standards (see Section 2.4.3).

Community agents have a contractual responsibility to transfer acquired skills to their successors with support from Systemica. Trained community members are prioritized for future project activities (e.g., biomass and fauna monitoring), ensuring that local capacity is maintained and strengthened over time[93].

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

All the job opportunities for the project's activities were widely publicized in Caboclo Village, so that everyone has an equal opportunity to participate in the selection process, without any discrimination against women or marginalized individuals, as set out in the section on the remuneration and compensation procedure within the communication procedure[94].

Apart from the job opportunities generated by the project's activities, the only direct hires in the community so far have been community agents[95]. The vacancies were publicized virtually through Caboclo Village's WhatsApp group with the project[96] and through the project's YouTube channel[97], and in person through general meetings in the village[98]. Virtually all the relevant information about the job vacancy was shared, and the visit to Caboclo Village, where general meetings would take place, was publicized. The face-to-face meetings were an important space for publicizing the vacancies and for general clarifications.

The selection of candidates for the two vacancies to be filled was made through an isonomic process, which aimed to fill the vacancies equally between genders and candidates in situations of social vulnerability. Virtual interviews were held with all the candidates, with standardized questions for all[99]. The selection of candidates was based on their demonstrated skills and motivation, as well as their ability to perform the necessary job functions.

Among the three candidates who showed interest in 2023, one woman was selected. However, she resigned from the position by her own choice since she would lose the benefits of government aid once she had formalized employment[100]. Systemica Inteligência em Sustentabilidade S.A. identified that the benefit received by the candidate (Bolsa Família[101]) could not be continued once the same person had formalized employment in some way (in this case, the woman would need to have the status of MEI – Individual Microentrepreneur). On this occasion, Systemica Inteligência em Sustentabilidade S.A. explained the possible legal conflict, and the candidate chose to remain with the government benefit, renouncing the position offered. The other two candidates were selected for job vacancies. Subsequently, in 2024, another woman from the community was hired as a temporary community agent to support specific activities, including the application of questionnaires and the organization of data collected through camera traps.

[93] 231214_CommunityContracting.zip
[94] 231019_CommunicationProcedureAnnexes.zip
[95] 231214_CommunityContracting.zip
[96] 231218_PromotionHiringAssistantsWhatsApp.pdf
[97] https://www.youtube.com/watch?v=-gCeIBYczl0&t=33s
[98] 231019_ReportGovernanceMeeting.zip
[99] 230906_HiringInterview.zip
[100] 231218_CommunityJobRejection.zip
[101] https://www.gov.br/mds/pt-br/acoes-e-programas/bolsa-familia

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

Consideration of substantial risks to worker safety that could arise due to project implementation is considered by TdX project. As presented in the Project Description, a risk matrix was prepared according to the project activities and presents the identified risks, severity, and mitigation measures[102].

All individuals contracted by these specific activities of the project were duly informed about the potential job risks, mitigation measures, and mandatory personal safety actions. The hiring of community agents provides evidence that Systemica is complying with adequate training[103,104] for the functions required for the job and sharing of legislation and labor standards related to the type of hiring[105,106]. In all the preventive safety practices training sessions, the occupational risk matrix was presented, breaking down the types and levels of risk for each activity. All this evidence can also be consulted in the attached folder[107].

In general, the following measures have been taken to ensure safety at work:

- Mandatory use of Personal Protective Equipment (EPI in Portuguese).
- Specific training for the activities to be performed.
- Promotion of awareness of safety standards and practices.
- First aid: assessment of the situation, vital signs, common occurrences, and venomous animals.
- Navigation, orientation, and use of firefighting tools and equipment.
- Requirement of certification and a code of ethics for contracted third-party companies[108,109].

No emergency measures needed to be taken during the monitoring period. Therefore, it was not necessary to activate life insurance or public emergency services and local support.

In the case of indirect hiring, through companies contracted by Systemica Inteligência em Sustentabilidade S.A., part of the team has assessed the occupational risk measures of these contracted companies. Good work has been done in this regard, as shown by the service reports submitted by these companies[110,111].

[102] 231205_PreventiveSafetyTraining.zip
[103] 231205_TrapCameraTraining.zip
[104] 231205_MonitoringTraining.zip
[105] 231011_ReportFieldWorkandAnexxes.zip
[106] 231205_PreventiveSafetyTraining.zip
[107] 231205_PreventiveSafetyTraining.zip
[108] 230713_ContractCodeEthicBioAma.pdf
[109] 230713_ContractCodeEthicTCF.pdf
[110] 230807_FinalForestInventoryReport.pdf
[111] 230919_FaunaInventoryReport.pdf

2.4 Management Capacity

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

The technical skills necessary for the successful implementation of the project are provided by the Systemica Inteligência em Sustentabilidade S.A. team, insofar as the project proponent is responsible for carrying out the proposed activities.

The expertise focuses on the following skills:

- Community engagement: experience and technical knowledge in working with rural communities, farmers, stakeholder engagement, and mastery of participatory methodologies.
- Biodiversity assessment and monitoring: technical knowledge about forest inventory, and agriculture systems, including agroecology and agroforestry. The domain of georeferencing and statistical software. Partners trained in surveying and elaboration of fauna inventories with species of mammals and avifauna.
- Carbon assessment and monitoring: technical knowledge of remote sensing tools and statistical software, practicality in organizing documents to obtain certification, and experience in carbon projects.
- Monitoring and legal support: legal team with experience in carbon projects, and specialized knowledge of legislation related to communities and nature conservation.
- Evaluation and monitoring of social aspects: knowledge and experience working with rural communities, skills with participatory methodologies, and expertise in social technologies. Partners trained in carrying out socio-environmental diagnoses.
- Remote monitoring: technical knowledge for collecting field data, software, and programs that make it possible to monitor the project area and zone through satellite images and their refinement to create figures and maps.

In addition to the Systemica Inteligência em Sustentabilidade S.A., some partners, as pointed out in Section 2.4.3, can contribute to the project's activities, emphasizing that the priority is that these partners are from institutions and organizations close to the project. Also, as pointed out in Section 2.4.2, the team that participates in the project is made up of professionals from different areas, each one with their specializations, ranging from the main areas of knowledge necessary for the development of the project, as well as social, biological, environmental, and forestry sciences.

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

The skill of the Systemica Inteligência em Sustentabilidade S.A. team has been consolidated since 2012, the year of its foundation. Since then, various projects from different segments have been spearheaded in the following areas: ecosystem services, introducing sustainability to governance strategies thinking about value creation, public policies, and forestry projects for the voluntary carbon market. Evidencing

that, for the present project, the experience in all these areas provides a fundamental basis for its elaboration and execution. Below is a summary of some of the projects developed by Systemica Inteligência em Sustentabilidade S.A. [112]:

Vale Florestar, reforestation of degraded tropical lands in the Brazilian Amazon: project evaluation and validation to ensure that it complies with the requirements of the Clean Development Mechanism for generating Carbon Credits. The project's objective is to create a local market for renewable wood and, at the same time, contribute to the expansion of forestry, attracting forest-based industries and other associated productive activities to the region.

Agrocortex REDD Project: guidance on the decision to acquire carbon credits related to the project through technical and legal due diligence, with an assessment of the project's environmental integrity. The main objective of the Agrocortex REDD project is to avoid the unplanned deforestation of the project area that belonged entirely to the territory of the Amazon Forest, in the Brazilian states of Acre and Amazonas.

CIKEL REDD Brazilian Amazon APD Project: technical analysis of the project and development of its continuity strategy. The project aims to avoid emissions from planned deforestation on a property in Paragominas, in the Brazilian state of Pará.

Amazon Biome Conservancy Grouped REDD+ Project: responsible for this carbon project as one of its proponents. This project contributes to preserving the most extensive tropical forest in the world in the Brazilian territory while providing significant improvements in the social interface. It is registered under the Verified Carbon Standard (VCS) and the first project activity instance is in the Itacoatiara municipality, the state of Amazonas, near its capital Manaus.

Florestal Santa Maria Project (FSM-REDD PROJECT): The FSM Forest property, a rural property exclusively dedicated to the sustainable management of natural forests, is in the municipality of Colniza. The FSM-REDD Project was designed to give this forest management company the opportunity to take full advantage of the REDD regulatory system being developed through the VCS standard. The specific area of the carbon project is part of a larger colonization initiative, started in 1975, through the state's legally established effort to develop the northern region of the State of Mato Grosso.

The Systemica Inteligência em Sustentabilidade S.A. team directly involved in the project is multidisciplinary, with experience relevant to and qualified for the project. It has professionals from different areas of knowledge, such as biological, social, and exact sciences. Additionally, several members have specializations, graduate degrees, and professional experience in areas directly related to the project, such as the carbon market, extension, rural communication, forest inventory, statistics, and geoprocessing.

Table 2.18 summarizes the professional team’s experience working on the Triunfo do Xingu Grouped REDD+ Project:

[112] TeamExperience

Table 2.18. Summarizes the professional team's experience working.

Management Team Experience	
Name	Munir Soares[113]
Role	Chief Executive Officer (CEO)
Summary	Munir is the co-founder and CEO of Systemica, a developer of socio-environmental asset projects. With over fifteen years of experience as a Low Carbon Strategist, Team Leader, and Portfolio Manager, he has extensive expertise in serving large corporations and NGOs across Latin America. Throughout his career, he has gained unparalleled field experience in Brazil, with a particular focus on the Amazon region, managing and working with multicultural teams. Munir also holds a Master's and PhD in Energy and Climate Change from the University of São Paulo (USP).
Contact	munir@systemica.digital
Name	Tiago Gonçalves de Oliveira Ricci[114]
Role	Legal Director and Prospecting
Summary	Tiago Ricci is a lawyer with an LLM in Financial and Capital Markets Law and a specialist in Tax Law, with over 17 years of experience in structuring and developing public policies, projects, and corporate ventures focused on technological innovation and climate change. His expertise ranges from conducting due diligence on carbon projects to international negotiations for large investments. He has served as a specialist consultant in the development of public policies on climate change, being one of the key contributors to the formulation of climate legislation in various Brazilian states.
Contact	tiago.ricci@systemica.digital
Name	Ricardo Zwarg[115]
Role	General Director of Restoration Projects

[113] 250801_ResumeMunirSoares.pdf
[114] 250801_ResumeTiagoRicci.pdf
[115] 250801_ResumeRicardoZwarg.pdf

Management Team Experience	
Summary	Environmental Engineer from the Faculty of Technology at UNICAMP. Master's degree in science and technology from the Federal University of São Paulo - UNIFESP. Completed an academic exchange at the Helmholtz Centre for Environmental Research, Leipzig, Germany. Has worked as a project coordinator for NBS (Nature-Based Solutions) in private areas and traditional communities. Currently he serves as Technical Director at Systemica, working on the development of carbon projects, MRV (Monitoring, Reporting, and Verification), and various modeling for REDD and ARR.
Contact	ricardo@systemica.digital
Name	Thiago de Freitas Viscondi [116]
Role	Project Intelligence Supervisor
Summary	Bachelor's, Master's, and Doctor's degrees in Physics at the University of Campinas. Former postdoctoral researcher at the Institute of Physics and at the Escola Politécnica of the University of São Paulo. Practical experience in developing and managing projects targeting the voluntary carbon market. Extensive knowledge of methodologies and documentation required for certifying carbon projects, especially those aimed at reforestation and avoiding deforestation. Proficiency in the conceptualization and implementation of technological tools for geospatial assessment of territories and management of carbon projects, such as models for predicting deforestation and evaluating reforestation suitability.
Contact	thiago@systemica.digital
Name	Larissa Oliveira Paulista [117]
Role	Conservation Project Manager
Summary	Larissa Oliveira Paulista holds a PhD in Environmental Engineering from the Faculty of Engineering of the University of Porto (FEUP), Porto, Portugal. She also holds a double degree from the Polytechnic Institute of Bragança (IPB),

[116] 250801_ResumeThiagoViscondi.pdf
[117] 250801_ResumeLarissaPaulista.pdf

Management Team Experience	
	Portugal, and a master's in environmental technology. With over five years of experience in CO_2, she currently works as Conservation Project Manager at Systemica. Her work focuses on conservation projects within the voluntary carbon market, using certifications such as Verified Carbon Standard (VCS) and Climate, Community & Biodiversity (CCB). She has experience in standards and methodologies focused on REDD and IFM projects, as well as other methodologies and scopes related to nature-based solutions (NBS).
Contact	larissa@systemica.digital
Name	Adriano Grigolo[118]
Role	Modelling specialist
Summary	Adriano Grigolo holds a PhD in Physics from UNICAMP, specializing in computational methods applied to molecular systems. He has been with Systemica since 2021, where he works as a specialist in the development of geospatial models and tools for the technical and economic feasibility analysis of carbon projects.
Contact	adriano@systemica.digital
Name	Nathalia Virginia Veloso Aguiar[119]
Role	Technical Specialist I
Summary	Environmental Engineer, graduated from the Federal University of São Carlos, with international experience in technology and programming through an exchange program at Universidad San Buenaventura. Holds a master's degree in Forest Resources from the University of São Paulo and works as a specialist in geospatial technologies within the carbon market and environmental solutions. He has extensive experience in spatial analysis and monitoring using Google Earth Engine (GEE) to handle large datasets, integrating remote sensing with advanced algorithms. Additionally, it has led teams in geoprocessing projects for the energy sector and environmental services.
Contact	nathalia@systemica.digital

[118] 250801_ResumeAdrianoGrigolo.pdf
[119] 250801_ResumeNathaliaAguiar.pdf

Management Team Experience	
Name	Pedro Henrique Presumido[120]
Role	Technical Analyst III
Summary	Pedro Henrique Presumido holds a PhD in Environmental Engineering from the Faculty of Engineering at the University of Porto (Portugal), with a focus on environmental issues and treatment solutions. With three years of experience in conservation and forest restoration projects, he specializes in the voluntary carbon market. He is well-versed in standards and methodologies (VERRA - AUD, APD, IFM) designed to support Reducing Emissions from Deforestation and Forest Degradation (REDD), as well as other methodologies and frameworks for Nature-Based Solutions (NBS). Currently, Pedro serves as a climate specialist for REDD projects at Systemica.
Contact	pedro@systemica.digital
Name	Laura Juanita del Pilar Rodriguez Ayala[121]
Role	Community Intelligence Analyst
Summary	Juanita Rodriguez Ayala is a Social or Community Specialist at Systemica, with extensive experience in socio-environmental research, the development and application of methodologies, as well as the design and evaluation of activities and outcomes aimed at improving the social well-being of communities. For approximately four years, she has been involved in the development of Nature-Based Solutions (NbS) projects for the voluntary carbon market, focusing on the Brazilian Amazon and the Colombian Orinoquía. The carbon projects she has participated in follow internationally recognized standards. She holds a degree in Social Anthropology and a master's in Sociology from the National University of Colombia. Currently, she is a PhD candidate at the Center for Sustainable Development at the University of Brasília, specializing in Policy and Sustainability Management.
Contact	juanita@systemica.digital

[120] 250801__ResumePedroPresumido.pdf
[121] 250801__ResumeJuanitaRodriguez.pdf

Management Team Experience	
Name	João Carlos Simonetti[122]
Role	Technical Analyst I
Summary	João Carlos Simonetti, a geoprocessing analyst at Systemica, holds a degree in Forestry Engineering from the Luiz de Queiroz College of Agriculture (ESALQ-USP) and a postgraduate degree in Data Science & Analytics from the University of São Paulo. He has worked in various sectors, such as environmental consulting focused on forest resources, supporting small producers in forest restoration, and the pulp and paper industry, with an emphasis on Geographic Information Systems (GIS) tools.
Contact	joao.simonetti@systemica.digital
Name	João Paulo Ferreira[123]
Role	Community Intelligence Coordinator
Summary	João Paulo holds a degree in Law from the Pontifical Catholic University of São Paulo and in Philosophy from the University of São Paulo. He is a specialist in Administrative Law and holds a master's degree in Constitutional Law from PUC-SP. With over fifteen years of experience in public law and human rights, he has worked in both the private sector and public administration. João Paulo has been with Systemica since April 2022, currently serving as the coordinator of the Community Intelligence department.
Contact	joao.swf@systemica.digital
Name	Iêda Tenório[124]
Role	Supply Analyst
Summary	Graduated in Production Engineering, with over 15 years of professional experience, 9 of which were spent working in logistics and supply chain in the aerospace and technology/oil and gas industries. She later worked in

[122] 250801_ResumeJoãoSimonetti.pdf
[123] 250801__ResumeJoãoFerreira.pdf
[124] 250801_Resumeleda.pdf

Management Team Experience	
	technology and, subsequently, in project development and the construction of clean rooms, focusing on planning, control, and project management. She has experience in team coordination, interfacing with strategic areas such as project development and finance, and managing contracts/projects. Currently, she works in the contracts/supply chain area, focusing on carbon credits and socio-environmental transformation at Systemica.
Contact	Idea.tenorio@systemica.digital
Name	Gabriella da Silva Ribeiro[125]
Role	Project Coordenation
Summary	She holds a degree in Forestry Engineering and a master's degree in applied Ecology from the Luiz de Queiroz College of Agriculture at the University of São Paulo (USP). She has experience in the socio-environmental field, focusing on agroforestry systems, environmental education, forest management, and public policy.
Contact	gabriella@systemica.digital
Name	Yago Alonso Cipoli [126]
Role	Project Analyst I
Summary	Yago Cipoli, a project analyst at Systemica, holds a degree in Environmental and Sanitary Engineering from the Federal University of Technology – Paraná (UTFPR – Londrina), a master's degree in environmental technology from the Polytechnic Institute of Bragança (IPB – Portugal), and is currently in the final year of a PhD in Environmental Engineering at the University of Aveiro (UA – Portugal). With over six years dedicated to academic research, he has extensive expertise in indoor and outdoor air pollutants, with a focus on their impact on health and the environment. He has conducted research in countries including Portugal, Hungary, and África, leading monitoring campaigns, developing mitigation strategies, and contributing to international scientific publications.

[125] 250801_ResumeGabriellaRibeiro.pdf
[126] 250801_ResumeYagoCipoli.pdf

Management Team Experience	
Contact	yago.cipoli@systemica.digital
Name	Valéria Christina Araújo Monteiro[127]
Role	Project Analyst I
Summary	Valéria Monteiro has a degree in Forestry Engineering from the Federal University of Amazonas - UFAM/Manaus and is a Specialist in the Environment and its Technologies from the Federal Institute of Education, Science and Technology of Amazonas - IFAM/Manaus. She has experience in research and extension projects with an emphasis on conservation and forest inventory, socio-environmental activities and working with traditional and riverside communities.
Contact	valeria.monteiro@systemica.digital
Name	Agatha Oliveira Ramos[128]
Role	Legal Project Analyst I
Summary	A lawyer graduated from the Escola Paulista de Direito (EPD), with a specialization in land issues and a focus on the Legal Amazon. She completed the course "Climate Change and Carbon Market: Scenarios and Perspectives" at the Escola Superior de Advocacia of OAB. She has solid experience in due diligence for private and collective properties, as well as extensive work in drafting and analyzing contracts, particularly in projects related to sustainability, land regularization, and the generation of environmental assets.
Contact	agatha@systemica.digital
Name	Laise de Jesus dos Santos[129]
Role	Project Analyst I

[127] 250801_ResumeValeria Monteiro.pdf
[128] 250801_ResumeAgathaORamos.pdf
[129] 250801_ResumeLaiseSantos.pdf

Management Team Experience	
Summary	Master's and PhD student in Wood Science and Technology at the Federal University of Lavras (UFLA). Forest Engineer graduated from the State University of Pará (UEPA). Former coordinator of the Study Group on Wood Anatomy and Chemical Products at UFLA. Volunteered in the National Volunteer Program of ICMBio at the Conservation Units of the Carajás Mosaic and interned at the Casa da Cultura Foundation in Marabá, working with indigenous populations in southeastern Pará. Member of the Wood Science and Technology League at UEPA. Experienced in the areas of forest resources, ethnobotany, and circular economy.
Contact	laise.santos@systemica.digital

2.4.3 Project Management Partnerships/Team Development (VCS, 3.19; CCB, G4.2)

The project involves several areas of activity. Initially, most of the activities are being carried out by the team at Systemica Inteligência em Sustentabilidade S.A., as well as by the community itself. In this sense, this team has the expertise and knowledge to develop and monitor project activities that have an impact on the climate, the community, and biodiversity, as presented in Section 2.4.2.

However, for the development of some initial components of the project, more relevant experience was needed, so hiring partners to support the project and guarantee its quality was essential. This is the case of the fauna and flora inventories. To remedy this deficiency, Systemica Inteligência em Sustentabilidade S.A. obtained the support of TCF & Serviços and the company BIOAMA Soluções Ambientais[130].

TCF & Serviços, was created in 2015 to support forestry companies in carrying out Forest Management and Reduced Impact Exploitation (MF-EIR, in Portuguese) and FSC Certification and to promote qualified labor. In addition to Training, Capacity Building, Forest Consultancy/FSC Certification, and Forest Services in the Natural Forest of the Amazon. The partnership with TCF & Serviços contributed to generating the forest biomass inventory as input for estimating biomass and calculating changes in the baseline carbon stock, among other aspects.

The company BIOAMA Soluções Ambientais, has professionals with more than 15 years of experience and experience in characterizing vegetation and carrying out inventories of flora and fauna for environmental compensation projects with state and municipal environmental agencies. The partnership with BIOAMA Soluções Ambientais contributed to the carrying out of the preliminary fauna inventory based on secondary data, training and qualification of community collaborators, installation of traps, and the faunal inventory and monitoring of interest groups.

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

[130] EntitiesInvolved.zip

Systemica Inteligência em Sustentabilidade S.A., as the implementing organization, has and will continue to have adequate financial support throughout the project's lifetime. This is evidenced by the budget provisioned for project activities[131], the projected income from the sale of carbon credits, and balance sheets demonstrating the financial health of the project proponent[132]. This information is commercially sensitive and has therefore been included as attachments to the document, and can be shared with the VVB and Verra upon request.

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

Strategies to guarantee the fairness of the proposing and partner institutions are based on transparency regarding the use of project resources. Institutionally, contracts, terms of reference, a code of conduct and an ethical commitment term, legally seal the project's actions, both internally and externally, since several project activities require partnerships with other organizations. In this sense, all Systemica Inteligência em Sustentabilidade S.A. collaborators and partners signed a code of ethics and conduct that supports their actions. Especially in the code of conduct, it is committed to combating and denouncing all forms of corruption, which include bribery, embezzlement, fraud, favoritism, cronyism, nepotism, extortion, and collusion.

Likewise, to date, Systemica Inteligência em Sustentabilidade S.A. is not involved in any form of corruption[133]. The measures taken to be able to provide this assurance are, in the event of any complaint of an illegal or unethical act within Systemica or its partners and collaborators, it has an internal Ethics Committee made up of a person responsible for the reporting channel, a member of the board of directors and a member of the staff, all appointed by the body company's corporate structure after documental, behavioral and social analysis. Also within the functions of this Committee is the ability to issue a technical opinion with the complete report of the procedure and the conclusion of the penalty to be applied to the author(s), which may be Retraining; Simple Warning; Formal Warning; Dismissal and/or termination of service provision contract; and Dismissal for cause, without prejudice to other applicable legal and judicial measures.

2.4.6 Commercially Sensitive Information (VCS, 3.5.2-3.5.4; CCB Program Rules, 3.5.13 – 3.5.14)

All documentation containing internal cost assumptions or information regarding trade secrets, financial, commercial, scientific, or other sensitive data that could result in material financial loss or gain, affect the outcome of contractual or other dealings, or otherwise harm or benefit the person or entity to which the information relates was attached to this Monitoring Report and are available to the VVB and Verra upon request. Any commercially sensitive information is included as attachments in both the Monitoring Report submitted to VVB and Verra and in the public version of the Monitoring Report. Therefore, no

[131] 240119_TdXCashFlow.xlsx
[132] 240124_SystemicaFinancialStatement.pdf
[133] GeneralLegalDocs.zip

commercially sensitive information has been excluded from the rest of the public version of the Monitoring Report, and Appendix 3 was not applied.

Moreover, information related to the determination of the baseline scenario, demonstration of additionality, and estimation and monitoring of GHG emission reductions and removals is not considered commercially sensitive and is described in the public version of the document.

2.5 Legal Status and Property Rights

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

The activities of the TdX project are in line with the principles established in the Federal Constitution of Brazil (Brasil, 1988), according to article 225, for the contribution to the right to an ecologically balanced environment, an asset of common use by the people and essential to a healthy quality of life, and to the item (I) of this article on preserving and restoring essential ecological processes and providing for the ecological management of species and ecosystems.

The project also observes the provisions of the National Environmental Policy, Law n° 6.938, of August 31, 1981 (Brasil, 1981), which declares the objectives of conservation, improvement, and recovery of the environmental quality that is conducive to life, having among its principles the protection of ecosystems with the conservation of relevant areas (Art. 2, IV) and the protection of areas threatened with degradation (item IX), and is in line with Federal Law n° 12.187, of December 29, 2009 (Brasil, 2009), which instituted the National Policy on Climate Change, concerning Article 3, item (I) in which it states that everyone has a duty to act, for the benefit of present and future generations, to the reduction of impacts resulting from anthropic interference on the climate system, and item (V) on how, actions at the national level to face climate change, current, present and future, should consider and integrate the actions promoted at the state level and municipal by public and private entities.

Regarding protecting native vegetation policy, the most important regulatory framework is the New Forest Code, Law n° 12.651, of May 2012 (Brasil, 2012). This law establishes not only the forest category that must be conserved within private properties but also the maximum amount of native vegetation that can be converted to other land uses for economic purposes. About this, the TdX project under the VCS GHG accounting standard and now for the CCB standard, ensured compliance in the project area with the permanence of the Legal Reserve, which for properties within the Legal Amazon it must be 80% of the property area.

Additionally, the private properties of the other entities involved in the project and the community of the first instance Caboclo Village are within the Triunfo do Xingu Environmental Protection Area (APA Triunfo do Xingu), which covers the municipalities of São Félix do Xingu and Altamira, as provided in state Decree n° 2.612 of 2006 (SEMAS, 2006). Even though no management plan puts the objectives of the APA Triunfo de Xingu into practice, the project activities are consistent with these, since it has “as its basic objectives to protect the diversity biological, disciplining the occupation process and ensuring the sustainability of the use of natural resources, aiming at improving the quality of life of the local population", as well as with Law n° 9.985 of 2000 (Brasil, 2000) of the National System of Conservation

Units (SNUC), that according to paragraph 1 of art. 15 provides that "the Environmental Protection Area includes public or private land". In this way, as can be seen in the project's CCB objectives presented, the activities are coherent and comply with the relevant legislation for their development.

2.5.2 Relevant Laws and Regulations Related to Worker's Rights (VCS, 3.18, 3.19; CCB, G3.11)

The project proponent is aware of and is adhering to the relevant Brazilian laws and regulations concerning workers' rights. The Code of Ethics and Conduct[134] document of Systemica Inteligência em Sustentabilidade S.A., states that the company is committed to diligently monitoring and fully complying with all applicable laws. Furthermore, it emphasizes that all individuals, regardless of location, while carrying out activities on behalf of the company, are expected to respect and abide by the laws. It is also likely that all third parties, including service providers, consultants, representatives, and others, comply with the applicable laws in any activities or business they engage in.

The principal way of contracting the project is through the Individual Microentrepreneur (MEI in Portuguese) modality. Complementary Law N°. 128 of December 19, 2008 (Brasil, 2008a), instituted this simplified business model to facilitate the formalization of activities for those who work autonomously. MEI was created to take self-employed professionals and small entrepreneurs out of informality. It is a simple company that adjusts very well to the needs of those who work autonomously. By formalizing as an MEI, the entrepreneur now has his own National Register of Legal entity (CNPJ in Portuguese), the possibility of issuing invoices, and can access social security benefits, such as old age retirement, sick pay, and maternity pay. It also makes applying for credit and opening a bank account easier.

Another way in which the project contracted was through an Autonomous Payment Receipt, also known as an RPA (an abbreviation in Portuguese). The RPA is a document issued to self-employed individuals who do not have a CNPJ registration and are hired on an occasional basis, receiving compensation through receipts. The legality of this hiring and payment method is supported by Brazilian legislation, as established in Law N°. 5,890 of June 8, 1973 (Brasil, 1973). The use of this form of contract was necessary for the hiring of community agents in the first few months of starting their activities, while the status of MEI had not yet been formalized, or for occasional hiring of professionals from the region.

Although the TdX Project does not rely on the Consolidation of Labor Laws (CLT in Portuguese) for its contracting methods, Brazilian Regulatory Standard 31 (Health and Safety at Work in Agriculture, Livestock, Forestry, Logging, and Aquaculture – NR-31 in Portuguese) remains relevant. This NR-31, a complementary regulation to the Consolidation of Labor Laws (Chapter V, Title II), encompasses health and safety in agriculture, livestock, forestry, logging, and aquaculture work. Also, guarantee the protection and health of workers, including capacity building, personal protective equipment, machines, equipment and etc (MTP, 2023).

[134] 230905_SystemicaSACodeofConduct.pdf

Therefore, the workers hired by the project were duly informed of their rights during the hiring process[135,136,137] and received courses and training on their obligations and rights[138,139]. In addition, everyone received preventive safety training in the field, where they were introduced to a new, more elaborate occupational risk matrix containing all the risks identified for the performance of the project's activities[140]. Systemica Inteligência em Sustentabilidade S.A. has the support of its legal team, which is available to answer questions and help inform workers of their rights when necessary.

2.5.3 Human Rights (VCS, 3.19)

The TdX project respects, recognizes and promotes the protection of the rights of local communities. It is important to note that the project does not impact or affect traditional communities, as evidenced in the CCB Project Description version 3.0. Below, it will be highlighted how the project respects, acknowledges, and promotes the rights of the Caboclo Village community. This demonstration occurs through the consent process obtained from the community and the joint development and validation of the project's activities matrix.

Regarding consent, the TdX project adheres to the perspective that it is developed continuously, through a multiple and systematic process. Therefore, it is crucial to say that the consent is not limited to a single act, moment, or stage. Although in the Triunfo do Xingu Grouped REDD+ Project, traditional communities recognized as such by national or international legislation do not participate nor are impacted, the guidelines given in the definition of the Program Definitions: CCB Version 3.0 on free, prior and informed consent and the principles established by Convention n° 169 of the International Labour Organization (ILO, 1989). Consent was obtained from the Caboclo Village community to participate in the project activities through a series of informative meetings and a dialogical process, encompassing a total of three important moments. Please refer to Section 2.5.7 for more information.

It is also important to mention that the project activities were designed and validated through a participatory process with Caboclo Village community, highlighting the commitment of TdX project to respect, recognize and promote the rights of the community. As described in the CCB Project Description version 3.0, the Project Activities were designed based on the community's priority issues, defined during the social diagnosis in a participatory process[141], and on a SWOT Analysis[142]. Afterwards, the preliminary project activities were disseminated to the community of Caboclo Village for consultation, adaptation, and approval[143]. It is important to stress that the development of the Theory of Change considered the following inputs: social diagnosis[144], stakeholder identification[145], report on the first governance

[135] 231019_ReportGovernanceMeeting.zip
[136] 230906_HiringInterview.zip
[137] 231011_ReportFieldWorkandAnexxes.zip
[138] 231205_TrapCameraTraining.zip
[139] 231205_MonitoringTraining.zip
[140] 231205_PreventiveSafetyTraining.zip
[141] 231023_SocialDiagnosisAnnexes.zip
[142] 231018_SWOTAnalysis.pdf
[143] 231019_ReportGovernanceMeeting.zip
[144] 231023_SocialDiagnosisAnnexes.zip
[145] 231024_StakeholderIdentification.pdf

meeting[146] and the biodiversity report on secondary data[147]. After describing the focal issues, the technical team was able to identify the expected outputs, outcomes and impacts of the project activities, which were further complemented by a participatory impact assessment carried out with the community of Caboclo Village[148]. All the theory of change process and its results can be seen in detail in the annex[149]. Lastly, it is important to note that the impacts of the foreseen project activities are to reduce poverty, to improve gender equality, to strengthen community organization, to conserve biodiversity and to improve the resilience to climate change. As it is possible to observe the foreseen impacts of the project activities respect, recognize and promote the rights of the local community.

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

It is important to note that the project does not impact or affect traditional communities, as evidenced in the CCB Project Description version 3.0. Additionally, it is worth observing that in the CCB Project Description version 3, no cultural heritage attributes, such as archaeological sites, were identified.

However, it is worth emphasizing that the project activities, as described in the CCB Project Description version 3.0, aim to conserve biodiversity, improve the quality of life of the community, and generate net positive benefits for the climate. More specifically, the activities have the following impacts: to reduce poverty, to improve gender equality, to strengthen community organization, to conserve biodiversity and to improve the resilience to climate change. As it is possible to observe the foreseen impacts of the project activities respect.

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

The TdX project is committed to recognizing, respecting, and supporting legal rights over land which includes the property rights of the landowners as other entities involved in the project and the property rights of possession and regularization by residents of Caboclo Village or future project communities in other instances. To help guarantee statutory rights in the project zone, necessary measures were taken, such as legal advice to one of the entities involved in the project. It is worth mentioning that the Ordinary Action for Contractual Rescission cumulated with Possession Rescission No. 0703752-08.2021.8.07.0009 concerns an area situated in the state of Goiás. Hence, the action pertains to an area distinct from the project area[150].

As for the Possessory Action No. 0003326-69.2012.8.14.0005, although it is ongoing, it does not pose a risk to the project[151]. From a legal standpoint, regardless of how the action is analyzed, the ownership of the rural property by the landowner is not under risk. It is worth noting that the project provides legal support regarding this matter, as can be seen in the attached document[152]. The project also encouraged

[146] 231019_ReportGovernanceMeeting.zip
[147] 230912_SecondaryDataReportBio.pdf
[148] 231011_ReportFieldWorkandAnexxes.zip
[149] 231018_TheoryofChange.pdf
[150] 230602_RSAreportTJDFT.pdf
[151] 230602_RSAreportTJPA.pdf
[152] 240223_PossessoryActionUpdate.pdf

the other landowner involved in the project to complete the total regularization of property ownership mainly through the contract established[153,154]. The documents related to the ownership of the other entities involved in the project regarding the farms are available for the auditors' review[155].

In addition, considering the constitutional right of possession and ownership of the land of the residents of Caboclo Village and other future communities of the project, to help guarantee the statutory rights, measures were taken jointly with the community, and they were developed within the scope of the activity Strengthening Community Governance and Communication and Strengthening environmental and civic education, as described Section 2.1.8 of the TdX CCB Project Description version 3. During the monitoring period in question, a working group was formed jointly with Caboclo Village aimed at discussing land regularization for community members[156]. In May 2024 a meeting was held with the community within this working group (WG). Based on information provided by the Altamira Municipal Environment Secretariat (SEMMA) on land regularization in the Triunfo do Xingu Environmental Protection Area (APA) and the best ways, requirements, and processes for founding or revitalizing a community association, the topics of associativism in the community were addressed, along with an introduction to land regulation[157].

Table 2.19 Disputes over rights to territories and resources.

Disputes over rights to territories and resources	During the monitoring period, it is noteworthy to mention the Ordinary Action for Contractual Rescission cumulated with Possession Rescission No. 0703752-08.2021.8.07.0009 and the Possessory Action No. 0003326-69.2012.8.14.0005.
Respect for property rights	To ensure the protection of statutory rights within the project area legal assistance was provided to one of the landowners. Concerning the Ordinary Action for Contractual Rescission cumulated with Possession Rescission No. 0703752-08.2021.8.07.0009, it pertains to an area located in the state of Goiás, distinct from the project's zone. Regarding Possessory Action No. 0003326-69.2012.8.14.0005, although it is ongoing, it does not pose a risk to the project. From a legal standpoint, regardless of the action's outcome, the ownership of the rural property by the other involved entities remains secure. It is important to highlight that the project is offering legal assistance in this regard, as evidenced in the attached document.

[153] 230810_SystemicaDContract.pdf
[154] 230810_SystemicaSContract.pdf
[155] 240315_TdXProofTitle.zip
[156] 240209_GovernanceMeetingJanuary2024.zip
[157] 240618_LandandGovernanceMeetingReport

2.5.6 Benefit Sharing Mechanism (VCS, 3.18, 3.19)

The TdX project activities impact only the property rights, usage, or resources of the landowners in the project. As described in Section 2.5.5 above, the TdX project ensures the property rights of landowners in the project and has activities to assist and inform the residents of Caboclo Village about the land regularization process. It does not impact on their property rights and therefore does not require the establishment of a benefit-sharing agreement directly with the community.

Thus, the benefits generated by the project follow the sharing mechanisms based on the contract signed between Systemica Inteligência em Sustentabilidade S.A. and the landowners, which establishes the allocation of a percentage of profits for the development of activities in the community, for the distribution of non-monetary benefits. The strategy for directing these resources to the implementation of activities in the community and their participation in the process is described in Table 2.2.

Table 2.20 Benefit sharing mechanism.

Summary of the benefit sharing plan	The mechanism for sharing monetary benefits is based on the contract between Systemica Inteligência em Sustentabilidade S.A. and the landowners[158]. Essentially, there was an agreement with the landowners of the percentage of the generated resources that would accrue to them, the percentage designated for the project proponent, and the percentage allocated for CCB project activities. This mechanism does not directly involve the community, but the community participates in planning the allocation of resources for CCB activities in the community, following the communication procedure established and validated with community members for decision-making in the project.
Benefit sharing during the monitoring period	The allocation of resources for CCB project activities has already been planned and initiated. Below, the progress of some project activities is presented. Please refer to Section 4.3.1 for more information. Firstly, it is worth mentioning the hiring of local assistants[159,160] and the permanent hiring of two community agents[161]. Besides, the school garden is being implemented[162]. It is also worth mentioning the establishment of 12 communication channels[163] and the

[158] 240528_Contract_PP_landowner.zip
[159] 230517_IFContractTempCabocloVillage.pdf
[160] 240301_FaunaContractTempCabocloVillage.zip
[161] 231030_CommunityAgentsContract.zip
[162] 240320_SchoolGardenReportandAnnex.zip
[163] 240301_ImplementationCommunicationChannels.pdf

	realization of participatory governance meetings[164]. Training for the development of the forest and fauna inventory took place, as well as training for forest protection activities[165], and working groups were formed to discuss topics such as water security[166] and land regularization[167]. In addition, equipment and materials were provided to the school[168]. It is possible to note that resources are being allocated to the activities of the CCB project, in this way, the expected long-term impacts and benefits are on track to be achieved.

2.5.7 Free, Prior, and Informed Consent (VCS, 3.18, 3.19; CCB, G5.2)

Free, prior, and informed consent (FPIC) is an internationally enshrined right for indigenous and tribal peoples by Convention 169 of the International Labor Organization (ILO, 1989). The mentioned convention is currently in force in Brazil through Decree No. 10,088 on November 5, 2019 (Brasil, 2019).

FPIC can be described as "the establishment of conditions under which people exercise their fundamental right to negotiate the terms of externally imposed policies, programs, and activities that directly affect their livelihoods or wellbeing, and to give or withhold their consent to them" (RECOFTC, 2011).

FPIC can also be understood as:

> Free, prior and informed consent should not be understood as a one-off, yes-no vote or as a veto power for a single person or group. Rather, it is a process by which indigenous peoples, local communities, government, and companies may come to mutual agreements in a forum that gives affected communities enough leverage to negotiate conditions under which they may proceed and an outcome leaving the community clearly better off (RECOFTC (2011), p. 18).

Table 2.21 Consent process description

Consent	The TdX project adheres to the perspective that the consent is developed continuously, through a multiple and systematic process. Therefore, it is crucial to say that the FPIC is not limited to a single act, moment, or stage. Although in the Triunfo do Xingu Grouped REDD+ Project, traditional communities recognized as such by national or international legislation do not participate nor are affected in their property rights, the guidelines given in the Program Definitions CCB

[164] 240229_AllProjectGovernanceMeetings.zip
[165] 240416_ProjectAreaMonitoringEvidence.zip
[166] 240226_WaterSecurityReport.zip
[167] 240220_LandIssuesReport.zip
[168] 231205_FirstDeliverySchoolSupplies.zip

Version 3.0 and the Program Definitions VCS Version 4.5 on FPIC were followed.

The consent process with the landowners of the TdX project consisted of three main phases: prospecting, contract negotiation and technical viability. In the first phase, initial contacts were made, and the prospects of the proposed project were presented. In the second phase, the necessary documents were requested, the contractual clauses, benefits, costs, and risks of the project were discussed, and technical and legal doubts were clarified. In the last phase, the environmental component and the technical viability of the project were discussed in depth, as well as the prospect of gains or not continuing the contract between the parties[169]. In this sense, consent to participate was obtained from the landowners in the project, where the project area is located, through the contract signed with Systemica Inteligência em Sustentabilidade S.A[170]. In the future, the same stages will be followed in the FPIC process with other participants such as landowners.

Also, consent was obtained from the Caboclo Village community to participate in CCB activities through a series of meetings.

Due to the lack of community organization and governance, the process required multiple sessions to explain the project and inquire whether the community would like to participate. The first moment took place between August 28, 2022, and September 8, 2022[171], during which social diagnosis, community and local stakeholder engagement was conducted. Throughout this period, meetings were held with the Caboclo Village Community and Santa Marta Farm. These meetings involved community diagnostic questionnaires and providing explanations about the project, aiming to communicate its key points, concepts, and implications regarding the implementation of a carbon credit project. It is noteworthy that there was also dissemination of summarized project documents, including the distribution and posting of flyers in the Caboclo Village and Santa Marta Farm. During these sessions, questions were clarified, and project communication channels were publicized. Thus, it can be concluded that during this initial contact, efforts were made to provide transparent information about the project in an appropriate language,

[169] 240516_FPIC_Landowners.zip
[170] 240528_Contract_PP_landowner.zip
[171] 231023_SocialDiagnosisAnnexes.zip

along with conducting collective workshops and participatory diagnostic activities aimed at incorporating the community's demands and opinions.

The second phase took place on June 19th, 2023, the project and its concepts were explained once again[172]. During this moment, project activities were also discussed, with the most relevant ones for the community highlighted, and the consent for the initiation of some of these activities was obtained. Additionally, on June 30th, 2023, communication procedures, code of ethics and conduct, and suggestion box procedures were also discussed. Therefore, during this second consent moment the community consented to participate in the activities and made some suggestions.

Lastly, the third phase occurred in September 2023[173]. On September 23rd, 2023, the participatory impact assessment of the project took place alongside the women of the Caboclo Village community. It's worth noting that the project's risks, costs, and benefits had been previously discussed on the project's YouTube channel, along with other relevant information (https://www.youtube.com/channel/UCg-cAvRpmmy10x5mj9e1ArA). However, project activities, their risks, costs, and benefits were presented again, and the participatory assessment was conducted. Then, on September 24th, 2023, the impact assessment of the project's activities was conducted with the Caboclo Village community. Additionally, during the meeting, project communication channels were highlighted once again. It's important to mention that during this meeting, there was a reaffirmation of the community's consent regarding the project and its activities. Thus, it can be concluded that consent regarding the project and its activities was obtained from the Caboclo Village community through an informative and dialogical process consisting of three main phases, in August 2022, June 2023 and September 2023.

It's worth noting that during the monitoring period in question, activities and discussions regarding community governance were implemented, with one of the objectives being the strengthening of the decision-making process. In this regard, it's important to highlight the hiring of community members to act as field agents, aiming to enhance communication between the community and the project and

[172] 231019_ReportGovernanceMeeting.zip
[173] 231011_ReportFieldWorkandAnexxes.zip

	improve community engagement[174]. In January 2024, governance concepts were explained to the community, and working groups were established to strengthen decision-making regarding sustainable agriculture, land regularization, and water security[175]. Additionally, a governance meeting was held specifically with the women of the community, contributing to female empowerment[176]. These activities and meetings support the structuring of community governance, strengthening the decision-making process. It is important to note the property rights of the Caboclo Village are not affected by the project. Nevertheless, the project obtained the consent of the community for their participation in the project activities. Lastly, based on the signed contract, on the referenced consultation and validation meetings, as well as on what was verified in Sections 2.1.8 on project activities and 2.5.2 on the recognition of the property rights of the CCB Project Description version 3, the developers of the TdX project understand that property rights are not or will not be affected by project activities, on the contrary, the project recognizes and respects all property rights of project participants and those surrounding the project zone, and therefore restitution or compensation measures are not applicable.
Outcome of FPIC	Regarding the landowners in the project, the outcome of the process was the obtention of consent for participation in the project and formalization through contract signing. Regarding the Caboclo Village community, consent was obtained, through a dialogical and informative process, for their participation in the CCB activities of the project, through a verbal agreement with the community members, which was evidenced in the documents presented in this section.

2.5.8 Property Right Protection (VCS, 3.18, 3.19; CCB, G5.3)

Project activities do not provide for the involuntary removal or relocation of property rights holders from their lands or territories and do not force rights holders to relocate activities important to their culture or livelihood, which can be demonstrated by Section 2.1.8 of the Project Description CCB version 3, and through direct interviews with the communities in the field. Rather, the project was designed to respect the rights of property rights holders, strengthen activities relevant to livelihoods and cultural values, and

[174] 231011_ReportFieldWorkandAnexxes.zip
[175] 240209_GovernanceMeetingJanuary2024.zip
[176] 240219_MeetingWomenReport

support the Caboclo Village and other future communities of the project in formalizing their property rights to the land.

2.5.9 Identification of Illegal Activity (VCS, 3.19, CCB, G5.4)

The only activity identified in the project zone with the potential to be illegal is the hunting of wild animals in the Caboclo Village, which was documented in questionnaires about the community's relationship with biodiversity[177] as common among 16% of the population and part of the community's means of life. Although Law No. 5,197, of January 3th, 1967 prohibits the hunting of wild fauna, subsequent legislation describes particularities about subsistence hunting that has generated confusion in its interpretation, because in the Law nº 9.605,of February 12th 1998 (Brasil, 1998) brings, in its Art. 37, the exclusions of illegality provided for in the environmental norm, related to the slaughter of an animal, according to this: It is not a crime to slaughter an animal, when carried out: I - in a state of need, to satisfy the hunger of the agent or his family, and in Law nº 11,706 of June 19th, 2008 (Brasil, 2008b) "the Brazilian State recognizes the subsistence hunter, and, consequently, the importance of exercising subsistence hunting as a means of guaranteeing the food security of families residing in the rural area" (Ranzi & Da Silveira, 2019). In this sense, it is an open debate in Brazil due to the legislative paradoxes.

