RIO MADEIRA GROUPED REDD+ PROJECT

Project title	Rio Madeira Grouped REDD+ Project
Project ID	2878
Crediting period	23-October-2019 to 22-October-2049
Monitoring period	01-January-2024 to 31-December-2024
(CCB) GHG accounting period	23-October-2019 – 22-October-2049; 30-years total period
Original date of issue	15-April-2025
Most recent date of issue	13-August-2025
Version	06
VCS Standard version	4.7
CCB Standards version	3.1
Project location	Rondônia and Amazonas States, Brazil
Project proponent(s)	**Future Carbon International LLC** Fábio Galindo Silvestre 150 SE 2nd Ave, Suite 906 Miami – Florida, U.S. - Postal Code 33131 forest@futurecarbon.com.br +55 11 3045-3474
Validation/verification body	**Verifit SAS** Ricardo Ribeiro Lopes Cra 30 N0. 7AA -207 Torre SCAGLIA. Medellín, Antioquia, Colombia ricardo@verifit.com.br + 55 11 3075-2865

History of CCB Status	Validated on December 5, 2024. 1st Monitoring period under CCB standard is under verification.
Gold Level criteria	Rio Madeira Grouped REDD+ Project is not applying for Gold Level in this verification period.
Prepared by	Future Carbon Group

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1 SUMMARY OF PROJECT BENEFITS

1.1 Unique Project Benefits

Outcome or Impact	Achievements during the Monitoring Period	Section Reference	Achievements during the Project Lifetime
1) Installation of internet antennas and construction of computer rooms: Greater access to education through digital resources, fostering equitable learning opportunities for all students via Internet Service Installation and access to computers.	During the monitoring period, the installation of the Starlink antenna was closely followed, with the activity starting in the second half of 2023. Additionally, technical reports were prepared detailing the progress of the installation, as well as the operation of the device and service.	4.3.1	The project provided for the installation of a Starlink internet antenna at the Flor do Cupuaçu school, located in the Santa Rita resettlement, in Porto Velho - RO in 2023 and has since impacted around 145 people (students and teachers). The project is expected to affect around 167 people over its lifetime and plans to supply computers to other community groups, depending on interest and need, which could increase the number of people affected.
2) Incentives for Sports: Support for physical health and well-being among children, youth, and adults through sports activities.	During this period, donations were made for the construction of a Karate training center for the "Guerreiros da Natureza" project, located in the Morrinhos