However, based on the precautionary principle, the TdX project considers the hunting of wild fauna as an illegal activity, and the measures designed to reduce this practice are part of the activities proposed in Section 2.1.8 of the CCB Project Description version 3, specifically within the activities of conservation and enhancement of local biodiversity and improving environmental and formal/informal education for children, young people and adults.

On June 18, 2023, a lecture was held[178] entitled “environment and sustainability: building a greener and more conscious future”, talking about environmental issues, sustainable development, biodiversity, the human-wildlife relationship and how to develop solutions to environmental problems. The above-mentioned lecture discussed and sensibilized the interaction between the community and the environment.

Besides, on November 24, 2023[179], a workshop on ecological functions was held at the Novo Pacto Municipal School for elementary school students. The aim of the workshop was to provide a theoretical and practical approach to topics that are relevant to the conservation of biodiversity and the environment, focusing on the concepts of ecology, climate change, conservation, and protection of vegetation. Concepts such as species extinction and species conservation were explained. Additionally, between June 17th to July 1st, 2023, a fauna survey was carried out in the project area with an inventory of species from the groups of amphibians, reptiles, avifauna, mammal fauna and bats[180]. The results of the fauna inventory shall provide robust data for the maintenance of local biodiversity contributing to the development of effective conservation strategies.

[177] 230814_QuestionnaireEvidence.zip
[178] 230618_LectureBiodiversity.zip
[179] 231205_EcologicalFunctionsWorkshopReport.zip
[180] 230919_FaunaInventoryReport.pdf

The camera trap monitoring and training were also initiated during the monitoring period in question. Between November 25 and 28 2023 training was held. The training took place both theoretically and practically on the two farms that are part of the project, to the local surveyors in the project areas and to the local agents. It is important to mention that, as a precautionary measure, during training the purpose of the sole and exclusive activities for the conservation of species was emphasized. Lastly, during the monitoring period, a questionnaire was applied to understand the patterns of use of wild resources by the community members. All the advancements contribute to greater awareness regarding the local fauna, generating and disseminating relevant information for the construction of conservation strategies and sustainable resource use. It is important to note that, as described the Section 2.1.8 of the CCB Project Description version 3.0, the project does not use victims of human trafficking, forced labour and child labour.

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

Two actions were identified regarding one of the landowners of the project. The first one is an Ordinary Action for Contractual Rescission cumulated with Possession Rescission and the second is a Possessory Action. Regarding both Actions, the TdX project offered legal advice to the property owner.

According to the legal consultancy[181], regarding Possessory Action No. 0003326-69.2012.8.14.0005, it was shown that there is not a single document that links the area object of the project to that discussed in the process. These cases in which there is the proposition of demands based on documents produced unilaterally and without correspondence with official bodies are not rare. From a legal standpoint, regardless of how the action is analyzed, the ownership of the rural property by the landowners in the project is not under risk. The updates regarding the mentioned Action are available for the auditor's consultancy[182].

Regarding the Ordinary Action for Contractual Rescission cumulated with Possession Rescission No. 0703752-08.2021.8.07.0009, the legal consultancy[183] showed that the area object of the project is not the same as that discussed in the Action, given that the areas are located in different states of Brazil, being the area object of the project in the State of Pará, while the area discussed in the Action is located in the State of Goiás, in this sense, it is proven in the documents that they are different areas. In this manner, the action does not pose a risk to the project.

Considering the above and Section 2.1.8 of the CCB Project Description version 3, the TdX project carries out no activity that could jeopardize the outcome of an unresolved dispute relevant to the project; on the contrary, the project proponents and other involved entities acted by implementing measures of legal advice and monitoring the progress of legal actions in the independent state institutions to resolve disputes impartially.

[181] 230602_RSAreportTJPA.pdf
[182] 240223_PossessoryActionUpdate.pdf
[183] 230602_RSAreportTJDFT.pdf

3 CLIMATE

3.1 Monitoring GHG Emission Reductions and Removals

3.1.1 Data and Parameters Available at Validation (VCS, 3.16)

Table 3.1. Data and Parameters Available at Validation.

Data / Parameter	$A_{PA-UDef}$
Data unit	ha
Description	Area of project where activities aimed at avoiding unplanned deforestation will take place[184]
Source of data	Calculated within a GIS
Value applied	10,704.58
Justification of choice of data or description of measurement methods and procedures applied	The accuracy of the mapped coordinates was demonstrated in the satellite monitoring report and the best techniques used are described in the GIS SOP[185]
Purpose of data	• Calculation of project emissions
Comments	None

Data / Parameter	AJ
Data unit	ha
Description	Area of the jurisdiction
Source of data	Digital map of jurisdictional boundaries

[184] TdX_Project_Area_V2.kml
[185] SatelliteMonitoring.zip

Value applied	To be determined by Verra
Justification of choice of data or description of measurement methods and procedures applied	Prior to the start of each BVP
Purpose of data	• Calculation of baseline emissions
Comments	AJ should be calculated using the same projected coordinate system as that used for the digital map of jurisdictional boundaries

Data / Parameter	$t_{alpha=10\%}$
Data unit	unitless
Description	Value of the Student's t distribution for a two-sided 90 percent confidence interval
Source of data	Common statistical tables or software
Value applied	1.6449
Justification of choice of data or description of measurement methods and procedures applied	Based on the central limit theorem, sample estimates are assumed to approach a normal distribution, from which a confidence interval may be constructed. The student's t distribution is used to allow for small sample sizes
Purpose of data	• Calculation of baseline emissions • Calculation of project emissions
Comments	None

Data / Parameter	$t_{alpha=66.67\%}$
Data unit	unitless

Description	Value of the Student's *t* distribution for a one-sided 66.67 percent confidence interval
Source of data	Common statistical tables or software
Value applied	0.4307
Justification of choice of data or description of measurement methods and procedures applied	Based on the central limit theorem, sample estimates are assumed to approach a normal distribution, from which a confidence interval may be constructed. The student's *t* distribution is used to allow for small sample sizes
Purpose of data	• Calculation of baseline emissions • Calculation of project emissions
Comments	None

Data / Parameter	CF_j
Data unit	t C t.d.m.$^{-1}$
Description	Carbon fraction of biomass for species group *j*
Source of data	Values from the literature (e.g. IPCC 2006 INV GLs AFOLU Chapter 4 Table 4.3) shall be used if available, otherwise default value of 0.47 t C t^{-1} d.m. can be used
Value applied	Tree: 0.47 Non-tree: 0.44
Justification of choice of data or description of measurement methods and procedures applied	None
Purpose of data	• Calculation of baseline emissions • Calculation of project emissions

Comments	Where new species are encountered in the course of monitoring, new carbon fraction values must be sourced from literature or otherwise use the default value

Data / Parameter	R
Data unit	root d.m. t $^{-1}$ shoot d.m.
Description	Root to shoot ratio appropriate to species or forest type / biome; note that as defined here, root to shoot ratio is applied as belowground biomass per unit area: aboveground biomass per unit area (not on a per stem basis)
Source of data	IPCC (2019), Chapter 4, page 4.18, Table 4.4
Value applied	0.221
Justification of choice of data or description of measurement methods and procedures applied	None
Purpose of data	• Calculation of baseline emissions • Calculation of project emissions
Comments	None

Data / Parameter	$COMF_i$
Data unit	dimensionless
Description	Combustion factor for stratum *i* (vegetation type)
Source of data	IPCC (2006), Table 2.6, page 2.55
Value applied	0.5

Justification of choice of data or description of measurement methods and procedures applied	Default values in Table 2.6 of IPCC for Primary tropical moist forest
Purpose of data	• Calculation of baseline emissions • Calculation of project emissions
Comments	None

Data / Parameter	$G_{g,i}$
Data unit	g kg^{-1} dry matter burnt
Description	Emission factor for stratum *i* for gas *g*
Source of data	IPCC (2006), Table 2.5, page 2.54
Value applied	$G_{g,CH_4} = 6.80$ $G_{g,N_2O} = 0.20$
Justification of choice of data or description of measurement methods and procedures applied	Default values in Table 2.5 of IPCC - Chapter 2
Purpose of data	• Calculation of baseline emissions • Calculation of project emissions
Comments	None

Data / Parameter	GWP_g
Data unit	dimensionless
Description	Global warming potential for gas *g*

Source of data	IPCC (2014), Box 3.2, Table 1, page 87
Value applied	$GWP_{CH_4} = 28$ $GWP_{N_2O} = 265$
Justification of choice of data or description of measurement methods and procedures applied	Default factor from the latest IPCC Assessment Report. Table 1, page 87
Purpose of data	• Calculation of baseline emissions • Calculation of project emissions
Comments	None

3.1.2 Data and Parameters Monitored (VCS, 3.16)

Table 3.2. Data and Parameters Monitored.

Data / Parameter	$A_{Available}$
Data unit	ha
Description	Area of jurisdiction mapped as available for activity shifting outside the UDef LB
Source of data	Verra (Appendix 2)
Description of measurement methods and procedures to be applied	Digital map of land available for activity shifting
Frequency of monitoring/recording	Every six years at baseline renewal
QA/QC procedures to be applied	None
Purpose of data	• Calculation of leakage
Calculation method	GIS

Comments	None

Data / Parameter	A_i
Data unit	ha
Description	Area of stratum *i*
Source of data	Project proponent (determined during spatial analysis)
Description of measurement methods and procedures to be applied	None
Frequency of monitoring/recording	Monitoring must be conducted at least every five years, or prior to each verification event where verification occurs more frequently
QA/QC procedures to be applied	None
Purpose of data	• Calculation of project emissions
Calculation method	GIS
Comments	None

Data / Parameter	A_{PSF}
Data unit	ha
Description	Area of project sampling frame
Source of data	Project proponent (determined during spatial analysis).
Description of measurement methods and procedures to be applied	None

Frequency of monitoring/recording	Monitoring must be conducted at least every five years, or prior to each verification event where verification occurs more frequently
QA/QC procedures to be applied	None
Purpose of data	• Calculation of project emissions
Calculation method	GIS
Comments	None

Data / Parameter	$AD_{LB-UDef}$
Data unit	ha
Description	Unplanned deforestation activity data allocated to the UDef LB
Source of data	Verra (VT0007 and Appendix 1 of VMD0055)
Description of measurement methods and procedures to be applied	None
Frequency of monitoring/recording	Every six years at baseline renewal. Note that a project's initial BVP may be shorter than six years; subsequent baselines will be renewed every six years
QA/QC procedures to be applied	None
Purpose of data	• Calculation of leakage
Calculation method	Application of Appendix 1 (VMD0055) and VT0007 by Verra
Comments	None

Data / Parameter	A_{ss}

Data unit	ha
Description	Area of sampling stratum ss in the project sampling frame (ha)
Source of data	Project (calculated in a GIS from spatial stratification of the project sampling frame)
Description of measurement methods and procedures to be applied	None
Frequency of monitoring/recording	Monitoring must be conducted at least every five years, or prior to each verification event where verification occurs more frequently
QA/QC procedures to be applied	None
Purpose of data	• Calculation of project emissions
Calculation method	GIS
Comments	None

Data / Parameter	$AD_{PA-UDef}$
Data unit	ha
Description	Unplanned deforestation activity data allocated to the UDef PA in the jurisdiction
Source of data	Verra (through the AD Baseline Allocation Report and VT0007)
Description of measurement methods and procedures to be applied	Approach to be determined and applied by DSP selected by Verra
Frequency of monitoring/recording	Every six years at baseline renewal
QA/QC procedures to be applied	None

Purpose of data	• Calculation of baseline emissions
Calculation method	Application of Appendix 1 by Verra (VMD0055)
Comments	None

Data / Parameter	$Buffer\%$
Data unit	%
Description	Buffer withholding percentage
Source of data	VCS AFOLU Non-Permanence Risk Tool
Description of measurement methods and procedures to be applied	See VCS AFOLU Non-Permanence Risk Tool
Frequency of monitoring/recording	Every verification event
QA/QC procedures to be applied	None
Purpose of data	• Calculation of VCUs
Calculation method	VCS AFOLU Non-Permanence Risk Tool
Comments	None

Data / Parameter	$C_{p,i}$
Data unit	t CO_2e ha^{-1}
Description	Estimated carbon stock in pool *p* of forest stratum *i*
Source of data	Project proponent (VMD0001, VMD0002, VMD0003, VMD0004, VMD0005)

Description of measurement methods and procedures to be applied	None
Frequency of monitoring/recording	Every six years at baseline renewal
QA/QC procedures to be applied	See VMD0001, VMD0002, VMD0003, VMD0004, VMD0005
Purpose of data	• Calculation of baseline emissions • Calculation of project emissions • Calculation of leakage
Calculation method	See VMD0001, VMD0002, VMD0003, VMD0004, VMD0005
Comments	None

Data / Parameter	$C_{p,post,i}$
Data unit	t CO_2e ha^{-1}
Description	Estimated carbon stock in post-deforestation pool p in forest stratum *i*
Source of data	Project proponent Published and/or peer-reviewed studies selected from the following, in descending order of preference: 1) Within 5 km of the project boundary 2) Subnational jurisdiction 3) National jurisdiction 4) National data from neighboring countries with similar conditions 5) Global Where these data are inadequate or not appropriate, field sampling may take place within the jurisdiction. Field sampling design must result in an estimate that produces conservative estimates of the carbon stocks
Description of measurement methods	See VMD0001, VMD0002, VMD0003, VMD0004, VMD0005

and procedures to be applied	
Frequency of monitoring/recording	Every six years at baseline renewal
QA/QC procedures to be applied	See VMD0001, VMD0002, VMD0003, VMD0004, VMD0005
Purpose of data	• Calculation of baseline emissions • Calculation of project emissions • Calculation of leakage
Calculation method	Stock estimates of each non-forest land use class represented must be equal to the long-term average stocks (time-weighted average of stocks in cyclical post-deforestation land-use systems such as shifting agriculture with fallow)
Comments	None

Data / Parameter	$C_{AB_{nontree,i}}$
Data unit	t CO_2e ha^{-1}
Description	Forest carbon stock in aboveground non-tree woody vegetation in stratum *i*
Source of data	Forest carbon stock in aboveground non-tree woody vegetation in stratum *i*
Description of measurement methods and procedures to be applied	See VMD0001
Frequency of monitoring/recording	Every six years at baseline renewal
QA/QC procedures to be applied	See VMD0001
Purpose of data	• Calculation of baseline emissions

	• Calculation of project emissions • Calculation of leakage
Calculation method	See VMD0001
Comments	None

Data / Parameter	$C_{AB_{nontree,post,i}}$
Data unit	t CO_2e ha^{-1}
Description	Post-land use transition carbon stock in aboveground non-tree woody vegetation in stratum *i*
Source of data	Project proponent Published and/or peer-reviewed studies selected from the following, in descending order of preference: 1) Within 5 km of the project boundary 2) Subnational jurisdiction 3) National jurisdiction 4) National data from neighboring countries with similar conditions 5) Global Where these data are inadequate or not appropriate, field sampling may take place within the jurisdiction. Field sampling design must result in an estimate that produces conservative estimates of the carbon stocks
Description of measurement methods and procedures to be applied	See VMD0001
Frequency of monitoring/recording	Every six years at baseline renewal
QA/QC procedures to be applied	See VMD0001
Purpose of data	• Calculation of baseline emissions • Calculation of project emissions

	• Calculation of leakage
Calculation method	Stock estimates of each non-forest land use class represented must be equal to the long-term average stocks (time-weighted average of stocks in cyclical post-deforestation land-use systems such as shifting agriculture with fallow)
Comments	None

Data / Parameter	$C_{AB_{tree},i}$
Data unit	t CO_2e ha^{-1}
Description	Forest carbon stock in aboveground tree biomass in stratum *i*
Source of data	Project proponent (as delineated in VMD0001)
Description of measurement methods and procedures to be applied	See VMD0001
Frequency of monitoring/recording	Every six years at baseline renewal
QA/QC procedures to be applied	See VMD0001
Purpose of data	• Calculation of baseline emissions • Calculation of project emissions • Calculation of leakage
Calculation method	See VMD0001
Comments	None

Data / Parameter	$C_{AB_{tree},post,i}$
Data unit	t CO_2e ha^{-1}

Description	Post-land use transition carbon stock in aboveground tree biomass in stratum *i*
Source of data	Project proponent Published and/or peer-reviewed studies selected from the following, listed in descending order of preference: 1) Within 5 km of the project boundary 2) Sub-national jurisdiction 3) National jurisdiction 4) National data from neighboring countries with similar conditions 5) Global Where these data are inadequate or not appropriate, field sampling may take place within the jurisdiction. Field sampling design must result in an estimate that produces conservative estimates of the carbon stocks
Description of measurement methods and procedures to be applied	See VMD0001
Frequency of monitoring/recording	Every six years at baseline renewal
QA/QC procedures to be applied	See VMD0001
Purpose of data	• Calculation of baseline emissions • Calculation of project emissions • Calculation of leakage
Calculation method	Stock estimates of each non-forest land use class represented must be equal to the long-term average stocks (time-weighted average of stocks in cyclical post-deforestation land-use systems such as shifting agriculture with fallow)
Comments	None

Data / Parameter	$C_{BB_{nontree},i}$

Data unit	t CO_2e ha^{-1}
Description	Forest carbon stock in the belowground non-tree woody biomass pool in stratum *i*
Source of data	Project proponent (field measurements as delineated in VMD0001)
Description of measurement methods and procedures to be applied	See VMD0001
Frequency of monitoring/recording	Every six years at baseline renewal
QA/QC procedures to be applied	See VMD0001
Purpose of data	• Calculation of baseline emissions • Calculation of project emissions • Calculation of leakage
Calculation method	See VMD0001
Comments	None

Data / Parameter	$C_{BB_{nontree},post,i}$
Data unit	t CO_2e ha^{-1}
Description	Post land use transition carbon stock in the belowground non-tree woody biomass pool in stratum *i*
Source of data	Project proponent Published and/or peer-reviewed studies selected from the following, in descending order of preference: 1) Within 5 km of the project boundary 2) Subnational jurisdiction 3) National jurisdiction

	4) National data from neighboring countries with similar conditions 5) Global Where these data are inadequate or not appropriate, field sampling may take place within the jurisdiction. Field sampling design must result in an estimate that produces conservative estimates of the carbon stocks
Description of measurement methods and procedures to be applied	See VMD0001
Frequency of monitoring/recording	Every six years at baseline renewal
QA/QC procedures to be applied	See VMD0001
Purpose of data	• Calculation of baseline emissions • Calculation of project emissions • Calculation of leakage
Calculation method	Stock estimates of each non-forest land use class represented must be equal to the long-term average stocks (time-weighted average of stocks in cyclical post-deforestation land-use systems such as shifting agriculture with fallow)
Comments	None

Data / Parameter	$C_{BB_{tree},i}$
Data unit	t CO_2e ha^{-1}
Description	Forest carbon stock in belowground tree biomass in stratum *i*
Source of data	Project proponent (field measurements as delineated in VMD0001)
Description of measurement methods	See VMD0001

and procedures to be applied	
Frequency of monitoring/recording	Every six years at baseline renewal
QA/QC procedures to be applied	See VMD0001
Purpose of data	• Calculation of baseline emissions • Calculation of project emissions • Calculation of leakage
Calculation method	See VMD0001
Comments	None

Data / Parameter	$C_{BB_{tree},post,i}$
Data unit	t CO_2e ha^{-1}
Description	Post land use transition carbon stock in belowground tree biomass in stratum *i*
Source of data	Project proponent Published and/or peer-reviewed studies selected from the following, listed in descending order of preference: 1) Within 5 km of the project boundary 2) Subnational jurisdiction 3) National jurisdiction 4) National data from neighboring countries with similar conditions 5) Global Where these data are inadequate or not appropriate, field sampling may take place within the jurisdiction. Field sampling design must result in an estimate that produces conservative estimates of the carbon stocks
Description of measurement methods and procedures to be applied	See VMD0001

Frequency of monitoring/recording	Every six years at baseline renewal
QA/QC procedures to be applied	See VMD0001
Purpose of data	• Calculation of baseline emissions • Calculation of project emissions • Calculation of leakage
Calculation method	Stock estimates of each non-forest land use class represented must be equal to the long-term average stocks (time-weighted average of stocks in cyclical post-deforestation land-use systems such as shifting agriculture with fallow)
Comments	None

Data / Parameter	MPL
Data unit	years
Description	Length of monitoring period
Source of data	Project proponent (metadata of imagery used to undertake plot interpretation for project monitoring)
Description of measurement methods and procedures to be applied	None
Frequency of monitoring/recording	Monitoring must be conducted at least every five years, or prior to each verification event where verification occurs more frequently
QA/QC procedures to be applied	None
Purpose of data	• Calculation of project emissions

Calculation method	Calculated as the difference between the average dates of imagery used to assess sample plots at the start and end of the monitored period
Comments	None

Data / Parameter	$\Delta C_{LK-ME,t}$
Data unit	t CO_2e
Description	Cumulative net GHG emissions due to market-effects leakage in year *t*
Source of data	Project proponent (as delineated in VMD0011)
Description of measurement methods and procedures to be applied	See VMD0011
Frequency of monitoring/recording	Monitoring must be conducted at least every five years, or prior to each verification event where verification occurs more frequently
QA/QC procedures to be applied	See VMD0011
Purpose of data	• Calculation of leakage
Calculation method	See VMD0011
Comments	Net GHG emissions due to market-effects leakage summed up to year *t*

Data / Parameter	$\Delta C_{OLB,t}$
Data unit	t CO_2e ha^{-1}

Description	Emissions from carbon stock change due to land cover transition in areas available for activity shifting outside the UDef LB, as calculated for year *t*
Source of data	Verra (see Appendix 2 Section A2.2; derived by Verra from average carbon stocks in pixels available for deforestation from a global carbon stock map, where relevant with addition of belowground biomass from IPCC root-to-shoot ratios)
Description of measurement methods and procedures to be applied	See Appendix 2 A2.2 of VMD0055
Frequency of monitoring/recording	Every six years at baseline renewal
QA/QC procedures to be applied	None
Purpose of data	• Calculation of leakage
Calculation method	See Appendix 2 A2.2 (VMD0055)
Comments	None

Data / Parameter	$CountJ_{CHC,ss}$
Data unit	Sampling units
Description	Total count of the sample units that fall into sampling stratum ss and change category CHC (UDef/SF/SNF/Reg)
Source of data	Verra (interpretation of high-resolution satellite imagery and/or ground measurements)
Description of measurement methods and procedures to be applied	See Appendix 1 (VMD0055)
Frequency of monitoring/recording	Every six years at baseline renewal

QA/QC procedures to be applied	Imagery Interpretation Method The interpretation and recordkeeping approach must be documented through SOPs, allowing the process to be reproduced by individuals not involved in initial data generation. The methods employed must meet the following minimum characteristics: • The interpretation approach provides sufficient objective criteria to allow interpreters to independently and consistently produce similar interpretations for the same samples. Interpretation criteria should relate to the physical definitions of land cover classes, as far as those criteria may be interpreted from high-resolution imagery. • Multiple analysts are employed to interpret each plot through blindly repeated observations or team-based interpretation. • Observation focuses on identifying a sample's class at each of two single points in time, the beginning and end of the HRP. The change is determined by the difference between the start and end classes. • Where there is analyst disagreement over the interpretation of a sample, an objective process is put in place to either adjudicate the dispute and resolve the plot to a single class or reject the plot as unclear. Adjudication must always be attempted before rejection. Information on all rejected plots must be retained, and it must be demonstrated that the rejection of plots does not bias the results
Purpose of data	• Calculation of baseline emissions • Calculation of project emissions • Calculation of leakage
Calculation method	Appendix 1 (VMD0055)
Comments	CHC = UDef, SF, SNF, Reg (unplanned deforestation, stable forest, stable nonforest, regrowth)

Data / Parameter	$Count_{ss}$
Data unit	Sample units

Description	Total count of sample units in sampling stratum ss
Source of data	Project proponent (interpretation of high-resolution satellite imagery and ground measurements)
Description of measurement methods and procedures to be applied	See Appendix 1 (VMD0055)
Frequency of monitoring/recording	Monitoring must be conducted at least every five years, or prior to each verification event where verification occurs more frequently
QA/QC procedures to be applied	As described in Standard Operating Procedures for Sample Plot Interpretation
Purpose of data	• Calculation of project emissions • Calculation of leakage
Calculation method	Approach must comply with all relevant requirements of Appendix 1 (VMD0055)
Comments	None

Data / Parameter	$Count_{CHC,ss}$
Data unit	Sample units
Description	Count of the sample units within the project sampling frame that fall into sampling stratum ss and are classified as change category CHC (UDef/SF/SNF/Reg)
Source of data	Project (interpretation of high-resolution satellite imagery and ground measurements)
Description of measurement methods and procedures to be applied	See Appendix 1 (VMD0055)

Frequency of monitoring/recording	Monitoring must be conducted at least every five years, or prior to each verification event where verification occurs more frequently
QA/QC procedures to be applied	As described in Standard Operating Procedures for Sample Plot Interpretation
Purpose of data	• Calculation of project emissions • Calculation of leakage
Calculation method	Approach must comply with all relevant requirements of Appendix 1 (VMD0055)
Comments	CHC = UDef, SF, SNF, Reg (unplanned deforestation, stable forest, stable nonforest, regrowth)

Data / Parameter	$E_{BSL,BiomassBurn,i,t}$
Data unit	t CO_2e
Description	Non-CO_2 emissions due to biomass burning as part of project activities in forest stratum *i* in year *t*
Source of data	Project proponent (as delineated in VMD0013)
Description of measurement methods and procedures to be applied	See VMD0013
Frequency of monitoring/recording	Every six years at baseline renewal
QA/QC procedures to be applied	See VMD0013
Purpose of data	• Calculation of baseline emissions
Calculation method	See VMD0013
Comments	None

Data / Parameter	$E_{MP,BiomassBurn,i,t}$
Data unit	t CO_2e
Description	Non-CO_2 emissions due to biomass burning as part of project activities in forest stratum *i* in year *t* Note – in application in the leakage management zones, there are no strata and subscript i should be omitted
Source of data	Project proponent (as delineated in VMD0013)
Description of measurement methods and procedures to be applied	See VMD0013
Frequency of monitoring/recording	Monitoring must be conducted at least every five years, or prior to each verification event where verification occurs more frequently
QA/QC procedures to be applied	See VMD0013
Purpose of data	• Calculation of project emissions
Calculation method	See VMD0013
Comments	None

Data / Parameter	$E_{Cstocks,LMZ,t}$
Data unit	t CO_2e
Description	Net CO_2e emissions from carbon stock changes due to the implementation of leakage mitigation measures in the leakage management zone in year *t*
Source of data	Project proponent (as delineated in VMD0001)
Description of measurement methods	See VMD0001

and procedures to be applied	
Frequency of monitoring/recording	Every six years at baseline renewal
QA/QC procedures to be applied	See VMD0001
Purpose of data	• Calculation of leakage
Calculation method	See VMD0001
Comments	None

Data / Parameter	$PROP_{MIG}$
Data unit	Proportion
Description	Proportion of households living in the project activities region that are recent migrants and are engaging in land use activities identified as a baseline driver of unplanned deforestation
Source of data	Project proponent (through participatory rural appraisal)
Description of measurement methods and procedures to be applied	For sampling requirements refer to CDM Guideline: Sampling and surveys for CDM project activities and programmes of activities. $PROP_{MIG}$ may always be assigned a conservative value of 1.0.
Frequency of monitoring/recording	Every six years at baseline renewal
QA/QC procedures to be applied	For sampling requirements refer to CDM Guideline: Sampling and surveys for CDM project activities and programmes of activities
Purpose of data	• Calculation of leakage
Calculation method	Survey
Comments	None

Data / Parameter	$t_{start,ss,s}$
	$t_{end,ss,s}$
Data unit	Decimal year
Description	Date of image used to interpret the start and end dates of sample s classified in sampling stratum ss
Source of data	Project proponent (from metadata provided with high resolution imagery used in sample plot interpretation, or for ground observations, date of field visit)
Description of measurement methods and procedures to be applied	None
Frequency of monitoring/recording	Monitoring must be conducted at least every five years, or prior to each verification event where verification occurs more frequently
QA/QC procedures to be applied	None
Purpose of data	• Calculation of project emissions • Calculation of leakage
Calculation method	None
Comments	For images that are composites of multiple imaging dates, the midpoint of the time period represented in the composite must be taken as the collection date

3.1.3 Monitoring Plan (VCS, 3.16, 3.20)

The TdX-I1 Monitoring Plan was developed according to the approved VCS methodology VM0048 Reducing Emissions from Deforestation and Forest Degradation v1.0, published on 27-November-2023. The monitoring plan must address the following tasks:

- Monitoring of project implementation;
- Monitoring of actual carbon stock changes and greenhouse gas emissions;

- Monitoring of leakage carbon stock changes and greenhouse gas emissions; and
- Estimation of ex post net carbon stock changes and greenhouse gas emissions.

For each of these tasks, the monitoring plan must include the following information:

- Technical description of the monitoring task.
- Data to be collected (data and parameters to be collected must be listed in the project description).
- Overview of data collection procedures.
- Quality control and quality assurance procedures.
- Data archiving; and
- Organization and responsibilities of the parties involved in all the above.

The parties involved in monitoring activities are represented in Figure 3.1. The work between the project proponent and landowners' entities is very often interlinked, and their smooth cooperation results in effective monitoring practices.

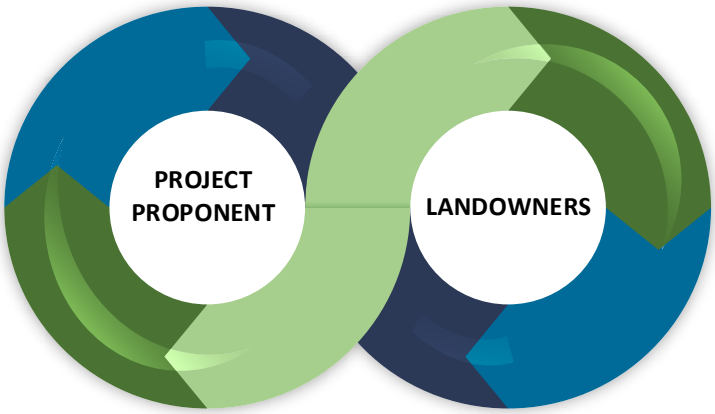


Figure 3.1. The parties involved in monitoring activities.

To clarify the general roles and responsibilities of the parties involved in the project, the following section seeks to describe each general role (Figure 3.2). The project proponent is responsible for REDD+ activities advisory through strategic planning, verification, instructions, accounting, and development of PD and monitoring report documents. General Systemica's quality control and quality assurance procedures are described in the "Internal Quality Management System – Systemica"[186]. The landowners are responsible for the execution and reporting of information through tactical planning, patrolling,

[186] 221014_QA_QC_v00.pdf

surveillance, local infrastructure, and on-site project management. Therefore, this structure involves collaborative work for monitoring activities.

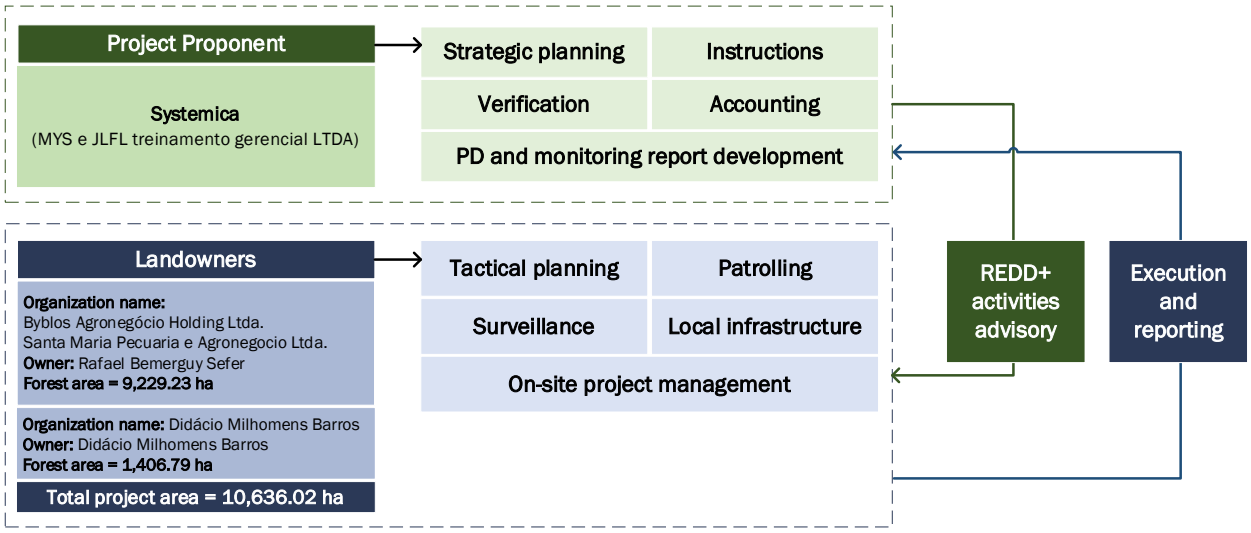


Figure 3.2. General overview of parties involved in monitoring activities.

3.1.3.1 Monitoring of actual carbon stock changes and GHG emissions within the project area

3.1.3.1.1 Technical description of the monitoring task

Monitoring actual changes in carbon stock and GHG emissions within the Project Area involves four main scopes, which are: (i) monitoring of project implementation, (ii) monitoring of land use and land cover change, (iii) monitoring of carbon stocks and non-CO_2 emissions, and (iv) monitoring of impacts from natural disturbances and other catastrophic events. These tasks are described below:

- **Monitoring of project implementation:** Project activities implemented within the project area will be consistent with the management plans of the project area and the PD. All maps and records generated during the project implementation were conserved and made available to VCS verifiers at verification for inspection to demonstrate that the AUD project activity has been implemented (Section 0).

- **Monitoring land-use and land-cover change:** The project area is not located in a region subjected to MRV by a jurisdictional program. Monitoring LU/LC change within the project area was performed annually by analyzing using images of the medium resolution, generated by MapBiomas. The large-scale monitoring was done through satellite images made available by INPE (PRODES) and MapBiomas Alert data, which is a system that validates and refines deforestation alerts with high-resolution images.

- **Monitoring of carbon stocks and non-CO_2 emissions:** For carbon stocks, monitoring is mandatory within the project area for areas subject to unplanned and significant carbon stock decrease, e.g. due to uncontrolled forest fires and other catastrophic events. In these areas, carbon stock losses must be estimated as soon as possible after the catastrophic event. For non-CO_2 emissions from

forest fires, the TdX will proceed with monitoring and accounting when the event is significant, according to VM0048 (VERRA, 2023);

- **Monitoring of impacts of natural disturbances and other catastrophic events:** Decreases in carbon stocks and increases in GHG emissions due to natural disturbances (e.g. in case of forest fires and other catastrophic events) or man-made events (such as acts of terrorism), including those over which the project proponent has no control, are subject to monitoring, when significant. If the area (or a subset of it) affected by natural disturbances or man-made events generated VCUs in past verifications, the total net change in carbon stocks and GHG emissions in the area(s) that generated VCUs will be estimated, and an equivalent amount of VCUs will be canceled from the VCS buffer. No VCUs can be issued for the project until all carbon stock losses and increases in GHG emissions have been offset.

3.1.3.1.2 Data collected

It is important emphasize here the best practices in remote sensing and GIS to obtain consistent data using the conservative approach[187]: (i) land use and land cover mapping is assessed using Landsat satellite images with resolution of 30 meters (MapBiomas, 2022) validating through a pixel-by-pixel based machine learning algorithms classification using Google Earth Engine; (ii) the Mapbiomas methodology uses image with minimal cloud cover product of Landsat scenes mosaicked from various months of the year (MapBiomas, 2022); (iii) an independent verifiable accuracy assessment was performed using high-resolution image with 5 m resolution from Planet Image to confirm the minimum map accuracy of 90% for each land use class used; (iv) conservatively the secondary forest is eliminated of the forest class according to Silva Junior et al. (2020); (v) also, with the objective of reducing the classification error between forest cover maps, a PRODES hydrography mask was downloaded by TerraBrasilis plataform is added in each forest cover maps map, in this way, this land use class remained unchanged in all years (Assis et al., 2019). The data collection was covered below:

- **Monitoring of project implementation** was carried out by the monitoring of deforestation-avoidance activities through evaluations of the surveillance rounds (as described in Section 2.1.1) and continuous monitoring activities with advanced remote sensing techniques and satellite images analysis. Social consultation data and signed attendance list are and have been collected while the community engagement occurs (more information in Section 0).

- **Monitoring of land-use and land-cover change within the project area** will be subject to MRV-A (monitoring, reporting, verification and accounting) to the "Area of forest land converted to non-forest land" (mandatory for this AUD project) and the "Area of forest land undergoing carbon stock increase" if the carbon stock increase is significant according to ex-ante assessment and will be only accounted on areas that will be deforested in the baseline case.

Monitoring carbon stock changes and non-CO_2 emissions from forest fires: An estimation of carbon stocks using Forest Inventory data within the project area will be performed to generate more accurate

[187] 240223_SOPRemoteAnalyses.pdf

carbon stock values, which will be made available to VCS verifiers at verification for inspection. The field inventory methodology and data to be collected are described in a Standard Operating Procedure (SOP)[188], which is available for consultation by the auditors. The results of monitoring activity data and carbon stocks will be reported using the same formats and tables used for the ex-ante assessment, according to Methodology VM0048 (VERRA, 2023).

Non-CO_2 emissions from forest fires were monitored and accounted, when significant.

Monitoring of impacts of natural disturbances and other catastrophic events: Decreases in carbon stocks and increases in GHG emissions (e.g., in case of forest fires) due to natural disturbances (such as hurricanes, earthquakes, volcanic eruptions, tsunamis, flooding, drought, fires, tornados or winter storms) or man-made events, including those over which the project proponent has no control (such as acts of terrorism or war), are subject to monitoring and must be accounted under the project scenario, when significant. The catastrophic events were monitored using INMET (2022) and INPE (2022) platform data and through periodic reports from the area supervisor.

If the area (or a subset of it) is affected by natural disturbances or man-made events that generated VCUs in past verifications, the total net change in carbon stocks and GHG emissions in the area(s) that generated VCUs will be estimated, and an equivalent amount of VCUs will be canceled from the VCS buffer.

The results of all ex-post estimations will be summarized in the project area using the same table format used for the ex-ante assessment. No natural disturbances or other catastrophic events were noted in the current monitoring report.

3.1.3.1.3 Overview of data collection procedures

General remote monitoring was carried out with remote sensing methods, using images of medium resolution. The large-scale monitoring was carried out through satellite images made available by INPE (PRODES) and MapBiomas Alert data, which is a system that validates and refines deforestation alerts with high-resolution images by integrating and analyzing multiple alert systems, such as DETER, PRODES and so on. This platform data is widely used because it integrates and validates the alerts of several products, increasing the reliability of the data and can be acquired on a daily frequency.

The forest condition within the Project Area and forest cover change due to unplanned deforestation are monitored through periodic assessment of classified satellite imagery covering the project area and is subject to monitoring the conversion of forest land to non-forest land. While increase or decrease in carbon stocks due to planned activities in the project area were also monitored through documents and the data collected consists of annual satellite imagery processed by PRODES, for the entire land coverage of the Project Area.

The surveillance and patrolling (as described in Section 2.1.1) were implemented and established by the project landowners to work as monitoring at the farms, as a strategy for looking after the property and

[188] 221014_SOP - Standard Operating Procedure.pdf

assure avoided entry of outsiders, hunters, fishermen and intrusion, the prevention of invasion, fire prevention, support the work of the field inventory, cleaning of frontiers and its milestones and internal organization of communication.

Monitoring of social parameters of project implementation was based on local community consultation and mapping the community needs, which attest that foreseen activities are being effectively implemented, and documentation related to activity implementation, as well as signed attendance lists.

Monitoring of carbon stock changes and non-CO_2 emissions from forest fires of areas subject to significant carbon stock decrease in the project scenario according to the ex-ante assessment, the carbon stock changes will be estimated, in case of planned deforestation, at least once after each harvest event.

The forest inventory methodology described in a Standard Operating Procedure (SOP)[189] was specifically designed for TdX carbon inventories, to be applied in the baseline assessment, as well as in the monitoring period. The field carbon inventory involved the installation of 55 permanent cluster plots (Figure 3.3). These permanent plots will be periodically assessed throughout the project duration.

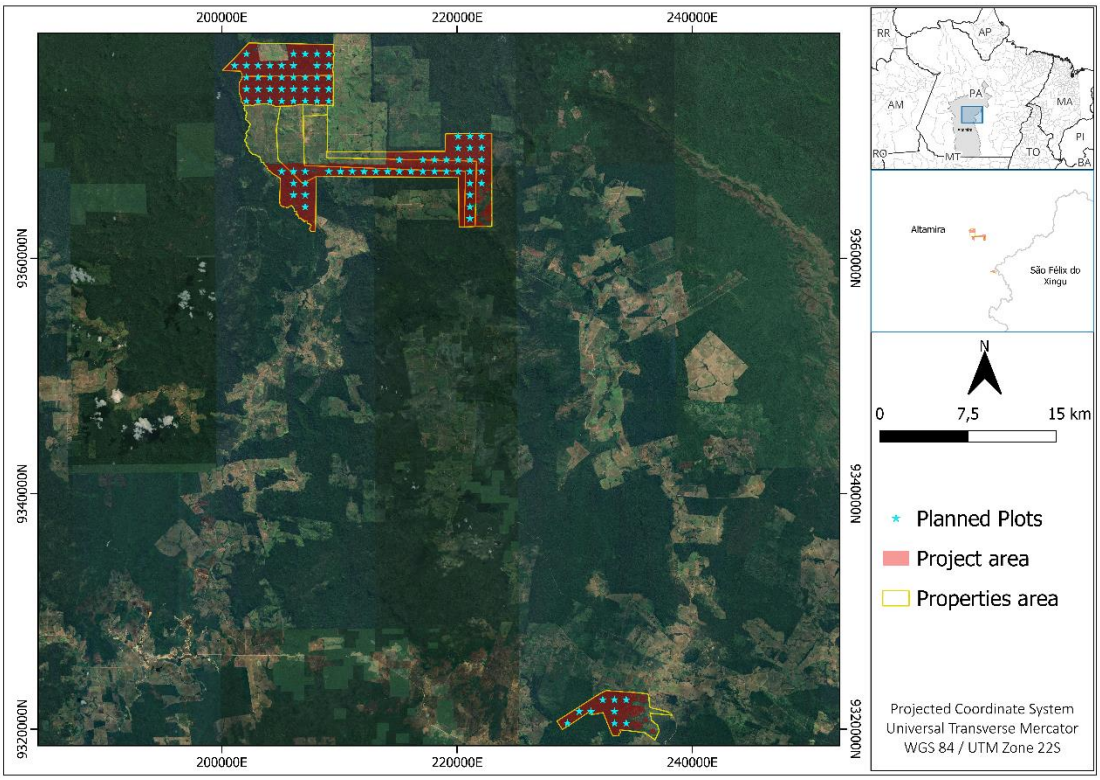


Figure 3.3. TdX Forest Biomass Inventory Permanent Cluster Plots.

[189] 240221_SOPIFTDX.pdf

3.1.3.1.4 Quality control and quality assurance procedures

The validation of land-use data used for modeling of land use was performed by using the confusion matrix, to calculate the overall index of success by period and by class. Three specific classes were used: forest, deforestation and non-forest (hydrography, not forest, clouds, roads, residues, unclassified objects, and others). The validation was carried out by using the land use mapping PRODES Digital, and the satellite images used were scenes of satellite Landsat 8 TM to the total geographic scope of the Project Area. With the help of the "Create Random Points" tool in ArcGIS 10.0, 100 random points were generated for each class/year as samples for evaluation, using satellite images as reference, making it possible to generate a confusion matrix for calculation of the accuracy indexes, and the Kappa index (indicators for validation of mapping accuracy). Land use classes must have higher values than 90% accuracy for the accuracy and Kappa index.

3.1.3.1.5 Data archiving

All images, maps and records generated during project implementation should be conserved and made available to VCS verifiers at verification for inspection to demonstrate that the AUD project activity has been implemented.

3.1.3.1.6 Organization and responsibilities of the parties involved in all the above

Systemica is responsible for generating maps, GIS analysis, remote monitoring of the project area, data archiving, and for aiding and clarification during verification audits.

The landowner is responsible for implementing the patrolling and surveillance system and providing the necessary vehicles and infrastructure if relevant to developing the project activities, as well as being co-responsible for data archiving.

Field team inventory is responsible for providing all the required information for Systemica during the forest inventory, as well as being co-responsible for data archiving.

3.1.3.2 Monitoring of leakage

The TdX project area is not located within a jurisdiction that is monitoring, reporting, verifying and accounting for GHG emissions from deforestation under a VCS or UNFCCC registered program. Furthermore, the boundary of the leakage belt will have to be reassessed at the end of each fixed baseline period using the same methodological approaches used in the first period.

3.1.3.2.1 Technical description of the monitoring tasks

All significant sources of leakage identified are subject to monitoring following the procedures outlined in the monitoring plan. Such procedures were consistent with the applicable leakage modules. The monitoring plan included all relevant parameters in the leakage modules.

Project Activity does not involve a decrease in carbon stocks and an increase in GHG emissions associated with leakage prevention activities, only the decrease in carbon stocks and increase in GHG emissions due to activity displacement leakage were monitored.

3.1.3.2.2 Data to be collected

To estimate the increased GHG emissions due to forest fires in the leakage belt area the assumption is made that forest clearing is done by burning the forest. The parameter values used to estimate emissions shall be the same used for estimating forest fires in the baseline, except for the initial carbon stocks which shall be those of the initial forest classes burned in the leakage belt area. Where strong evidence can be collected that forest fires in the leakage belt are attributable to deforestation agents that are not linked to the project area, the detected deforestation will not be attributed to the project activity, thus not considered leakage.

The following values must be reported using the unit in parentheses, each with an estimate of uncertainty, representing sampling error as a two-sided 90 percent confidence interval:

1) For projects using AUDef, the allocated annual deforestation area by stratum (ha for each year of the monitoring period).

2) Aggregate annual deforestation area for the verification period in the project area (ha per year).

3) Aggregate annual deforestation area for the verification period in the leakage belt (ha per year).

4) Aggregate annual emissions from deforestation for the verification period and project area (tonnes CO_2e per year).

5) Aggregate annual emissions from deforestation for the verification period and leakage belt (tonnes CO_2e per year); and

6) Average emission factor for deforestation for the verification period and over the project area (tonnes CO_2e per ha).

The results of all ex-post estimations of leakage are summarized using the same table format used for the ex-ante assessment.

3.1.3.2.3 Overview of data collection procedures

The avoiding unplanned deforestation project leakage belt (UDef LB) is the forest area to which unplanned deforestation by geographically constrained agents may be displaced and is monitored.

The spatial extent of the UDef LB will be defined by Verra following the criteria described in Section A1.2.2 of Appendix 1 and will be provided to the project proponent. Baseline AD will be allocated by Verra to each project's UDef LB following Section A1.4.3 of Appendix 1.

The project proponent must subtract from the project's baseline UDef LB AD any activity data that is allocated to other VCS AFOLU PAs that intersect with the project's UDef LB. The subtraction enters into force once the intersecting VCS AFOLU projects have submitted an initial validation report to the Verra Registry and no sooner than the intersecting projects' start date. The onus is on the project proponent to demonstrate this and on the VVB to confirm it. Once the UDef LB AD allocated to the intersecting VCS AFOLU PAs has been excluded from the project's baseline, the project may stop monitoring the UDef LB AD in the intersecting area and related leakage emissions may be omitted.

3.1.3.2.4 Quality control and quality assurance procedures

Geographically mobile agents may displace their activities outside the UDef PA and beyond UDef LB. The area available for this kind of activity shifting corresponds to all potentially arable, physically accessible, and unprotected land in the country.

The spatial extent of land available for geographically mobile activity shifting will be defined by Verra following the criteria and procedures described in Section A2.1 of Appendix 2. This will be provided by Verra to the project proponent upon receipt of the AD Baseline Allocation Request Form.

3.1.3.2.5 Data archiving

All images, maps and records generated during project implementation were conserved and made available to VCS verifiers at verification for inspection to demonstrate that the AUD project activity has been implemented.

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

The Systemica is responsible for generating the maps, GIS analysis and remote monitoring of the project area, data archiving, and for aiding and clarification during verification audits.

3.1.3.3 Ex post calculation of net anthropogenic GHG emission reduction

3.1.3.3.1 Technical description of the monitoring tasks

If new and more accurate carbon stock data become available, these can be used to estimate the net anthropogenic GHG emission reduction, provided that these data are in accordance with the requirements established by the applied methodology VM0048 (VERRA, 2023). The calculation of ex-post net anthropogenic GHG emission reductions is like the ex-ante calculation.

3.1.3.3.2 Data to be collected

The report of ex-post estimated net anthropogenic GHG emissions and calculation of Verified Carbon Units was applied the same table format used for the ex-ante assessment.

3.1.3.3.3 Overview of data collection procedures

The data collection procedures involve the compilation of data from previous procedures to calculate ex-post net anthropogenic GHG emission reduction.

3.1.3.3.4 Quality control and quality assurance procedures

All the previous relevant QC/QA procedures are applicable for the ex-post calculation of net anthropogenic GHG emission reduction. The cumulative areas credited map within the project area shall be updated and presented to VCS verifiers at each verification event. The cumulative area cannot generate additional VCUs in future periods.

3.1.3.3.5 Data archiving

All maps and records generated during the project implementation will be conserved and made available to VCS verifiers at verification for inspection to demonstrate that the AUD project activity has been implemented. The procedures meet the highest levels of control, and the main purpose is to minimize

the risk of error, obtaining reliable data on which to base the monitoring results, and thus, minimizing non-conformities (Table 3.3). If non-conformities exist during the internal or external auditing processes, the data should be reviewed, and the non-conformities addressed.

Table 3.3. Data to be collected for monitoring changes in carbon stock and GHG emissions.

Data/ Parameter	Description	Unit	Source	Frequency
Buffer%	Buffer withholding percentage	%	VCS Non-Permanence Risk Report	Every verification event

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

Systemica is responsible for calculating and reporting the ex-post estimated net anthropogenic GHG emissions, data archiving, and for aiding and clarification during verification audits.

3.1.4 Dissemination of Monitoring Plan and Results (VCS, 3.18; CCB, CL4.2)

The results of the TdX project monitoring plan, up to this first Monitoring Report, will be made publicly available on the VERRA website (https://registry.verra.org/app/projectDetail/VCS/3738). link will also be shared on the Systemica Inteligência em Sustentabilidade S.A. website (https://systemica.digital/projetos/triunfo-do-xingu-redd/). In addition, stakeholders will be directly informed via email to ensure transparent access to the monitoring information[190].

For the Caboclo Village community and project workers, dissemination of the monitoring plan results followed specific communication channels established by the project. In November 2023, an informative pamphlet was distributed, presenting a summary of the monitoring methodologies and results[191], along with an explanatory video published on the project's YouTube channel[192]. Printed copies of the pamphlet, as well as the digital version and the video link, were made available to the community to foster awareness and encourage engagement. In addition, email communication containing information on the results was sent to other stakeholders[193].

The physical and digital dissemination was complemented by the role of community agents, hired by Systemica as project workers, who acted as direct communication channels with access to project documentation and actively contributed to sharing the monitoring plan and results. In August 2025, the results obtained up to that point were disseminated within the community through a summary pamphlet[194], which presented an overview of all ongoing activities as well as those already completed. In September 2025, communication and availability of information about the project[195],[196] with other

[190] 240208_ProjectDocumentsDissemination.zip
[191] 231205_CommunityContinuedCommunication.zip
[192] 240208_ProjectDocumentsDissemination.zip
[193] 250417_CommunicationOtherStakeholders.zip
[194] 250416_Folder_communication_stakeholders.pdf
[195] 250915_Resumo_Projeto.pdf
[196] 250915_Resumo_RelatorioMonitoramento.pdf

stakeholders took place by sending an e-mail with a letter and summary of the monitoring results[197]. On the same date, the documents were also provided in digital format through WhatsApp community groups, broadening access and facilitating their circulation among residents[198]. This multi-layered communication strategy ensured that information was circulated not only among external stakeholders but also within the local community in an accessible and participatory manner.

3.2 Quantification of GHG Emission Reductions and Removals

3.2.1 Baseline Emissions (VCS, 3.15)

3.2.1.1 Initial Project Baseline Validity Period (BVP)

According to VMD0055 v 1.1 (VERRA, 2024c), where a project validates or transitions to VM0048 (VERRA, 2023a) and this module after the initial year of a jurisdictional BVP, an initial baseline validity period will be applied. There are two options when moving to the jurisdictional BVP:

1) Option 1: The project proponent chooses to be allocated UDef AD from the subsequent jurisdictional BVP (e.g., BVP 2) when that BVP begins; or

2) Option 2: The initial project BVP is extended into the subsequent jurisdictional BVP for the duration set out in the VCS Standard or two years, whichever is shorter. After the initial project BVP ends, the project must adopt an allocation from the respective jurisdictional baseline. This option only applies where there has been no Verra-endorsed jurisdictional BVP for five years or more.

The project adopted Option 2 for the baseline validity period transition, as outlined in VMD0055. This decision was primarily driven by the fact that the jurisdictional BVP 2 had not yet been released.

Under Option 2, the initial project BVP 1 was extended into the subsequent jurisdictional BVP for the duration set out in the VCS Standard or two years, whichever was shorter. This approach allowed the project to maintain its current baseline framework while awaiting the availability of updated jurisdictional baseline data and allocation methodologies. Once the initial project BVP period concludes, the project will transition to adopt an allocation from the respective jurisdictional baseline when it becomes available. This approach ensures continuity in project monitoring and reporting while maintaining alignment with the jurisdictional framework requirements, providing a practical solution during the interim period before new jurisdictional baseline data becomes accessible.

3.2.1.2 Biomass estimation and calculation of baseline carbon stock changes

A forest inventory[199] was carried out to estimate forest biomass in the tree and palm stock. To do this, 56 cluster plots were systematically distributed throughout the area according to the biomass inventory

[197] 250917_Dissemination_OtherStakeholders.pdf
[198] 250917_Dissemination_Community_Whatsapp.pdf
[199] 240221_IFTDX.xlsx

SOP[200]. The geographical coordinates[201] of the central points of the cluster plots are available for consultation by the auditors.

Figure 3.4 shows the distribution of the plots in the area, with 9 cluster plots installed in Didácio's area and 47 cluster plots installed in Séfer's area.

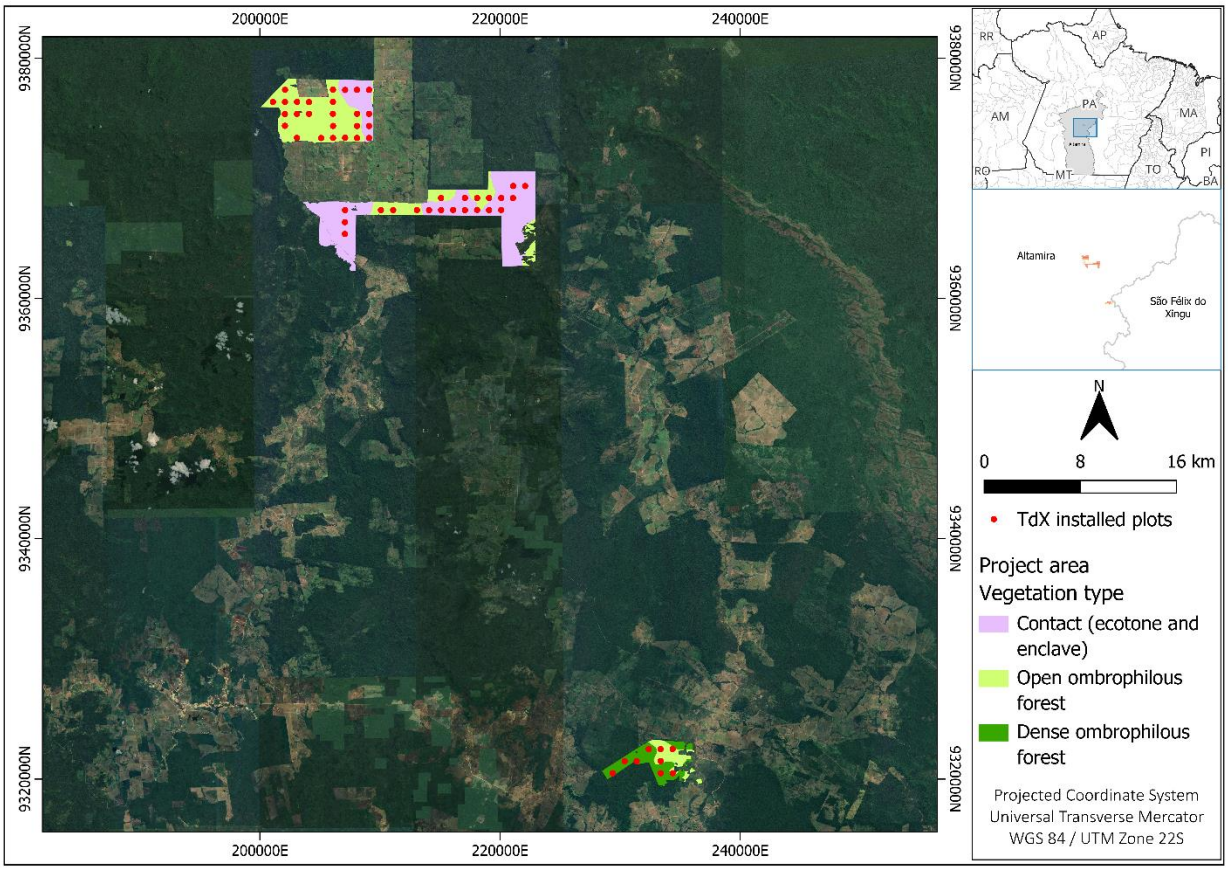


Figure 3.4. Distribution of the forest inventory cluster plots.

Initially, a test of means (t-test, 95% confidence interval) was applied to evaluate whether there are statistically significant differences in biomass means between the Open Ombrophilous Forest and Dense Ombrophilous strata. In this test, the null hypothesis assumes that the means of the two strata are equal, while the alternative hypothesis assumes that the means are different. The results showed a p-value greater than 0.05. Therefore, the null hypothesis is not rejected, indicating no statistically significant difference between the strata. For analytical purposes, the fragment can be considered as a single sampling unit.

[200] 240221_SOPIFTDX.pdf
[201] 240216_ClusterPlotsPoints.zip

The result of the inventory complies with the requirements of the methodology, showing an overall relative error of 5.44% of the mean value for a 90% confidence interval. Table 3.4 shows the statistical parameters of the biomass inventory.

Table 3.4. Forest inventory statistical parameters.

Parameters	Unit	Global
Area	ha	10,704.58
n		56
Aboveground biomass	$t.d.m.ha^{-1}$	275.55
Aboveground tree biomass	$t.d.m.ha^{-1}$	264.16
Aboveground palm tree biomass	$t.d.m.ha^{-1}$	11.39
Variance within	$(t.d.m.ha^{-1})^2$	9257.0
Variance between	$(t.d.m.ha^{-1})^2$	2187.0
Variance	$(t.d.m.ha^{-1})^2$	11443.0
Standard deviation	$t.d.m.ha^{-1}$	107.00
r		0.19
Correction factor		1.57
Mean variance	$(t.d.m.ha^{-1})^2$	80.37
Standard error	$t.d.m.ha^{-1}$	8.96
Absolute sampling error	$t.d.m.ha^{-1}$	14.99
Relative sampling error	%	5.44
Coefficient of Variation	%	38.82
Upper confidence interval	$t.d.m.ha^{-1}$	290.5
Lower confidence interval	$t.d.m.ha^{-1}$	260.5

The forest inventory showed a negative exponential diameter distribution for both strata (Figure 3.5). This is typical in uneven-aged stands (Skovsgaard, 2004) in the Amazon biome. This distribution is common in forests with no intensive disturbance, with a larger number of individuals with smaller DBH values (Rubin et al., 2006).

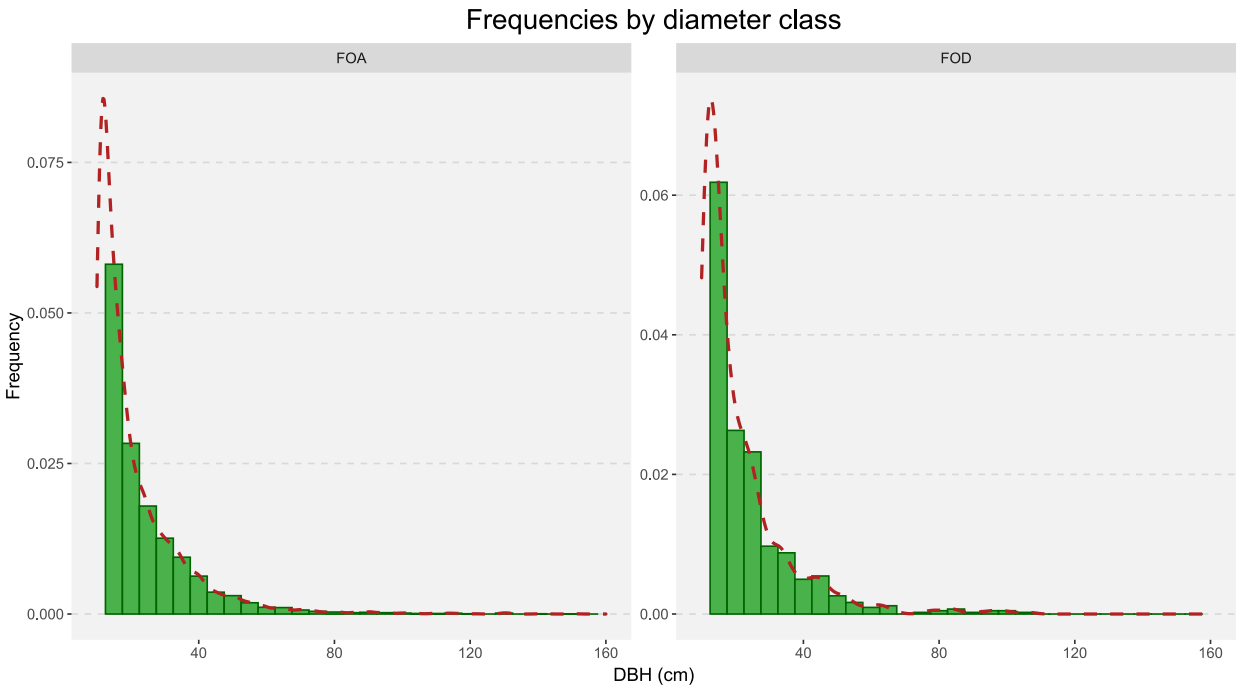


Figure 3.5 Histogram and frequency curves of DBH in both strata.

When the analysis is stratified by species groups (Figure 3.6), Cecropia sp. is strongly concentrated in the smallest diameter classes, consistent with its pioneer status and rapid growth dynamics. Palm trees also occur predominantly in the smaller diameter classes but display a narrower distribution and lower density compared to *Cecropia* sp. The remaining species ("General") exhibit the broadest diameter distribution, spanning from small to large DBH classes and encompassing the few individuals that attain the largest diameters within the fragment. Collectively, these patterns underscore ongoing regeneration processes, the coexistence of pioneer and non-pioneer species, and the structural complexity of the forest across both strata.

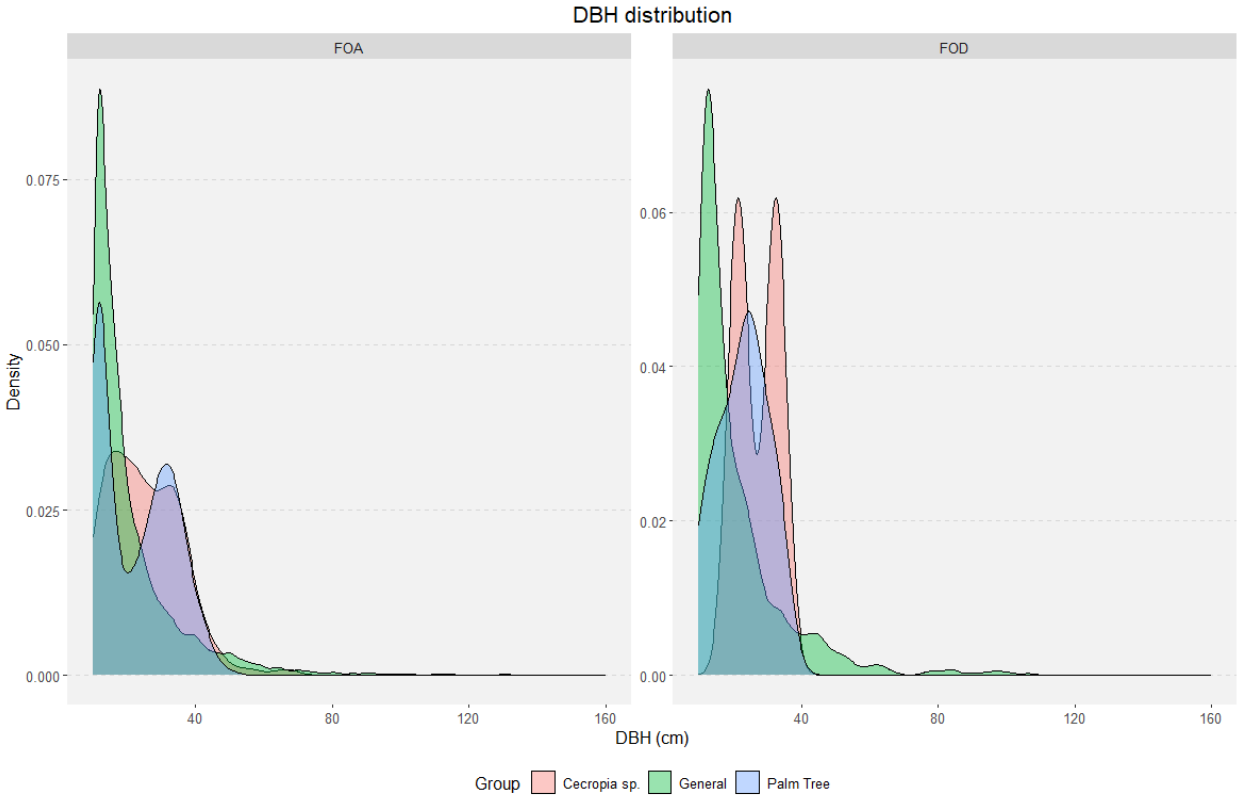


Figure 3.6. Diameter distribution of individuals in FOA and FOD strata.

Regarding the percentage of biomass by group (Figure 3.7), the 'General' group accounted for approximately 95% of the total biomass and encompasses a wide range of species, including pioneers, secondary, and climax species. In contrast, palm trees contributed about 4%, and *Cecropia* sp. represented only 0.5%. Fitting separate models for each species group ensures greater precision in the results. By applying allometric models tailored to the specific characteristics of each group, biomass estimates become more consistent with the actual structure and composition of the vegetation.

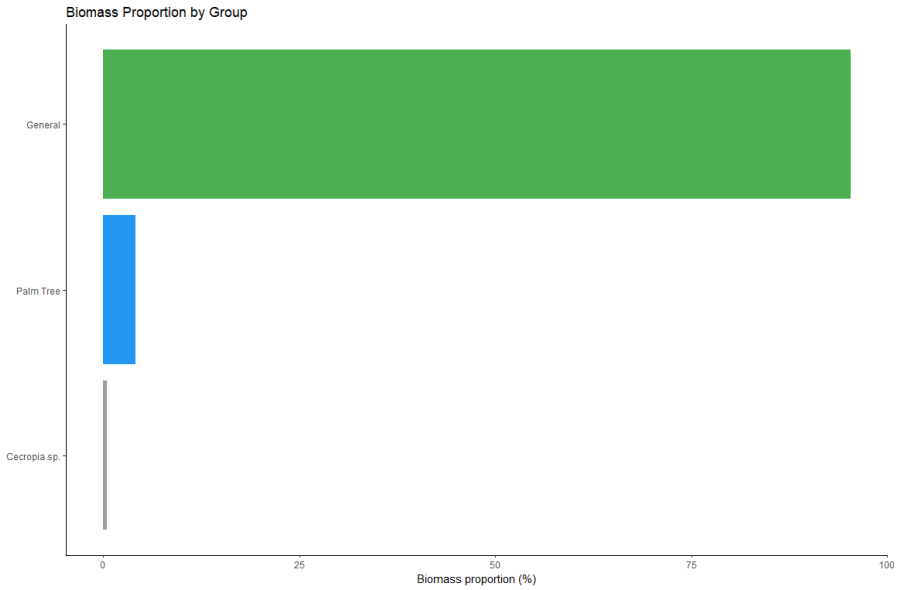


Figure 3.7. Proportional biomass per group in percentage.

3.2.1.3 Conservative Estimation of Emissions from Carbon Stock Change

Conservative estimates of emissions per carbon stock change for the stocks applicable to this project are shown in Table 3.5. All previous steps were considered to obtain the most conservative value according to the VM0048 methodology (VERRA, 2023) and the VCS standard (VERRA, 2024). Further details can be verified in the VCS PD.

Table 3.5. Conservative estimation of emissions from carbon stock change.

	Carbon stock	Value
Project area	$\Delta C_{AB\text{-}LI,As}$ (t CO_2e ha^{-1})	455.76
	$\Delta C_{AB\text{-}LI,Ds}$ (t CO_2e ha^{-1})	455.76
	$\Delta C_{BB\text{-}DW,As}$ (t CO_2e ha^{-1})	100.71
	$\Delta C_{BB\text{-}DW,Ds}$ (t CO_2e ha^{-1})	100.71
Leakage belt	$\Delta C_{LB,AB\text{-}LI,As}$ (t CO_2e ha^{-1})	455.76
	$\Delta C_{LB,AB\text{-}LI,Ds}$ (t CO_2e ha^{-1})	455.76
	$\Delta C_{LB,BB\text{-}DW,As}$ (t CO_2e ha^{-1})	100.71
	$\Delta C_{LB,BB\text{-}DW,Ds}$ (t CO_2e ha^{-1})	100.71

3.2.1.4 Estimation of Annual Baseline Emissions from Carbon Stock Changes

The sum of emissions projected to occur in UDef PA was estimated using the AD area and emissions from carbon stock changes resulting from unplanned deforestation.

Stock changes in above-ground carbon pools and litter are assumed to be emitted at the time of land-use transition. After land-use transition, emissions from belowground pools, deadwood, soil organic carbon, and wood products are assumed to occur gradually over time; those from belowground biomass pools and deadwood at an annual rate of 1/10 of the stock change, and those from soil organic carbon and wood products at an annual rate of 1/20 of the stock change. For a given year *t* (the year for which emissions are to be estimated), emissions from unplanned deforestation are summed from time t − 10 to time t (for belowground biomass and deadwood) and from time t − 20 to time t (for soil organic carbon and wood products).

For carbon pools in the UDef PA strata (Equation 1):

$$\Delta C_{BSL,PA-UDef,i,t} = \left(AD_{BSL,PA-UDef,i,t} \times \Delta Cc_{AB-LI,i}\right) + \sum_{t-10}^{t}\left(AD_{BSL,PA-UDef,i,t}\right) \times \frac{\Delta Cc_{BB-DW,i}}{10} + \sum_{t-20}^{t}\left(AD_{BSL,PA-UDef,i,t}\right) \times \frac{\Delta Cc_{SOC-WP,i}}{20} \quad \text{Equation 1}$$

Where:

$\Delta C_{BSL,PA-UDef,i,t}$	Total emissions from the baseline carbon stock change in all carbon pools in forest stratum i within the UDef PA in year *t* (t CO_2e)
$AD_{BSL,PA-UDef,i,t}$	UDef AD in the baseline scenario allocated to forest stratum i in the UDef PA for year *t* (ha)
$\Delta Cc_{AB-LI,i}$	Conservatively estimated emissions from carbon stock change in the UDef PA in aboveground biomass and litter pools in forest stratum *i* (t CO_2e ha^{-1})
$\Delta Cc_{BB-DW,i}$	Conservatively estimated emissions from carbon stock change over a 10-year period in the UDef PA in belowground biomass and dead wood pools in forest stratum *i* (t CO_2e ha^{-1})
$\Delta Cc_{SOC-WP,i}$	Conservatively estimated emissions from carbon stock change over a 20-year period in the UDef PA in the soil organic carbon and wood product pools in forest stratum *i* (t CO_2e ha^{-1})
i	1, 2, 3, …, *M* forest stratum
t	1, 2, 3, …, *t** years elapsed since the start of the project

For carbon pools in UDef LB strata (Equation 2):

$$\Delta C_{BSL,LB-UDef,i,t} = \left(AD_{BSL,LB-UDef,i,t} \times \Delta C_{LB,AB-LI,i}\right) + \sum_{t-10}^{t}\left(AD_{BSL,LB-UDef,i,t}\right) \times \frac{\Delta Cc_{LB,BB-DW,i}}{10} + \sum_{t-20}^{t}\left(AD_{BSL,LB-UDef,i,t}\right) \times \frac{\Delta C_{LB,SOC-WP,i}}{20} \quad \text{Equation 2}$$

Where:

$\Delta C_{BSL,LB-UDef,i,t}$	Total emissions from baseline carbon stock change in all carbon pools in forest stratum i within the UDef LB in year *t* (t CO_2e)
$AD_{BSL,LB-UDef,i,t}$	UDef AD in the baseline scenario allocated to forest stratum i in the UDef LB for year *t* (ha)
$\Delta C_{LB,AB-LI,i}$	Estimated emissions from carbon stock change in the UDef LB in aboveground biomass and litter pools in forest stratum *i* (t CO_2e ha^{-1})
$\Delta C_{LB,BB-DW,i}$	Estimated emissions from carbon stock change over a 10-year period in the UDef LB in belowground biomass and dead wood pools in forest stratum *i* (t CO_2e ha^{-1})
$\Delta C_{LB,SOC-WP,i}$	Estimated emissions from carbon stock change over a 20-year period in the UDef LB in organic carbon soil and wood product pools in forest stratum *i* (t CO_2e ha^{-1})
i	1, 2, 3, …, *M* forest stratum
t	1, 2, 3, …, *t** years elapsed since the start of the project

The Table 3.6 summarizes all the values needed to calculate the Equation 1 for baseline, and Table 3.8 summarizes Equation 2 for the leakage belt, as well as the final results for $\Delta C_{BSL,PA-UDef,i,t}$ and $\Delta C_{BSL,LB-UDef,i,t}$, respectively. Additionally, there are identified exclusion areas and degradation impact areas that were excluded from the baseline and leakage according to the VMD0055 module. More information about the results can be verified in Table 3.7 and Table 3.8 and in the attached document[202].

[202] SatelliteMonitoring.zip

Table 3.6. Estimation of annual baseline emissions from carbon stock changes for the baseline.

		As*				Ds*				
Start	End	$AD_{BSL,PA-UDef,As,t}$ (ha)	$\Delta C_{AB-LI,As}$ (t CO_2e ha^{-1})	(1/10) x $AD_{BSL,PA-UDef,As,t}$ x $\Delta C_{BB-DW,As}$ (t CO_2e)	$\Delta C_{BSL,PA-Udef,As,t}$ (t CO_2e)	$AD_{BSL,PA-UDef,Ds,t}$ (ha)	$McC_{abe-LI,Ds}$ (t CO_2e ha^{-1})	(1/10) x $AD_{BSL,PA-UDef,Ds,t}$ x $\Delta C_{BB-DW,Ds}$ (t CO_2e)	$\Delta C_{BSL,PA-Udef,Ds,t}$ (t CO_2e)	$\Delta C_{BSL,PA-Udef,t}$ (t CO_2e)
31-Aug-2022	31-Dec-2022	75.86	455.76	763.97	35,338.68	8.85	455.76	89.14	4,123.45	39,462.13
1-Jan-2023	31-Dec-2023	225.12	455.76	3,031.05	105,630.79	26.27	455.76	353.68	12,325.41	117,956.20
1-Jan-2024	31-Dec-2024	225.12	455.76	5,298.13	107,897.87	26.27	455.76	618.21	12,589.94	120,487.81
1-Jan-2025	15-Aug-2025	140.00	455.76	6,708.07	70,516.68	16.34	455.76	782.72	8,228.16	78,744.83
Total					319,384.02				37,266.95	356,650.98

*As – Open Ombrophylous Forest; Ds – Dense Ombrophylous Forest.

Table 3.7. Estimation of identified exclusion areas and degradation impact areas for the baseline during the monitoring period.

		Identified exclusion (IE) – natural disturbance				Degradation impact area (DIA)				
Start	End	$AD_{BSL,PA-UDef,IE,t}$ (ha)	$\Delta C_{AB-LI,IE}$ (t CO_2e ha^{-1})	(1/10) x $AD_{BSL,PA-UDef,IE,t}$ x $\Delta C_{BB-DW,IE}$ (t CO_2e)	$\Delta C_{BSL,PA-Udef,IE,t}$ (t CO_2e)	$AD_{BSL,PA-UDef,DIA,t}$ (ha)	$McC_{abe-LI,DIA}$ (t CO_2e ha^{-1})	(1/10) x $AD_{BSL,PA-UDef,DIA,t}$ x $\Delta C_{BB-DW,DIA}$ (t CO_2e)	$\Delta C_{BSL,PA-Udef,DIA,t}$ (t CO_2e)	$\Delta C_{BSL,PA-Udef,t}$ (t CO_2e)
31-Aug-2022	31-Dec-2022	1.14	0	0	0	0.53	0	0	0	0
1-Jan-2023	31-Dec-2023	3.39	0	0	0	1.59	0	0	0	0
1-Jan-2024	31-Dec-2024	3.39	0	0	0	1.59	0	0	0	0
1-Jan-2025	15-Aug-2025	2.11	0	0	0	0.99	0	0	0	0
Total							0	0	0	0

Table 3.8. Estimation of annual baseline emissions from carbon stock changes for the leakage belt.

		Baseline - LK				Identified exclusion (IE) – natural disturbance				
Start	End	$AD_{BSL,LB\text{-}UDef,l,t}$ (ha)	$\Delta C_{BSL,LB,AB\text{-}Ll,l}$ (t CO_2e ha^{-1})	(1/10) x $AD_{BSL,LB\text{-}UDef,l,t}$ x $\Delta C_{BBSL,LB,BB\text{-}DW,l,t}$ (t CO_2e)	$\Delta C_{BSL,LB\text{-}Udef,l,t}$ (t CO_2e)	$AD_{BSL,LB\text{-}UDef,El,t}$ (ha)	$\Delta C_{BSL,LB,AB\text{-}Ll,El}$ (t CO_2e ha^{-1})	(1/10) x $AD_{BSL,LB\text{-}UDef,El,t}$ x $\Delta C_{BBSL,LB,BB\text{-}DW,El,t}$ (t CO_2e)	$\Delta C_{BSL,LB\text{-}Udef,El,t}$ (t CO_2e)	$\Delta C_{BSL,LB\text{-}UDef,t}$ (t CO_2e)
31-Aug-2022	31-Dec-2022	117.06	455.76	1,178.91	54,531.94	6.87	0	0.00	0.00	54,531.94
1-Jan-2023	31-Dec-2023	347.38	455.76	4,677.29	163,001.33	20.40	0	0.00	0.00	163,001.33
1-Jan-2024	31-Dec-2024	347.38	455.76	8,175.67	166,499.71	20.40	0	0.00	0.00	166,499.71
1-Jan-2025	15-Aug-2025	216.04	455.76	10,351.38	108,815.92	12.69	0	0.00	0.00	108,815.92
Total					492,848.89					492,848.89

*As – Open Ombrophylous Forest; Ds – Dense Ombrophylous Forest.

3.2.1.5 Estimation of Other Baseline GHG Emissions

Other GHG emissions that would occur in the baseline scenario within UDef PA were estimated. The VCS module VMD0013 Estimation of Greenhouse Gas Emissions from Biomass and Peat Burning (E-BPB) was used for calculation of $E_{BSL,BiomassBurn,i,t}$, $E_{BSL,FC,i,t}$, and $N2O_{BSL,direct-N,i,t}$ were not applied to the project and were conservatively excluded from the baseline.

Therefore, other GHG emissions within UDef PA are estimated as (Equation 3):

$$GHG_{BSL_{PA}-UDef,E,t} = \sum_{t=1}^{t*} \sum_{i=1}^{M} \left(E_{BSL,FC,i,t} + E_{BSL,BiomassBurn,i,t} + N2O_{BSL,direct-N,i,t}\right) \quad \text{Equation 3}$$

Where:

$GHG_{BSL_{PA}-UDef,E,t}$	Cumulative other GHG emissions in the baseline in year t resulting from unplanned deforestation within the UDef PA since the project start (t CO_2e)
$E_{BSL,FC,i,t}$	Emissions from fossil fuel combustion in forest stratum *i* in the UDef PA in year *t* (t CO_2e)
$E_{BSL,BiomassBurn,i,t}$	Non-CO_2 emissions due to biomass burning as part of unplanned deforestation activities in forest stratum *i* in year *t* (t CO_2e)
$N2O_{BSL,direct-N,i,t}$	Direct N_2O emission because of nitrogen application on an alternative land use in forest stratum *i* in year *t* (t CO_2e)
i	1, 2, 3, …, *M* forest stratum
t	1, 2, 3, …, *t** years elapsed since the start of the project

Table 3.9 shows the parameters used in calculating biomass burning for the baseline scenario, as well as results accounted for CH_4 and N_2O emissions generated and the average aboveground biomass stock before burning for stratum As and Ds.

Table 3.9. Cumulative other GHG emissions in the baseline in year t resulting from unplanned deforestation within the UDef PA since the project started.

		As*				Ds*				
		$B_{As,t}$ = 275.55 t d.m. ha^{-1}				$B_{Ds,t}$ = 275.55 t d.m. ha^{-1}				
Start	End	$A_{burn,As,t}$ (ha)	$E_{BiomassBurn,CH4,As,t}$ (t CO_2e)	$E_{BiomassBurn,N2O,As,t}$ (t CO_2e)	$E_{BSL,FC,As,t}$ (t CO_2e)	$A_{burn,Ds,t}$ (ha)	$E_{BiomassBurn,CH4,Ds,t}$ (t CO_2e)	$E_{BiomassBurn,N2O,Ds,t}$ (t CO_2e)	$E_{BSL,FC,Ds,t}$ (t CO_2e)	$GHG_{BSLPA-UDef,E,t}$ (t CO_2e)
31-Aug-2022	31-Dec-2022	75.86	1,989.99	553.94	0	8.85	232.20	64.64	0	2,840.77
1-Jan-2023	31-Dec-2023	225.12	5,905.26	1,643.80	0	26.27	689.05	191.80	0	8,429.91
1-Jan-2024	31-Dec-2024	225.12	5,905.26	1,643.80	0	26.27	689.05	191.80	0	8,429.91
1-Jan-2025	31-Aug-2025	140.00	3,672.59	1,022.31	0	16.34	428.53	119.29	0	5,242.71
Total		666.10	17,473.11	4,863.84	0	77.72	2,038.83	567.53	0	24,943.31

*As – Open Ombrophylous Forest ; Ds – Dense Ombrophylous Forest.

3.2.1.6 Estimation of Net Baseline Emissions

Net emissions under baseline conditions for UDef PA were calculated using Equation 4 and the results are shown in Table 3.10. More information can be found in the calculation spreadsheet[203].

$$\Delta C_{BSL,PA-UDef,t} = \left(\sum_{t=1}^{t*}\sum_{i=1}^{M} \Delta C_{BSL,PA-UDef,i,t}\right) + GHG_{BSL_{PA}-UDef,E,t} \quad \text{Equation 4}$$

Where:

$\Delta C_{BSL,PA-UDef,t}$	Cumulative net GHG emissions since the project started within the UDef PA in the baseline in year *t* (t CO_2e)
$GHG_{BSL_{PA}-UDef,E,t}$	Cumulative other GHG emissions in the baseline in year *t* resulting from unplanned deforestation within the UDef PA since the project started (t CO_2e)
$\Delta C_{BSL,PA-UDef,i,t}$	Sum of the baseline emissions from carbon stock change in all carbon pools in forest stratum *i* within the UDef PA in year *t* (t CO_2e)
i	1, 2, 3, …, *M* forest stratum
t	1, 2, 3, …, *t** years elapsed since the start of the project

Table 3.10. Cumulative net GHG emissions since the project start within the UDef PA in the baseline in year t.

Start	End	$\Delta C_{BSL,PA-Udef,t}$ (t CO_2e)	$GHG_{BSLPA-UDef,E,t}$ (t CO_2e)	$\Delta C_{BSL,PA-UDef,t}$ (t CO_2e)
31-Aug-2022	31-Dec-2022	39,462.13	2,840.77	42,302.90
1-Jan-2023	31-Dec-2023	117,956.20	8,429.91	126,386.11
1-Jan-2024	31-Dec-2024	120,487.81	8,429.91	128,917.73
1-Jan-2025	15-Aug-2025	78,744.83	5,242.71	83,987.55
Total		356,650.98	24,943.31	381,594.29

On the other hand, net emissions under baseline conditions for the UDef LB were calculated according to Equation 5. The values for this parameter can be found in Table 3.8.

$$\Delta C_{BSL,LB-UDef,t} = \sum_{t=1}^{t*}\sum_{i=1}^{M} \Delta C_{BSL,LB-UDef,i,t} \quad \text{Equation 5}$$

Where:

[203] GHGCalculation.zip

$\Delta C_{BSL,LB-UDef,t}$	Cumulative net GHG emissions since the project started within the UDef LB in the baseline in year *t* (t CO_2e)
$\Delta C_{BSL,LB-UDef,i,t}$	Cumulative emissions from baseline carbon stock change in all carbon pools in forest stratum *i* within the UDef LB in year *t* (t CO_2e)
i	1, 2, 3, …, *M* forest stratum
t	1, 2, 3, …, *t** years elapsed since the start of the project

3.2.2 Project Emissions (VCS, 3.15)

3.2.2.1 UDef PA and UDef LB Deforestation Data for the Monitoring Period

AD was estimated using a sample-based approach that used human interpretation of high-resolution imagery (10 m or finer spatial resolution) within sample plots distributed in a representative manner across the project activities region. Other spatial data, such as spectral band analysis and vegetation indices, were used to increase the efficiency of the sampling design or aid in image interpretation. If necessary, the AD should be conservatively inflated based on the estimated statistical uncertainty, following Steps 3 and 4 below. Furthermore, a stratified sampling design was employed that considered each site's baseline deforestation risk, forest carbon stocks, and inclusion in avoiding unplanned deforestation project area (PA) or avoiding unplanned deforestation project leakage belt (LB).

Step 1: Develop a Land Cover/Land Cover Change Dataset

The sample-based method produced an estimate of the area of unplanned deforestation occurring during the monitoring period. Standard Operating Procedures (SOP) were developed and used by the project proponent and included: sample design, response design, data sources, data collection, and analysis. Furthermore, the SOP included detailed guidance on quality management throughout these stages.

The collected sample data are used to identify land cover conditions at the start and end dates of the monitoring period within the UDef Conservation Area (PA) and the UDef Conservation Area (LB) and to assign an outcome of change (deforestation or forest regeneration) or no change (stable forest or non-stable forest) to each observation. Further information can be found in the SOP attached[204] to the monitoring report.

Step 2: Calculate Total Area of Each AD Category

The area within the project sampling frame (for the project scenario) classified into each change category (CHC) was estimated. The sum of PropCHC,ss occurs across all sampling strata ss, except those representing forest strata (i) or project accounting areas (UDef PA or UDef LB).

For UDef PA (Equation 6):

[204] SatelliteMonitoring.zip

$$A_{PA,CHC,i} = A_{PSF} \times \sum_{ss=1}^{SS} Prop_{PA,CHC,i,ss}$$ Equation 6

Where:

$A_{PA,CHC,i}$	Area of the UDef PA in stratum *i* classified as change category CHC over the monitoring period (ha)
A_{PSF}	Area of project sampling frame (ha)
$Prop_{PA,CHC,i,ss}$	Weighted proportion of $A_{PA,i}$ that falls into sampling stratum ss and is classified as change category *CHC* (dimensionless)
CHC	Change category: unplanned deforestation (UDef), stable forest (SF), stable non-forest (SNF), regrowth (Reg)
i	1, 2, 3, ..., M forest stratum
ss	1, 2, 3, ..., SS sampling stratum

For UDef LB (Equation 7):

$$A_{LB,CHC,i} = A_{PSF} \times \sum_{ss=1}^{SS} Prop_{LB,CHC,i,ss}$$ Equation 7

Where:

$A_{PA,CHC,i}$	Area of the UDef LB in stratum *i* classified as change category CHC over the monitoring period (ha)
A_{PSF}	Area of project sampling frame (ha)
$Prop_{PA,CHC,i,ss}$	Weighted proportion of $A_{LB,i}$ that falls into sampling stratum ss and is classified as change category *CHC* (dimensionless)
CHC	Change category: unplanned deforestation (UDef), stable forest (SF), stable non-forest (SNF), regrowth (Reg)
i	1, 2, 3, ..., M forest stratum
ss	1, 2, 3, ..., SS sampling stratum

Step 3: Calculate the Uncertainty of the Estimated Areas of Each Change Category

The standard error of the proportions was calculated (Equation 8):

$$S(Prop_{CHC}) = \sqrt{\sum_{ss=1}^{SS} \frac{ws_{ss}^2 \times \frac{Count_{CHC,ss}}{Count_{ss}} \times \left(1 - \frac{Count_{CHC,ss}}{Count_{ss}}\right)}{Count_{ss} - 1}}$$ Equation 8

Where:

$S(Prop_{CHC})$	Standard error of the proportion of the project sampling frame in change category CHC (dimensionless)
$Prop_{CHC}$	Proportion of the project sampling frame in change category CHC (dimensionless)
ws_{ss}	Weight of sampling stratum ss (dimensionless)
$Count_{CHC,ss}$	Number of observations of change category CHC in sampling stratum ss (sample units)
$Count_{ss}$	Total count of sample units in sampling stratum ss (sample units)
CHC	Change category: unplanned deforestation (UDef), stable forest (SF), stable non-forest (SNF), regrowth (Reg)
ss	1, 2, 3, ..., SS sampling stratum

The standard error of the areas was calculated (Equation 9):

$$S(A_{CHC}) = S(Prop_{CHC}) \times A_{PSF} \quad \text{Equation 9}$$

Where:

$S(A_{CHC})$	Standard error of the estimated area of change category CHC within the project sampling frame over the monitoring period (ha)
$S(Prop_{CHC})$	Standard error of the proportion of the project sampling frame in change category CHC (dimensionless)
A_{PSF}	Area of project sampling frame (ha)
CHC	Change category: unplanned deforestation (UDef), stable forest (SF), stable non-forest (SNF), regrowth (Reg)

The percentage uncertainty of the estimated area was calculated. Percent uncertainty is defined as half of the two-sided 90% confidence interval, expressed as a percentage of the estimated area (Equation 10).

$$U\%(A_{CHC}) = t_{alpha=10\%} \times \frac{S(A_{CHC})}{\sum_{i=1}^{M} A_{PA,CHC,i} + \sum_{i=1}^{M} A_{LB,CHC,i}} \times 100 \quad \text{Equation 10}$$

Where:

$U\%(A_{CHC})$	Percentage uncertainty of the estimated area of change category CHC within the project sampling frame over the monitoring period (%)
$S(A_{CHC})$	Standard error of the estimated area of change category CHC within the project sampling frame over the monitoring period (ha)

$A_{PA,CHC,i}$	Area of the UDef PA classified as change category CHC in stratum i over the monitoring period (ha)
$A_{LB,CHC,i}$	Area of the UDef LB classified as change category CHC in stratum i over the monitoring period (ha)
$t_{alpha=10\%}$	Value of the t distribution for a two-sided 90 percent confidence interval (a value of 1.6449 may be used for UDef AD analyses)
CHC	Change category: unplanned deforestation (UDef), stable forest (SF), stable non-forest (SNF), regrowth (Reg)
i	1, 2, 3, …, M forest stratum

Step 4: Conservatively Inflate the Estimated Area of Unplanned Deforestation

The estimated total area of unplanned deforestation (CHC = UDef) within the project sampling frame is inflated based on its uncertainty level. Where the percentage uncertainty of the estimated unplanned deforestation area is less than or equal to 10 percent, the estimate may be used without modification, and the inflation factor is zero. Where the percentage uncertainty is greater than 10 percent, the area estimate must be scaled up by inflation factor IFUDef.

The inflation factor, IFUDef is calculated as follows (Equation 11):

$$IF_{UDef} = \frac{U\%(A_{UDef})}{100 \times t_{alpha=10\%}} \times t_{alpha=66.67\%} \quad \text{Equation 11}$$

Where:

IF_{UDef}	Inflation factor for area of unplanned deforestation (unitless)
$U\%(A_{UDef})$	Percentage uncertainty of the estimated area of unplanned deforestation (where CHC = UDef) within the project sampling frame over the monitoring period (%)
$t_{alpha=10\%}$	Value of the t distribution for a two-sided 90 percent confidence interval (a value of 1.6449 may be used for AD analyses)
$t_{alpha=66.67\%}$	Value of the t distribution for a one-sided 66.67% confidence interval (a value of 0.4307 may be used for AD analyses)

Using the estimated area and the inflation factor, the final AD values for UDef PA were calculated as (Equation 12):

$$A_{PA,inflated,UDef,i} = A_{PA,UDef,i} \times (1 + IF_{UDef}) \quad \text{Equation 12}$$

Where:

$A_{PA,inflated,UDef,i}$	Area of unplanned deforestation within forest stratum i of the UDef PA over the monitoring period, conservatively inflated for uncertainty (ha)
$A_{PA,UDef,i}$	Uninflated area of unplanned deforestation (where CHC = UDef) within forest stratum i within the UDef PA over the monitoring period (ha)
IF_{UDef}	Inflation factor for area of unplanned deforestation (unitless)
i	1, 2, 3, …, M forest stratum

Using the estimated area and inflation factor, the final AD values for UDef LB were calculated as (Equation 13):

$$A_{LB,inflated,UDef,i} = A_{LB,UDef,i} \times (1 + IF_{UDef}) \quad \text{Equation 13}$$

Where:

$A_{LB,inflated,UDef,i}$	Area of unplanned deforestation within forest stratum i in the UDef LB over the monitoring period, conservatively inflated for uncertainty (ha)
$A_{LB,UDef,i}$	Uninflated area of unplanned deforestation (where CHC = UDef) within forest stratum i within the UDef LB over the monitoring period (ha)
IF_{UDef}	Inflation factor for area of unplanned deforestation (unitless)
i	1, 2, 3, …, M forest stratum

Step 5: Determine the AD for Unplanned Deforestation

The annualized activity data per stratum in the UDef PA and UDef LB are equal to AD calculated for the monitoring period divided by the number of years in the monitoring period.

For UDef PA (Equation 14):

$$AD_{MP,PA-UDef,i,t} = \frac{A_{PA,inflated,UDef,i}}{MPL} \quad \text{Equation 14}$$

Where:

$AD_{MP,PA-UDef,i,t}$	UDef AD in the UDef PA in forest stratum i in year t (ha)
$A_{PA,inflated,UDef,i}$	Area of unplanned deforestation within forest stratum i of the UDef PA over the monitoring period, conservatively inflated for uncertainty (ha)
MPL	Length of monitoring period (years)
t	1, 2, 3, …, t* years elapsed since the start of the project
i	1, 2, 3, …, M forest stratum

For UDef LB (Equation 15):

$$AD_{MP,LB-UDef,i,t} = \frac{A_{LB,inflated,UDef,i}}{MPL}$$ Equation 15

Where:

$AD_{MP,LB-UDef,i,t}$	UDef AD in the UDef LB in forest stratum i in year t (ha)
$A_{LB,inflated,UDef,i}$	Area of unplanned deforestation within forest stratum i of the UDef LB over the monitoring period, conservatively inflated for uncertainty (ha)
MPL	Length of monitoring period (years)
t	1, 2, 3, …, M forest stratum
i	1, 2, 3, …, t* years elapsed since the start of the project

3.2.2.2 Estimation of Annual Emissions Caused by Unplanned Deforestation

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

For carbon pools in the UDef PA strata (Equation 16):

$$\Delta C_{MP,PA-UDef,i,t} = \left(AD_{MP,PA-UDef,i,t} \times \Delta Cc_{AB-LI,i}\right) + \sum_{t-10}^{t}\left(AD_{MP,PA-UDef,i,t}\right) \times \frac{\Delta Cc_{BB-DW,i}}{10} + \sum_{t-20}^{t}\left(AD_{MP,PA-UDef,i,t}\right) \times \frac{\Delta Cc_{SOC-WP,i}}{20}$$ Equation 16

Where:

$\Delta C_{MP,PA-UDef,i,t}$	Total emissions from carbon stock change in all carbon pools in forest stratum i in the UDef PA in year *t* (t CO_2e)
$AD_{MP,PA-UDef,i,t}$	UDef AD in the UDef PA in forest stratum *i* in the year *t* (ha)
$\Delta Cc_{AB-LI,i}$	Conservatively estimated emissions from carbon stock change in the UDef PA in aboveground biomass and litter pools in forest stratum *i* (t CO_2e ha^{-1})
$\Delta Cc_{BB-DW,i}$	Conservatively estimated emissions from carbon stock change over a 10-year period in the UDef PA in belowground biomass and dead wood pools in forest stratum *i* (t CO_2e ha^{-1})
$\Delta Cc_{SOC-WP,i}$	Conservatively estimated emissions from carbon stock change over a 20-year period in the UDef PA in the soil organic carbon and wood product pools in forest stratum *i* (t CO_2e ha^{-1})
i	1, 2, 3, …, *M* forest stratum

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

For carbon pools in UDef LB strata (Equation 17):

$$\Delta C_{MP,LB-UDef,i,t} = \left(AD_{MP,LB-UDef,i,t} \times \Delta C_{LB,AB-LI,i}\right) + \sum_{t-10}^{t}\left(AD_{MP,LB-UDef,i,t}\right) \times \frac{\Delta C_{LB,BB-DW,i}}{10} + \sum_{t-20}^{t}\left(AD_{MP,LB-UDef,i,t}\right) \times \frac{\Delta C_{LB,SOC-WP,i}}{20} \quad \text{Equation 17}$$

Where:

$\Delta C_{MP,LB-UDef,i,t}$	Total emissions from carbon stock change in all carbon pools in forest stratum i in the UDef LB in year t (t CO_2e)
$AD_{MP,LB-UDef,i,t}$	UDef AD in the UDef LB in forest stratum i in year t (ha)
$\Delta C_{LB,AB-LI,i}$	Estimated emissions from annual carbon stock change in the UDef LB in aboveground biomass and litter pools in forest stratum i (t CO_2e ha^{-1})
$\Delta C_{LB,BB-DW,i}$	Estimated emissions from carbon stock change over a 10-year period in the UDef LB in belowground biomass and dead wood pools in forest stratum i (t CO_2e ha^{-1})
$\Delta C_{LB,SOC-WP,i}$	Estimated emissions from carbon stock change over a 20-year period in the UDef LB soil organic carbon and wood product pools in forest stratum i (t CO_2e ha^{-1})
i	1, 2, 3, …, *M* forest stratum
t	1, 2, 3, …, t^* years elapsed since the start of the project

For total emissions from carbon stock change in the UDef PA (Equation 18):

$$\Delta C_{MP,PA-UDef,t} = \sum_{i=1}^{M} \Delta C_{MP,PA-UDef,i,t} \quad \text{Equation 18}$$

Where:

$\Delta C_{MP,PA-UDef,t}$	Total emissions from carbon stock change in all pools in the UDef PA in year t (t CO_{2e})
$\Delta C_{MP,PA-UDef,i,t}$	Total emissions from carbon stock change in all pools in forest stratum i in the UDef PA in year t (t CO_{2e})
i	1, 2, 3, …, M forest stratum
t	1, 2, 3, …, t* years elapsed since the start of the project

For total emissions from carbon stock change in the UDef LB (Equation 19):

$$\Delta C_{MP,LB-UDef,t} = \sum_{i=1}^{M} \Delta C_{MP,LB-UDef,i,t}$$ Equation 19

Where:

$\Delta C_{MP,LB-UDef,t}$	Total emissions from carbon stock change in all pools in the UDef LB in year t (t CO_{2e})
$\Delta C_{MP,LB-UDef,i,t}$	Total emissions from carbon stock change in all pools in forest stratum i in the UDef LB in year t (t CO_{2e})
i	1, 2, 3, ..., M forest stratum
t	1, 2, 3, ..., t* years elapsed since the start of the project

3.2.2.3 Estimation of Other GHG Emissions

Any other GHG emissions that occur due to project activities in the UDef PA were estimated using the following equation (Equation 20):

$$GHG_{MP,PA-UDef,E,t} = \sum_{t=1}^{t*} \sum_{i=1}^{M} \left(E_{MP,FC,i,t} + E_{MP,BiomassBurn,i,t} + N20_{MP,direct-N,i,t}\right)$$ Equation 20

Where:

$GHG_{MP,PA-UDef,E,t}$	Cumulative other GHG emissions because of project activities in the UDef PA in year t (t CO_{2e})
$E_{MP,FC,i,t}$	Emissions from fossil fuel combustion in forest stratum i in year t (t CO_{2e})
$E_{MP,BiomassBurn,i,t}$	Non-CO_2 emissions due to biomass burning as part of project activities in forest stratum i in year t (t CO_{2e})
$N20_{MP,direct-N,i,t}$	N2O emissions resulting from nitrogen application on an alternative land use in forest stratum i in year t (t CO_{2e})
i	1, 2, 3, ..., M forest stratum
t	1, 2, 3, ..., t* years elapsed since the start of the project

3.2.2.4 Estimated Net Project Emissions

The net project emissions for UDef PA were calculated as (Equation 21):

$$\Delta C_{MP,PA-UDef,t} = \sum_{t=1}^{t*} \sum_{i=1}^{M} \left(\Delta C_{MP,PA-UDef,i,t}\right) + GHG_{MP,PA-UDef,E,t}$$ Equation 21

Where:

$\Delta C_{MP,PA-UDef,t}$	Cumulative net GHG emissions in the UDef PA in year t (t CO_{2e})

$\Delta C_{MP,PA-UDef,i,t}$	Total emissions from carbon stock change in all pools in forest stratum i in the UDef PA in year t (t CO_{2e})
$GHG_{MP,PA-UDef,E,t}$	Cumulative other GHG emissions because of project activities in the UDef PA in year t (t CO_{2e})
i	1, 2, 3, …, M forest stratum
t	1, 2, 3, …, t* years elapsed since the start of the project

The net project emissions for UDef LB were calculated as (Equation 22):

$$\Delta C_{MP,LB-UDef,t} = \sum_{t=1}^{t*} \sum_{i=1}^{M} (\Delta C_{MP,LB-UDef,i,t}) \quad \text{Equation 22}$$

Where:

$\Delta C_{MP,LB-UDef,t}$	Cumulative net GHG emissions in the UDef LB in year t (t CO_{2e})
$\Delta C_{MP,LB-UDef,i,t}$	Total emissions from carbon stock change in all pools in forest stratum i in the UDef LB in year t (t CO_{2e})
i	1, 2, 3, …, M forest stratum
t	1, 2, 3, …, t* years elapsed since the start of the project

The complete project emissions assessment procedure can be verified in the attached annex[205] on project area monitoring. This comprehensive document provides detailed information on all relevant aspects of the emissions evaluation process, including methodology application, data collection procedures, calculations, and results analysis, all conducted in strict accordance with the VMD0055 module requirements. The monitoring annex contains the technical documentation that supports the emissions quantification presented in this report, ensuring full transparency and traceability of the assessment process. All procedures, assumptions, and calculations follow the standardized approaches outlined in the VMD0055 methodology for jurisdictional and nested REDD+ programs, providing stakeholders with the necessary technical details to verify and validate the reported emissions reductions.

The final result for project issuance during the monitoring period can be seen for UDef PA in Table 3.11 and for UDef LB in Table 3.12. Further details of the quantification process can be verified in the calculation spreadsheet[206].

[205] SatelliteMonitoring.zip
[206] GHGCalculation.zip

Table 3.11. Cumulative net GHG emissions in the UDef PA.

Year	Start	End	$\Delta C_{MP,PA\text{-}Udef,t}$ (t CO_2e)	$GHG_{MP,PA\text{-}UDef,E,t}$ (t CO_2e)	$\Delta C_{MP,PA\text{-}UDef,t}$ (t CO_2e)
2022	31-Aug-2022	31-Dec-2022	1,255.83	90.40	1,346.24
2023	1-Jan-2023	31-Dec-2023	3,753.81	268.27	4,022.08
2024	1-Jan-2024	31-Dec-2024	3,834.37	268.27	4,102.64
2025	1-Jan-2025	15-Aug-2025	2,505.95	166.84	2,672.80
Total			11,349.97	793.79	12,143.76

Table 3.12. Cumulative net GHG emissions in the UDef LB.

Year	Start	End	$\Delta C_{MP,LB\text{-}UDef,t}$ (t CO_2e)
2022	31-Aug-2022	31-Dec-2022	39,379.86
2023	1-Jan-2023	31-Dec-2023	117,710.28
2024	1-Jan-2024	31-Dec-2024	120,236.61
2025	1-Jan-2025	15-Aug-2025	78,580.66
Total			355,907.42

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

Four types of leakage must be assessed:

1) Activity shifting by geographically constrained agents.
2) Activity shifting by geographically mobile agents.
3) Market-effects leakage; and
4) Leakage mitigation emissions.

Emissions from these sources are summed up to yield an estimate of the total leakage emissions for the project activities over the monitoring period.

Leakage due to activity shifting by geographically constrained agents is monitored within UDef LB. Baseline unplanned deforestation allocated within the UDef LB compared to the deforestation monitored ex post.

Leakage due to activity shifting by geographically mobile agents is estimated because of:

a) The net reduction (displacement) of deforestation from the baseline to the end of the monitoring period within the combined area of the UDef PA and UDef LB;

b) The proportion of geographically mobile agents of deforestation projected in the baseline; and

c) Area-weighted emission factors for areas accessible to geographically mobile deforestation agents outside of the UDef LB.

Market-effects leakage occurs where in the baseline case commodities were produced for regional, national or international markets. However, the baseline of the land-use change project does not consider market effects, as the deforestation agent is interested solely and exclusively in converting forests to pasture. Therefore, this value was considered zero.

Emissions due to leakage mitigation measures correspond to non-CO_2 GHG emissions from biomass burning or fertilizer use, and must be quantified. No leakage mitigation measures involving biomass burning or fertilizer use were implemented in this project. Consequently, emissions from such activities were not quantified and were considered zero for the purposes of this assessment.

Figure 4 summarizes the key leakage estimation steps to be undertaken by the project proponent.

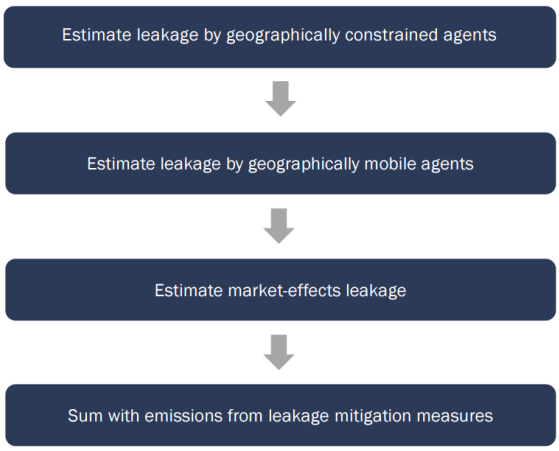


Figure 3.8. Leakage estimation steps.

3.2.3.1 Emissions From Displacement of Geographically Constrained Activities in the UDef LB

Net Carbon Stock Difference in the UDef LB During the Monitoring Period Versus the Baseline Scenario

The spatial extent of the UDef LB was defined by Verra following the criteria described in Section A1.2.2 of Appendix 1 and was provided to the project proponent (Figure 3.9). Baseline AD was allocated by Verra to each project's UDef LB following Section A1.4.3 of Appendix 1.

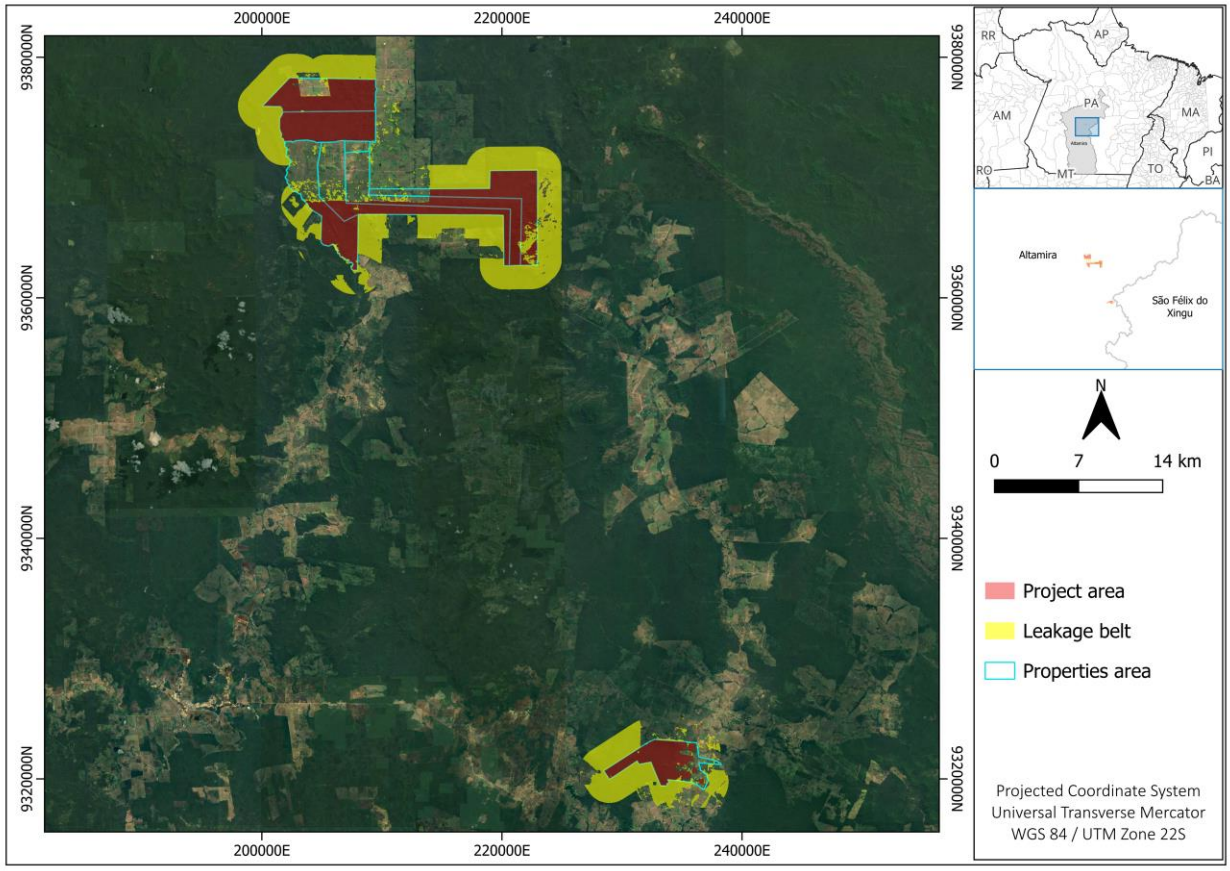


Figure 3.9. Leakage belt area supplied by Verra according to module VMD0055.

The difference in carbon stocks between the baseline scenario and the monitoring period within the UDef LB since the project start date to year t was calculated as $\Delta C_{LK\text{-}net\text{-}LB,t}$. Note that $\Delta C_{LK\text{-}net\text{-}LB,t}$ may be less than zero at this step, where forest carbon stocks in the monitoring period are greater than projected under the baseline. Negative values are accounted for in a later step such that positive leakage is never attributed to the project (Equation 23).

$$\Delta C_{LK-net-LB,t} = \Delta C_{BSL,LB-UDef,t} - \Delta C_{MP,LB-UDef,t} \quad \text{Equation 23}$$

Where:

$\Delta C_{LK-net-LB,t}$	Difference in cumulative net GHG emissions between the baseline and monitoring period within the UDef LB due to unplanned deforestation in year t (t CO_{2e})
$\Delta C_{BSL,LB-UDef,t}$	Cumulative net GHG emissions in the baseline in year t within the UDef LB since the project start (t CO_{2e})
$\Delta C_{MP,LB-UDef,t}$	Cumulative net monitored GHG emissions in year t within the UDef LB since the project start (t CO_{2e})
t	1, 2, 3, …, t^* years elapsed since the start of the project

The $\Delta C_{LK\text{-}net\text{-}LB,t}$ values for the current monitoring period can be verified in Table 3.13. Since there was no increase in the leakage deforestation rate in the presence of the project, leakage for emissions from displacement of geographically constrained activities in the UDef LB was not considered. This is in accordance with the VMD0055 module, which states that positive leakage is never attributed to the project.

Table 3.13. Difference in cumulative net GHG emissions between the baseline and monitoring period within the UDef LB due to unplanned deforestation.

Year	Start	End	$\Delta C_{BSL,LB\text{-}UDef,t}$ (t CO_2e)	$\Delta C_{MP,LB\text{-}UDef,t}$ (t CO_2e)	$\Delta C_{LK\text{-}net\text{-}LB,t}$ (t CO_2e)
2022	31-Aug-2022	31-Dec-2022	54,531.94	39,379.86	0.00
2023	1-Jan-2023	31-Dec-2023	163,001.33	117,710.28	0.00
2024	1-Jan-2024	31-Dec-2024	166,499.71	120,236.61	0.00
2025	1-Jan-2025	15-Aug-2025	108,815.92	78,580.66	0.00
Total			492,848.89	355,907.42	0.00

Other Deforestation Emissions Within the UDef LB During the Monitoring Period

Where significant, fossil-fuel related and non-CO_2 GHG emissions occurring in the UDef LB must be evaluated. Fossil-fuel related and non-CO_2 GHG emissions per unit area resulting from land cover transition in the UDef LB are assumed to equal those estimated for the baseline period in the UDef PA. These emissions are calculated by summing the total emissions over the baseline period for each forest stratum across the UDef PA and then dividing this by the sum of AD per forest stratum over the baseline period using Equation 24. These average emissions per unit area are then applied to the difference in AD between the baseline and monitoring period within the UDef LB in Equation 25.

$$GHG_{LB,E,i,t} = \frac{\sum_{t=1}^{t*}\left(E_{BSL,FC,i,t} + E_{BSL,BiomassBurn,i,t} + N20_{BSL,direct-N,i,t}\right)}{\sum_{t=1}^{t*} AD_{BSL,PA-UDef,i,t}} \quad \text{Equation 24}$$

Where:

$GHG_{LB,E,i,t}$	Annual per ha other GHG emissions in the UDef LB because of deforestation activities in forest stratum i in year t (t CO_2e ha^{-1})
$E_{BSL,FC,i,t}$	Emissions from fossil fuel combustion in forest stratum i in year t (t CO_2e)
$E_{BSL,BiomassBurn,i,t}$	Non-CO_2 emissions due to biomass burning as part of project activities in forest stratum i in year t (t CO_2e)
$N20_{BSL,direct-N,i,t}$	Direct N_2O emissions because of nitrogen application on an alternative land use in forest stratum i in year t (t CO_2e)
$AD_{BSL,PA-UDef,i,t}$	UDef AD in the baseline scenario allocated to forest stratum *i* in the UDef PA for year *t* (ha)
i	1, 2, 3, …, *M* forest stratum

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

$$GHG_{MP,LK-UDef,E,t} = \sum_{t=1}^{t^*}\sum_{i=1}^{M}\left(\left(AD_{BSL,LB-UDef,i,t} - AD_{MP,LB-UDef,i,t}\right) \times GHG_{LB,E,i,t}\right) \quad \text{Equation 25}$$

Where:

$GHG_{MP,LK-UDef,E,t}$	Cumulative other GHG emissions in year *t* because of unplanned deforestation within the UDef LB during the monitoring period (t CO_2e)
$AD_{BSL,LB-UDef,i,t}$	UDef AD in the baseline scenario allocated to forest stratum *i* in the UDef LB for year t (ha)
$AD_{MP,LB-UDef,i,t}$	UDef AD in the UDef LB in forest stratum *i* in year t (ha)
$GHG_{LB,E,i,t}$	Annual per ha other GHG emissions in the UDef LB because of deforestation activities in forest stratum i in year t (t CO_2e ha^{-1})
i	1, 2, 3, …, *M* forest stratum
t	1, 2, 3, …, t^* years elapsed since the start of the project

The values for $GHG_{MP,LK-UDef,E,t}$ can be checked in Table 3.14. Since there was no increase in the leakage deforestation rate in the presence of the project, leakage for emissions from displacement of geographically constrained activities in the UDef LB was not considered. This is in accordance with the VMD0055 module, which states that positive leakage is never attributed to the project.

Table 3.14. Cumulative other GHG emissions in year t because of unplanned deforestation within the UDef LB during the monitoring period.

Year	Start	End	$GHG_{LB,E,As,t}$ (t CO_2e ha^{-1})	$GHG_{LB,E,Ds,t}$ (t CO_2e ha^{-1})	$GHG_{MP,LK-UDef,E,t}$ (t CO_2e)
2022	31-Aug-2022	31-Dec-2022	34.53	34.53	0.00
2023	1-Jan-2023	31-Dec-2023	34.53	34.53	0.00
2024	1-Jan-2024	31-Dec-2024	34.53	34.53	0.00
2025	1-Jan-2025	15-Aug-2025	34.53	34.53	0.00
Total					0.00

Net GHG Emissions Within the UDef LB During the Monitoring Period

The net GHG emissions were summed for the UDef LB as (Equation 26):

$$\Delta C_{LK,LB,t} = \Delta C_{LK-net-LB,t} + GHG_{MP,LK-UDef,E,t} \quad \text{Equation 26}$$

Where:

$\Delta C_{LK,LB,t}$	Cumulative net GHG leakage emissions within the UDef LB during the monitoring period in year t (t CO_2e)
$\Delta C_{LK-net-LB,t}$	Difference in cumulative net GHG emissions between the baseline and monitoring period within the UDef LB due to unplanned deforestation in year t (t CO_2e)
$GHG_{MP,LK-UDef,E,t}$	Cumulative other GHG emissions in year t because of unplanned deforestation within the UDef LB during the monitoring period (t CO_2e)
t	1, 2, 3, …, t^* years elapsed since the start of the project

The values for $\Delta C_{LK,LB,t}$ can be checked in Table 3.15. Since there was no increase in the leakage deforestation rate in the presence of the project, leakage for emissions from displacement of geographically constrained activities in the UDef LB was not considered[207]. This is in accordance with the VMD0055 module, which states that positive leakage is never attributed to the project.

Table 3.15. Cumulative net GHG leakage emissions within the UDef LB during the monitoring period.

Year	Start	End	$\Delta C_{LK\text{-}net\text{-}LB,t}$ (t CO_2e)	$GHG_{MP,LK\text{-}UDef,E,t}$ (t CO_2e)	$\Delta C_{LK,LB,t}$ (t CO_2e)
2022	31-Aug-2022	31-Dec-2022	0.00	0.00	0.00
2023	1-Jan-2023	31-Dec-2023	0.00	0.00	0.00
2024	1-Jan-2024	31-Dec-2024	0.00	0.00	0.00
2025	1-Jan-2025	15-Aug-2025	0.00	0.00	0.00
Total			**0.00**	**0.00**	**0.00**

3.2.3.2 Emissions from Activity Shifting Due to Displacement of Unplanned Deforestation to Areas Outside the UDef LB

Estimation of the Proportion of Migrated Land Cover Transition Agents in the Baseline (PROPMIG)

Households located within the project activities region were randomly sampled to determine the proportion that met the following criteria:

1) Migrated into the area within the last five years; and

2) Engages in land use activities identified as a baseline driver of deforestation.

The proportion of sampled households meeting these criteria is termed $PROP_{MIG}$. The sampling requirements and minimum sample size followed the best-practice guidelines for estimating a proportional parameter with a 20% relative precision with a 95% confidence level provided in Appendix 1 of the most recent version of Sampling and surveys for CDM project activities and programmes of activities.

[207] SatelliteMonitoring.zip

The sampling methodology employed in this study follows the guidelines established in the Clean Development Mechanism (CDM) document "Sampling and surveys for CDM project activities and programmes of activities" (Version 04.0) to ensure unbiased and reliable estimates of the parameters of interest while maintaining statistical rigor and compliance with CDM standards. The target population for this study was considered homogeneous in nature, consisting of a total of 21 houses within the project area, and given the relatively small population size and the assumption of homogeneity across the target units, simple random sampling was identified as the most appropriate sampling approach. According to the CDM methodology, samples were selected using a simple random sampling approach, with the sample size calculated using the Equation 27. This equation is specifically designed for finite populations where the parameter of interest is a proportion, ensuring that the sample size calculation accounts for the finite population correction factor, and a 95% confidence criterion was applied, meaning that the margin of error in the estimate does not exceed ±10% in relative terms.

$$n \geq \frac{1.96^2 \times N \times p(1-p)}{(N-1) \times 0.2^2 \times p^2 + 1.96^2 \times p(1-p)}$$ Equation 27

Where:

n	Sample size
N	Total number of households (21)
p	Our expected proportion (0.50)
1.96	Represents the 95% confidence required
0.2	Represents the 20% relative precision

According to Equation 27 and the values provided, the number of samples to be performed is 17 houses. Of the 17 houses sampled, only one met the criteria for migration to the area in the past five years and involvement in land use activities identified as a driving factor for deforestation[208]. Therefore, the value of $PROP_{MIG}$ represents 0.06. This assessment must be repeated within two years prior to the start of each new BVP and the estimated proportions are assumed to remain constant for the BVP.

Total Area of Activity Shifting to Outside the UDef LB

It is conservatively assumed that geographically mobile agents of unplanned deforestation recently settled in the project activities region are primarily driven by a need to secure agricultural land. The amount of leakage to areas outside the UDef LB is taken as the total area of avoided land cover transition in the UDef PA, scaled by the proportion of recent migration ($PROP_{MIG}$). Therefore, the cumulative area outside the UDef LB experiencing land cover conversion due to activity shifting was calculated according to Equation 28.

[208] SocialDiagnosis.zip

$$AD_{AS-OLB,t} = PROP_{MIG,t} \times \sum_{t=1}^{t*} \sum_{i=1}^{M} \left(AD_{BSL,PA-UDef,i,t} - AD_{MP,PA-UDef,i,t} \right)$$ Equation 28

Where:

$AD_{AS-OLB,t}$	Cumulative area outside the UDef LB experiencing land cover conversion due to activity shifting in year *t* (ha)
$PROP_{MIG,t}$	Proportion of households living in the project activities region are recent migrants and are engaging in land use activities identified as a baseline driver of unplanned deforestation, as calculated for year *t* (proportion)
$AD_{BSL,PA-UDef,i,t}$	UDef AD in the baseline scenario allocated to forest stratum *i* in the UDef PA for year *t* (ha)
$AD_{MP,PA-UDef,i,t}$	UDef AD in the UDef PA in forest stratum *i* in year *t* (ha)
i	1, 2, 3, …, *M* forest stratum
t	1, 2, 3, …, *t** years elapsed since the start of the project

Where, at any point in time, $AD_{AS-OLB,t} \geq A_{Available}$, then $AD_{AS-OLB,t}$ will be equal to zero for the remainder of the BVP.

Emissions from Activity Shifting to Areas Outside the UDef LB

The area of deforestation that is displaced from the UDef PA ($AD_{AS-OLB,t}$) is assumed to result in land cover conversion of an equal extent outside the UDef LB (Equation 29).

$$\Delta C_{LK,OLB,t} = AD_{AS-OLB,t} \times \Delta C_{OLB,t}$$ Equation 29

Where:

$\Delta C_{LK,OLB,t}$	Cumulative total emissions from carbon stock change due to activity shifting to areas available outside the UDef LB in year t (t CO_2e)
$AD_{AS-OLB,t}$	Cumulative area outside the UDef LB experiencing land cover transition due to activity shifting in year *t* (ha)
$\Delta C_{OLB,t}$	Emissions from carbon stock change due to land cover transition in areas available for activity shifting outside the UDef LB, as calculated for year *t* (t CO_2e ha^{-1})
t	1, 2, 3, …, *t** years elapsed since the start of the project

The results for the $\Delta C_{LK,OLB,t}$ parameter can be found in Table 3.16.

Table 3.16. Cumulative total emissions from carbon stock change due to activity shifting to areas available outside the UDef LB.

$PROP_{MIG}$	0.06				
Year	Start	End	$AD_{AS-OLB,t}$ (ha)	$\Delta C_{OLB,t}$ (t CO_2e)	$\Delta C_{LK,OLB,t}$ (t CO_2e)
2022	31-Aug-2022	31-Dec-2022	4.82	424.99	2,050.38
2023	1-Jan-2023	31-Dec-2023	14.32	424.99	6,084.47
2024	1-Jan-2024	31-Dec-2024	14.32	424.99	6,084.47
2025	1-Jan-2025	15-Aug-2025	8.90	424.99	3,784.04
Total			42.36		18,003.38

3.2.3.3 Estimation of Total Leakage from Displacement of Unplanned Deforestation

Total activity-shifting leakage emissions are the sum of leakage from within and outside the UDef LB (Equation 30). Where total leakage is calculated to be less than zero, $\Delta C_{LK-AS,t}$ is assigned a value of zero.

$$\Delta C_{LK-AS,t} = \Delta C_{LK,LB,t} + \Delta C_{LK,OLB,t} \quad \text{Equation 30}$$

Where:

$\Delta C_{LK-AS,t}$	Cumulative net GHG leakage emissions due to the displacement of unplanned deforestation activities in year *t* (t CO_2e)
$\Delta C_{LK,LB,t}$	Cumulative net GHG leakage emissions within the UDef LB during the monitoring period in year *t* (t CO_2e)
$\Delta C_{LK,OLB,t}$	Cumulative total emissions from carbon stock change due to activity shifting to areas available outside the UDef LB in year *t* (t CO_2e)
t	1, 2, 3, …, *t** years elapsed since the start of the project

The results of the $\Delta C_{LK-AS,t}$ parameter for the monitoring period are described in Table 3.17.

Table 3.17. Cumulative net GHG leakage emissions due to the displacement of unplanned deforestation activities.

Year	Start	End	$\Delta C_{LK,LB,t}$ (t CO_2e)	$\Delta C_{LK,OLB,t}$ (t CO_2e)	$\Delta C_{LK-AS,t}$ (t CO_2e)
2022	31-Aug-2022	31-Dec-2022	0.00	2,050.38	2,050.38
2023	1-Jan-2023	31-Dec-2023	0.00	6,084.47	6,084.47
2024	1-Jan-2024	31-Dec-2024	0.00	6,084.47	6,084.47
2025	1-Jan-2025	15-Aug-2025	0.00	3,784.04	3,784.04
Total			0.00	18,003.38	18,003.38

3.2.3.4 Estimation of Summed Leakage Emissions

Total leakage emissions are equal to the summed emissions from activity shifting, market-effects, and GHG emissions associated with leakage mitigation measures (Equation 31).

$$\Delta C_{LK-UDef,t} = \Delta C_{LK-AS,t} + \Delta C_{LK-ME,t} + GHG_{LK,E.t} \quad \text{Equation 31}$$

Where:

$\Delta C_{LK-UDef,t}$	Cumulative net GHG emissions due to leakage from the project activity in year t (t CO_2e)
$\Delta C_{LK-AS,t}$	Cumulative net GHG leakage emissions due to the displacement of unplanned deforestation in year t (t CO_2e)
$\Delta C_{LK-ME,t}$	Cumulative net GHG emissions due to market-effects leakage in year t, from VMD0011 (t CO_2e)
$GHG_{LK,E.t}$	Cumulative other GHG emissions because of leakage mitigation measures in year t (t CO_2e)
t	1, 2, 3, …, t^* years elapsed since the start of the project

Table 3.18 presents a comprehensive overview of cumulative emissions associated with leakage measures for the monitoring period. The data track four main categories of leakage emissions: unplanned displacement due to deforestation ($\Delta C_{LK\text{-}UDef,t}$), activity shift ($\Delta C_{LK\text{-}AS,t}$), market effects ($\Delta C_{LK\text{-}ME,t}$), and other GHG emissions resulting from leakage mitigation measures ($GHG_{LK,E,t}$). Further details of the quantification process can be verified in the calculation spreadsheet[209].

Table 3.18. Estimation of Summed Leakage Emissions.

Year	Start	End	$\Delta C_{LK\text{-}AS,t}$ (t CO_2e)	$\Delta C_{LK\text{-}ME,t}$ (t CO_2e)	$GHG_{LK,E,t}$ (t CO_2e)	$\Delta C_{LK\text{-}UDef,t}$ (t CO_2e)
2022	31-Aug-2022	31-Dec-2022	2,050.38	0.00	0.00	2,050.38
2023	1-Jan-2023	31-Dec-2023	6,084.47	0.00	0.00	6,084.47
2024	1-Jan-2024	31-Dec-2024	6,084.47	0.00	0.00	6,084.47
2025	1-Jan-2025	15-Aug-2025	3,784.04	0.00	0.00	3,784.04
Total			18,003.38	0.00	0.00	18,003.38

3.2.4 GHG Emission Reductions and Carbon Dioxide Removals (VCS, 3.15, 4.1)

The total net GHG emissions reductions of the avoiding unplanned deforestation project activity were calculated as follows (Equation 32):

$$NER_{UDef,t} = \Delta C_{BSL,PA-UDef,t} - \Delta C_{MP,PA-UDef,t} - \Delta C_{LK-UDef,t} \quad \text{Equation 32}$$

Where:

$NER_{UDef,t}$	Cumulative total net GHG emission reductions of the project activity in year t (t CO_2e)

[209] GHGCalculation.zip

$NER_{UDef,t}$	Cumulative total net GHG emission reductions of the project activity in year t (t CO_2e)
$\Delta C_{BSL,PA-UDef,t}$	Cumulative net GHG emissions in the baseline within the UDef PA in year t (t CO_2e)
$\Delta C_{MP,PA-UDef,t}$	Total emissions from carbon stock change in all pools in the UDef PA in year t (t CO_2e)
$\Delta C_{LK-UDef,t}$	Cumulative net GHG emissions due to leakage from the UDef PA in year t (t CO_2e)
t	1, 2, 3, …, t^* years elapsed since the start of the project

Table 3.19 provides a detailed breakdown of greenhouse gas emission reductions achieved through the prevention of unplanned deforestation within the designated project area across the monitoring period from August 2022 to August 2025. The analysis encompasses baseline emission scenarios, actual carbon stock variations across all pools, leakage-related emissions, and the net environmental benefits quantified in t CO_2e. Further details of the quantification process can be verified in the calculation spreadsheet[210].

Table 3.19. Cumulative total net GHG emission reductions of the project activity.

Year	Start	End	$\Delta C_{BSL,PA-UDef,t}$ (t CO_2e)	$\Delta C_{MP,PA-UDef,i,t}$ (t CO_2e)	$\Delta C_{LK-UDef,t}$ (t CO_2e)	$NER_{UDef,t}$ (t CO_2e)
2022	31-Aug-2022	31-Dec-2022	42,302.90	1,255.83	2,050.38	38,996.68
2023	1-Jan-2023	31-Dec-2023	126,386.11	3,753.81	6,084.47	116,547.83
2024	1-Jan-2024	31-Dec-2024	128,917.73	3,834.37	6,084.47	118,998.88
2025	1-Jan-2025	15-Aug-2025	83,987.55	2,505.95	3,784.04	77,697.55
Total			381,594.29	11,349.97	18,003.38	352,240.94

3.2.4.1 Calculation of AFOLU Pooled Buffer Account Contribution

The number of credits to be held in the AFOLU pooled buffer account was determined as a percentage of the total carbon stock benefits. For avoiding unplanned deforestation project activities, this is calculated using Equation 33. Leakage emissions do not factor into the buffer calculations.

$$Buffer_{Total,t} = \left(\Delta C_{BSL,PA-UDef,t} - \Delta C_{MP,PA-UDef,t}\right) \times Buffer\% \qquad \text{Equation 33}$$

Where:

$Buffer_{Total,t}$	Cumulative total permanence risk buffer withholding in year t (t CO_2e)
$\Delta C_{BSL,PA-UDef,t}$	Cumulative net GHG emissions in the baseline within the UDef PA in year t (t CO_2e)

[210] GHGCalculation.zip

$\Delta C_{MP,PA-UDef,t}$	Total emissions from carbon stock change in all pools in the UDef PA in year t (t CO_2e)
$Buffer\%$	Buffer withholding percentage, from VCS AFOLU Non-Permanence Risk Tool (%)
t	1, 2, 3, …, t^* years elapsed since the start of the project

According to the VCS AFOLU Non-Permanence Risk Tool[211], the buffer for the present monitoring period is 15%.

3.2.4.2 Calculation of Verified Carbon Units

To calculate the number of potential Verified Carbon Units (VCUs) for years in which monitoring has been conducted and submitted for verification, this section uses the following equation (Equation 34):

$$VCU_{AUDef,t} = \left(NER_{UDef,t} - NER_{UDef,t-1}\right) - \left(Buffer_{Total,t} - Buffer_{Total,t-1}\right) \quad \text{Equation 34}$$

Where:

$VCU_{AUDef,t}$	Number of potential Verified Carbon Units generated in year t (VCU)
$NER_{UDef,t}$	Cumulative total net GHG emission reductions of the project activity in year t (t CO_2e)
$NER_{UDef,t-1}$	Cumulative total net GHG emission reductions of the project activity in year t – 1 (t CO_2e)
$Buffer_{Total,t}$	Cumulative total permanence risk buffer withholding in year t (t CO_2e)
$Buffer_{Total,t-1}$	Cumulative total permanence risk buffer withholding in year t − 1 (t CO_2e)
t	1, 2, 3, …, t^* years elapsed since the start of the project

Where this equation results in a decimal number, the number must be rounded down.

According to the CCB v3.0 and VCS v4.4 monitoring report template, the following information is provided (Table 3.20)

Table 3.20. Information about the non-permanence risk rating.

State the non-permanence risk rating (%)	15%
Has the non-permanence risk report been attached as either an appendix or a separate document?	☒ Yes ☐ No

[211] VCS_NPR_REP_3738_31_08_2022_15_08_2025.pdf

For ARR and IFM projects with harvesting, state, in t CO_2e, the Long-term Average (LTA).	N/a
Has the LTA been updated based on monitored data, if applicable?	N/a
State, in t CO_2e, the expected total GHG benefit to date.	352,240.94
If a loss occurred (including a loss event or reversal), state the amount of t CO_2e lost:	11,349.97

3.2.4.3 Calculation of ex post Verified Carbon Units (VCUs)

According to the CCB v3.0 and VCS v4.4 monitoring report template, the following information is provided (Table 3.21 and Table 3.22).

Table 3.21. Summary of GHG emission reductions.

Vintage period	Baseline emissions (t CO_2e)	Project emissions (t CO_2e)	Leakage emissions (t CO_2e)	Buffer pool allocation (t CO_2e)	Total VCU issuance (t CO_2e)
31-Aug-2022 to 31-Dec-2022	42,302.90	1,255.83	2,050.38	6,157.06	32,839
01-Jan-2023 to 31-Dec-2023	126,386.11	3,753.81	6,084.47	18,394.85	98,152
01-Jan-2024 to 31-Dec-2024	128,917.73	3,834.37	6,084.47	18,762.50	100,236
01-Jan-2025 to 15-Aug-2025	83,987.55	2,505.95	3,784.04	12,222.24	65,475
Total	381,594.29	11,349.97	18,003.38	55,536.65	296,702

Table 3.22. Estimated ex-ante reductions in GHG emissions and carbon dioxide removals and the reductions and removals achieved for the monitoring period.

Vintage period	Ex-ante estimated reductions (t CO_2e)	Achieved reductions (t CO_2e)	Percent difference (%)	Explanation for the difference
31-Aug-2022 to 31-Dec-2022	34,511.60	38,996.68	13%	The difference is mainly due to the reduction of project and leakage emissions under the project scenario. This demonstrates the effectiveness of the project activities implementation. There was a small decrease from the baseline because of the identified degradation areas and exclusion areas.
01-Jan-2023 to 31-Dec-2023	103,108.47	116,547.83	13%	
01-Jan-2024 to 31-Dec-2024	105,173.81	118,998.88	13%	
01-Jan-2025 to 15-Aug-2025*	66,693.94	77,697.55	16%	
TOTAL	309,487.82	352,240.94	14%	

*Proportional to the days of monitoring period.

3.3 Optional Criterion: Climate Change Adaptation Benefits

3.3.1 Activities and/or processes implemented for Adaptation (CCB, GL1.3)

As described in Section 3.5.3 of the Project Description Document (TdX project, 2022), most of the project activities are expected to provide adaptation benefits for the community and the biodiversity, which were divided into 4 main groups:

Group 1 – Education and access to information: the first group encompasses activities that aim to improve community communication internally and externally, enhance the documentation and access to information, and improve de quality of education services within the community. The relevance of this group of activities is evidenced by Reid et al. (2009). The study evidence that making scientific information available and accessible to communities is crucial for maintaining long-term adaptation. Besides, as highlighted by Enamul Haque et al. (2022), one of the principles that climate adaptation measures shall consider is the social empowerment of communities. Lastly, this category is aligned with the principle of encouraging learning (Stockholm Resilience Centre, 2015).

Group 2 - Biodiversity conservation: the second group encompasses activities that aim to conserve the biodiversity of the project zone, through capacity building, lectures and monitoring activities. This group of initiatives is evidenced by Enamul Haque et al. (2022) and aligns with the principle

of maintaining diversity and redundancy, as well as connectivity (Stockholm Resilience Centre, 2015).

Group 3 – Institutional Strengthening and Well-Being: the third category regards activities that aim at enhancing the governance structure of Caboclo Village and improving community well-being. The category in question is evidenced by Enamul Haque et al. (2022) since it aims at improving the coordination of action and socially empowering the community.

Group 4 - Employment and income generation: the fourth category of activities aims at diversifying the income sources of the community, as well as generating employment opportunities. This set of initiatives is aligned with the first group of climate adaptation activities highlighted by Enamul Haque et al. (2022).

The project activities carried out during this monitoring period have made progress in providing adaptation benefits for the community and biodiversity. Table 3.23 shows the planned activities and adaptation benefits. Please refer to Sections 2.1.1, 4.1.1, 4.3.1, 5.1.1 and 5.3.1 for more details on the project implementation.

Table 3.23. Planned activities and adaptation benefits.

Planned activity	Group 1: Education and access to information	Group 2: Biodiversity conservation	Group 3: Institutional strengthening and well-being	Group 4: Employment and income generation
Cooperation with public authorities to improve education	X		X	X
Improvement of access to technology, information, and leisure	X		X	
Cooperation with public authorities to improve healthcare			X	
Strengthening environmental and civic education	X	X	X	
Provision of clean and sustainable electricity to the community	X		X	
Generation of income opportunities for the community	X		X	X
Strengthening community governance and communication	X		X	
Cooperation with public authorities to improve mobility	X		X	
Conservation and enhancement of local biodiversity	X	X		X
Patrolling and surveillance of strategic checkpoints		X		X
Maintenance of firebreaks		X		X
Improvement of community and biodiversity access to water resources	X	X	X	

Regarding the activity "Cooperation with the public authorities to improve education," this initiative was designed to generate three adaptation benefits: (i) improve education and access to information by strengthening the school's teaching conditions, (ii) promote community well-being through better quality of education and student nutrition, and (iii) contribute to income generation and employment in the long term by expanding the education of community members. To achieve these objectives, important actions have already been carried out. Materials and equipment were delivered to the local school[212], directly improving teaching conditions and expanding access to educational resources (details of donated materials in Table 4.2). In addition, a school garden was implemented[213] and inaugurated with the active participation of students, teachers, and community members. The garden may in the future provide food both to complement school meals and to benefit the community, contributing to improved nutrition and healthy eating. The initiative has been embraced by teachers and coordinators of the EMEF Novo Pacto, who recognize its potential to strengthen student performance and diversify teaching practices. As a result, the community has already perceived a visible improvement in education quality, with school conditions rising from a rating of 2 to 4 on a scale of 1 to 5[214].

Regarding the activity "Improvement of access to technology, information, and leisure," this initiative was designed to provide internet connectivity to the school, health post, and community spaces. By doing so, it is expected to generate two adaptation benefits: (i) education and access to information, by expanding communication and access to knowledge resources, and (ii) community well-being, through improved opportunities for leisure, culture, and social interaction. The implementation of this activity is still pending and is scheduled for the next phases of the project.

Regarding the activity "Cooperation with the public authorities to improve healthcare," this initiative aims to strengthen the quality of health services in Caboclo Village through improvements in physical infrastructure and service provision. The activity is expected to generate a key adaptation benefit: community well-being, by ensuring greater access to quality healthcare in a context where public services remain precarious. The implementation of this activity is still pending and is expected to be carried out in the next stages of the project.

Regarding the activity "Strengthening environmental and civic education," this initiative was designed to generate three adaptation benefits: (i) enhance education and access to information, through awareness campaigns and lectures on health, citizenship, and the environment; (ii) promote community well-being, by reducing social vulnerabilities such as domestic violence and substance abuse while fostering civic participation; and (iii) conserve biodiversity, by addressing negative perceptions and increasing local awareness of environmental issues. To date, several actions have been carried out. An environmental education lecture[215] was delivered to school students, in parallel, within the community, a sensitization lecture on environmental issues was conducted, accompanied by the distribution of an educational

[212] 03_MaterialsSupply.zip
[213] 240320_SchoolGardenReportandAnnex.zip
[214] 240223_ResultsSchoolQuestionnaires.pdf
[215] 230618_LectureBiodiversity.zip

pamphlet[216] specifically tailored to the local reality. In addition, capacity-building workshops on water security and sustainable agriculture were held, leading to the creation of the Agrosustainable Working Group, a space for continuous dialogue and promotion of sustainable practices. This initiative also facilitated professional training opportunities through SENAR, including a baking course requested by the women's group and a cattle insemination course requested by the ago-sustainability group, both of which were completed with full participation and certification. Furthermore, civic engagement was strengthened through the establishment of a women's working group, which not only selected professional courses but also organized collective initiatives such as the *"Healthy Body, Strong Mind"* group to promote health, solidarity, and empowerment among women. More details about these implemented activities[217] can be consulted in Section 4.1.3 and 4.3.1.

Regarding the activity "Provision of clean and sustainable electricity to the community," this initiative focuses on installing photovoltaic panels in the school, the health post, and the community space. It is expected to provide two adaptation benefits: (i) education and access to information, through reliable access to electricity for teaching and communication, and (ii) community well-being, by improving the conditions of health and education services. The implementation of this activity is still pending and will be developed in upcoming project phases.

Regarding the activity "Generation of income opportunities for the community," this initiative was designed to generate three adaptation benefits: (i) expand education and access to information, through professional and technical training; (ii) promote community well-being, by reducing economic vulnerability, particularly among women; and (iii) foster employment and income generation, by creating direct opportunities for local hiring and capacity building. During this monitoring period, a series of actions were carried out to achieve these objectives. Community members were temporarily hired and employed as local assistants to support fauna and biomass inventory activities, ensuring immediate income opportunities for families and building technical knowledge in the process. Specific training sessions were conducted for those hired, including modules on fauna collection and handling, as well as floristic and biomass inventory techniques in Amazonian forests. In addition, four professional training courses[218] were offered: *Treinamento e Execução de IC-0% - Técnicas de Inventário Florístico da Biomassa do Solo/Carbono em Floresta Natural da Amazônia* (conducted by TCF); a *theoretical-practical course on fauna collection and handling* (conducted by BioAma); and two courses facilitated by SENAR in partnership with the Altamira Rural Producers' Union (SIRALTA) — *Artificial Insemination* in cattle, requested by the agro-sustainability group, and *Baking*, requested by the women's group. A photography course was also organized, broadening skill sets and alternative sources of income. Importantly, women were active participants in these training sessions, reinforcing the project's focus on reducing their economic vulnerability and strengthening gender inclusion. All participants received certification, increasing their professional qualifications and employability. Collectively, these actions represent a concrete step toward diversifying livelihoods, fostering technical skills, and laying the foundation for

[216] 240619_Bio-sensitizationReport.zip
[217] 01_CoursesTrainings.zip
[218] 01_CoursesTrainings.zip

sustainable income generation within Caboclo Village. More details about these implemented income opportunities can be consulted in Section 4.1.3 and 4.3.1.

Regarding the activity "Strengthening community governance and communication," this initiative was designed to strengthen local institutions and promote community well-being by fostering inclusive participation and autonomy. So far, all 12 communication channels[219] planned in the project's communication procedure have been implemented and maintained, ensuring transparency and collective engagement. Governance meetings have enabled residents to voice their opinions and influence project decisions, including the participation of women. These actions have already contributed to greater community cohesion, empowerment, and more inclusive decision-making processes.

Regarding the activity "Cooperation with the public authorities to improve mobility," this initiative is expected to provide two adaptation benefits: (i) improve access to information, by facilitating the flow of communication to and from the community, and (ii) promote well-being, through better access to healthcare, leisure, and social interaction. As a first step, a formal letter was sent to the Municipal Department of Construction, Roads and Infrastructure (SEMOVI) to seek partnership for improving mobility in Caboclo Village. In addition, a personal visit was made to SEMOVI, during which preliminary dialogues[220] were held and the department committed to future follow-ups aimed at reaching an agreement for potential technical cooperation and further alignments. The next stage will involve initiating structured discussions with SEMOVI, with active participation of community representatives to ensure that local needs are properly addressed.

Regarding the activity "Conservation and enhancement of local biodiversity," this initiative was designed to generate three adaptation benefits: (i) education and access to information, by raising awareness on ecological functions and sustainable practices; (ii) biodiversity conservation, through monitoring and protection of fauna and flora; and (iii) employment and income generation, by involving local residents in technical tasks. To date, the community has participated in a REDD+ training, which introduced the principles of environmental stewardship and prepared participants for biodiversity-related activities. Complementary actions included a workshop on the ecological functions of fauna and sustainable activities, an environmental education lecture, and a hunting pressure assessment, all of which increased ecological awareness and sustainable resource management. Technical capacity was further strengthened through training courses on forest and fauna monitoring and practical instruction on the installation and maintenance of camera traps, enabling the community to support long-term wildlife monitoring. More details are provided in Section 4.1.3 and 4.3.1.

Regarding the activity "Patrolling and surveillance of strategic checkpoints," this initiative was designed to provide two adaptation benefits: (i) biodiversity conservation, by reducing pressures on habitats through routine surveillance, and (ii) employment and income generation, by engaging community members in field activities. Building on the awareness and preparation provided by the initial REDD+ training, patrols have been structured along pre-established routes, agreed with landowners, and carried

[219] 01_CommunitcationChannels.zip
[220] 240508_Minute_SEMOVI.pdf

out four per year (approximately). These patrols involve documenting routes, as well as recording sightings and tracks of fauna[221], contributing directly to monitoring and habitat protection. To ensure effectiveness, training sessions were organized with property managers and employees responsible for surveillance, strengthening technical skills and alignment with conservation goals.

Regarding the activity "Maintenance of firebreaks," this initiative was designed to strengthen adaptation through two main benefits: (i) biodiversity conservation, by preventing habitat loss from wildfires, and (ii) community well-being, by reducing fire risks that threaten livelihoods and safety. Rooted in the initial REDD+ training, which provided the conceptual basis for fire prevention, the activity advanced through alignment meetings with landowners, where a schedule for firebreak maintenance and necessary firefighting equipment was agreed upon. Further, the community engaged in specialized capacity-building, including a brigade training[222] in partnership with the Fire Department (Figure 3.10), which combined theory and practice on fire behavior, prevention strategies, first aid, and firebreak construction. In addition, community agents and property employees participated in two further wildfire training programs, providing the basic tools and skills to act on the front line in small-scale events, providing rapid local response and preventing escalation. The project also began developing a real-time fire monitoring tool, currently in the implementation phase, which will enable early detection of fire outbreaks and faster interventions. By combining planning, repeated training, and technological innovation, this activity is building robust community resilience against wildfire threats while safeguarding biodiversity and livelihoods. Details of these activities can be consulted in Section 4.1.3 and 4.3.1.

Figure 3.10 São Félix do Xingu Fire Department in the community to provide training in fighting forest fires.

[221] IndicadoresClimaCCB.xlsx
[222] Fire_Department_Training.zip

4 COMMUNITY

4.1 Net Positive Community Impacts

4.1.1 Community Impacts (CCB, CM2.1)

The impacts on community groups are described in terms of actual or predicted direct or indirect benefits, costs, and risks. The impacts were assessed based on the analysis of the results obtained through the project activities implemented and evaluated by the community monitoring methodologies (see Section 4.3.1). It is worth noting that the results of the observed impacts were shared and validated by the community and community groups[223]. That is, how the indicators and results of project activities were obtained and analysed, had community approval and participation[224], for example, when responding to perception assessment questionnaires.

There is no cost to the community. The benefits and negative impacts, as well as changes in the well-being of the community groups in the TdX project, are presented in the Table 4.1 together with clarifications of impacts not applicable to this monitoring.

Table 4.1. Impact monitoring results on community and community groups.

Community Group	Community group living below the poverty line
Impact	Poverty reduction
Type of Benefit/Cost/Risk	Direct actual benefit
Change in Well-being	The impact has been positive, with the diversification and increase in income opportunities, and the establishment of better conditions for school teaching. The increase in income opportunities occurred through the hiring of 8 community members to participate in project activities on a temporary or permanent basis[225], with 3 being women. One person reported an increase in income from the activity, and two of them reported an improvement in their well-being. Those hired temporarily by the project did not perceive an improvement in income, which is consistent with the type of occasional hiring, but they did have new opportunities and income diversification through the hires.

[223] 240208_ProjectDocumentsDissemination.zip
[224] 240209_GovernanceMeetingJanuary2024.zip
[225] Hiring_TdX.zip

	As for the establishment of basic conditions to improve school teaching, the school garden was implemented[226], In this way, the project is progressing toward producing food that can be harvested and integrated into the school's menu or distributed to the community, thereby reducing food insecurity for its members. In addition, the alignment with the school's staff was conducted to start discussions and initial contacts with the Department of Education for the possible inclusion of the school garden in the pedagogical plan (theorical and practical learning[227]), as a tool for food and environmental education. This initiative is supported by materials[228,229,230] donated by Systemica for the development and maintenance of this activity, contributing to the improvement of access to better conditions for the education[231] , which is also a dimension of poverty reduction. All the students at the school, as well as the teachers, are benefited from these results

Community Group	Women of the community
Impact(s)	Improved gender equality
Type of Benefit/Cost/Risk	Direct actual benefit
Change in Well-being	The impact has been positive, leading to diversified income opportunities, improved conditions for school teaching, and the full participation of women in community social life and decision-making regarding relevant activities. Of the individuals hired by the project so far, three are women, and therefore, they have had new opportunities and income diversification. As for the activities aimed at the school, which bring improvements in teaching conditions, they benefit not only the students but also the teachers, who are women, through better infrastructure and availability of teaching tools.

[226] 240320_SchoolGardenReportandAnnex.zip
[227] 240208_GardenMeetingSchoolStaff.zip
[228] 231205_FirstDeliverySchoolSupplies.zip
[229] 240129_SchoolGardenTraining.zip
[230] 240621_SchoolSuppliesReport.zip
[231] 240223_ResultsSchoolQuestionnaires.pdf

	On the other hand, with the project's efforts to promote female participation in governance spaces, a participation rate of 89% among women in the community was observed, with them representing an average of 52.2% of meeting participants[232]. Finally, the project led to the creation of a women's working group. In their meetings, the women selected professional courses offered by SENAR, made available through the partnership between the project and the Altamira Rural Producers' Union (SIRALTA). Among the available options, they chose courses focused on agro-industry and social promotion. Also, within this working group, a physical activity group for women called "Healthy Body, Strong Mind" was organized, which was made possible by the organization promoted by the project and the space and materials the school now has[233].

Community Group	Local Leaders of the community
Impact(s)	Strengthened community organization
Type of Benefit/Cost/Risk	Direct actual benefit
Change in Well-being	The impact has been positive, leading to an initial empowerment of the local leaders and the community at large through the full operation of all communication channels[234] and active community participation in the project's governance. The activities carried out allowed the community to actively participate in the development and implementation of the project, advocating for their own opinions collectively. 73,6% of people were engaged and have already participated in the governance meetings[235], and the results showed that, out of the total number of individuals participating in the last governance meeting before the closure of this monitoring, 93.8% and 87.5% indicated that they believe the project has inclusive decision-making processes and allows equal participation of all community members, respectively. Also,

[232] 240229_AllProjectGovernanceMeetings.zip
[233] 240617_MeetingWomenReport
[234] 240301_ImplementationCommunicationChannels.pdf
[235] 240229_AllProjectGovernanceMeetings.zip

	68,8% of people had the perception that there has been an improvement in the unity and engagement of people in the community or at least a partial improvement[236]. For the development of these activities, the role played by local leaders was very important.

Community Group	All community
Impact(s)	Improved resilience to climate change
Type of Benefit/Cost/Risk	Direct actual benefit
Change in Well-being	The impact has been positive, leading to the building of community capacity for the sustainable use of water and the maintenance of water resources, as initial steps towards improving water security. To date, the workshop on water security and sustainable agriculture and livestock farming developed with the community[237] is the initial foundation that is capacitating the population for the maintenance and conservation of water resources, which is a benefit related to the maintenance of HCVs 4 and 5 and so, is of great importance to ensure the well-being of the community now and in the future and to improve resilience to climate change. 100% of the workshop participants stated that the topic was relevant to the community and that no doubts or points remained to be clarified after the meeting. As well as being an exhibition, the workshop aimed to create a working group of interested people for frequent discussions on the subject. In this way, the Agrosustainable Working Group was created, and at the meetings held there, people were encouraged to take part in SENAR's professional courses, which are facilitated by the partnership between Systemica and SIRALTA, around "Rural professional training" within the components related to sustainable agriculture. The members of the community who take part in the group have chosen the courses of Artificial Insemination of Cattle or Cocoa Cultivation

[236] 240223_ResultsGovernanceQuestionnaires.pdf
[237] 240226_WaterSecurityReport.zip

	Worker, one of which will be implemented depending on the best choice. In partnership with the Fire Department of São Félix do Xingu, a training program on forest fires was delivered to the community, promoting both theoretical and practical knowledge adapted to the local context. Community members were introduced to fire prevention measures, hands-on practice with specific fire-control equipment, and introductory first-aid training. These activities not only increased awareness of the causes and risks of wildfires but also strengthened the community's technical knowlodge of fire events. By enhancing preparedness and response skills, the initiative contributes to improved community resilience to climate change impacts, particularly in reducing vulnerability to forest fires and their associated environmental, social, and economic consequences[238].

Community Group	All community
Impact(s)	Greater susceptibility to cybercrimes and access to disinformation
Type of Benefit/Cost/Risk	Predicted direct risk
Change in Well-being	This risk does not apply to this monitoring report because, as the activity of improvement of internet access has not been implemented yet, there has been no observed increase in digital scams or the spread of false information. No changes in community well-being related to this negative impact were observed.

Community Group	All community
Impact(s)	Decrease in the quality of public services after the end of the cooperation agreement
Type of Benefit/Cost/Risk	Predicted direct risk

[238] Fire_Department_Training.zip

Change in Well-being	This negative impact was not observed, as the cooperation agreement signed with the Altamira's Department of Education (SEMED) allowed activities aimed at the school to take place normally[239], and the clarification meeting between Systemica and school representatives to align responsibilities in the activity. At this time, as the cooperation agreement with Altamira's Department of Health (SEMAS) has not yet been signed, in this case too, no negative impact has been observed. The cooperation agreement signed with SEMED enabled the development of activities such as the donation of materials to the school and the implementation of the school garden. The mitigation measure: a meeting between Systemica and the school staff were established, resulting in a reduction of insecurity within the community and reaffirming the objectives of the activity[240].

Community Group	All community
Impact(s)	Increased community mistrust with fears that the project could increase land inspections
Type of Benefit/Cost/Risk	Predicted direct risk
Change in Well-being	There was no increase in the community's insecurity regarding the project's potential to increase land inspections. A working group was implemented with the community, to discuss land issues and how the project will assist the community in the land regularization process. As a mitigation measure for this impact, the project held two lectures. The first lecture on land regularization reduced the insecurity of the population that the project may cause impacts that could affect their possessions. Before this activity, the percentage of people who had some fear regarding the project because of the land issue was 100%, now, only 25% still felt some insecurity[241].

[239] 231205_FirstDeliverySchoolSupplies.zip
[240] 240208_GardenMeetingSchoolStaff.zip
[241] 240220_LandIssuesReport.zip

	The second lecture in the Land Working Group was on associations and land regulation. The discussion was informed by inputs from the Altamira Municipal Environment Secretariat (SEMMA), which had previously provided relevant information on the subject. Additionally, was presented with the opportunity to participate in a course on Associativism and Cooperativism in collaboration with the Organization of Brazilian Cooperatives (OCB)[242]. In this way, no negative impact was observed.

4.1.2 Negative Community Impact Mitigation (VCS, 3.19; CCB, CM2.2)

Activities to mitigate any negative well-being impacts on community and community groups, and for maintenance or enhancement of high conservation value (HCV), were implemented by the project. Next, the adopted mitigation measures and justifications for measures not yet implemented are presented.

The activity of improving internet access through the installation of internet devices in the school, health center, and community space may lead to gatherings of people in these places for internet use. This situation may cause disturbances in schools, health center, and nearby homes, potentially generating or intensifying conflicts in the community. As a mitigation measure, internet access at health center and school will be exclusively for their use. Common internet access will be provided in the community space, equipped with infrastructure for community interactions and options for digital leisure activities. This mitigation measure has not been implemented yet, as the installation of internet devices did not occur within this monitoring period and therefore has not generated negative impacts in this regard.

Another potential negative impact associated with the internet is the increased vulnerability of the community to digital crimes and false information. Residents may not be familiar with certain scams that primarily occur through social networks, clandestine websites, and malicious advertisements. To mitigate this potential negative impact, the strengthening activity of environmental and civic education will include lectures on digital education, aiming to alert people about possible digital crimes and raise awareness of the issue. In this case as well, mitigation activities have not been developed yet, as the installation of internet devices in the community has not been implemented.

The cooperation agreements with public authorities to improve education and health brings insecurity to the community, which thinks that Systemica's actions may discourage public institutions from continuing to serve the community. Because of this, mitigation measures were implemented upon the completion of the cooperation agreement with the Education Department of Altamira (SEMED), however, they have not been implemented for the cooperation agreement with the Health Department of Altamira (SESMA) since, in this case, the agreement has not yet been concluded. As mitigation, a meeting involving Systemica and representatives from the community school was conducted with the aim of clarifying any

[242] 240618_LandandGovernanceMeetingReport

doubts among the parties, reducing community concerns about the supply of materials under the secretariat's responsibility, and reaffirming the responsibilities of each party[243].

To address the potential negative impact of increased community distrust, with fears that the project may increase land inspections, a working group was implemented with the community, to discuss land issues and how the project will assist the community in the land regularization process. As a mitigation measure for this impact, the project held two lectures[244,242][242], reducing insecurity on the part of the community as presented in section 4.3.1.

Concerning the High Conservation Values related to the community, one of the forest areas of TdX project, protects multiple springs and tributaries of the Caboclo stream, ensuring essential ecosystem services of water regulation, climate regulation, and soil protection that indirectly affect the community (HCV 4: Forest surrounding the Caboclo stream and its springs and tributaries). Therefore, the project is maintaining the ecosystem services provided by preserving the forest in the project area. The monitored parameters that guarantee the preservation of the forest can be consulted in Section 3 of this monitoring report.

In the case of HCV 5: Caboclo stream, which encompasses the riparian zone along its extent between the project area and the community and is used by the community for fishing, recreation, and water usage, it is important to develop activities for the conservation and restoration of the riparian zone, as well as activities related to sustainable water use. To date, a workshop on water security and sustainable agriculture, and livestock farming has been conducted with the community[245]. This workshop is the first step to empower community members to become active participants in the conservation of the Caboclo stream and ensure that the project is on track for improvement in the community's climate resilience in the future. Additionally, to maintain and enhance HCV 5, the project is establishing a cooperation agreement with the Municipal Department of Environmental Management (SEMMA) to implement productive agroforestry systems in degraded areas owned by family farmers, including members of the Caboclo Village community who live near the stream.

4.1.3 Net Positive Community Well-Being (VCS 3.19; CCB, CM2.3, GL1.4)

Caboclo Village is in a region that has been and continues to be under significant pressure from deforestation and illegal activities. Additionally, the State has not taken decisive and effective action in this area, which is quite isolated due to poor road conditions. Consequently, the community faces precarious conditions in essential public services such as health, electricity, education, culture, leisure, and security. This creates fertile ground for the proliferation of tensions, conflicts, and illegal activities because opportunities to access basic services are limited and not equally accessible to all.

[243] 240208_GardenMeetingSchoolStaff.zip
[244] 240220_LandIssuesReport.zip
[245] 240226_WaterSecurityReport.zip

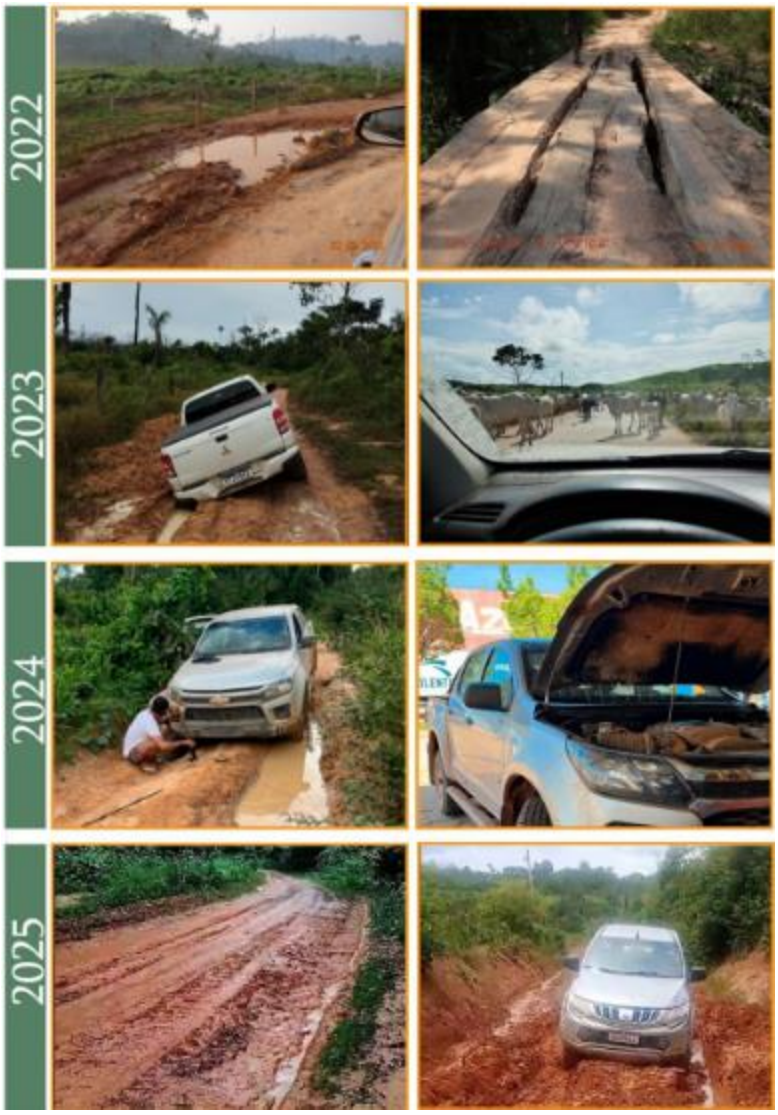


Figure 4.1 Visual reports on the Trans-Iriri road during field visits.

Recognizing that this without-project scenario would persist if no action were taken, the TdX project has developed and will continue to implement activities that generate positive impacts on the well-being of the community and identified community groups. Therefore, by the end of the project, it is expected that benefits such as poverty reduction, improved gender equality, and strengthened community organization will be achieved. Moreover, the project is promoting activities that assist the community in adapting to the probable impacts of climate change.

Regarding the impact on poverty reduction, so far, 7% of the population below the poverty line has experienced improved access to income opportunities through the temporary hiring of local assistants[246,247] and the permanent hiring of two community agents[248]. This has not yet led to an increase

[246] 230517_IFContractTempCabocloVillage.pdf
[247] 240301_FaunaContractTempCabocloVillage.zip
[248] 231030_CommunityAgentsContract.zip

in income for this group, but the hiring activities have led to a 1.5% increase in the average income of other community individuals compared to the scenario where no income increase would be expected without the project's development. Additionally, individuals who reported their income being impacted by the project also reported a positive impact on their well-being, either through increased income or a more regular income source.

Another component of the poverty reduction impact is the improvement of school teaching related to the school garden[249], which was implemented, and thus, which will soon provide vegetables for the students' meals and be integrated as a pedagogical tool for teaching at the school[250]. To set up the garden, materials and equipment were purchased in January 2024, initiating the preparation of the area for the establishment of the garden. During this period, training was given to community agents to enable them to contribute to this initial implementation. On the same date, an alignment with the teaching staff of the Municipal School of Elementary Education Novo Pacto (EMEF acronyms in Portuguese) took place, identifying the School Garden as a Pedagogical Tool, and demonstrating the interest of the coordinators and teachers of the EMEF Novo Pacto. The School Garden was presented as an alternative Pedagogical Tool, in addition to promoting healthy eating, and natural food intake by students and supporting the improvement of school performance through different disciplines (ecological, arithmetic, physical, chemical, and biological teachings; dynamic classes; diversification of learning situations).

In May 2024, the implementation of the garden (Figure 4.2) was completed with its school irrigation system, and its inauguration was held with community members, especially the children who planted previously prepared seedlings. Supplies for the maintenance of the garden until the end of 2024 were also provided[251].

Figure 4.2 Establishment of the school garden and installation of the primary irrigation system, with the collaborative participation of community members, teachers, and students.

[249] 240320_SchoolGardenReportandAnnex.zip
[250] 240208_GardenMeetingSchoolStaff.zip
[251] 240701_VegetableGardenReport.zip

This new pedagogical tool, along with the donation of materials and equipment needed by the school (Figure 4.3), has contributed to a perceived improvement in teaching conditions in the school (on a scale of 1 to 5), rising from 2 to 4, indicating a noticeable improvement according to the community itself[252]. These activities especially benefit the subgroup of those living below the poverty line in the community, and these benefits did not exist in the without-project scenario.

Figure 4.3 Materials and equipment delivered to EMEF Novo Pacto for the continuation and maintenance of the school garden.

Regarding the impact of improving gender equality, several activities have been implemented. All project activities were designed with a focus on the specific needs of the women's group. So far, there has been an improvement in income opportunities through the temporary hiring of two women for project activities. Additionally, teaching conditions for female teachers and girls at the school have improved, and there has been a notable increase in women's participation in the project. Women represented an average of 52.2% of participants in the governance meetings[253], and governance meetings have already mobilized 89% of the women from Caboclo Village, who have participated in at least one meeting.

Finally, the project led to the creation of a women's working group. In their meetings, the women selected professional courses offered by SENAR, made available through the partnership between the TdX project and the Altamira Rural Producers' Union (SIRALTA). Among the available options, they chose courses focused on agro-industry and social promotion. Also, within this working group, a physical activity group for women called "Healthy Body, Strong Mind" was organized, which was made possible by the organization promoted by the project and the space and materials the school now has[254]. These activities

[252] 240223_ResultsSchoolQuestionnaires.pdf
[253] 240229_AllProjectGovernanceMeetings.zip
[254] 240617_MeetingWomenReport

especially benefit the subgroup of women in the community, and these benefits did not exist in the without-project scenario.

Figure 4.4 Meeting held with the women's group to strengthen the group's governance.

In the case of the benefit of strengthened community organization, up to this point, all 12 communication channels with the community have been established[255], and participatory meetings, with a focus on governance, have been organized at different moments. In a scenario where the community had no social organization, the project has already conducted five governance meetings with an average participation of 24.5% of community members, including an average of 32.2% of women, and active involvement of local leaders[256].

Therefore, the activities are already having a positive impact on the lack of political culture and collective identification in the community. This is because, through these activities, the project is contributing to community empowerment to participate in the design and implementation of project activities that positively impact their well-being, advocating for their own opinions collectively and minimizing potential conflicts. As a result, out of the total number of individuals participating in the last governance meeting before the closure of this monitoring (in January 2024), 93.8% and 87.5% indicated that they believe the project has inclusive decision-making processes and allows equal participation of all community members, respectively. Additionally, another 68.6% of individuals reported believing that the unity among community members has improved after the development of governance activities[257].

Regarding the benefit of increasing the community's resilience to climate change, several activities have been implemented. Firebreak maintenance and fire control training in forest areas have helped safeguard the project area (see Section 2.1.1) while also strengthening community members' technical capacity to

[255] 240301_ImplementationCommunicationChannels.pdf
[256] 240229_AllProjectGovernanceMeetings.zip
[257] 240223_ResultsGovernanceQuestionnaires.pdf

combat wildfires[258]. In May 2024, a 40-hour training course was delivered to brigade members, including employees of Fazenda Santa Maria and workers from the project area. The training covered wildfire prevention and suppression, incorporated Physical Aptitude Tests and Skill Assessments in the use of agricultural tools, and included practical instructions for fire control[259]. In July 2025, an additional training session was held[260], focusing on reinforcing general knowledge of wildfire prevention and suppression, with a strong emphasis on first aid, an essential component given the remote location of the properties and the need for rapid and effective emergency response.

Figure 4.5 Construction of firebreaks on properties and training in forest fire management and first aid.

Furthermore, a specific training program[261] was structured in partnership with the Fire Department of São Félix do Xingu, aimed at strengthening community knowledge on wildfire prevention and empowering residents to act as true environmental agents within the region. These combined efforts are preventing fire expansion and mitigating the potential savannization of the region, thereby enhancing the community's resilience to climate change.

[258] 240416_ProjectAreaMonitoringEvidence.zip
[259] FirefightingCourse.zip
[260] 250722_FireTraining_SEFER.zip
[261] Fire_Department_Training.zip

Figure 4.6 Practical activity of the fire department together with community members during the training.

Additionally, a workshop was organized for community members to build their capacity for the sustainable use of water and the maintenance of water resources[262]. This is directly related to preserving High Conservation Values (HCVs) 4 and 5, which are associated with community well-being as well. 100% of the participants stated that the topic was relevant to the community and that no doubts or points remained to be clarified after the meeting.

Figure 4.7 Presentation on water security and sustainable agriculture.

In addition to serving as an exhibition, the workshop also aimed to establish a working group for regular discussions on sustainable practices. This initiative led to the creation of the Agrosustainable Working Group, through which community members were encouraged to participate in professional training courses offered by SENAR in partnership with the TdX project and SIRALTA.

[262] 240226_WaterSecurityReport.zip

As a result, in September 2024, two training courses were delivered to the Caboclo Village community: one on baking[263], requested by the women's group, and another on artificial insemination in cattle[264], requested by the sustainable agriculture and water security working group. Both courses had full participation, were completed successfully, and qualification certificates were issued by SENAR. These trainings provided practical tools to expand income opportunities, promote sustainable land-use practices, and strengthen local governance and community organization.

These activities particularly support the community in building adaptive capacity to climate change, fostering socio-economic development, and ensuring benefits that did not exist in the without-project scenario.

Figure 4.8 Practical part of the course on artificial insemination in cattle (left) and presentation of the food prepared in the baking (right).

As part of the efforts to strengthen cultural identity and social cohesion, the project organized the community photography contest "Olhares da Comunidade"[265]. This activity encouraged participants to apply knowledge acquired in previous workshops on community, biodiversity, and sustainability, as well as skills developed through the photography training course. Through their images, community members expressed individual perspectives on their territory and illustrated their sense of belonging to the local landscape. The initiative served both as a creative platform and as a participatory monitoring tool, capturing how residents perceive and value their environment. Women's participation was particularly significant, representing more than 70% of contestants, and highlighting the role of women as active agents in community life. To recognize these efforts, the three best-ranked participants received monetary awards, while all contestants were granted certificates of participation, further reinforcing the value of their engagement and contribution.

[263] BakeryCourse.zip
[264] InseminationCourse.zip
[265] 250617_Concurso_Fotografia_QuemSomosNos.zip

Figure 4.9 Awarding of certificates to the three winners of the photography contest held in Caboclo Village.

Figure 4.10 Winning photos from the photography contes held in Caboclo Village.

As part of the community photography contest, participants were invited not only to share images but also to express in words what those images meant to them, reflecting their personal experiences, memories, and sense of belonging to their territory. These texts revealed the depth of community attachment and the ways in which local identity is shaped by everyday spaces and shared practices.

The winning photograph portrayed the local school, *Escola Novo Pacto*, accompanied by a testimony that underlined both personal and collective histories. The author explained how the school had been central in her life: she studied there as a child, later completed her higher education in the city, and eventually returned as a pedagogue to teach in the same classroom where she once learned. She described the school as a "warrior," resilient despite challenges, continuing to educate children who represent the future. Her words emphasized the importance of perseverance and of dreams as a source of strength and prosperity.

The second-place entry also highlighted the significance of *Escola Novo Pacto*, seen as a symbol of simplicity, fraternity, and love. The accompanying reflection expressed pride in the school community, recognizing it as a place where even in modest circumstances, people nurture big dreams.

The third-place photograph focused on women's football in Caboclo Village. The participant described how these games bring women together, not only to play, but also to talk, laugh, and strengthen bonds regardless of whether the team wins or loses. For her, football is not just a sport but a source of joy, courage, and solidarity, creating a space where women feel connected and empowered.

Together, these narratives illustrate the power of personal perspectives in documenting community life. The photographs and their accompanying stories show how spaces such as schools and social practices like women's football are more than just physical or recreational activities, they are embodiments of resilience, pride, unity, and hope for the future.

4.1.4 Protection of High Conservation Values (CCB, CM2.4)

The project negatively affects none of the community's well-being-related High Conservation Values (HCVs). This is because none of the project activities were designated for logging or deforestation, and the project area is not composed of degraded or deforested areas. Furthermore, there are no forest management activities in the area, meaning the entire project area is being preserved.

For HCV 4: The forest surrounding the Caboclo stream and its springs and tributaries, which ensure the provision of ecosystem services such as water regulation, climate regulation, and soil protection - essential for the well-being of the community - the focal activity is the protection of the project area. This activity is being carried out through the maintenance of firebreaks and patrolling, ensuring that no negative impact has been caused to this HCV[266]. On the contrary, its preservation is guaranteed.

As for HCV 5: The Caboclo stream, used by the community for activities such as subsistence and leisure fishing, recreation, washing clothes, and meeting other domestic needs during dry seasons, the focal

[266] 240416_ProjectAreaMonitoringEvidence.zip

activities are the conservation of the riparian zone of the Caboclo stream (from the project area to Caboclo Village) and the capacity building of the community for the sustainable use of water and the conservation of water resources. So far, a workshop has been held for community members with the aim of training the population in the maintenance and conservation of water resources[267]. The workshop also aimed at creating a working group with interested individuals for frequent discussion of the theme.

Additionally, to maintain and enhance HCV 5, the project is establishing a cooperation agreement with the Municipal Department of Environmental Management (SEMMA) to implement productive agroforestry systems in degraded areas owned by family farmers, including members of the Caboclo Village community who live near the stream, which would also be part of the working group's scope. In this case, as well, the HCV is not negatively impacted by the project activities; on the contrary, the activity contributes to its preservation or improvement.

4.2 Other Stakeholder Impacts

4.2.1 Mitigation of Negative Impacts on Other Stakeholders (VCS, 3.18, 3.19; CCB, CM3.2)

The other stakeholders of TdX project include institutions of the municipality of Altamira, institutions of the municipality of São Félix do Xingu and State institutions of Pará. Considering that there are no rural populations and communities like other stakeholders, an assessment focused on the impact of project activities on the well-being of human populations does not apply to the other stakeholders of this project. Therefore, the project did not affect the well-being of the other stakeholders identified, and consequently, there were no activities implemented to mitigate the negative impacts on them.

4.2.2 Net Impacts on Other Stakeholders (VCS, 3.18, 3.19; CCB, CM3.3)

Since no communities or community groups are identified as other stakeholders, as mentioned in Section 4.2.1 of this Monitoring Report, the TdX project does not affect the scope of well-being. Consequently, net negative impacts on other stakeholders are zero.

4.3 Community Impact Monitoring

4.3.1 Community Monitoring Plan (CCB, CM4.1, CM4.2, GL1.4, GL2.2, GL2.3, GL2.5)

This section presents the results of the results of social monitoring, including indicators of the community, community groups, and HCVs related to community well-being established in the monitoring plan. The Community Monitoring Plan is an important tool for assessing whether the project's objectives are being achieved and for tracking the risks and impacts on the well-being of the community that were previously identified.

[267] 240226_WaterSecurityReport.zip

Table 4.2 presents all defined indicators, baseline results, and measurement methodology for each indicator, along with the results achieved up to this monitoring period: essentially, all information related to the monitoring process. The achieved indicators result from project activities developed so far, including community hires, lectures, workshops, training sessions, and material donations, among other initiatives.

For each achieved result, the table provides information on the methodology used to measure the results, evidence, and project activities involved, among other relevant details. Regarding indicators that have not been measured, the table categorizes the result as "Data not available", explains why the indicator has not been measured yet, and provides comments on the indicator's status.

In the case of general indicators of community well-being impact, i.e., those expected to be achieved by 2052 (end of the project's lifespan), the table demonstrates the progress up to the present moment. The percentage of each impact that has been achieved so far is the result of the number of people impacted by each activity that contributes to the impact, concerning the total number of people in the community. According to the social diagnosis, the Caboclo Village has approximately 69 people, 30 men, 23 women, and 16 children. At school, according to the representative teacher, there are 40 enrolled children or youth, with 18 boys and 20 girls, in addition to two female teachers. Most of the students are from the community, but there are also students from nearby local populations.

For the indicator that measures the impact of "access to informative content for environmental and civic education", the presented percentage was calculated based on the number of children in the village who are students in the school (16 children), because there was only one lecture on environmental topics, which was aimed at the students[268].

The result for the impact indicator of "improved access to income opportunities" was calculated based on the people already hired by the project, whether permanently or temporarily[269]. In the case of the indicator related to the impact of "engaged and involved in organizing and discussing relevant topics for local development", the result is the percentage of community members who participated in the project's governance meetings[270]. The calculation of the results of the impact indicators and several of the indicators in the table below have been recorded in the Excel spreadsheet attached[271].

The impact indicators, with a result of zero indicate that there have not been enough activities developed thus far to cause changes in people's well-being. It's worth noting that impact indicators are long-term objectives over the project's lifetime but are on the path to being achieved.

According to the well-being definition in the standardized metrics table, the result for the number of individuals whose well-being was improved as a result of project activities was calculated based on the

[268] 231205_EcologicalFunctionsWorkshopReport.zip
[269] 240221_ResultsIncomeQuestionnaires.pdf
[270] 240223_ResultsGovernanceQuestionnaires.pdf
[271] 240201_CommunityMonitoringResults.xlsx

number of people who experienced improvements in education (40 people), governance and community engagement (13 people), and employment opportunities (7 people), as described in Table 4.2.

The TdX project aims to be validated at the Gold Level for exceptional community benefits, given that in Caboclo Village, more than 50% of the population lives below the national poverty line. To change this scenario, the project relies on specific activities to cause poverty reduction. Some of these activities have already been implemented or are currently underway, such as the temporary and permanent hiring of community members and the provision of training. The results for indicators leading to this impact of poverty reduction and income increase are also presented in the table. Poverty reduction is an impact that primarily affects the subgroup of community members with lower economic power.

Similarly, the TdX project seeks validation for the Gold Level for climate change adaptation benefits. Therefore, it includes activities aimed at increasing access to water and conserving water resources, which are directly related to maintaining HCVs 4 and 5 related to community well-being. The results for indicators leading to community climate adaptation and the maintenance of HCVs are also presented in the table below.

It is worth noting that the monitoring plan for this project was shared and approved by the community and community groups. That is, the indicators, data collection methods[272], and expected results[273] were validated by the community, and they also participated in this monitoring by responding to perception assessment questionnaires about the project activities.

[272] 240209_GovernanceMeetingJanuary2024.zip
[273] 240208_ProjectDocumentsDissemination.zip

Table 4.2. Community monitoring plan results.

Indicator	Indicator baseline	Unit	Sampling methods and monitoring dates	Results	Comments
During this Monitoring Period, 19% of the population and 22% of women had increased the quantity or quality of the products and services that are a source of household income					
4.7. Content and tools for global citizenship education and education for sustainable development are being integrated into teacher and student training.	0	Number	Survey conducted on the population	Data not available	The line for this indicator is zero because content and tools for global citizenship education and education for sustainable development were not integrated into the training of teachers and students prior to the development of the project. In this monitoring period with the implementation of the school garden and alignment with teaching staff to use the garden as a pedagogical tool, the project is on track to contribute to education for sustainable development in teacher and student training. Up to this point, the project has no results for this indicator because there have been no activities for global citizenship education. The monitoring frequency for this indicator is 1 to 2 years.
1.2 Proportion of the population living below the national poverty line, by sex	62%	Percentage	Survey conducted on the population	Data not available	There hasn't been a reduction in poverty during this monitoring period; however, the temporary and permanent hires of community members to work on project activities were made and demonstrated an increase of 1.5% in family income with the people hired. Furthermore, although there hasn't been a reduction in poverty, it's worth noting that 12.5% of the population living below the poverty line in the community has had increased access to opportunities and income diversification through project activities.

Indicator	Indicator baseline	Unit	Sampling methods and monitoring dates	Results	Comments
4.3. Participation rate of children, youth and adults in formal or non-formal education and training in the previous months, by sex	0	Percentage	Counting; meeting minutes, documents, reports	18.8% male 34.8% female	During the first year of the project, training sessions in forest and fauna inventory were conducted, with 8.7% of the community population participating. In the second year of monitoring, courses in Artificial Insemination and Baking were held, involving 47.8% of the community. Some community members participated in more than one course or training, and in total, 53.6% of the community was engaged in non-formal education. Women were the majority in participation. Certificates were provided for both the training sessions and courses offered.
Percentage of students or community members for whom food insecurity has been reduced	0	Percentage	Survey conducted on the population	Data not available	The baseline for this indicator is zero because, since no school gardens were implemented and no vegetables were harvested before the project development, no student had their food insecurity reduced. Regarding the results of this monitoring report, there has been no vegetable harvest since the implementation of the school garden and, therefore, it has not been possible to implement the food in the students' menu. Thus, the result of the reduction in students' food insecurity has not yet been quantifiable. However, with the forecasted start of the garden harvest in June 2024, this indicator will have its initial results measured. The monitoring frequency for this indicator is 1 to 2 years.

Indicator	Indicator baseline	Unit	Sampling methods and monitoring dates	Results	Comments
Improvement of the school's teaching conditions	2	Satisfaction scale (ratings from 1 to 5)	Survey conducted on the population	4.7	The baseline value for this indicator is the average of the responses obtained through the questionnaires administered to school employees. The questionnaire sought to understand the satisfaction level of each respondent regarding the school's infrastructure and equipment, as well as the availability and quality of educational materials, in the situation prior to the project's development. The scale ranged from 1 to 5, with 1 being the lowest possible score (very bad) and 5 being the highest possible score (excellent). Regarding the results for this monitoring report, with the implementation of the school garden and the provision of necessary school equipment and materials by the project, a questionnaire was once again administered to school staff[274]. Thus, the result of this indicator is the average of the responses related to the satisfaction scale indicated by school employees after the development of project activities, which was 4.7. In addition to the average value indicated, 78% reported an improvement in the school's infrastructure and equipment, and 67% considered there was an improvement in the availability and quality of educational materials.

[274] 240223_ResultsSchoolQuestionnaires.pdf

Indicator	Indicator baseline	Unit	Sampling methods and monitoring dates	Results	Comments
Percentage of students and teachers using new tools and content	0	Percentage	Survey conducted on the population	100%	The baseline for this indicator is zero because, as no new tools or content were available to the school before the project development. In this monitoring period, the improvements in teaching conditions at the school are being used and positively impact all enrolled students, as well as the entire teaching staff[275], totaling 46 individuals (26 of these individuals, or 57%, are female), or 100% of the students and teachers at the school community, and approximately 100% of the community children.
Number of cooperation agreements signed for the short and long term	0	Number	Counting; meeting minutes, documents, reports	Data not available	During this monitoring period, this indicator was not measured because no project activities related to it were carried out.
Percentage of the population for which the average household income has increased	0	Percentage	Survey conducted on the population	1.5%	The baseline of this indicator is zero because the expected outcome is an increase in the average income of the community's population through the development of activities, which does not occur prior to the project's implementation. Regarding the results of this monitoring report, just over a year into the project, there haven't been enough hires or job-oriented courses to significantly impact income increase in the community. However, as some community members were temporarily hired as local assistants (6 individuals)

[275] 240223_ResultsSchoolQuestionnaires.pdf

Indicator	Indicator baseline	Unit	Sampling methods and monitoring dates	Results	Comments
					and community agents (2 individuals)[276] have been employed for approximately 2 years, The average income increase was measured through dedicated questionnaires applied to only seven individuals employed by the project, since additional hiring took place after the questionnaires had been conducted[277]. Therefore, the outcome of this indicator is the percentage of 1 individual hired by the project who reported an increase in their average monthly family or individual income due to project activities (which represents 1.5% of the community's population). One individual also reported a decrease in income due to the project; however, they mentioned that it was a change that positively impacted their life since they started doing a less physically demanding job and their source of income became more regular. It is worth noting that individuals who were permanently hired by the project (community agents) were able to observe a more evident impact of the hiring on their income, unlike those who were hired temporarily, but still experienced a temporary increase. It's also worth noting that out of the 7 hired by the project, 3 are in the group below the poverty line (which totals 32 people), meaning 9% of this group had access to income diversification through temporary employment.

[276] Hiring_TdX.zip
[277] 240221_ResultsIncomeQuestionnaires.pdf

Indicator	Indicator baseline	Unit	Sampling methods and monitoring dates	Results	Comments
Number of participants in the job-oriented training courses	0	Number	Counting; meeting minutes, documents, reports	39	The baseline for this indicator is zero because no job-oriented training courses were promoted before the project development; hence, there is no baseline for participants. Regarding the results for this monitoring report, in course 1. "Treinamento e Execução de IC-0% - Técnicas de Inventário Florístico da Biomassa do Solo/Carbono em Floresta Natural da Amazônia," conducted by TCF, there was the participation of 5 community members with a total duration of 200 hours. In course 2. "Theoretical-practical course on fauna collection and handling", conducted by BioAma, 4 community members were involved in a total of 8 hours. In course 3. "Artificial Insemination" and 4. "Baking", conducted by SENAR, 12 and 20 community members were involved. 5. Photography course, with 4 community members involved. The result of this indicator is 39 people in total without repetition.
Average extra income of people who applied acquired knowledge and skills	0	Average in R$	Survey conducted on the population	Data not available	During this monitoring period, several activities were carried out related to the generation of alternative and additional income through the application of skills such as baking, artificial insemination, photography, and involvement in project activities, among others. However, so far, community members have not reported a measurable increase in their income that could be considered additional income.

Indicator	Indicator baseline	Unit	Sampling methods and monitoring dates	Results	Comments
Percentage of the population with more options for income generation in the community	0	Percentage	Survey conducted on the population	56.5%	The baseline for this indicator is zero because no hiring for project activities or job-oriented training courses took place before the project development. Regarding the results of this monitoring report, 8 people from the community were hired for project activities, either temporarily or permanently, and 4 job-oriented courses were conducted, with 37 participants in total across the courses offered. Therefore, the result for this indicator is the number of people who were hired by the project or participated in the courses (39 people), and consequently, had their income generation opportunities increased. People who were involved in more than one course or hiring are not counted multiple times.
Number of school gardens implemented and maintained	0	Number	Counting	1	The baseline for this indicator is zero because no school gardens were implemented or maintained before the project development. Regarding the results for this monitoring report, the implementation of the school garden was completed in May 2024[278]. Eight varieties of vegetables have been planted and it is hoped that in the future they will be harvested and incorporated into the students' school meals. The school garden will impact 38 students, which represents 100% of those enrolled in the school.

[278] 240320_SchoolGardenReportandAnnex.zip

Indicator	Indicator baseline	Unit	Sampling methods and monitoring dates	Results	Comments
Number of children and adults benefited by the implementation of the garden or donations to the school	0	Number	Survey conducted on the population	46	The baseline for this indicator is zero because no donations or garden implementation for the school happened before the project development. The donations to the school are benefiting all enrolled students (38 children), as well as the entire teaching staff (8 people), totaling 46 individuals.
Number of workshops for alignment with the school teaching staff conducted	0	Number	Counting; meeting minutes, documents, reports	3	The baseline for this indicator is zero because no workshops for alignment with the school teaching staff were conducted before the project development. Regarding the results of this monitoring report, three alignment workshops with the school faculty have already taken place[279] on January 26, September 13, and November 28 of 2024 where options for incorporating the school garden into the teaching of different school subjects were presented and discussed, among other potential partnership opportunities involving the school garden. Therefore, in addition to the implementation of the garden, Systemica will also be responsible for assisting school representatives in implementing the pedagogical plan, if needed.

[279] 240208_GardenMeetingSchoolStaff.zip

Indicator	Indicator baseline	Unit	Sampling methods and monitoring dates	Results	Comments
Number of school supplies replenishments conducted	0	Number	Counting	5	The baseline for this indicator is zero because no school supplies replenishments were conducted before the project development. Regarding the results of this monitoring report, 1 replenishment with 15 different types of equipment and materials was provided to the school in varying quantities in November 2023[280]. Also, in January 2024, 37 different types of equipment and materials were supplied, with an approximate estimate of 147 units of material or equipment[281]. In May 2024, the school was supplied with a Pctop Multimedia Led Pc2000 2000 Lumens Black projector to replace the previous equipment[282]. Finally, in June 2025, two complete Intel Core i5 CPUs with 8GB RAM, 240GB SSD + monitor and Wi-Fi kit[283] were provided to the school to support and strengthen institutional activities.
Number of job-oriented training courses provided	0	Number	Counting; meeting minutes, documents, reports	5	The baseline for this indicator is zero because no job-oriented training courses were promoted before the project development. Regarding the results for this monitoring report, four job-oriented training courses have been conducted with the community: 1. "Treinamento e Execução de IC-0% - Técnicas de Inventário Florístico da Biomassa do Solo/Carbono em Floresta Natural da Amazônia", conducted by TCF; 2. "Theoretical-practical course on

[280] 231205_FirstDeliverySchoolSupplies.zip
[281] 240129_SchoolGardenTraining.zip
[282] 240621_SchoolSuppliesReport.zip
[283] 250805_Termo_Doação_Escola_Computadores.pdf

Indicator	Indicator baseline	Unit	Sampling methods and monitoring dates	Results	Comments
					fauna collection and handling", conducted by BioAma, 3. "Artificial Insemination" and 4. "Baking", conducted by SENAR. Both courses aimed to theoretically and practically empower participants to engage in activities related to the training. Upon completion, participants were awarded a participation certificate. Additionally, a course was conducted about 5. Photography with community members.
Number of people hired	0	Number	Counting; meeting minutes, documents, reports	8	The baseline for this indicator is zero because no hiring for project activities happened before the project development. Regarding the results of this monitoring report, 8 (or 15% of the adult population) community members to participate in project activities were hired on a temporary (6) or permanent basis (2), with 3 of them being women.
During this Monitoring Period, 0% of the population and 0% of women had accessed to water and secure, affordable water resource management under variable or extreme climatic conditions					
6.1.1 Proportion of the population using safely managed drinking water services	0	Percentage	Survey conducted on the population	Data not available	The baseline for this indicator is zero because no activity to increase water security would have been developed without the project, and the current water supply conditions are precarious. Regarding the results of this monitoring report, it has not yet been possible to implement activities to conserve and improve access to water, which can increase community water security. As project activities progress, this indicator will be measured. The defined frequency is every 1 to 2 years

Indicator	Indicator baseline	Unit	Sampling methods and monitoring dates	Results	Comments
Percentage of people who have gained a better understanding of climate change adaptation and mitigation.	0	Percentage	Counting	11.6%	The baseline for this indicator is zero because no activities related to climate change adaptation and mitigation were conducted prior to project development. During this monitoring period, a workshop was held addressing topics such as water security and sustainable agriculture, with the participation of 8 people (representing 11.6% of the community population).
Percentage of women who have gained a better understanding of climate change adaptation and mitigation.	0	Percentage	Counting	1.44%	The baseline for this indicator is zero because no activities related to climate change adaptation and mitigation were conducted prior to project development. During this monitoring period, a workshop was held addressing topics such as water security and sustainable agriculture, with the participation of 8 people (representing 11.6% of the community population), of whom only one was a woman (1.44%).
Percentage of people who perceive an improvement in the maintenance of the riparian zone.	0	Percentage	Survey conducted on the population	Data not available	During this monitoring period, this indicator was not measured because no project activities related to it were carried out.
Percentage of the area that was benefited	0	Percentage	Remote sensing	Data not available	During this monitoring period, this indicator was not measured because no project activities related to it were carried out.

Indicator	Indicator baseline	Unit	Sampling methods and monitoring dates	Results	Comments
Reduction in the rate of identified threat occurrences during patrol campaigns in the project area	0	Percentage	Patrolling checklist	0	The baseline for this indicator is zero because no patrol campaign activities were conducted prior to project development. During the monitoring period, 12 patrols were carried out (6 on each property), with a total of 7 threats observed, all located on the Sefer property. Six threats were related to the presence of cattle within the project area, and one to the opening of a clandestine trail. Since the baseline was zero, it was not possible to report a percentage increase for this monitoring period. These data can be assessed more robustly in the next monitoring cycle, when comparative information will be available to evaluate potential reductions over the course of the project's implementation. The records cover various activities that may be observed by community agents during patrols, including: presence of unauthorized vehicles and individuals; traces of unusual vehicles; signs of fire use; presence of fishing/hunting materials; opening of clandestine trails; and deforestation or clearing.
Reduction in the percentage of heat spots detected via remote sensing in the project area compared to the total	98.98%	Percentage	Remote sensing	99.91%	Percentage reduction in the number of fire hotspots within the project area compared to a 10 km buffer zone, as identified via GIS from the project start date (August 31, 2022) to August 2025. There was a significant increase in fire hotspots in the 10 km

Indicator	Indicator baseline	Unit	Sampling methods and monitoring dates	Results	Comments
occurrences within a 10 km buffer					buffer zone, rising from an average of 152 to 2,527 hotspots[284]. However, this increase did not reflect a rise in the number of hotspots within the project area.
Increase in the quality of water for human consumption	0	Water quality parameters	Counting; meeting minutes, documents, reports	Data not available	During this monitoring period, this indicator was not measured because no project activities related to it were carried out.
Percentage of people who experienced an improvement in the availability and quality of water for consumption	0	Percentage	Survey conducted on the population	Data not available	During this monitoring period, this indicator was not measured because no project activities related to it were carried out.

[284] IndicadoresClimaCCB.xlsx

Indicator	Indicator baseline	Unit	Sampling methods and monitoring dates	Results	Comments
Percentage of people who believe that ecosystem maintenance or restoration measures and the construction of adaptation infrastructures have contributed to their well-being	0	Percentage	Survey conducted on the population	Data not available	During this monitoring period, this indicator was not measured because no project activities related to it were carried out.
Number of lectures and/or awareness events on environmental and civic education	0	Number	Counting; meeting minutes, documents, reports	3	The baseline for this indicator is zero because no events on environmental and civic education were conducted before project development. Regarding the results of this monitoring report, the REDD+ training that marked the project start date is the first awareness event on environmental education, with 13 participants from Caboclo Village. Additionally, a lecture was held for the Caboclo Village community on the environment, sustainability, and biodiversity, ministrated by Bioama, the company hired by Systemica to carry out the fauna survey in the project areas. Finally, a lecture focused on environmental education was provided to the school students, with a total participation of 38 students, including the 16 children who live in the village. The lecture, conducted by the Systemica team, addressed topics such as ecological functions of fauna and

Indicator	Indicator baseline	Unit	Sampling methods and monitoring dates	Results	Comments
					sustainable activities , and it is part of the biodiversity activities of the project, therefore. As the project progresses, a greater number of lectures and various themes will be addressed with the community.
Participation obtained in the lectures and/or events on environmental and civic education	0	Number	Counting; meeting minutes, documents, reports	78	The baseline for this indicator is zero because, as no events on environmental and civic education were conducted before the project, there is no baseline for participants. Regarding the results for this monitoring report, the REDD+ training that marked the project start date is the first awareness event on environmental education, with 13 participants from Caboclo Village. Also, a lecture focused on environmental education was provided to the school students, so, the result of this indicator is the total number of students enrolled that participated in the lecture. Considering the number of students plus the school's teachers, the attendance at the lecture was 100% (or 38 children) of the students and approximately 100% of children of community. If you add up the participants in the school and the participants in the REDD+ training (start date) and lecture ministrated by Bioama (40 people), the result is 78 people taking part.

Indicator	Indicator baseline	Unit	Sampling methods and monitoring dates	Results	Comments
Number of community members training or participating in monitoring the project area or zone	0	Number	Counting; meeting minutes, documents, reports	71	The training carried out for the monitoring of the project area during this period were developed as part of the activity "Conservation and enhancement of local biodiversity", totaling six training sessions. The first was the REDD+ training, which marked the start date of the project. This training served as the starting point both for raising environmental awareness within the community (as indicated under another indicator) and for providing the necessary preparation for activities such as patrolling, surveillance, and maintenance of firebreaks. Three individuals participated in this training, all of whom are currently contributing to the development of these activities in the project area. The second training, held on May 15, 2024, focused on raising awareness about the impacts of hunting and was attended by seven community members. The third training addressed the role of the project's community agents and involved several sessions with two agents and other workers active in the project area. The first session took place on September 21, 2023, with the two community agents, and the second on January 29, 2024, with three project workers, focusing on the implementation of a school garden.

Indicator	Indicator baseline	Unit	Sampling methods and monitoring dates	Results	Comments
					The fourth training covered the installation and maintenance of camera traps for wildlife monitoring in the project area. It was also conducted in multiple sessions: the first on November 27, 2023, with four participants, and the second on March 9, 2024, with another four participants. The fifth training focused on patrolling the project area and was divided into four sessions: the first on March 9, 2024, with two participants; the second on November 26, 2023, with four participants; the third on October 18, 2024, with one participant; and the fourth on February 8, 2025, also with one participant. The sixth training focused on wildfire prevention and response and was held on November 12, 13, and 14. The first two days were dedicated to theoretical lessons on fire behavior, best practices in mitigation and prevention, and an introduction to first aid and equipment use. On the third day, a practical exercise was carried out with the participants. In addition, job-oriented training initiatives were implemented, such as courses in bakery, artificial insemination, photography, forest inventory, and fauna inventory, which expanded technical skills and offered alternative opportunities for livelihood improvement while also reinforcing local monitoring capacity. Altogether, considering only unique participants (excluding repetitions of individuals across multiple activities), a total of 71 community members were trained

Indicator	Indicator baseline	Unit	Sampling methods and monitoring dates	Results	Comments
					or directly engaged in monitoring-related activities during this period.
Number of identified threat occurrences during monitoring		Number	Counting; meeting minutes, documents, reports	7	The baseline for this indicator is zero because no patrol campaign activities were conducted prior to project development. During the monitoring period, 12 patrols were carried out (6 on each property), with a total of 7 threats observed, all located on the Sefer property. Six threats were related to the presence of cattle within the project area, and one to the opening of a clandestine trail. The records cover various activities that may be observed by community agents during patrols, including presence of unauthorized vehicles and individuals; traces of unusual vehicles; signs of fire use; presence of fishing/hunting materials; opening of clandestine trails; and deforestation or clearing.
Number of fire-fighting measures	0	Number	Counting; meeting minutes, documents, reports	5	During this monitoring period, four fire prevention and control measures were implemented in the project area: The first was the installation of firebreaks on one of the properties within the project area. The second measure involved engaging with external organizations to establish partnerships for joint actions in wildfire prevention and control. The third measure was the

Indicator	Indicator baseline	Unit	Sampling methods and monitoring dates	Results	Comments
					implementation of the Brigade Training Course for Preventing and Fighting Forest Fires, held on one of the properties in the project area and provided to workers involved in local activities. The fourth measure was the purchase of specific equipment for wildfire suppression; The fifth prevention was related to the capacity-building program offered by the Fire Department to the community.
Number of fire hotspots in the project area	2	Number	Counting; meeting minutes, documents, reports	2	Number of fire hotspots identified via GIS from the project start date (August 31, 2022) to August 2025. The annual average is 2 fire hotspots per year. It is important to highlight that these fire hotspots did not result in biomass loss.
Number of fire-fighting equipment/PPE provided	0	Number	Counting; meeting minutes, documents, reports	53	During this monitoring period, a CTD6500 water tank trailer and a 20-liter Jacto sprayer were acquired. Additionally, various items were purchased to compose the wildfire fighting equipment inventory, including a leaf blower, chainsaw, spray pump, tractor, and drone. In total, 53 wildfire combat equipment items were acquired.
Number of people involved in the protection strategy contributing to the protection of the	0	Number	Counting; meeting minutes, documents, reports	Data not available	During this monitoring period, this indicator was not measured because no project activities related to it were carried out.

Indicator	Indicator baseline	Unit	Sampling methods and monitoring dates	Results	Comments
Caboclo Stream riparian zone and/or other water bodies in the area					
Number of interventions carried out	0	Number	Counting; meeting minutes, documents, reports	Data not available	The baseline for this indicator is zero because no protection strategies were structured and implemented in the Riparian zone of Caboclo Stream, before the project development. Regarding the results for this monitoring report, it has not been possible to access the entire Permanent Preservation Area (APP) of Caboclo stream and the rural properties that comprise this zone. This is a complex activity as it involves persuasion and environmental education efforts to engage landowners in the protection of the stream. Therefore, now, this activity is still in the planning phase, and the monitoring frequency of this indicator will be every 1 to 2 years.
Number of households and other buildings with implemented solutions for access to clean water	0	Number	Counting; meeting minutes, documents, reports	Data not available	The baseline for this indicator is zero because no solutions for access to clean water were implemented in households and other buildings, before the project development. Regarding the results for this monitoring report, it has not yet been possible to collect data on the community's artesian well. Therefore, solutions for the community's access to this well have not yet been developed. Currently, this activity is in the data collection phase with the

Indicator	Indicator baseline	Unit	Sampling methods and monitoring dates	Results	Comments
					community and responsible public agencies, and the monitoring frequency of this indicator will be every 1 to 2 years.
Number of workshops on maintenance measures for Permanent Preservation Areas (APPs in Portuguese), spring protection, sustainable water use, and construction of septic tanks conducted	0	Number	Counting; meeting minutes, documents, reports	1	The baseline for this indicator is zero because no workshops on maintenance measures for Permanent Preservation Areas (APP), spring protection, sustainable water use, and construction of septic tanks were conducted, before the project development. Regarding the results for this monitoring report, a workshop was organized for community members, addressing topics such as water security and sustainable agriculture, and had the participation of 8 people. 100% of the participants stated that the topic is relevant to the community and that no doubts or points remained to be clarified after the meeting. In addition to the expository nature, the workshop aimed to create a working group with interested people for frequent discussion of the theme, and it is part of project activities that aim to increase community resilience to climate change.

Indicator	Indicator baseline	Unit	Sampling methods and monitoring dates	Results	Comments
Number of people participating in climate change adaptation or mitigation workshops and actions	0	Number	Counting; meeting minutes, documents, reports	8	The workshop addressing topics such as water security and sustainable agriculture had the participation of 8 people (or 11.6% of the community population). The workshop aimed to create a working group with interested people for frequent discussion of the theme, and it is part of project activities that aim to increase community resilience to climate change.
Number of women participating in climate change adaptation or mitigation workshops and actions	0	Number	Counting; meeting minutes, documents, reports	1	The workshop addressing topics such as water security and sustainable agriculture had the participation of 8 people (or 11.6% of the community population), were 1 of them were women. The workshop aimed to create a working group with interested people for frequent discussion of the theme, and it is part of project activities that aim to increase community resilience to climate change.
During this Monitoring Period, 0% of the population, and 0% of women, had increased their economic autonomy and their capacity to make decisions that directly impact their lives					
16.7 Proportion of the population who believe decision-making is inclusive in the project	0	Percentage	Survey conducted on the population	90.9%	The baseline for this indicator is zero because it could not have existed before the project. In this monitoring period, the implementation of community governance meetings and participatory activities with the community gave the community a perception of unity among the population and that participation in the project's decision-making processes was inclusive. Through the governance activities carried out so far, 100% of the community members who have answered the survey believe that

Indicator	Indicator baseline	Unit	Sampling methods and monitoring dates	Results	Comments
					the project is inclusive in the decision-making processes and 81.8% believe that the project allows equal participation by all members.
Percentage of women for whom the average individual income has increased	0	Percentage	Survey conducted on the population	8.7%	The baseline of this indicator is zero because the expected outcome is an increase in the average income of the women through the development of activities, which does not occur prior to the project's implementation. Regarding the results of this monitoring report, two women who participated in the SENAR "Baking" course reported an increase in their average income after the course, although they did not specify the extent of this increase. They represent 8.7% of the women in the community (based on the 23 women mapped in the social diagnosis).
Average extra income of women who applied acquired knowledge and skills	0	Average in R$	Survey conducted on the population	Data not available	During this monitoring period, several activities were carried out related to the generation of alternative and additional income through the application of skills such as baking, artificial insemination, photography, and involvement in project activities, among others. However, so far, the women in the community have not reported a measurable increase in their income that could be considered additional income.

Indicator	Indicator baseline	Unit	Sampling methods and monitoring dates	Results	Comments
Percentage of women with more options for income generation in the community	0	Percentage	Survey conducted on the population	30.4%	The baseline of this indicator is zero because the expected outcome is an increase in income generation for women through the development of activities, which does not occur prior to the project's implementation. Regarding the results of this monitoring report, five women who participated in the SENAR courses stated that their income-generating opportunities in the community improved due to the application of the knowledge and skills acquired in the courses. Two of them mentioned that this improvement was only partial, bringing the total to 30.4% of the women in the community.
Increase in women's average income	0	Percentage	Survey conducted on the population	Data not available	During this monitoring period, several activities were carried out related to the generation of alternative and additional income through the application of skills such as baking, artificial insemination, photography, and involvement in project activities, among others. However, so far, the women in the community have not reported a measurable increase in their income that could be considered in relation to the average income in the community.
Percentage of women actively participating in community or project governance	0	Percentage	Counting; meeting minutes, documents, reports	100%	The baseline for this indicator is zero because no initiatives for governance structuring, with a focus on promoting women's participation, were held with the community before the project development; hence, there is no baseline for female participants. Regarding the results for this monitoring report, six initiatives for structuring the community governance were implemented.

Indicator	Indicator baseline	Unit	Sampling methods and monitoring dates	Results	Comments
					The first is the Working Group on Sustainable Agriculture; the second, the Initiative to Strengthen Associativism; the third, the Community's Own Governance; the fourth, the Working Group on Land Issues; the fifth, the Initiative for the Governance of the TdX project; and finally, the Women's-Only Working Group within the community. Women participated in all these initiatives, both in collective decision-making spaces and in those designed exclusively for them. The result of this indicator is the percentage of women who participated in governance initiatives, specifically 30 women. According to the social diagnosis, the approximate number of adult women is 23, so it is understood that all the women have participated in some initiative. It is worth noting that there is no double counting for the result of this indicator, meaning women who may have participated in more than one governance meeting are not counted multiple times.
Number of women participating as leaders in community governance	0	Number	Survey conducted on the population	Data not available	During this monitoring period, this indicator was not measured because no project activities related to it were carried out.

Indicator	Indicator baseline	Unit	Sampling methods and monitoring dates	Results	Comments
Increase in the quality of social relationships for women	0	Percentage per variable	Survey conducted on the population	68.2%	The baseline for these indicators is zero because there would be no improvement in the population's access to digital forms of leisure and culture, as well as an increase in the quality of social relationships before project activities. Regarding the results for this monitoring report, according to the responses obtained through community questionnaires, 55% of women believe that the community's relationships improved with the project activities. The reasons cited include stronger community bonds, increased unity among women, and the formation of new friendships. Additionally, 82% of women believe the project enhanced female engagement, while 18% think this engagement improved only partially. Therefore, the percentage presented as the result of this indicator represents the average of women who responded "yes" regarding improvements in community unity and female engagement.
Number of women hired	0	Number	Counting; meeting minutes, documents, reports	3	The baseline for this indicator is zero because no hiring for project activities happened before the project development. Regarding the results of this monitoring report, 3 (or 13% of the total women in the community) women were hired to participate in project activities on a temporary or permanent basis.

Indicator	Indicator baseline	Unit	Sampling methods and monitoring dates	Results	Comments
Number of women participants in the training courses	0	Number	Counting; meeting minutes, documents, reports	27	The baseline for this indicator is zero because no job-oriented training courses were promoted before the project development; hence, there is no baseline for female participants. Regarding the results for this monitoring report, in course 1. "Treinamento e Execução de IC-0% - Técnicas de Inventário Florístico da Biomassa do Solo/Carbono em Floresta Natural da Amazônia," 2 women participated, in coure 2. "Theoretical-practical course on fauna collection and handling", 1 woman from the community were involved: in 3. "Inseminação artificial", 1 woman participeted; in course 4. "Panificação", 22 women from Caboclo Village participated, in course 5. "Photography", 3 women from the community participated, in course 6. "Wildfire prevention and response", 6 women from Caboclo Village participated. The result of this indicator is 27 women, without repetition.
Participation of women obtained in lectures and/or events on environmental and civic education	0	Number	Counting; meeting minutes, documents, reports	28	The baseline for this indicator is zero because, as no inaugural open lectures for training courses were conducted before project development, there is no baseline for participants. Regarding the results for this monitoring report, the REDD+ training that marked the project start date is the first awareness event on environmental education, with 8 women participants from the Caboclo Village. Also, a lecture focused on environmental education was provided to the school students, so, the result of this indicator is the number of female students enrolled who participated in the lecture. Considering the number of students

Indicator	Indicator baseline	Unit	Sampling methods and monitoring dates	Results	Comments
					and adult women in the two sessions, the participation is 28 women.
Number of girls and women benefited by the implementation of the garden or donations to the school	0	Number	Survey conducted on the population	26	The baseline for this indicator is zero because no donations or garden implementation for the school happened before the project development. The donations to the school are benefiting all enrolled students, as well as the entire teaching staff, out of the total 46 individuals, 26 are women (6) or girls (20) (or 57%).
Number of women participating in in-person meetings for governance structuring focused on promoting women's participation	0	Number	Counting; meeting minutes, documents, reports	15	The baseline for this indicator is zero because no in-person meetings for governance structuring, with a focus on promoting women participation, were held with the community before the project development; hence, there is no baseline for female participants. Regarding the results for this monitoring report, six initiatives for structuration the community governance were implemented. As part of these initiatives, five face-to-face meetings were held focusing on the exclusive participation of women in structuring community governance. The result of this indicator is the number of women who participated in governance in-person meetings, specifically 15 women. According to the social diagnosis, the approximate

Indicator	Indicator baseline	Unit	Sampling methods and monitoring dates	Results	Comments
					number of adult women is 23, so it is understood that the majority of women have participated in these meetings. It is worth noting that there is no double counting for the result of this indicator, meaning women who may have participated in more than one governance meeting are not counted multiple times.
During this Monitoring Period, 0% of the population and 0% of women had experienced an increase in their capacity to engage in organization and leisure activities in their community					
17.8.1 Proportion of individuals using the Internet	59%	Percentage	Survey conducted on the population	Data not available	During this monitoring period, this indicator was not measured because no project activities related to it were carried out.
Increase in the quality of social relationships of the community members	0	Percentage per variable	Survey conducted on the population	40.9%	The baseline for these indicators is zero because there would be no improvement in the population's access to digital forms of leisure and culture, as well as an increase in the quality of social relationships before project activities. Regarding the results for this monitoring report, according to the responses obtained through community questionnaires, 40.9% of people believe that community relationships improved with the project activities, while 27.3% think there was no improvement, and 31.8% were unsure. Among those who believe social relationships improved,

Indicator	Indicator baseline	Unit	Sampling methods and monitoring dates	Results	Comments
					the main reasons cited were increased unity among community members, stronger bonds among women, and the formation of new friendships. To a lesser extent, respondents also mentioned the expansion of interaction spaces, better relationships with neighbors, and improved family relationships.
Percentage of the population actively participating in community or project governance	0	Percentage	Counting; meeting minutes, documents, reports	100%	The baseline for this indicator is zero because no initiatives for governance structuring, with a focus on promoting women's participation, were held with the community before the project development; hence, there is no baseline for community participants. Regarding the results for this monitoring report, six initiatives for structuring the community governance were implemented. The first is the Working Group on Sustainable Agriculture; the second, the Initiative to Strengthen Associativism; the third, the Community's Own Governance; the fourth, the Working Group on Land Issues; the fifth, the Initiative for the Governance of the TdX project; and finally, the Women's-Only Working Group within the community. The result of this indicator is the percentage of community members who participated in governance initiatives, specifically 61 adults in the community. According to the social diagnosis, the approximate number of adults is 53, so it is understood that all community members have participated in some initiative, and people who live on neighboring farms and have a relationship

Indicator	Indicator baseline	Unit	Sampling methods and monitoring dates	Results	Comments
					with Caboclo Village. It is worth noting that there is no double counting for the result of this indicator, meaning women who may have participated in more than one governance meeting are not counted multiple times.
Percentage of individuals displaying fear and insecurity regarding land tenure issues	100%	Percentage	Survey conducted on the population	25%	The baseline value for this indicator is 100% because, according to observations from the social diagnosis, all residents of Caboclo Village feel insecure due to the lack of land regularization for their homes or properties, even before the project development. Regarding the results of this monitoring report, based on the identified risk that the community might be afraid to participate in the project due to the visibility it could bring to these issues, a working group to discuss solutions was formed with those interested in the topic, as a way of mitigating risks, 15 people attended the meeting. As a result of this indicator, the percentage of people who participated in the activity still responded to the feedback questionnaire negatively (they responded that they felt insecure or didn't know how they felt about participating in the project, even knowing that the project will help with land issues). Additionally, a collective questionnaire was administered to the participants at the end of the presentations to ensure an understanding of the subject matter. As a result, 100% of the individuals considered the topic relevant to the community and indicated that there were no points to be clarified. A second talk

Indicator	Indicator baseline	Unit	Sampling methods and monitoring dates	Results	Comments
					in the Land Working Group was on land associations and regulation. The discussion included contributions from the Altamira Municipal Department of the Environment (SEMMA), which had previously provided relevant information on the subject.
Percentage of the population that has experienced digital forms of leisure and culture	0	Percentage	Survey conducted on the population	Data not available	During this monitoring period, this indicator was not measured because no project activities related to it were carried out.
Number of individuals who fell victim to digital scams	0	Number	Survey conducted on the population	Data not available	The baselines for these indicators are zero because no internet devices were installed before the project development; and as a result, no incidents of people being victims of digital scams have been reported. Regarding the results for this monitoring report, no internet devices have been installed yet, so, currently, this activity has not been started. The monitoring frequency for this indicator is 1 to 2 years.
Improvement in communication capacity and access to information	3	Percentage per variable	Survey conducted on the population	Data not available	The baseline value for this indicator is the average of the responses obtained through the questionnaires administered to community members. The questionnaire sought to understand the satisfaction level of each respondent regarding the availability and quality of the internet signal, i.e., the stability and speed of the internet network they had in the situation prior to

Indicator	Indicator baseline	Unit	Sampling methods and monitoring dates	Results	Comments
					the project's development. The scale ranged from 1 to 5, with 1 being the lowest possible score (very bad) and 5 being the highest possible score (excellent). In addition to these questions addressing the indicator, additional questions were asked to help understand the overall internet access situation in Caboclo Village, which showed that most people access the internet every day, mainly for communication purposes, and the proportion of people who access the internet at home or in other locations is quite balanced. Regarding the results for this monitoring report, since no internet devices have been installed yet, it has not been possible to monitor differences in people's perceptions regarding internet access. The internet activity is in the planning phase; therefore, these results will be obtained through new questionnaires with community members in the future. The monitoring frequency for this indicator is 1 to 2 years.
Percentage of people and women in the community who have not participated in any project activities	0	Percentage	Counting; meeting minutes, documents, reports	100%	Virtually all community members, including women, have participated in the project's activities. The community consists of 69 people in total, and the project has carried out actions involving both schoolchildren and adults. Adults have been actively engaged in structuring community governance and the project itself, as well as in activities such as wildlife monitoring, protection of the project area, and other initiatives that generate benefits through the use of materials donated to the community.

Indicator	Indicator baseline	Unit	Sampling methods and monitoring dates	Results	Comments
Percentage of the population for whom healthcare services or spaces have improved	0	Percentage	Survey conducted on the population	Data not available	The baseline for this indicator is zero because no supplies replenishments for the health center were conducted before the project development, and as a result, it's not possible to assess the number of people form whom healthcare services would have improved. Regarding the results for this monitoring report, communication with representatives from SESMA has been difficult and lengthier, so the cooperation agreement has not yet been finalized, thereby preventing the provision of equipment for the health center in Caboclo Village. However, new contacts continue to be made for the cooperation agreement to be established with SESMA. Additionally, an alignment meeting with representatives from the Caboclo Village Health Post was held to keep the perspectives of the activity in focus and the construction of the activity jointly.
Percentage of the population for whom leisure services, equipment or spaces have improved	0	Percentage	Survey conducted on the population	81.8%	Regarding the results for this monitoring report, according to the responses obtained through community questionnaires, 81.8% of people reported having greater access to culture and leisure in the community after the implementation of the activities.

Indicator	Indicator baseline	Unit	Sampling methods and monitoring dates	Results	Comments
Number of communication platforms with the community implemented and maintained	0	Number	Counting; meeting minutes, documents, reports	12	The baseline value for this indicator is zero because no communication platforms with the community were implemented and maintained before the project development. Regarding the results for this monitoring report, all 12 communication channels[285] outlined and agreed upon in the communication procedure have been implemented and maintained. It is worth noting that the communication procedure includes processes for recording and addressing suggestions, complaints, or conflicts, but no such incidents have occurred as of this monitoring report.
Number of cooperation discussions with the government for improving mobility infrastructure conducted	0	Number	Counting; meeting minutes, documents, reports	Data not available	The baseline for this indicator is zero because no cooperation discussions with the government for improving mobility infrastructure were conducted before the project development. Regarding the results for this monitoring report, based on the identified risk that project activities could be affected by the loss of work hours due to road conditions, as a mitigation measure, a letter was sent to the Municipal Department of Construction, Roads and Infrastructure (SEMOVI) in the initial attempt to establish a partnership with the department to improve mobility in Caboclo Village . The next step in this activity involves initiating the first discussions with SEMOVI, with the participation of community representatives. The monitoring frequency for this

[285] 01_CommunitcationChannels.zip

Indicator	Indicator baseline	Unit	Sampling methods and monitoring dates	Results	Comments
					indicator is 1 to 2 years. Furthermore, the project team has been employing strategies for more effective planning and reducing potential side effects due to road conditions in the project area.
Number of reports indicating logistical difficulties in accessing the community		Number	Counting; meeting minutes, documents, reports	4	The baseline for this indicator is zero because no logistical difficulties in accessing the community were reported prior to project development. During the monitoring period, 4 incidents related to poor logistical access conditions were recorded. These incidents occurred predominantly during rainy events. The reported events took place in August 2022, April 2023, May 2024, and February 2025. Poor road conditions along the Trans Iriri route were consistently observed over the years, with no significant improvements reported during the monitoring period. [286]
Number of in-person meetings for governance structuring with a focus on promoting	0	Number	Counting; meeting minutes, documents, reports	5	The baseline for this indicator is zero because no in-person meetings for governance structuring, with a focus on promoting women participation, were held with the community before the project development; hence, there is no baseline for female participants. Regarding the results for this monitoring report, six initiatives for structuring the community governance were

[286] 250415_Road_conditions_report.pdf

Indicator	Indicator baseline	Unit	Sampling methods and monitoring dates	Results	Comments
women participation held					implemented. As part of these initiatives, five face-to-face meetings were held focusing on the exclusive participation of women in structuring community governance. The first meeting took place on September 23, 2023, with the aim of collectively identifying and communicating the potential positive and negative impacts, risks, and costs of the project for the women in the community. The second meeting was held on January 26, 2024, to encourage the formation and participation in the Working Group focused on the needs of the community's women. The third meeting occurred on May 17, 2024, to align procedures related to the implementation of the "Baking" course for women, offered by the project in partnership with SENAR. The fourth meeting took place on May 22, 2024, and was independently organized by the women of the community to plan the logistics of the "Baking" course. The most recent meeting was held on September 7, 2024, to discuss the progress of the "Baking" course and to deliver gym equipment to support health and leisure activities for women.
Number of internet network equipment installed and maintenance reports	0	Number	Counting; meeting minutes, documents, reports	Data not available	The baselines for these indicators are zero because no internet devices were installed before the project development; and as a result, no incidents of people being victims of digital scams or conflicts over internet usage have been reported. The same applies for the indicator of people who aglomerate in public

Indicator	Indicator baseline	Unit	Sampling methods and monitoring dates	Results	Comments
					places for internet usage. Regarding the results for this monitoring report, no internet devices have been installed yet, so, currently, this activity has not been started. The monitoring frequency for this indicator is 1 to 2 years.
Equipment and/or materials for community use provided	0	Number	Counting; meeting minutes, documents, reports	2	During this monitoring period, two donations of equipment and materials for community use were made. The first donation took place on September 7, 2024, and consisted of a set of 19 gym equipment items, specifically intended for use by the women of the community. The second donation was made on August 30, 2024, and included the distribution of men's football jerseys to part of the Caboclo Village community.

4.3.2 Monitoring Plan Dissemination (CCB, CM4.3)

The results of the TdX project monitoring plan, up to the present Monitoring Report, have been made publicly available on the VERRA website (https://registry.verra.org/app/projectDetail/VCS/3738), with a link also shared on the Systemica Inteligência em Sustentabilidade S.A. website (https://systemica.digital/projetos/triunfo-do-xingu-redd/). In addition, stakeholders were informed directly via email, ensuring transparent access to the monitoring information[287].

For the Caboclo Village community and project workers, dissemination of the monitoring plan results followed specific communication channels established by the project. In November 2023, an informative pamphlet was distributed, presenting a summary of the monitoring methodologies and results[288], along with an explanatory video published on the project's YouTube channel[289]. Printed copies of the pamphlet, as well as the digital version and the video link, were made available to the community to foster awareness and encourage engagement. In addition, email communication containing information on the results was sent to other stakeholders[290].

The physical and digital dissemination was complemented by the role of community agents, hired by Systemica as project workers, who acted as direct communication channels with access to project documentation and actively contributed to sharing the monitoring plan and results. In August 2025, the results obtained up to that point were disseminated within the community through a summary pamphlet[291], which presented an overview of all ongoing activities as well as those already completed. In September 2025, communication and availability of information about the project[292],[293] with other stakeholders took place by sending an e-mail with a letter and summary of the monitoring results[294]. On the same date, the documents were also provided in digital format through WhatsApp community groups, broadening access and facilitating their circulation among residents[295]. This multi-layered communication strategy ensured that information was circulated not only among external stakeholders but also within the local community in an accessible and participatory manner.

4.4 Optional Criterion: Exceptional Community Benefits

4.4.1 Short-term and Long-term Community Benefits (CCB, GL2.2)

For the first monitoring period, the TdX project has and is on track to generate short-term and long-term net positive well-being benefits for the community.

[287] 240208_ProjectDocumentsDissemination.zip
[288] 231205_CommunityContinuedCommunication.zip
[289] 240208_ProjectDocumentsDissemination.zip
[290] 250417_CommunicationOtherStakeholders.zip
[291] 250416_Folder_communication_stakeholders.pdf
[292] 250915_Resumo_Projeto.pdf
[293] 250915_Resumo_RelatorioMonitoramento.pdf
[294] 250917_Dissemination_OtherStakeholders.pdf
[295] 250917_Dissemination_Community_Whatsapp.pdf

To achieve the long-term impact of poverty reduction, for example, activities such as hiring community members for project development are leading to the short-term benefit of an increase in the community's average income, and 7% of the population below the poverty line had experienced improved access to income opportunities through the temporary hiring of local assistants and the permanent hiring of two community agents. This has not yet led to an increase in income for this group, but the hiring activities have led to a 1.5% increase in the average household income of other community individuals compared to the scenario where no income increase would be expected without the project's development[296,297,298].

Also, the school garden was implemented and the alignment with the school's staff was conducted, and with the support of Systemica, soon the school garden will be integrated into the school's theoretical and practical learning, as a tool for food and environmental education. Similarly, the donation of materials to the school results in the short-term benefit of improved teaching conditions (on a scale of 1 to 5), rising from 2 to 4, indicating a noticeable improvement according to the community itself[299]. With the implementation and maintenance of the school garden, the project is on track to generate the short-term benefit of reducing food insecurity among students.

Another long-term benefit of the project associated with poverty reduction is the improvement of gender equality, which primarily impacts the well-being of the community group of women in Caboclo Village. The project considers that this impact has many dimensions to it[300], which is why the indicators to measure it are included in the monitoring plan. In the first monitoring period, to achieve this benefit, the project is developing governance activities and encouraging active participation of women in the project activities, thus, it is generating the short-term benefits of expanding the space of participation for women in the community, 89% women of the community participated in the governance meetings[301], 20 girls and two teachers or 100% of women in the school community was benefited in the improving of teaching conditions with the donation of materials to the school, as well as creating spaces where they can have the freedom to express opinions and make decisions with the creation and implementation of two exclusive channels with them[302].

Finally, the project led to the creation of a women's working group. In their meetings, the women selected professional courses offered by SENAR, made available through the partnership between the project and the Altamira Rural Producers' Union (SIRALTA). Among the available options, they chose courses focused on agro-industry and social promotion. Also, within this working group, a physical activity group for women called "Healthy Body, Strong Mind" was organized, which was made possible by the organization promoted by the project and the space and materials the school now has[303].

[296] 230517_IFContractTempCabocloVillage.pdf
[297] 240301_FaunaContractTempCabocloVillage.zip
[298] 231030_CommunityAgentsContract.zip
[299] 240223_ResultsSchoolQuestionnaires.pdf
[300] 231018_TheoryofChange.pdf
[301] 240229_AllProjectGovernanceMeetings.zip
[302] 231019_CommunicationProcedureAnnexes.zip
[303] 240617_MeetingWomenReport

Therefore, with these first actions and short-term benefits achieved, the project is on track to generate the expected long-term benefit of poverty reduction and the improvement of gender equality, impacts that primarily benefit the community groups.

To achieve the long-term benefit of strengthening of community organization, the project has established 12 communication channels with the community[304], and participatory meetings, with a focus on governance, have been organized at different moments. In a scenario where the community had no social organization, the project has already conducted five governance meetings with an average participation of 73,6% of community members, including women, and active involvement of local leaders[301]. These communication channels have proven to be a highly effective tool for reaching and engaging the community. For example, in 2025, the dissemination, registration, and planning of both the photography contest and the training conducted by the São Félix do Xingu Fire Department were only possible due to the strengthening of these channels[305,306]. WhatsApp groups provide an accessible means for residents to stay in direct contact, keeping project activities visible and relationships active. Beyond regular updates, communications, and suggestions, these platforms foster greater social integration, which in turn generates multiple benefits for community life.

Through these activities, the project is contributing to the short-term benefit of community empowerment to participate in the design and implementation of project activities that positively impact their well-being, advocating for their own opinions collectively and minimizing potential conflicts. As a result, out of the total number of individuals participating in the last governance meeting before the closure of this monitoring (in January 2024), 93.8% and 87.5% indicated that they believe the project has inclusive decision-making processes and allows equal participation of all community members, respectively. Additionally, another 68.6% of individuals reported believing that the unity among community members has improved after the development of governance activities[299]. Therefore, with these first actions and short-term benefits achieved, the project is on track to generate the expected long-term benefit of strengthening of community organization.

To achieve the long-term benefit of improving the community's resilience to climate change, activities such as firebreak maintenance and training on fire control in forest areas have contributed to maintaining the project area, as well as strengthening community knowledge on wildfire prevention and behavior through the training provided by the Fire Department and a workshop was organized for community members regarding to sustainable use of water and the maintenance of water resources[307], in this workshop 100% of the participants stated that the topic is relevant to the community and that no doubts or points remained to be clarified after the meeting. In addition to the expository nature, the workshop aimed to create a working group with interested individuals for frequent discussion of the theme. In this way, the Agrosustainable Working Group was created, and at the meetings held there, people were encouraged to take part in SENAR's professional courses, which are facilitated by the partnership

[304] 240301_ImplementationCommunicationChannels.pdf
[305] Photography_contest_dissemination.zip
[306] FireCourse_Dissemination.zip
[307] 240226_WaterSecurityReport.zip

between Systemica and SIRALTA, around "Rural professional training" within the components related to sustainable agriculture. Therefore, the project is generating the short-term benefit of developing the capabilities of community members to combat fires, and use water sources, both directly related to preserving High Conservation Values (HCVs) 4 and 5 and the community's well-being.

4.4.2 Marginalized and/or Vulnerable Community Groups (CCB, GL2.4)

Among the community groups identified by the project, two of them are marginalized or vulnerable groups: women and those living below the poverty threshold. According to CCB's definition, marginalized groups are those that have little or no influence over decision-making processes and vulnerable groups are those who lack secure access to the assets on which secure livelihoods are built (socio-political, cultural, human, financial, natural, and physical) and with high exposure to external stresses and shocks (including climate change). The project is engaging with marginalized and/or vulnerable community groups. It has or is on track to gain net positive benefits, as can be seen in the following tables (Table 4.3 and Table 4.4).

Table 4.3. Net positive impact, benefit access, and negative impacts on the community group below the poverty threshold.

Community Group	Below the poverty threshold
Net positive impacts	The main positive impact generated by the project that primarily affects the group of those below the poverty threshold is poverty reduction. The TdX project is on track to achieve this long-term benefit through short-term benefits achieved. To date, for example, there has been the temporary hiring of local assistants and the permanent hiring of two community agents. This has contributed to an increase in income opportunities that occurred through the hiring of 8 community members to participate in project activities on a temporary or permanent basis[308], with 3 being women. One person reported an increase in income from the activity, and two of them reported an improvement in their well-being. Those hired temporarily by the project did not perceive an improvement in income, which is consistent with the type of occasional hiring, but they did have new opportunities and income diversification through the hires.

[308] Hiring_TdX.zip

	The school garden was implemented[309]. This has been incorporated as a pedagogical tool for teaching at the school, which, together with the donation of materials and equipment to the school, has contributed to improved teaching conditions (on a scale of 1 to 5), rising from 2 to 4[310]. The improvement of access to education indirectly also will contribute to poverty reduction. Thus, the benefits achieved within the scope of community governance and improving resilience to climate change to date also benefit the group of those living below the poverty line. The strengthening of community governance is contributing to the short-term benefit of community empowerment to participate in the design and implementation of project activities that positively impact their well-being[311], while the action related to water resources and fire control are generating the short-term benefit of developing the capabilities of community members to combat fires and use water sources[312,313].
Benefit access	To avoid any inequality in the hiring process, the job opportunities for community agents and local agents were widely publicized throughout the community, enabling the participation of any community member[314]. Similarly, to facilitate engagement in governance meetings and workshops on water resources, the communication channels outlined in the communication procedure were created[315] and used, aiming to reach the largest number of community members and groups.
Negative impacts	To ensure that these vulnerable members of the community were identified, stakeholder identification was carried out through the analysis of the data resulting from the social diagnosis[316].

[309] 240320_SchoolGardenReportandAnnex.zip
[310] 240223_ResultsSchoolQuestionnaires.pdf
[311] 240229_AllProjectGovernanceMeetings.zip
[312] 231205_MonitoringTraining.zip
[313] 240226_WaterSecurityReport.zip
[314] 231218_PromotionHiringAssistantsWhatsApp.pdf
[315] 231019_CommunicationProcedureAnnexes.zip
[316] 231023_SocialDiagnosisAnnexes.zip

The activity aimed at improving access to technology, information, and leisure could potentially result in negative impacts, such as the agglomeration of people in inappropriate areas in Caboclo Village or an increased susceptibility to digital scams. However, this activity has not been implemented yet, so none of these negative impacts have been observed. It is essential to emphasize that the project includes mitigation measures for these potential negative impacts, which will be implemented during the execution of the activity.

Regarding risks, the poor condition of roads in the project area may impede and delay activities. As a mitigation measure, a letter was sent to the Municipal Department of Construction, Roads, and Infrastructure (SEMOVI) in the initial attempt to establish a partnership with the department to improve mobility in Caboclo Village[317].

On the other hand, the communication procedure tool is being fully utilized to avoid a lack of community engagement in project activities that could affect the distribution and impact of project benefits. There is constant communication between the project team and the community. Governance meetings[311] have also been promoted to encourage active participation from community members.

There is a concern within the community that the project may draw attention to territorial inspection issues in Caboclo Village. This risk is being mitigated through informative lectures[318] and the creation of a Working Group on land-related issues.

Lastly, there is a concern in Caboclo Village that the project might reduce government support to the school and health post, which is already limited. To prevent this, a clarification meeting was conducted involving the Caboclo Village and Systemica Inteligência em Sustentabilidade S.A[319]. As the cooperation agreement with the health department has not been concluded, mitigation measures have not been implemented thus far.

[317] 240304_ImproveMobilitySEMOVI.zip
[318] 240220_LandIssuesReport.zip
[319] 240209_GovernanceMeetingJanuary2024.zip

Table 4.4. Net positive impact, benefit access and negative impacts on the community group of women.

Community Group	Women
Net positive impacts	The main positive impact generated by the project that predominantly affects the women's group is the promotion of gender equality. This long-term benefit is expected to be achieved through short-term benefits generated by project activities, including opportunities for diversification and income growth through the hiring of community agents and local assistants by the project, the promotion of women's participation in public social spheres and community governance, and training on the sustainable use of water and conservation of water resources, which, in turn, are short-term benefits for increasing climate resilience. Of the individuals hired by the project so far, two are women, and therefore, they have had new opportunities and income diversification. As for the activities aimed at the school, which bring improvements in teaching conditions, they benefit not only the students but also the teachers, who are women, through better infrastructure and availability of teaching tools. Specifically, 18 girls and two teachers, or 100% of women in the school community benefited in the improvement of teaching conditions from the donation of materials to the school[320], and 1 woman has participated in activities aimed at increasing resilience to climate change, such as workshops on sustainable water use and water resource conservation[321] On the other hand, with the project's efforts to promote female participation in governance spaces. An example of this is the exclusive channel with women, where all project activities are shared[322], and they can have the freedom to express opinions and make decisions. Also, a participation rate of 89% among women in the community was observed, with them representing an average of 52.2% of meeting participants[323].

[320] 231205_FirstDeliverySchoolSupplies.zip
[321] 240226_WaterSecurityReport.zip
[322] 240229_WhatsAppChat-MulheresVilaCaboclo.zip
[323] 240229_AllProjectGovernanceMeetings.zip

	Finally, the project led to the creation of a women's working group. In their meetings, the women selected professional courses offered by SENAR, made available through the partnership between the project and the Altamira Rural Producers' Union (SIRALTA). Among the available options, they chose courses focused on agro-industry and social promotion. Also, within this working group, a physical activity group for women called "Healthy Body, Strong Mind" was organized, which was made possible by the organization promoted by the project and the space and materials the school now has[324].
Benefit access	To avoid any inequality in the hiring process, the job opportunities for community agents and local agents were widely publicized throughout the community, enabling the participation of any community member[314]. Similarly, to facilitate engagement in governance meetings and workshops on water resources, the communication channels outlined in the communication procedure were used, aiming to reach the largest number of community members and groups. It is worth noting that there is a specific channel for women in the communication procedure, and the project team is attentive to the community's schedule availability, especially for women who often face triple daily workloads. Also, for this reason, the project always offers food breaks during meetings, so that participation is comfortable and less worrying to this group.
Negative impacts	To ensure that these vulnerable members of the community were identified, stakeholder identification was carried out through the analysis of the data resulting from the social diagnosis[325]. The activity aimed at improving access to technology, information, and leisure could potentially result in negative impacts, such as the agglomeration of people in inappropriate areas in Caboclo Village or an increased susceptibility to digital scams. However, this activity has not been implemented yet, so none of these negative impacts have been observed. It is essential to emphasize that the project includes mitigation

[324] 240617_MeetingWomenReport
[325] 231023_SocialDiagnosisAnnexes.zip

measures for these potential negative impacts, which will be implemented during the execution of the activity.

Regarding risks, the poor condition of roads, as a mitigation measure, a longer travel time is planned for all field trips, and an effort has been made to improve mobility between the Village and Altamira, together with the Municipal Department of Works, Roads and Infrastructure (SEMOVI), to establish a Technical Cooperation Agreement, This is also motivating the creation of a Mobility Working Group (WG) together with the community, which is also expected to organize the community's demands on the subject on a territorial basis[326, 327].

On the other hand, the communication procedure tool is being fully utilized to avoid a lack of community engagement in project activities that could affect the distribution and impact of project benefits. There is constant communication between the project team and the community. Governance meetings have also been promoted to encourage active participation from community members.

There is a concern within the community that the project may draw attention to territorial inspection issues in Caboclo Village. This risk is being mitigated through an informative lecture on land-related issues[328].

Lastly, there is a concern in Caboclo Village that the project might reduce government support to the school and health post, which is already limited. To prevent this, a clarification meeting was conducted involving the Caboclo Village and Systemica Inteligência em Sustentabilidade S.A[319]. As the cooperation agreement with the health department has not been concluded, mitigation measures have not been implemented thus far.

4.4.3 Net Impacts on Women (CCB, GL2.5)

The TdX project has generated net positive impacts on the well-being of women, and women have participated and influenced decision-making. The primary benefit intended for the women's group is the

[326] 240304_ImproveMobilitySEMOVI.zip
[327] 240304_ImproveMobilitySEMOVI.zip
[328] 240220_LandIssuesReport.zip

increase in gender equality, considering that this group is marked by social and economic differences in the community that tend to place women in vulnerable positions and perpetuate gender inequalities. However, achieving increased gender equality is a long-term benefit that is on track to be realized through short-term benefits achieved in the first monitoring period.

To date, some project actions, such as governance meetings, have been conducted exclusively with the community women's group, and in general, all project actions and activities developed in the first monitoring period have been widely publicized to ensure strong female participation. To ensure this, an exclusive channel with women was created in the project's communication procedure[329], where all project activities are shared[330], and the community's women can be free to express their opinions and contribute to project decision-making. Exclusive meetings have also been held with the women to make decisions about their participation and the co-conception of the project, and they have also taken part in governance meetings with the whole community. Therefore, a rate of 89% of women in the community participated in project governance meetings, where they could actively contribute to decision-making[331].

Up to this point, the women's group has taken advantage of opportunities for diversification and income growth by hiring 7 community members, with 2 being women[332,333,334]. One person reported an increase in income from the activity, and two of them reported an improvement in their well-being. Those hired temporarily by the project did not perceive an improvement in income, which is consistent with the type of occasional hiring, but they did have new opportunities and income diversification through the hires.

Additionally, 18 girls and two teachers, or 100% of women in the school community, have benefited from the improvement of teaching conditions from the donation of materials to the school[335], and they have participated in activities aimed at increasing resilience to climate change, such as workshops on sustainable water use and water resource conservation[336].

In addition, the project led to the creation of a women's working group. In their meetings, the women selected professional courses offered by SENAR, made available through the partnership between the project and the Altamira Rural Producers' Union (SIRALTA). Among the available options, they chose courses focused on agro-industry and social promotion. Also, within this working group, a physical activity group for women called "Healthy Body, Strong Mind" was organized, which was made possible by the organization promoted by the project and the space and materials the school now has[337].

These short-term benefits achieved will be further intensified throughout the project with the development of new activities, such as improving access to healthcare, internet, and leisure, vocational training courses, among others.

[329] 231019_CommunicationProcedureAnnexes.zip
[330] 240229_WhatsAppChat-MulheresVilaCaboclo.zip
[331] 240229_AllProjectGovernanceMeetings.zip
[332] 231030_CommunityAgentsContract.zip
[333] 240301_FaunaContractTempCabocloVillage.zip
[334] 230517_IFContractTempCabocloVillage.pdf
[335] 231205_FirstDeliverySchoolSupplies.zip
[336] 240226_WaterSecurityReport.zip
[337] 240617_MeetingWomenReport

Finally, the project promoted the community photography contest *"Olhares da Comunidade"*[338], in which participants were invited to portray how they perceive their territory and what makes them feel a sense of belonging to it. The initiative was designed to foster community integration and strengthen social bonds. Women played a leading role in this activity, with more than 70% participation, and notably, the three winners of the contest were women. Beyond the recognition, the contest highlighted women's creativity and capacity for self-expression, reinforcing their empowerment and demonstrating that they are able to engage meaningfully in diverse areas of community life.

4.4.4 Benefit Sharing Mechanisms (CCB, GL2.6)

The benefit-sharing mechanism is already described in Section 2.5.6 of this document and the Project Description.

4.4.5 Governance and Implementation Structures (CCB, GL2.8)

The governance and project implementation structure have been carried out by Systemica Inteligência em Sustentabilidade S.A., as the project proponent, the landowners, as other involved entities, and with community members directly (Figure 4.11).

Systemica Inteligência em Sustentabilidade S.A. deals with all administrative, technical, and commercial aspects necessary for the project's development and implementation. The landowners, on the other hand, are strictly fulfilling the responsibilities outlined in the project contract[339], executing what is within their responsibility and ensuring compliance with applicable legislation and no alteration to the community's and biodiversity way of life.

The third party, Caboclo Village, is participating in the design, implementation, and decision-making of the project's activities, meaning that it is directly involved in developing positive results for its community's well-being. Community participation in project activities and decision-making is encouraged by Systemica Inteligência em Sustentabilidade S.A. and is supported by the project communication procedure[340], which was also developed in collaboration with the community and has their approval. Furthermore, during the governance meetings along with the project and especially a field visit in January 2024[341], the project's governance structure was shared and discussed with the community, where details of activities being implemented or already implemented, as well as the responsibilities of each party, were also discussed.

[338] 250617_Concurso_Fotografia_QuemSomosNos.zip
[339] 230810_SystemicaDContract.pdf
[340] 231019_CommunicationProcedureAnnexes.zip
[341] 240209_GovernanceMeetingJanuary2024.zip

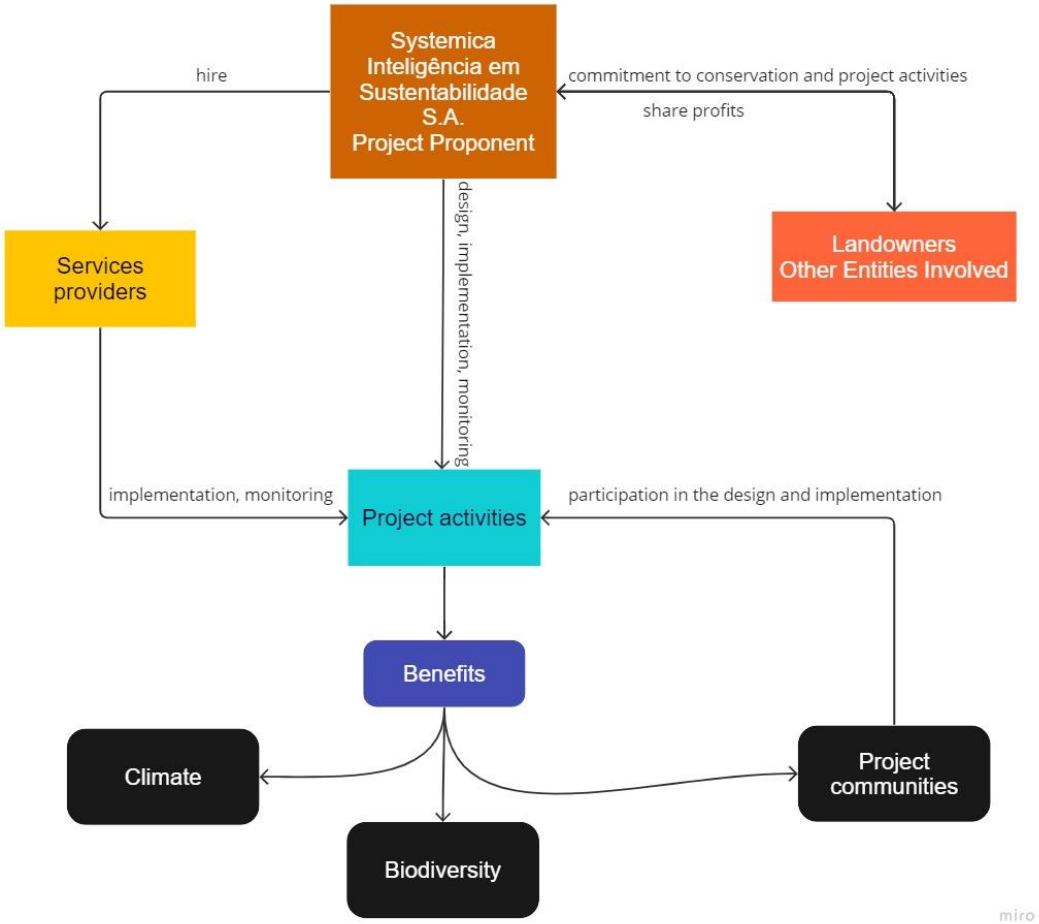


Figure 4.11. Governance and Implementation Structure of the TdX project.

4.4.6 Smallholders/Community Members Capacity Development (CCB, GL2.9)

The TdX project has developed the capacity of community members to participate effectively and actively in project design, implementation, and management. This was primarily developed through activities aimed at strengthening community governance and communication. So far, four in-person governance meetings have been organized with the community:

- REDD+ Capacity Building Activities[342]: was held at the beginning of the project in August 2022 and aimed to present the TdX project, bringing elements of environmental education and understanding their opinion about it. During this meeting, community participation was prioritized to guide some REDD+ capacities, mainly in the themes of (i) reduction of emissions from deforestation; (ii) reduction of emissions from forest degradation; (iii) how to contribute to increasing forest carbon stocks; and (iv) actions and attitudes that can contribute to controlling climate change and global warming.

[342] 230515_REDD+CapacityBuilding.zip

- Community Governance Meeting[343]: occurred in June 2023, aimed to present the communication procedure and previously defined project activities, and obtain suggestions from the community, which even resulted in new project activities.

- Meeting on Community Space and Other Demands[344]: took place in September 2023 and had as its main objective, the joint discussion on the community space to be implemented in the community, in addition, a reinforcement of the communication procedure was made to guarantee the full functioning of this tool.

- Community Governance Meeting[345]: the last one before this monitoring report was conducted in January 2024 and aimed to discuss different aspects of the project, including a conversation about understanding the governance structure, the project's communication procedures, and the auditing process. Three working groups were also set up to discuss and work together on certain project activities.

Governance meetings with the community aim to plan and facilitate a governance structure that enables community engagement in decision-making processes, including marginalized groups, especially women (the participation of these groups can be observed in the attendance lists of the governance reports mentioned above). These meetings are a means to develop social capacities, preparing community members to actively participate in the project's development. As part of these activities, the communication procedure was created and disseminated initially to enhance communication effectiveness within the project stakeholders, particularly with the community and community groups.

In Caboclo Village, there are no relevant local organizations, but the project is improving the capacity of local institutions, such as the school, where all meetings with community participation take place, in addition to being the target of improvements through project activities.

In addition to governance meetings, lectures, and work groups that addressed topics of interest to the community, such as sustainable water use activities[346] and land regularization[347], are also activities that contribute to the development of capacities for project development.

For each implemented project activity that required training for community members, specific training sessions were conducted. So far, training has been provided for techniques in floristic and biomass inventory[348], fauna inventory[349], installation and maintenance of camera traps for fauna monitoring[350,351,352], and training and preventive security in patrolling and monitoring project areas[353].

[343] 231019_ReportGovernanceMeeting.zip
[344] 231011_ReportFieldWorkandAnexxes.zip
[345] 240209_GovernanceMeetingJanuary2024.zip
[346] 240226_WaterSecurityReport.zip
[347] 240220_LandIssuesReport.zip
[348] 230517_CertificateInventoryCabocloVillage.pdf
[349] 231214_WildlifeMonitoringTraining.zip
[350] 231011_ReportFieldWorkandAnexxes.zip
[351] 231205_TrapCameraTraining.zip
[352] 231205_PreventiveSafetyTraining.zip
[353] 231205_MonitoringTraining.zip

5 BIODIVERSITY

5.1 Net Positive Biodiversity Impacts

5.1.1 Biodiversity Changes (VCS, 3.19; CCB, B2.1)

The evaluation of anticipated impacts on biodiversity arising from project activities was conducted in accordance with the project's theory of change, outlined in Section 2.1.8 of the Project Documentation (PD). Nevertheless, validating biodiversity impacts poses challenges, given the inherent complexities and the limited observability within the current monitoring period. It is important to highlight that all monitoring and execution of activities follow an adaptive management plan in accordance with the financial health of the project and any methodological changes made by the certifier. The findings presented herein are preliminary, focusing on the initial stages of implementation as outlined in the project design. Regarding the Biodiversity Conservation Standardized Benefit Metrics, the species identified through the fauna and forest inventories that are globally classified as Critically Endangered or Endangered and are benefiting from reduced threats because of project activities, when measured against the without-project scenario, include *Ateles marginatus*, *Ocotea fragrantissima*, and *Virola surinamensis*.

Table 5.1. Change in Biodiversity: Maintenance of the populations of threatened species and HCV1 species.

Change in Biodiversity	Populations of threatened species, vulnerable, endemic species, and HCV 1 species
Monitored Change	Maintenance
Justification of Change	In the fauna inventory[354] it was recorded 7 bird species and 4 mammal species at some level of extinction threat regarding national (ICMBio, 2024) and international (IUCN, 2023) classifications, and 9 endemic bird species and 2 endemic bat species. Also, two migratory species were registered: *Vireo chivi* and *Lathrotriccus euleri*. *Vireo chivi* is a species that breeds in the center-west and south of Brazil and Peru, in addition to the center-west of Paraguay and northern Argentina, migrating after the nesting period to the Amazon (Somenzari et al., 2018). *Lathrotriccus euleri* has its populations living in the south of Brazil, migrating to the North during the winter (Somenzari et al., 2018).

[354] 230919_FaunaInventoryReport.pdf

	Regarding mammal fauna, the project area harbor abundant populations of the trigger species *Ateles marginatus* (see Section 5.4.1), and the vulnerable species tapir, which is considered the largest neotropical mammal, predominantly herbivorous and occurs in different Brazilian biomes, but it suffers intense hunting pressure and in some Brazilian regions it has already become locally extinct (Reis et al., 2006). Although it was not recorded all individuals of the local tapir population in the areas investigated, several signs suggest that this population is larger than it appears. The fact that traces such as footprints and feces of these animals were found indicates the constant presence of tapirs in the region. Tapirs are known to be discreet creatures and prefer to move at night, which can make direct detection even more difficult (Reis et al., 2006). Therefore, it is plausible to argue that the actual tapir population in the area may be significantly higher than evidence suggests, given their elusive nature and the constant threat of hunting. At the REDD+ Didácio farm, traces of *Panthera onca* were detected (non-systemic data) and at the REDD+ Sefer Farm, *Alouatta belzebul* was detected, both species classified as vulnerable by IUCN (2023) and ICMBio (2024). The sampled sites in the project area are located between the Tapajós and Xingu Rivers, region also known as Tapajós Center of Endemism (C.E. Tapajós) (Da Silva et al., 2002). The project area indicated significant numbers of endemic species, bioindicators of environmental quality, and migratory species, in addition to balanced trophic guilds with the presence of the most varied feeding species habits, especially specialist frugivores and insectivores bird species[354]. In this way, the project area has the potential to guarantee the maintenance of these two habitat patches and can offer appropriate conditions for the preservation of this species, free from hunting and the destruction of its natural habitat.

Table 5.2 Change in Biodiversity: Maintenance of native forest area and HCV 2.

Change in Biodiversity	Area of native forest and HCV 2
Monitored Change	Maintenance

Justification of Change	The project area, together with Triunfo do Xingu Environmental Protection Area, and other Protected Areas form the mosaic called Terra do Meio that covers an extensive area of tropical forest.[354] According to the last Intact Forest Landscape (IFL, 2020) assessment, there are in the project zone, globally, regionally, or nationally significant large landscape-level areas where viable populations of occurring species exist in natural patterns of distribution and abundance. In the project area the IFL maintains[355]. The project area is important for maintaining the conservation of the local continuum of ecosystems, species and microhabitats, as they are in the Terra do Meio mosaic region. During the monitoring period, the TdX territory was systematically monitored through the integration of remote sensing technologies and participatory territorial assessments. This combined approach aims to enable early detection and prevention of negative disturbances such as forest degradation, and fire outbreaks. These efforts supported the protection of native forest,. In addition to technological monitoring, community-based surveillance and fire prevention initiatives contribute to maintaining the forest's ecological integrity. These efforts support the preservation of critical ecosystem functions, including carbon storage stabilization, biodiversity conservation, and regulation of hydrological cycles, ensuring the long-term sustainability of the forest within the project area.

Table 5.3 Change in Biodiversity: Human-wildlife interaction.

Change in Biodiversity	Human-wildlife interaction
Monitored Change	No change observed
Justification of Change	The project is still at the beginning of implementing its activities, and as the dynamics of the human-fauna relationship are a complex multivariate network with cultural and historical factors, any changes in this monitoring period are unlikely. However, some activities have been initiated. Such as the questionnaire on ecological perceptions and hunting practices[354], in which it was possible to map and better understand the cultural history of subsistence hunting and the application of any criteria for choosing species, closed seasons or

[355] XXXXX_RemoteSensingMonitoring.pdf

selection based on degree of threat of extinction. In the lecture on environmental education and sustainability[356], crucial issues were addressed to initiate dialogue with the community regarding biodiversity conservation. This lecture reached an adult audience. The workshop on ecological functions[357], climate change and biodiversity conservation involved children and young people who discussed the importance of fauna on a global scale. In addition, on May 15, 2024, an awareness activity on hunting was conducted at Novo Pacto Municipal School and aimed primarily to raise awareness about hunting practices, their environmental, social, and economic implications, as well as to discuss sustainable alternatives and specific regulations of the Triunfo do Xingu Grouped REDD+ Project, particularly concerning the project areas.[358] The activity was addressed to community members who hunt as a cultural expression and those who work or have worked in the project areas and in activities related to the CCB. The event aimed to foster a constructive and educational dialogue on the subject. During the activity, the concept of "Forest Guardians" was introduced to encourage and hold community members responsible for protecting and preserving forest ecosystems, recognizing the importance of forests for biodiversity, environmental balance, and the quality of life of the community. The title suggests a noble mission of watching over and caring for the forests. Additionally, the name reflects the joint efforts of different social actors (hunters, rural workers, community agents) towards a common goal: the preservation of forests and the promotion of a balanced and healthy environment. This union is essential to face the environmental challenges of the project and find solutions that reconcile conservation and sustainable development with local cultural expressions.

In the context of fauna maintenance, elements that support the understanding of alternative income opportunities, such as bird watching or ecotourism, were presented. The ecological importance of trophic interactions and their direct impacts on the reduction of natural pollinators was presented as an example.

[356] 230618_LectureBiodiversity.zip
[357] 231205_EcologicalFunctionsWorkshopReport.zip
[358] 240619_Bio-sensitizationReport.zip

5.1.2 Mitigation Actions (VCS, 3.19; CCB, B2.3)

During all training activities and lectures, cautionary approaches were used that emphasized the need to conserve fauna and flora.[359,360,361] Suppliers and local agents who worked on biodiversity activities signed the conduct and ethics term in the contracting procedure that declares the use of information and equipment solely and exclusively for conservation purposes, preventing the practice of activities harmful to biodiversity during activities, and agreeing with the fundamental pillars for the project of no harm to fauna, minimal impacts to the environment and integrity.[362,363] These measures are consistent with the precautionary principle, as it was taken regardless of whether this negative impact is observed. In addition, On May 15, 2024, an awareness activity about hunting impacts was conducted at Novo Pacto Municipal School and aimed primarily to raise awareness about hunting practices, their environmental, social, and economic implications, as well as to discuss sustainable alternatives and specific regulations of the TdX project, particularly concerning the project areas[364]. As supporting material, pamphlets containing educational information about the content presented were distributed. Complementing these efforts, the project has undertaken continuous monitoring of the area using multiple tools, including fire outbreak analysis, forest cover monitoring through remote sensing, and patrol monitoring activities.

5.1.3 Net Positive Biodiversity Impacts (CCB, B2.2, GL1.4)

Table 5.4 Net positive Biodiversity impacts and Species and habitats protected.

HCV 1 Species and Dense Ombrophilous Forest	The project provided positive impacts on biodiversity by carrying out the activities outlined in the underlying theory of change[365]. The ongoing monitoring period includes planned actions that have been either initiated or are currently in progress, contributing to biodiversity gains in various aspects as outlined below. In a situation where the project is absent, as detailed in (refer to Section 5.1.3 of PD), the decline of native forest areas would result in irreversible consequences for both wildlife and flora. Another area in which initial benefits have been achieved is in strengthening environmental and civic education. Through the activities of environmental lecture[366] and workshop[367] (see Section 5.3.1) A dialogue began to raise awareness among the community, in different age groups,

[359] 231205_TrapCameraTraining.zip
[360] 231214_ WildlifeMonitoringTraining.zip
[361] 231205_EcologicalFunctionsWorkshopReport.zip
[362] 230516_WildlifeSupplierContract.pdf
[363] 240111_ConductAgreementsSigned.zip
[364] 240619_Bio-sensitizationReport.zip
[365] 231018_TheoryofChange.pdf
[366] 230618_LectureBiodiversity.zip
[367] 231205_EcologicalFunctionsWorkshopReport.zip

	about climate change and the role of biodiversity conservation for ecological balance. The fauna inventory[368] activity produced local knowledge about the stage and pattern of faunal occupation of the project area and systematized it for the elaboration of specific future strategies for conserving existing biodiversity. Furthermore, through the trainings[369] and creation of job opportunities[370] (both direct hiring and capacity building) in biodiversity activities, it generates a positive vision for the community, with the prospect of generating income from biodiversity monitoring and conservation activities.

The protection of the project area maintains the native forest cover and its associated ecosystems and microhabitats. Also, patrolling and surveillance[371] of strategic checkpoints benefit both flora and fauna, preventing illegal occupation or illegal activities of logging and hunting, and provides wildfire surveillance, allowing mitigation or avoidance measures to be taken. In the climate change scenario, the occurrence of fires is expected to increase, and the project activity can help adapt fauna and flora to this scenario.

5.1.4 High Conservation Values Protected (CCB, B2.4)

Most of the activities developed and planned by the project are aimed precisely at maintaining and conserving the original forest cover and preserving biodiversity. There are therefore no HCVs or species of flora and fauna adversely affected. The maintenance of the project area in its original condition provides for the conservation of flora species (including endemic species at risk of conservation) and consequently the maintenance of habitats for fauna species. In addition to the benefits within the project area, forest conservation also allows for connectivity between the different types of conservation units near the project zone.

5.1.5 Species Used (VCS, 3.19; CCB, B2.5, 2.6)

Table 5.5 Species used in the project.

Species introduced	Classification	Justification for use	Adverse effects and mitigation
Lettuce, arugula, radish, kale, tomato, okra, peppers, onion, pumpkin, carrot	Non-native	These are species of food value, vegetables of common and widespread use by the community.	Given the already existing and common use in the project zone, and that the use in the project activity will be

[368] 230919_FaunaInventoryReport.pdf
[369] 231214_ WildlifeMonitoringTraining.zip
[370] 231214_CommunityContracting.zip
[371] 231205_MonitoringTraining.zip

			contained within the community garden space, there are no adverse effects.
Free-range cucumber	Native	Common species in the project area, with food value to be used in the community garden.	Given the already existing and common use in the project zone, there are no adverse effects.
Thitonia diversifolia (margaridão)	Native	Used to form a living fence as a biological barrier to protect the community garden	There are no adverse effects.
Ricinus communis (Mamona)	Non-native	Used to form a living fence as a biological barrier to protect the community garden	Given the already existing and common presence in the project zone, there are no adverse effects.

5.1.6 Invasive Species (VCS, 3.19; CCB, B2.5)

Considering the Invasive Alien Species National Database Network from Horus Institute (Instituto Hórus, 2023) and the fauna inventory[372] carried out, the project has not identified any invasive species of flora or fauna, nor does it foresee the introduction of non-native species.

5.1.7 GMO Exclusion (CCB, B2.7)

The Triunfo do Xingu Project does not envisage the use or introduction of any genetically modified organisms into the project area to reduce or remove greenhouse gases.

5.1.8 Inputs Justification (VCS, 3.19; CCB, B2.8)

The project completely excludes the use of chemical pesticides, biological control agents, or synthetic fertilizers in any activities

5.2 Offsite Biodiversity Impacts

5.2.1 Negative Offsite Biodiversity Impacts (CCB, B3.1) and Mitigation Actions (CCB, B3.2)

The project aims to conserve the biodiversity and ecosystems in the project area. All the planned activities described in Section 2.1.8 of the Project Description are designed to lead to positive impact on climate,

[372] 230919_FaunaInventoryReport.pdf

community, and biodiversity. There will be no negative impacts outside the project area. Also, throughout the duration of the project the principle of adaptive management will be applied, in which any impacts outside the project area will be reassessed and when identified, specific actions will be designed to mitigate any negative impacts.

5.2.2 Net Offsite Biodiversity Benefits (VCS, 3.19; CCB, B3.3)

For the expected Biodiversity benefits (see Section 5.2.3 of the PD), as the project is still in the initial phase of implementing activities, it is unlikely that there will already be any positive impact on biodiversity beyond the project area in this monitoring period.

As noted in Section 5.2.1, no negative impacts on biodiversity have been observed outside the project area because of project activities. However, during the current monitoring period, it is not yet possible to verify measurable net biodiversity benefits beyond the project zone. To date, the project's efforts have been primarily focused on the conservation of local biodiversity. Additionally, maintaining the original soil cover contributes to broader ecological benefits, such as enhanced forest connectivity with surrounding areas and increased resilience to climate change. Environmental education is another important component, fostering awareness of the community about their connection to the forest and local wildlife. These efforts are expected to lay the groundwork for broader, long-term offsite biodiversity benefits. As these initiatives mature, it is anticipated that positive outcomes will extend to communities surrounding the TdX project area.

5.3 Biodiversity Impact Monitoring

5.3.1 Biodiversity Monitoring Plan (CCB, B4.1, B4.2, GL1.4, GL3.4)

Accordingly, to the project’s theory of change rationale, the main biodiversity objective is the permanence or increase in the population of all endangered and endemic fauna and flora species identified in the project area until the end of the project period. Following is described as the activities that already started and the ones that are still in initial development.

Table 5.6 shows the biodiversity indicators, their sampling methods, monitoring frequency, areas, related HCVs and exceptional benefits, and related Pressure-State-Response (PSR) attribute.

Table 5.6 Indicators of Biodiversity Monitoring plan.

Indicator	Sampling methods	Frequency of monitoring	Status for this monitoring period	Areas to be monitored	HVCs	Gold	PSR indicator
Number of lectures and/or awareness events on environmental and civic education	Counting; meeting minutes, documents, reports	Each 1 – 2 years	3 (REDD+ training; Environment, sustainability and biodiversity lecture; Envriomental education lecture)	Caboclo Village	HCV 4	GL1	R
Participation obtained in the lectures and/or events on environmental and civic education	Counting; meeting minutes, documents, reports	Each 1 – 2 years	78 people	Caboclo Village	HCV 4	GL1	R
Percentage of people who recognize the importance of biodiversity	Survey conducted on the population	5 years	No data available. This indicator will be monitored in the future.	Caboclo Village			S
Percentage of women who recognize the importance of biodiversity	Survey conducted on the population	5 years	No data available. This indicator will be monitored in the future.	Caboclo Village			S
Number of community members training or participating in monitoring the project area or zone	Counting; meeting minutes, documents, reports	Each 1 – 2 years	32 participants without duplication, since some individuals attended more than one session.	Project zone	HCV 4	GL1	R

Indicator	Sampling methods	Frequency of monitoring	Status for this monitoring period	Areas to be monitored	HVCs	Gold	PSR indicator
Forest and Biodiversity Benefits Perception Index (level of agreement with statements about direct and indirect benefits of biodiversity for human well-being)	Survey conducted on the population	5 years	The overall average index was 89.4%, based on community perceptions[373] of the benefits provided by forests and their conservation for human well-being	Caboclo Village			S
Number of attempts of cooperative discussions conducted with local authorities/institutions regarding wildlife protection programs	E-mail, meeting notes or documents	5 years	5 contacts were made (2 with universities and 3 with specialists)	Project zone	HCV 1		R
Percentage of people who perceive some change in biodiversity over time	Survey conducted on the population	5 years	77%[374] of respondents reported perceiving changes in biodiversity over time	Caboclo Village			S
Number of people interested in participating in wildlife protection programs or measures	Survey conducted on the population	5 years	Of the 11 respondents[375], 6 expressed strong interest in participating in wildlife protection programs	Caboclo Village			R

[373] 241118_QuestionárioPercepçõesEcológicas.pdf
[374] 241118_QuestionárioPercepçõesEcológicas.pdf
[375] 241118_QuestionárioPercepçõesEcológicas.pdf

Indicator	Sampling methods	Frequency of monitoring	Status for this monitoring period	Areas to be monitored	HVCs	Gold	PSR indicator
Number of strategies for human-wildlife coexistence fostered	Counting; meeting minutes, documents, reports	5 years	1 lecture focused on environmental issues, sustainable development, biodiversity and human-wildlife relationship	Caboclo Village, Project zone			R
Number of monitoring campaigns for focal fauna/flora species carried out	Fauna and Biomass inventories; Phytosociological report	6 years	2 campaigns	Project area	HCV 1		R
Species richness and relative abundance indexes	Fauna inventory; Camera trap monitoring	3 years	During this monitoring period, only the fauna inventory[376] and phytosociological report[377] data are available. To carry out calculations based on camera trap data, a larger sampling effort is required; therefore, no results are reported for this monitoring period	Project area	HCV 1		S

[376] 230919_FaunaInventoryReport.pdf
[377] 231030_PhytoReport_tdx.pdf

Indicator	Sampling methods	Frequency of monitoring	Status for this monitoring period	Areas to be monitored	HVCs	Gold	PSR indicator
Maitenance or increase in species richness and relative abundance indexes	Fauna and Biomass inventories; Phytosociological report	6 years	During this monitoring period, only the fauna inventory[378] and phytosociological report[379] data are available. To carry out calculations to further comparisons and reports, a larger sampling effort is required	Project area	HCV 1		S
Relative abundance and population viability analysis of Ateles marginatus	Active surveys; occasional sights	3 years	Data on *A. marginatus* abundance is reported in Section 5.4.1. No population viability analysis was carried out during this monitoring period. Additionally, during patrols conducted in the project areas between 2024–2025, 20 sightings or traces of *A. marginatus* were recorded	Project area		GL3	S

[378] 230919_FaunaInventoryReport.pdf
[379] 231030_PhytoReport_tdx.pdf

Indicator	Sampling methods	Frequency of monitoring	Status for this monitoring period	Areas to be monitored	HVCs	Gold	PSR indicator
Number of fauna monitoring reports produced (which includes camera trap monitoring reports and Ateles marginatus monitoring reports)	Camera trap monitoring reports; Primate active search reports	Each 1 – 2 years	No specific reports for *A. marginatus* or camera trap monitoring were produced during this monitoring period. However, monitoring of *A. marginatus* through patrol sightings is in place and actively conducted, and a dedicated survey campaign is planned for the next activities. In addition, four monitoring campaigns using camera traps have already been carried out, and further campaigns will be initiated later this year. The preparation of camera trap reports is being facilitated through partnerships with specialists, and as part of the upcoming activities, sufficient data will be processed to produce these reports	Project area	HCV 1	GL3	R

Indicator	Sampling methods	Frequency of monitoring	Status for this monitoring period	Areas to be monitored	HVCs	Gold	PSR indicator
Number of hunting pressure assessments	Survey conducted on the population	5 years	No data available. This indicator will be monitored in the future	Caboclo Village, Project zone	HCV 1	GL3	P
Fauna sights index, during patrolling campaigns	Patrolling checklist	3 years	A total of 52 sightings were recorded during patrols between 2024–2025. The fauna sighting indices assessed during patrol campaigns included direct observations of *Tapirus terrestris*, *Panthera onca*, and *A. marginatus*, as well as their traces	Project area	HCV 1		S
Maintenance or increase in fauna sights index, during patrolling campaigns	Patrolling checklist	3 years	In relation to 2024, there was an increase of approximately 56% in the number of sightings reported for 2025. The calculation was based on the comparison of the average number of sightings recorded in the project areas during patrols in 2024 (4 sightings) with	Project area	HCV 1		S

Indicator	Sampling methods	Frequency of monitoring	Status for this monitoring period	Areas to be monitored	HVCs	Gold	PSR indicator
			those reported for 2025 (6.25 sightings)				
Number of identified threat occurrences during monitoring	Counting; meeting minutes, documents, reports	Each 1 – 2 years	During the monitoring period, 12 patrols were carried out (6 on each property), with a total of 7 threats observed, all located on the Sefer property. Six threats were related to the presence of cattle within the project area, and one to the opening of a clandestine trail	Project area	HCV 4	GL1	P
Reduction in the rate of identified threat occurrences during patrol campaigns in the project area	Patrolling checklist	Each 1 – 2 years	During the monitoring period, 12 patrols were conducted (6 on each property), with a total of 7 threats observed, all located on the Sefer property. Six threats were related to the presence of cattle within the project area, and one to the opening of a clandestine trail. Compared to the	Project area	HCV 4	GL1	R

Indicator	Sampling methods	Frequency of monitoring	Status for this monitoring period	Areas to be monitored	HVCs	Gold	PSR indicator
			average number of occurrences recorded per patrol in 2024, a 20% reduction was reported in 2025				
Number of protected ha of native forest areas of high ecological importance and critical habitats.	Remote sensing	At each verification	10,704.58 ha	Project area	HCV 1; HCV2	GL1	R

5.3.1.1 Maintenance of the native forest cover within the project area

As part of the monitoring framework, two key indicators were analyzed to track the conservation of native forest cover throughout the Project Area. The first indicator focuses on the total extent of native forest that remains available as habitat for local biodiversity. The baseline for comparison is deforestation projected under a without-project scenario. Forest cover was assessed using high-resolution (10 m) satellite imagery, applying techniques described in methodology VM0048 and its module VMD0055. Monitoring is conducted at each verification event and complemented by routine remote sensing analyses. Monthly monitoring reports are prepared to capture short-term variations, and a consolidated annual report compiles results for the full calendar year.

The preservation of forest cover aligns with project objectives, contributes directly to AVC 1 and 2, and supports Gold Level criterion GL1 by ensuring the continuity of habitat and maintaining microclimatic stability essential for species resilience.

5.3.1.2 Environmental education open lecture

On June 18, 2023, a lecture[380] was held entitled “environment and sustainability: building a greener and more conscious future”, talking about environmental issues, sustainable development, biodiversity, the human-wildlife relationship and how to develop solutions to environmental problems. The lecture was an important milestone, when participated 31 community members 16 of whom were women, and as it served as a moment of environmental education and subsequent discussion on the topics covered, and sensibilization about the interaction between the community and the environment.

Figure 5.1 Image record of the lecture.

[380] 230618_LectureBiodiversity.zip

5.3.1.3 Workshop on the ecological functions of fauna and sustainable activities

On November 24, 2023, a workshop[381] on ecological functions was held at the Novo Pacto Municipal School (Figure 5.2), located in Caboclo Village, for elementary school students. The workshop was divided into two parts: in the morning for 6th to 9th graders, 13 students were present, and in the afternoon for 1st to 5th graders, 20 students were present.

Figure 5.2 Guidance for developing practical activities and activities carried out to fix the concepts.

The workshop was taught entirely by the biologist Joelma Santos do Prado, who is part of Systemica's team of experts and works on the project's biodiversity scope. The aim of the workshop was to provide a theoretical but playful and practical approach to topics that are relevant to the conservation of biodiversity and the environment, focusing on the concepts of ecology, climate and climate change, conservation and protection of vegetation. Also, some local species and their ecological importance were presented (e.g. *Tapirus terrestris, Panthera onca*) and the project's trigger species *Ateles marginatus*, which is an endangered species. In this context, concepts such as species extinction and species conservation were explained. It emphasized how the protection of vegetation cover benefits fauna in adapting to climate change. The scope of the activities that were developed and other details of the workshop can be found in the Reference Term for the Ecological Functions Workshop at School. The planning of the workshop was aligned in advance with the teaching staff, and the proposal was agreed by the school director together with the teacher in charge of the unit.

5.3.1.4 Fauna inventory

From June 17th to July 1st, 2023, a fauna survey campaign was carried out in the project area, with an inventory of species from the groups of amphibians, reptiles, avifauna, mammal fauna and bats. The sampling methods, sampling effort and data analysis method are described in the technical report[382]. The entire work plan and sampling methods followed the principles of minimum impact on fauna and the environment. The results describe the composition, species richness and abundance of individuals for

[381] 231205_EcologicalFunctionsWorkshopReport.zip
[382] 230919_FaunaInventoryReport.pdf

the different taxes listed. The results are presented by the samplings on the two sites that configure the project area (I – Didacio's farm and II – Sefer's farm).

5.3.1.4.1 Amphibians

At site I, 34 specimens of anurans grouped into 6 families and 11 species of anuran amphibians (toads, frogs and tree frogs) were recorded, where the species *Rhinella marina* and *Boana multifasciata* were the most abundant with 10 and 6 specimens observed, respectively. At site II were observed 48 specimens grouped into 5 families and 9 species, the most abundant species were *Rhinella marina* and *Trachycephalus typhonius*, with 10 and 8 individuals recorded, respectively. No specimens of any species were collected, all of which were released after capture and handled only for biometrics and photos. The families Leptodactylidae (frogs) and Bufonidae (toads) showed greater richness at site I, with 4 and 3 species recorded, respectively. Greater richness was observed in the families Leptodactylidae and Hylidae (tree frogs) at site II, with 3 and 2 species recorded, respectively. This pattern is very common in inventories in the Amazon, since Leptodactylidae, Hylidae and Bufonidae are the most found families, in addition to being widely distributed throughout the region (Duellman & Trueb, 1994). Practically all amphibian species can be considered bioindicators of environmental quality, given the great dependence shown by these animals on a balanced environment, as they depend on specific habitats and microhabitats. Among the species found, all have certain habitat requirements, and their occurrence in these areas shows that the environment still maintains the necessary conditions to maintain these populations.

Species from the Hylidae family have diverse reproductive strategies, as well as species from the Leptodactylidae family, which provides a great advantage over other species, as observed in the Genus Adenomera, where species excavate rounded depressions, where they deposit their eggs, until hatching and beginning of larval development and are independent of bodies of water for their reproduction, and this may be the reason why these animals are always present in great abundance in samples.

Pristimantis fenestratus – tree frog – Sefer Farm.

Boana multifasciata – tree frog – Fazenda Sefer.

Rhinella marina – Sapo Cururu – Fazenda Didácio.

Trachycephalus typhonius – Resin frog – Didácio Farm.

Trachycephalus typhonius – Resin frog – Sefer Farm.

Physalaemus ephippifer – little frog –Didácio Farm.

Cercosaura ocellata – leaf litter lizard – Sefer Farm.

Cercosaura ocellata – leaf litter lizard – Sefer Farm.

Figure 5.3 Photographic records of some identified species.

5.3.1.4.2 Reptiles

It was recorded 25 specimens relating to 12 species of reptiles in the five areas sampled at site I (8 lizards and 4 snakes) and 36 individuals belonging to 11 species at site II (6 lizards, 3 snakes and 2 testudines). The species *Plica umbra*, which is closely associated with well-preserved areas, occurred concomitantly in both areas, as well as *Norops chrysolepis* and *Imantodes cenchoa*, all species associated with forest areas. *Micrurus lemniscatus* appears on the international list of threatened species of CITES (Convention on International Trade in Endangered Species of Wild Fauna and Flora) and Normative Instruction MMA no. 1, of 12/9/2010 as threatened. Litter lizards, such as *Chatogekko amazonicus* and *Cercosaura ocellata* are always good bioindicators of forest change, indicated by several authors (Avila-Pires et al., 2007; Ávila-Pires, 1995; Bernarde & Abe, 2006; Vitt & Caldwell, 1994). These animals feed on small invertebrates and need a balanced environment to maintain their activities and foraging (Vitt & Caldwell, 1994). The litter also conditions shelter sites during the day, maintaining the ideal temperature for these animals to remain in undisturbed places, since small lizards do not survive extreme temperatures, quickly disappearing in deforested areas (Avila-Pires et al., 2007). Species of arboreal lizards, such as *Norops chrysolepis, Dactyloa punctatus and Plica umbra*, live on the trunks of small to medium-sized trees and have a specialized diet of ants (Vitt & Zani, 1998), can also be considered bioindicators, as the smallest change in its habitat, such as fragmentation, deforestation or anthropogenic activities that could cause these changes would result in local extinction (Avila-Pires et al., 2007). *Norops chrysolepis* is known to be an excellent indicator of air quality. Changes in the atmosphere, pollution and climate change can affect their behavior and distribution. Their presence and behavior can provide clues about local air quality. Lizards associated with water bodies, such as *Potomites ecpleopus*, are considered a local endemic species, since their populations occupy the banks of streams, this being their home range, forming isolated and often parthenogenetic populations (Vitt & Caldwell, 1994).

5.3.1.4.3 Avifauna

The area of influence of the REDD+ Triunfo do Xingu Didácio project presented a richness of 99 registered species distributed in 18 orders, 37 families and 237 registered individuals. The REDD+ Triunfo do Xingu Sefer project demonstrated a richness of 101 species distributed in 18 orders, 34 families and 250 registered individuals (Table 5.7). It is worth mentioning that the Triunfo do Xingu Environmental Protection.

Table 5.7 Richness, abundance, number of families and orders of bird species considering detection in systematic collection sampling methods in the project area, in the dry season, June 2023.

Sampled sites in the Project Area	Richness	Abundance	Families	Orders
I	99	237	37	18
II	101	250	34	18

Regarding trophic guilds, I presented the insectivore guild as the largest in terms of species richness, followed by the frugivore and carnivore guild, respectively. And site II presented the insectivore guild as the largest in number of species detected, followed by the frugivore and omnivore guild. It is worth

highlighting the guild that occupied second place in number of species in both sampled sites, was the frugivores, with 40 and 46 species detected, respectively.

Some studies point to a scenario in which environmental fragmentation causes the disappearance of specialist insectivores and frugivores (da Silva & Tabarelli, 2000; Willis, 1979). This scenario differs from that found for the projet area, as we found a high number of frugivores, especially large ones such as Cracidae, Psittacidae of the genus *Ara sp*. and *Amazona sp*., the Ramphastidae, among other frugivores that indicate that the areas of both sites are well preserved. Furthermore, as previously mentioned, it was detected the Thamnophilidae family in both projects as the richest in species and, in this family, several species of specialist insectivores following army ants such as *Pyriglena similis, Cymbilaimus lineatus, Thamnomanes caesius, Epinecrophylla leucophthalma, Epinecrophylla ornata, Cercomacroides nigrescens, Taraba major*, among others.

Figure 18: Species *Hylophylax naevius*, mist net method, avifauna in the area of influence of the Triunfo do Xingu-Sefer conglomerate REDD+ project, sampling unit S2 dry season, June 2023.

Figure 19: Species *Glyphorynchus spirurus*, mist net method, avifauna in the area of influence of the Triunfo do Xingu-Sefer conglomerate REDD+ project, sampling unit S5 dry season, June 2023.

Figure 20: Species *Penelope pileata*, active daytime search, avifauna in the area of influence of the Triunfo do Xingu-Didácio conglomerate REDD+ project, sampling unit DT3 dry season, June 2023.

Figure 21: Species *Trogon viridis*, active diurnal search, avifauna in the area of influence of the Triunfo do Xingu-Didácio conglomerate REDD+ project, sampling unit DT1 dry season, June 2023.

Figure 22: Species *Pulsatrix perspicillata*, active nocturnal search, avifauna in the area of influence of the REDD+ project of the Triunfo do Xingu-Didácio conglomerate, sampling unit DT3 dry season, June 2023.

Figure 23: Species *Nyctidromus albicollis*, active nocturnal search, birdlife in the area of influence of the Triunfo do Xingu-Didácio conglomerate REDD+ project, sampling unit DT3 dry season, June 2023.

Figure 5.4 Photographic records of some Avifauna identified species from fauna inventory.

5.3.1.4.4 Terrestrial Mastofauna

Mammals, due to their morphological and functional diversity, occupy several ecological niches, becoming excellent indicators for the biological characterization of the landscape and the detection of possible changes. Results indicated the project area as a good forest remnant with the potential to shelter and promote the maintenance of different species of mammals with a significant diversity of use in micro-habitat (arboreal, terrestrial and scansorial) and diet (Herbivores, Omnivores and Carnivores) ensuring the preservation of the natural habitat and endangered species. A total of 141 records, 51 records from 8 Orders, 13 Families and 15 species of medium and large mammals at the site I and 90 records from 4 Orders, 7 Families and 9 species at the site II.

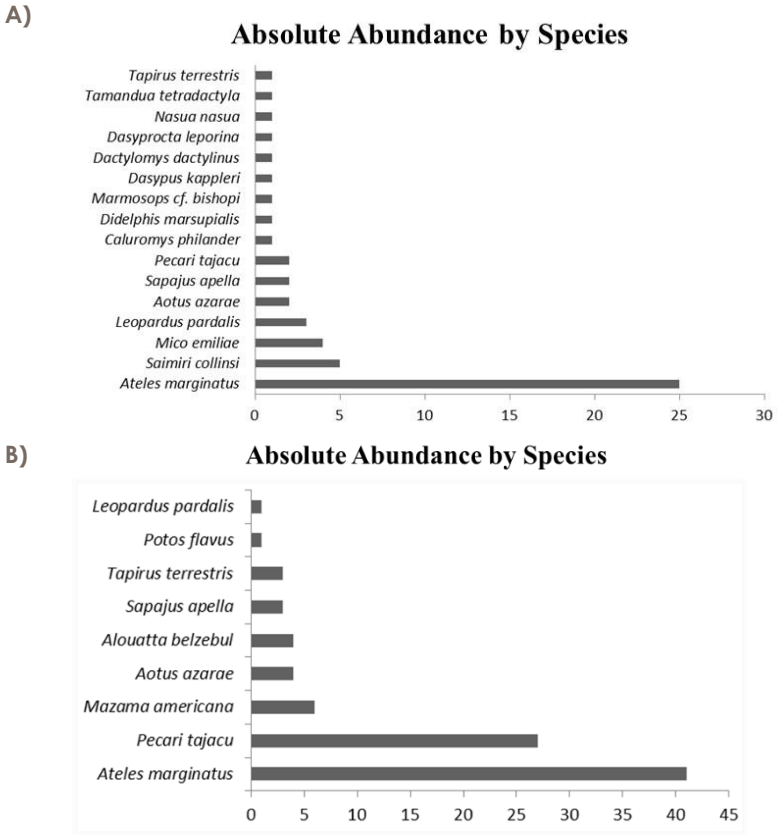


Figure 5.5. Abundance of mammals in the areas of the Triunfo do Xingu conglomerates A) site I; and B) site II, during dry season, June 2023.

It was observed that in the area corresponding to site I there is no tendency towards stabilization of the species accumulation curve in the three categories of trophic guilds (Herbivores – mammals that have an exclusive diet of plant origin; Non-Herbivores – mammals that have a predominantly carnivorous diet; Omnivores – mammals that have a mixed diet, including a wide range of foods of animal and plant origin) used and there was a predominance of omnivorous species, followed by herbivores and non-herbivores (Figure 5.5). The predominance of omnivorous species may be related to the availability of resources in the environment as well as low primary productivity in the dry period, leading to lower detection of herbivorous species, normally more abundant in natural communities. However, this is a preliminary survey with only one sampling event and, possibly, with additional sampling during the rainy season, this

scenario can be modified. Differently, for the site II, there was a tendency towards asymptote in all categories used and there was a predominance of herbivorous mammals, followed by omnivores and finally non-herbivores. As it is a larger area than the site I, the spatial distribution and existing resources may have favored the detection of a more balanced composition of resident mammals. However, even with a tendency towards asymptote, an even greater richness of species can be detected from a complementary campaign during the rainy season.

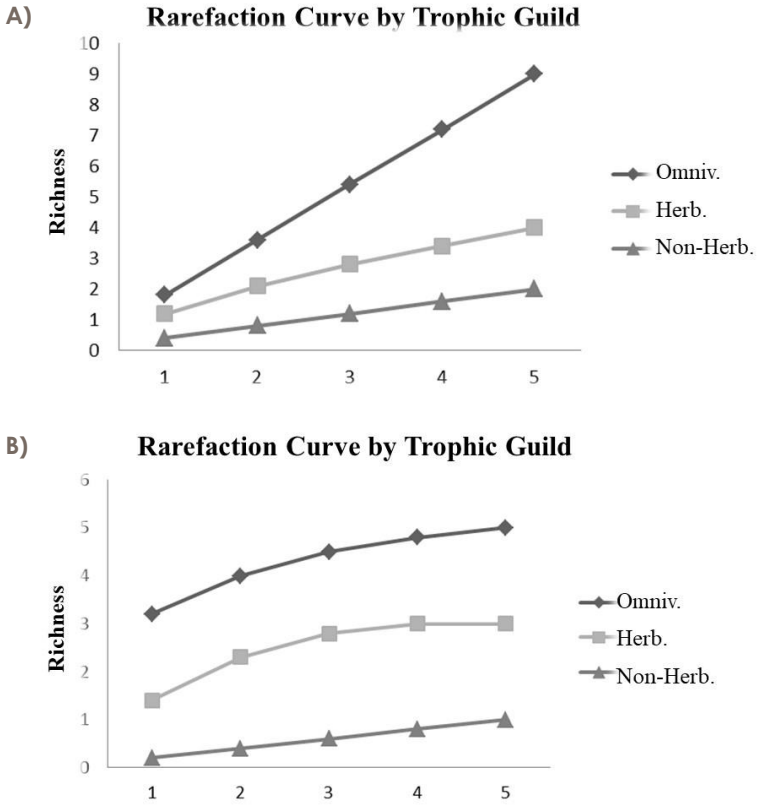


Figure 5.6. Species accumulation curve considering detection by different systematic collection methods in A) site I; and B) site II, during dry season, June 2023.

Figure 5.7 Leopardus pardalis at project area site II.

Figure 5.8 Leopardus pardalis at project area site I.

Figure 5.9 Mico emiliae at project area site I.

Figure 5.10 Tajacu peccary at project area site I.

Figure 5.11 Panthera onca at project area site I.

Figure 5.12 Tapirus terrestris at project area site II.

5.3.1.4.5 Chiroptera

In this campaign, a total of 68 individuals belonging to two families, 10 genera and 12 species were identified: *Artibeus obscurus, Carollia brevicauda, Carollia perspicillata, Rhinophylla fischerae, Rhinophylla pumilio, Hsunycteris thomasi, Lophostoma silvícola, Phyllostomus elongatus, Tonatia saurophila, Trachops cirrhosus, Trinicteris nicefori* and *Pteronotus parnellii.*

This predominance of *Carollia perspicillata* is mainly due to the intense edge effect present in the sample areas caused by the fragmentation process. This species adapts well to disturbed environments, for consuming fruits of pioneer plant species present in the understory, which are abundant in conditions of forest regeneration. *Artibeus obscurus* presents similar conditions to *C. perspicillata*, in a more opportunistic way, when there is a shortage of fruits in the canopies. The bats detected in this campaign were categorized and grouped into three trophic guilds: Frugivores – which have an exclusive diet based on fruits; Nectarivorous – having diet predominantly based on nectar and pollen; Omnivores – having a mixed diet, including a wide range of animal and plant foods. Monitoring bat assemblages in the medium and long term can function as good indicators of environmental quality. Insectivorous bats are also important agents for controlling urban and agricultural pests and are considered good indicators of environmental quality, animals being extremely sensitive to the presence of pesticides.

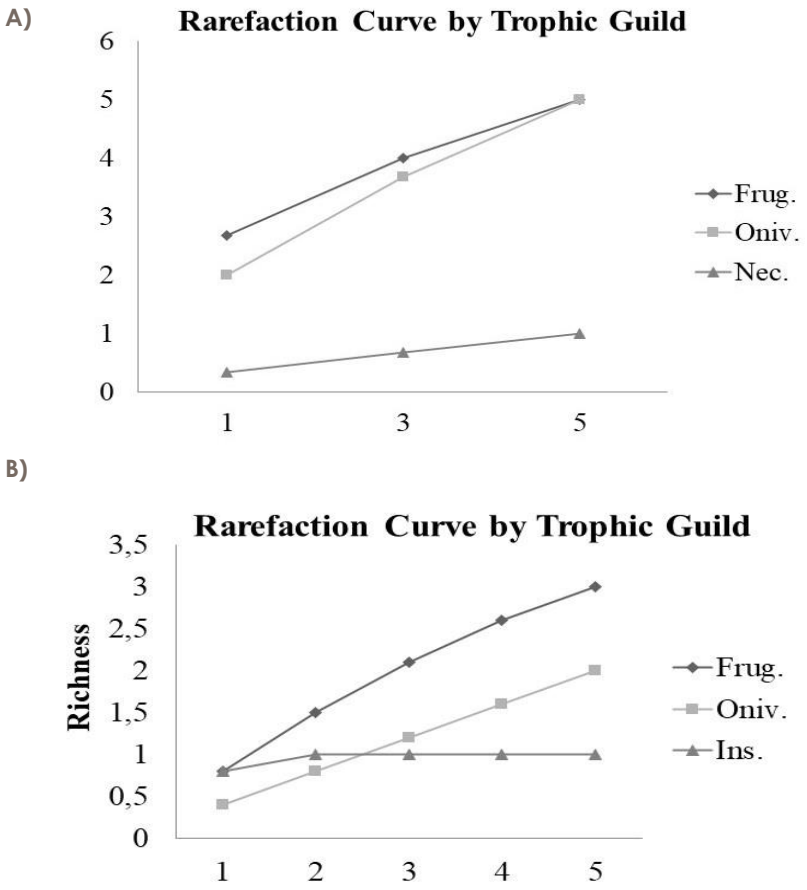


Figure 5.13 Bat species accumulation curve, grouped into their respective trophic guilds in A) site I and B) site II.

5.3.1.5 Camera trap monitoring and training

The fauna monitoring program using camera traps began with a pilot project carried out between November 2023 and October 2024[383]. During this period, training on the use of camera traps for wildlife monitoring was provided in the areas of the TdX project. The training combined theoretical and practical sessions (Figure 5.14) conducted on two farms participating in the project and was directed at local surveyors and community agents.

Figure 5.14 Camera trap training installation.

During the training, the main functionalities of the cameras and instructions for their operation in wildlife monitoring were presented, considering their settings and the installation protocol. The parameters adopted for the pilot testing period were also introduced. In addition, the training provided a brief explanation of the sampling method, emphasizing an unbiased sampling design and offering guidelines for selecting installation sites within the project areas, while considering different biophysical scenarios.

All participants received practical training in camera installation along pre-planned trails, considering distance, slope, adverse terrain conditions, and travel time. At this stage, guidance was provided on selecting installation points, considering the type of support for fixing the cameras, installation height, wildlife trails, unobstructed viewing angle, and other biophysical characteristics of the terrain. Alongside the technical training, the local knowledge of community members was recognized and integrated into the decision-making process.

[383] CameraTrapMonitoring.zip

At the end of each installation, a review simulation was conducted to ensure cameras were fully functional, including battery and memory card replacement for a new round of image capture. As a precautionary measure, it was emphasized throughout the training that the activities were intended solely and exclusively for species conservation purposes. In total, 10 activities were conducted during the pilot phase of wildlife monitoring with camera traps, including installation, review, and removal actions across two main project properties: Didácio's and Sefer's farms.

Following the pilot process, four monitoring campaigns were carried out, each lasting between two and four months. On Didácio's property, monitoring was conducted in July 2024 and March 2025, while on Sefer's property, it was conducted in June 2024 and February 2025. A total of 10 camera traps were installed on each property, fixed to tree trunks and positioned approximately 20 to 40 cm above the ground in strategic locations. No bait was used to avoid bias caused by the consistent attraction of the same individuals. The cameras were programmed to operate 24 hours a day in motion-sensitive mode, automatically recording short video clips upon detecting movement. Batteries were replaced monthly to ensure continuous operation.

These four seasonal monitoring campaigns resulted in more than 1,000 video recordings. The collected material is currently undergoing species-specific identification and classification. Selected examples of these recordings are presented in Figure 5.15.

Figure 5.15 Visual examples of records obtained by camera trap during monitoring period.

To create protection for the camera traps against rain, the project team launched a campaign in the community to collect plastic bottles for reuse. A collection point was set up at Novo Pacto school. To complete the required quantity, reused bottles were purchased to avoid the production of waste[384].

In addition, initial discussions were held with two universities (UFV and UFPA) as well as with three independent specialists in ecology and biology. These dialogues are still ongoing and are intended to establish collaborative pathways for the analysis and interpretation of the camera trap data. Engaging academic institutions and subject-matter experts at this stage is considered essential to ensure scientific rigor, strengthen methodological approaches, and enhance the reliability of the ecological insights derived from monitoring efforts.

5.3.1.6 Patrolling of the areas and demarcation

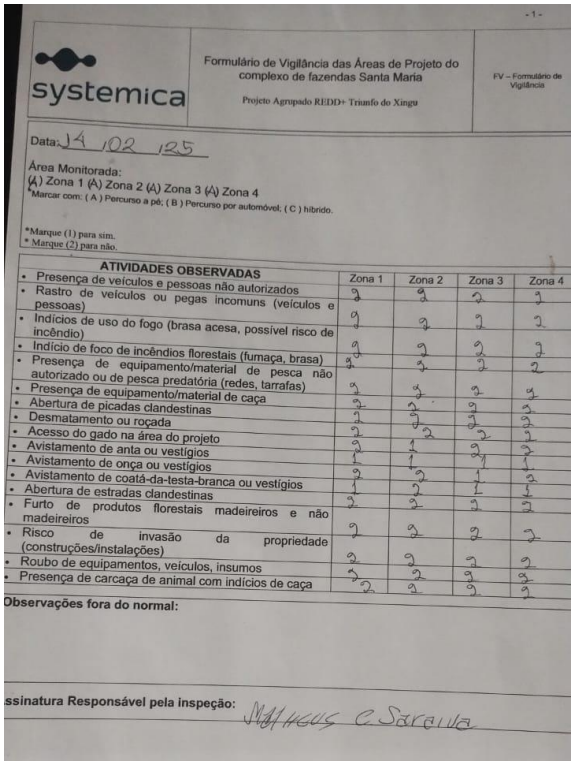
[384] 240619_MaterialsReuseCampaign.zip

To promote species conservation and ecological balance, the project implemented activities focused on the installation of surveillance markers[385] on properties and the organization of monitoring patrols. These measures aim to preserve native forest cover, which is essential for maintaining biodiversity and ecological processes, as larger and less disturbed forest areas tend to be more resilient. The placement of signs in strategic areas of the properties serves as a constant reminder that activities such as deforestation and other unauthorized uses are prohibited in these zones.

Figure 5.16 Installation of surveillance markers on the properties.

In addition, during the installation and removal of camera traps, the same community agents responsible for managing the equipment also conduct monitoring patrols. Using standardized forms, they record wildlife sightings and tracks, as well as evidence of deforestation or other anthropogenic activities. These records not only provide valuable information for understanding ecological dynamics within the project area but also strengthen the agents' knowledge of ecological relationships and enhance their capacity to track ecosystem improvements over time.

[385] MilestonesInstallation.zip



systemica

Formulário de Vigilância das Áreas de Projeto do complexo de fazendas Santa Maria

Projeto Agrupado REDD+ Triunfo do Xingu

FV – Formulário de Vigilância

Data: 14/02/25

Área Monitorada:
(A) Zona 1 (A) Zona 2 (A) Zona 3 (A) Zona 4
*Marcar com: (A) Percurso a pé; (B) Percurso por automóvel; (C) híbrido.

*Marque (1) para sim.
* Marque (2) para não.

ATIVIDADES OBSERVADAS	Zona 1	Zona 2	Zona 3	Zona 4
• Presença de veículos e pessoas não autorizados	2	2	2	2
• Rastro de veículos ou pegas incomuns (veículos e pessoas)	2	2	2	2
• Indícios de uso do fogo (brasa acesa, possível risco de incêndio)	2	2	2	2
• Indício de foco de incêndios florestais (fumaça, brasa)	2	2	2	2
• Presença de equipamento/material de pesca não autorizado ou de pesca predatória (redes, tarrafas)	2	2	2	2
• Presença de equipamento/material de caça	2	2	2	2
• Abertura de picadas clandestinas	2	2	2	2
• Desmatamento ou roçada	2	2	2	2
• Acesso do gado na área do projeto	2	2	2	2
• Avistamento de anta ou vestígios	2	1	2	2
• Avistamento de onça ou vestígios	1	1	2	1
• Avistamento de coatá-da-testa-branca ou vestígios	2	2	1	2
• Abertura de estradas clandestinas	1	2	1	1
• Furto de produtos florestais madeireiros e não madeireiros	2	2	2	2
• Risco de invasão da propriedade (construções/instalações)	2	2	2	2
• Roubo de equipamentos, veículos, insumos	2	2	2	2
• Presença de carcaça de animal com indícios de caça	2	2	2	2

Observações fora do normal:

Assinatura Responsável pela inspeção: Matheus C. Saraiva

Figure 5.17 Monitoring patrol report example.

5.3.1.7 Ecological perception and Hunting pressure assessment

To understand the patterns of use of wild resources by residents it was applied a questionnaire[386] about the ecological perception and hunting practices in the region. From all age classes, 30 individuals participated. Details about the method and specific results about hunting frequency and hunting practices are available for auditors[386].

About consumption of game meat, it was observed that this habit is more common among older people (N=11), but there is no observable ontogenetic variation in the population, demonstrating that the consumption of game meat is habitual, being a common practice in community. This probably reflects a historical legacy, due to the distance from large urban centers, the practice of consuming game meat becomes a matter of survival, and this is often the only protein option available to residents.

Regarding the custom of hunting within the families of those interviewed, many responded that the family does not practice this activity. Among those who practice it, the father was identified as the main hunter within the family, being the most common response among all age groups. This reinforces the hypothesis that hunting is a hereditary activity, being passed from father to son over generations.

The perception of those interviewed is that there has been an increase in hunting activity across generations. This may be a result of the increase in family size, which requires a greater amount of food, causing an increase in hunting pressure in the community.

[386] 230919_FaunaInventoryReport.pdf

Regarding ecological perception, interviews were questioned if there noticed any change in the number of animals over time. The majority of those who responded (N=12) said that there had been an increase in the number of animals, however, a considerable portion of respondents (N=9) stated that there had been a decrease. This perception came mainly from younger residents. Among all age groups, the most sighted animal in the region was the jaguar (*Panthera onca*), mentioned on 25 occasions, followed by wild deer (*Mazama americana*), mentioned 20 times and Paca (*Cuniculus paca*), 18 times. Other species such as wild boar (*Tayassu tajacu*), guan (*Penelope sp*), tapir (*Tapirus terrestris*), capybara (*Hydrochoerus hydrochaeris*) and agouti (*Dasyprocta sp*) were also included in the interviewees' responses.

It was also asked whether the number of tapirs (*Tapirus terrestris*) varied in the region over time. Because it is a constant presence in hunting reports, and because it is classified as vulnerable in IUCN plaform, knowing the local status of this animal can be essential for the conservation of the species on a local scale. There was a disparity between the responses of the youngest and oldest. Among the youngest (up to 30 years old), there was a consensus that there was an increase (N=12) in the number of tapirs in the region, while the oldest (40 years old or more) responded that the tapir population had decreased (N= 6).

The application of this questionnaire about hunting and fishing in Caboclo Village was essential to start understanding people's reality regarding the use of the Caboclo stream and the fauna in people's daily lives. Hunting pressure, despite interviews showing few people hunting, is strong in the region. The presence, on the hunting list, of species considered vulnerable shows that there is no environmental filter that leads them to select more abundant species to the detriment of threatened species.

5.3.2 Biodiversity Monitoring Plan Dissemination (CCB, B4.3)

The results of the TdX project monitoring plan, up to the present Monitoring Report, have been made publicly available on the VERRA website (https://registry.verra.org/app/projectDetail/VCS/3738), with a link also shared on the Systemica Inteligência em Sustentabilidade S.A. website (https://systemica.digital/projetos/triunfo-do-xingu-redd/). In addition, stakeholders were informed directly via email, ensuring transparent access to the monitoring information[387].

For the Caboclo Village community and project workers, dissemination of the monitoring plan results followed specific communication channels established by the project. In November 2023, an informative pamphlet was distributed, presenting a summary of the monitoring methodologies and results[388], along with an explanatory video published on the project's YouTube channel[389]. Printed copies of the pamphlet, as well as the digital version and the video link, were made available to the community to foster awareness and encourage engagement. In addition, email communication containing information on the results was sent to other stakeholders[390].

[387] 240208_ProjectDocumentsDissemination.zip
[388] 231205_CommunityContinuedCommunication.zip
[389] 240208_ProjectDocumentsDissemination.zip
[390] 250417_CommunicationOtherStakeholders.zip

The physical and digital dissemination was complemented by the role of community agents, hired by Systemica as project workers, who acted as direct communication channels with access to project documentation and actively contributed to sharing the monitoring plan and results. In August 2025, the results obtained up to that point were disseminated within the community through a summary pamphlet[391], which presented an overview of all ongoing activities as well as those already completed. In September 2025, communication and availability of information about the project[392],[393] with other stakeholders took place by sending an e-mail with a letter and summary of the monitoring results[394]. On the same date, the documents were also provided in digital format through WhatsApp community groups, broadening access and facilitating their circulation among residents[395]. This multi-layered communication strategy ensured that information was circulated not only among external stakeholders but also within the local community in an accessible and participatory manner.

5.4 Optional Criterion: Exceptional Biodiversity Benefits

5.4.1 Trigger Species Population Trends (CCB, GL3.2, GL3.3)

Table 5.8. Trigger species population trends.

Trigger Species	*Ateles marginatus* (White-cheeked Spider Monkey). Endangered species by the national and international classifications (ICMBio, 2023; IUCN, 2023). Decreasing (IUCN, 2023). It is an endemic species of the Brazilian Amazon, occurring between the Rivers Tapajós and Xingú (Ravetta & Mittermeier, 2021). With a decreasing population trend, the documented population density in the areas that it occurs is of 4.36 – 13.08 individuals/km² (Ravetta, 2015).
With-project Scenario	In the fauna inventory[396] populations of *Ateles marginatus* were registered. The species emerged as the most abundant registered mammal in the project area, comprising 25 records at the site I and 41 records at the site II[396] during systematic sampling in the campaign in June 2023. Also, between November 27th and 28th, 2023, 5 occasional encounters with flocks of *A. marginatus* were recorded in the project area, which totaled 20 individuals, of which 2 were puppies and 5 were juveniles[397]. This species faces significant challenges primarily from the extensive deforestation occurring due to the expansion of soybean cultivation,

[391] 250416_Folder_communication_stakeholders.pdf
[392] 250915_Resumo_Projeto.pdf
[393] 250915_Resumo_RelatorioMonitoramento.pdf
[394] 250917_Dissemination_OtherStakeholders.pdf
[395] 250917_Dissemination_Community_Whatsapp.pdf
[396] 230919_FaunaInventoryReport.pdf
[397] 243001_TriggerSpeciesRecords.rar

cattle farming, and urban development. Additionally, the species is under the threat of hunting, which has led to the disappearance of the species in certain parts of its habitat (Ravetta & Ferrari, 2009).

Approximately 60% of the ranges of Amazonian primates are situated outside of protected regions (Azevedo-Ramos et al., 2006). Since the last assessment, only one new protected area has been established to shelter this species. In the scenario without intervention, it is probable that the remaining local population faces the risk of local extinction due to the combined impacts of hunting and habitat loss.

During the current monitoring period, no active surveys specifically targeting *A. marginatus* were conducted; however, seven occasional observations were recorded, including 24 adults, 11 juveniles and 2 infants. Video footage enabled the identification and classification of individuals into distinct life-stage groups. While these records provide valuable preliminary information, a dedicated survey campaign for this species is planned as part of the project's upcoming activities. The monitoring frequency for this indicator is scheduled every three years.

The project is contributing to the maintenance and permanence of the local population of the White-cheeked Spider Monkey. Faced with the scenario of greater threat to species from habitat loss, the project area protection activity[398] guarantees the permanence of the home range of these sampled populations. Preserving their foraging and breeding areas. Also, the educational lecture and the workshop raise environmental awareness about the ecological role and importance to conserve this species[399,400] and reduce human-fauna conflicts.

[398] 240416_ProjectAreaMonitoringEvidence.zip
[399] 230618_LectureBiodiversity.zip
[400] 231205_EcologicalFunctionsWorkshopReport.zip

Figure 5.18. Trigger species White-cheeked Spider Monkey individual in the project area.

6 REFERENCES

Assis, L. F., Ferreira, K. R., Vinhas, L., Maurano, L., Almeida, C., Carvalho, A., Rodrigues, J., Maciel, A., & Camargo, C. (2019). TerraBrasilis: a spatial data analytics infrastructure for large-scale thematic mapping. *ISPRS International Journal of Geo-Information*, *8*(11), 513.

Avila-Pires, T. C. S., Hoogmoed, M. S., & Vitt, L. J. (2007). Herpetofauna da Amazônia. *Herpetologia no Brasil II*, 13-43.

Ávila-Pires, T. C. S. d. (1995). Lizards of brazilian amazonia (Reptilia: Squamata). *Zoologische verhandelingen*.

Azevedo-Ramos, C., do Amaral, B. D., Nepstad, D. C., Filho, B. S., Nasi, R. J. E., & Society. (2006). Integrating ecosystem management, protected areas, and mammal conservation in the Brazilian Amazon. *11*(2).

Bernarde, P. S., & Abe, A. S. (2006). A snake community at Espigão do Oeste, Rondônia, southwestern Amazon, Brazil. *South American Journal of Herpetology*, *1*(2), 102-113.

Brasil. (1973). *Law N°. 5,890. Amends social security legislation and provides for other provisions. Law N°. 5,890 of June 08, 1973.* Retrieved September 28th, 2023 from https://www.planalto.gov.br/ccivil_03/leis/L5890.htm

Brasil. (1981). *Law n°6,939 of 31 of August 1981. Provides for the National Environmental Policy, its purposes, formulation and implementation mechanisms, and other measures*. Retrieved July 24th, 2023 from https://www.planalto.gov.br/ccivil_03/leis/l6938.htm

Brasil. (1988). *Constitution of the Federative Republic of Brazil of 1988*. Retrieved July 24th, 2023 from https://www.planalto.gov.br/ccivil_03/constituicao/constituicao.htm

Brasil. (1998). *Law Nº. 9,605 of February 12, 1998. Provides for criminal and administrative sanctions arising from conduct and activities harmful to the environment, and other provisions*. Retrieved July 24th, 2023 from https://www.planalto.gov.br/ccivil_03/leis/l9605.htm

Brasil. (2000). *Federal Lay N° 9,985. Regulates art. 225, § 1°, clauses I, II, III and VII of the Federal Constitution, creates the National System of Conservation Units and makes other provisions*. Retrieved June 24th, 2023 from https://www.planalto.gov.br/ccivil_03/leis/l9985.htm

Brasil. (2008a). *Complementary Law N°. 128 of December 19, 2008. Amends Complementary Law N°. 123, of December 14, 2006, Amends Laws N°. 8,212, of July 24, 1991, 8,213, of July 24, 1991, 10,406, of January 10, 2002 – Civil Code, 8,029, of April 12, 1990, and makes other provisions*. Retrieved September 24th, 2023 from http://www.planalto.gov.br/ccivil_03/leis/LCP/Lcp128.htm.

Brasil. (2008b). *Law No. 11,706 of June 19, 2008. Amends and adds provisions to Law No. 10,826 of December 22, 2003, which regulates the registration, possession, and sale of firearms and ammunition, and establishes the National Firearms System (Sinarm) and defines crimes*. Retrieved June 24th, 2023 from https://www2.camara.leg.br/legin/fed/lei/2008/lei-11706-19-junho-2008-576772-publicacaooriginal-99903-pl.html

Brasil. (2009). *Law Nº. 12,187, dated December 29th, 2009. It establishes the National Policy on Climate Change - PNMC and provides for other measures*. Retrieved August 30th, 2023 from https://www.planalto.gov.br/ccivil_03/_ato2007-2010/2009/lei/l12187.htm

Brasil. (2012). *Federal Law N° 12,651. Provides for the protection of native vegetation; amends Laws N° 6,938, of August 31, 1981, 9,393, of December 19, 1996, and 11,428, of December 22, 2006; repeals Laws N° 4,771, of September 15, 1965, and 7,754, of 14 of April 1989, and Provisional Measure N° 2,166-67, of August 24, 2001; and give others measures. Federal Law N° 12,651 of 25-May-2012*. Retrieved June 24th, 2023 from https://www.planalto.gov.br/ccivil_03/_ato2011-2014/2012/lei/l12651.htm

Brasil. (2019). *Decree n° 10.088, of 5 of November of 2019. Consolidates normative acts issued by the Federal Executive Power that concern the promulgation of conventions and recommendations from the International Labour Organization - ILO ratified by the Federative Republic of Brazil*. Retrieved August 28th, 2023 from https://www.planalto.gov.br/ccivil_03/_ato2019-2022/2019/decreto/d10088.htm

Da Silva, J., Novaes, F., & Oren, D. (2002). Differentiation of Xiphocolaptes (Dendrocolaptidae) across the river Xingu, Brazilian Amazonia: recognition of a new phylogenetic species and biogeographic implications. *BULLETIN-BRITISH ORNITHOLOGISTS CLUB*, *122*(3), 185-193.

da Silva, J. M. C., & Tabarelli, M. (2000). Tree species impoverishment and the future flora of the Atlantic forest of northeast Brazil. *Nature*, *404*(6773), 72-74.

Duellman, W., & Trueb, L. (1994). Biology of amphibians, Baltimore, USA, Ed. *Johns Hopkins*.

Enamul Haque, A., Mukhopadhyay, P., Nepal, M., & Shammin, M. R. (2022). Correction to: Climate Change and Community Resilience. In *Climate Change and Community Resilience: Insights from South Asia* (pp. C1-C1). Springer. https://doi.org/https://doi.org/10.1007/978-981-16-0680-9_30

ICMBio. (2023). *Sistema de Avaliação do Risco de Extinção da Biodiversidade*. Retrieved October 25th, 2023 from https://ICMBio.icmbio.gov.br/

ICMBio. (2024). *Sistema de Avaliação do Risco de Extinção da Biodiversidade – SALVE*.from https://salve.icmbio.gov.br/

IFL. (2020). *Intact Forest Landscapes 2000/2013/2016/2020*. Retrieved July 25th, 2023 from www.intactforests.org

ILO. (1989). *C169 - Indigenous and Tribal Peoples Convention*. Retrieved July 26th, 2023 from https://www.oas.org/dil/port/1989%20Conven%C3%A7%C3%A3o%20sobre%20Povos%20Ind%C3%ADgenas%20e%20Tribais%20Conven%C3%A7%C3%A3o%20OIT%20n%20%C2%BA%20169.pdf

INMET. (2022). *Instituto Nacional de Meteorologia*.from http://www.inmet.gov.br

INPE. (2022). *Queimadas*.from https://queimadas.dgi.inpe.br/queimadas/portal

Instituto Hórus. (2023). *Brazil National Invasive Alien Species Database: Syzygium. bd*. Retrieved March 20th, 2023 from https://bd.institutohorus.org.br/especies

IPCC. (2006). *Chapter 2: Generic methodologies applicable to multiple landuse categories*. Retrieved May 8, 2024 from https://www.ipcc-nggip.iges.or.jp/public/2019rf/pdf/4_Volume4/19R_V4_Ch02_Generic%20Methods.pdf

IPCC. (2014). Climate Change 2014: Synthesis Report. *Contribution of Working Groups I, II and III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change*, 151.

IPCC. (2019). 2019 Refinement to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories. *IPCC Guidelines for National Greenhouse Gas Inventories*. https://www.ipcc-nggip.iges.or.jp/public/2006gl/pdf/4_Volume4/V4_04_Ch4_Forest_Land.pdf

IUCN. (2023). *The IUCN Red List of Threatened Species.* . Retrieved 24th july, 2023 from https://www.iucnredlist.org

Jeffrey D. Sachs, Guillaume Lafortune, Fuller, G., & Drumm, E. (2023). *Sustainable Development Report 2023*. Retrieved Octuber 25th, 2023 from https://s3.amazonaws.com/sustainabledevelopment.report/2023/sustainable-development-report-2023.pdf

MapBiomas. (2022). *Projeto de Mapeamento Anual do Uso e Cobertura da Terra no Brasil*. Retrieved 20th June, 2022 from https://mapbiomas.org/

MTP. (2023). *Normas Regulamentadoras – NR.* . Retrieved July 12th, 2023 from https://www.gov.br/fundacentro/pt-br/centrais-de-conteudo/biblioteca/normas-regulamentadoras-nrs.

ONU. (2022). *Relatório Anual das Nações Unidas no Brasil 2022*. Retrieved July 25th, 2023 from https://brasil.un.org/sites/default/files/2023-03/ONU_Brasil_Relatorio_Anual_2022.pdf

Ramírez, C., & Morales, D. (2021). Integrating forest and landscape restoration into national forest monitoring systems. *FAO*. https://doi.org/10.4060/cb6021en

Ranzi, T. J., Fonseca, R., , & Da Silveira, R. (2019). A legalidade da caça de subsistência no contexto das unidades de conservação na Amazônia Brasileira. *Biodiversidade Brasileira*, *9(2)*,, 26–41. https://www.icmbio.gov.br/revistaeletronica/index.php/BioBR/article/view/753

Ravetta, A. L. (2015). *Distribuição e Abundância de Médios e Grandes Mamíferos na Amazônia Central* [Tese (Doutorado), Universidade Federal do Pará, Museu Paraense Emílio Goeldi]. https://repositorio.ufpa.br/handle/2011/8314

Ravetta, A. L., Buss, G. , & Mittermeier, R. A. (2021). *Ateles marginatus (amended version of 2019 assessment). The IUCN Red List of Threatened Species 2021: e.T2282A191689524.* . Retrieved August 24th, 2023 from

Ravetta, A. L., & Ferrari, S. F. (2009). Geographic distribution and population characteristics of the endangered white-fronted spider monkey (Ateles marginatus) on the lower Tapajós River in central Brazilian Amazonia. *Primates*, *50*(3), 261-268. 10.1007/s10329-009-0146-1

RECOFTC. (2011). *Free, Prior, and Informed Consent in REDD+*. Retrieved August 14th, 2023 from https://www.recoftc.org/sites/default/files/publications/resources/recoftc-0000210-0001-en.pdf

Reid, H., Alam, M., Berger, R., Cannon, T., Huq, S., & Milligan, A. (2009). Participatory Learning and Action: Community-based adaptation to climate change. *Participatory learning action*, *60*(1). https://www.iied.org/14573iied

Reis, N. R., Peracchi, A. L., Pedro, W. A., & Lima, I. P. (2006). *Mamíferos do Brasil* (1 ed.). https://pos.uel.br/biologicas/wp-content/uploads/2021/06/Livro-completo-Mamiferos-do-Brasil.pdf

Rubin, B. D., Manion, P. D., & Faber-Langendoen, D. (2006). Diameter distributions and structural sustainability in forests. *Forest Ecology and Management*, 222(1), 427-438. https://doi.org/10.1016/j.foreco.2005.10.049

SEMAS. (2006). *State Decree n° 2.612 of 2006*.from https://www.semas.pa.gov.br/legislacao/files/pdf/546.pdf

Silva Junior, C. H., Heinrich, V. H., Freire, A. T., Broggio, I. S., Rosan, T. M., Doblas, J., Anderson, L. O., Rousseau, G. X., Shimabukuro, Y. E., & Silva, C. A. (2020). Benchmark maps of 33 years of secondary forest age for Brazil. *Scientific data*, *7*(1), 1-9. https://doi.org/10.1038/s41597-020-00600-4

Skovsgaard, J. (2004). Mensuration. In B. J, E. J, & Y. J (Eds.), *Encyclopedia of Forest Sciences* (pp. 550-566). Elsevier, Academic Press.

Somenzari, M., Amaral, P. P. d., Cueto, V. R., Guaraldo, A. d. C., Jahn, A. E., Lima, D. M., Lima, P. C., Lugarini, C., Machado, C. G., & Martinez, J. (2018). An overview of migratory birds in Brazil. *Papéis Avulsos de Zoologia*, *58*.

Stockholm Resilience Centre. (2015). *Applying resilience thinking: seven principles for building resilience in social-ecological systems*. Retrieved May 25th, 2023 from https://www.stockholmresilience.org/research/research-news/2015-02-19-applying-resilience-thinking.html

TdX project. (2022). *Triunfo do Xingu Grouped REDD+ Project. Verified Carbon Standard and Climate, Community & Biodiversity*. Verra.from https://registry.verra.org/app/projectDetail/VCS/3738

VERRA. (2023). *VM0048 Reducing Emissions from Deforestation and Forest Degradation*. Retrieved November, 1st, 2024 from https://verra.org/wp-content/uploads/2023/11/VM0048-Reducing-Emissions-from-Deforestation-and-Forest-Degradation-v1.0-1-1.pdf

VERRA. (2024). *Verified Carbon Standard, v4.7*. Retrieved November 13th, 2024 from https://verra.org/wp-content/uploads/2024/04/VCS-Standard-v4.7-FINAL-4.15.24.pdf

Vitt, L. J., & Caldwell, J. P. (1994). Resource utilization and guild structure of small vertebrates in the Amazon forest leaf litter. *Journal of Zoology*, *234*(3), 463-476.

Vitt, L. J., & Zani, P. A. (1998). Ecological relationships among sympatric lizards in a transitional forest in the northern Amazon of Brazil. *Journal of tropical ecology*, *14*(1), 63-86.

Willis, E. O. (1979). *The composition of avian communities in remanescent woodlots in southern Brazil*. Departamento de Zoologia.

7 APPENDIX: SUSTAINABLE DEVELOPMENT CONTRIBUTIONS

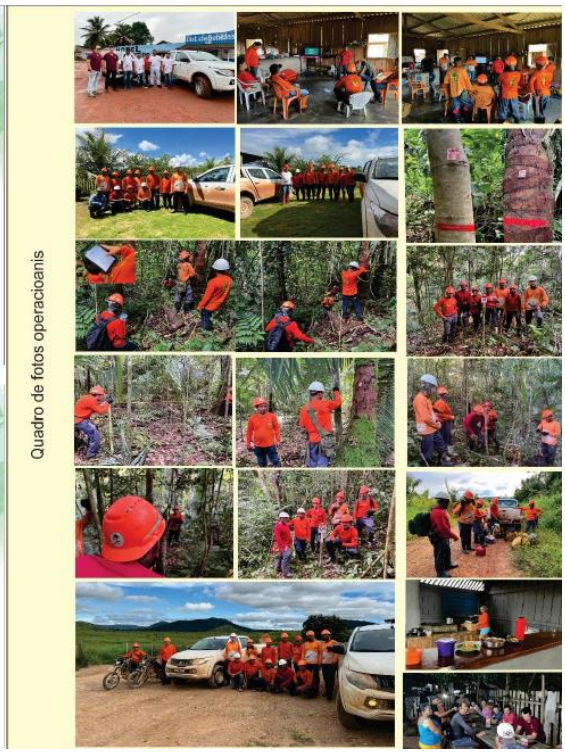
Target 4.3 Participation rate of youth and adults in formal or non-formal education and training in the previous months, by sex:

The result aligned with this goal during the first monitoring period is the participation of 100% female and 43% male youth and adults in non-formal education and training during the previous months by sex.

Training sessions in forest and fauna inventory were conducted, with 8.7% of the community population participating. Also, courses in Artificial Insemination and Baking were held, involving 47.8% of the community. Some community members participated in more than one course or training, and in total, 52% of the community was engaged in non-formal education. Women were the majority in participation. Certificates were provided for both the training sessions and courses offered. The number of people from the community who participated in non-formal education and training was 36 adults, 23 women, and 13 men. According to the social diagnosis in Caboclo, there are currently 30 adult men and 23 women, as well as 69 community members in total, including children. Since these training and non-formal education courses are aimed at adults, the result is calculated based on the total number of adults.


Certificado
Sobre a obtenção do Treinamento e Execução de IC-0% - Técnicas de Inventário Florístico da Biomassa do Solo/Carbono, em Floresta Natural da Amazônia.
04 a 30 de abril de 2023 | CH: 200 Horas
Alisson de Sousa Barros
Apoio florestal
Vila Cabocla, 30/04/2023
systemica
ALTAMIRA - PA


Certificado
Sobre a obtenção do Treinamento e Execução de IC-0% - Técnicas de Inventário Florístico da Biomassa do Solo/Carbono, em Floresta Natural da Amazônia.
04 de abril de 2023 | CH: 8 Horas
Jandira Alves R. de Sousa
Cozinheira
Vila Cabocla, 30/04/2023
systemica
ALTAMIRA - PA


Quadro de fotos operacionais


13/09/2024 10:24
6°10'33,569"S 53°23'12,894"W


09/09/2024 15:03
6°10'42,033"S 53°22'59,925"W


Caderno de Receitas

Target 16.7 Proportion of the population who believe decision-making is inclusive in the project

The result aligned with this goal during the first monitoring period is the proportion of 90,9% the community population who believe decision-making is inclusive in the project.

In this monitoring period, the implementation of community governance meetings and participatory activities with the community gave the community a perception of unity among the population and that participation in the project's decision-making processes was inclusive. Through the governance activities carried out so far, 100% of the community members who have answered the representative survey believe that the project is inclusive in the decision-making processes and 81.8% believe that the project allows equal participation by all members.

Target 13.0 (Tons of greenhouse gas emissions avoided):

The result of the first monitoring period for this indicator was calculated based on the project's baseline, which is to avoid unplanned deforestation. The baseline scenario represents the continued conversion of forest areas to other land uses without the implementation of conservation measures. Using the VM0048 v1.0 methodology and its VMD0055 v1.1 module, the net GHG emissions avoided in the first monitoring period were calculated, resulting in 352,240.94 t CO_2e. This methodology ensures the integrity of greenhouse gas accounting for individual projects within a jurisdiction and enables the utilization of the most up-to-date science, data, and technologies. The calculation considers the procedures for unplanned deforestation activity data collection, construction of forest cover benchmark maps, estimation of baseline emissions from carbon stock changes, and assessment of leakage from displacement of deforestation activities. The methodology also accounts for ex post monitoring of GHG emissions in both the project area and leakage belt, providing a comprehensive framework for quantifying the climate benefits achieved through avoided deforestation activities.

Attachments: GHGCalculation.zip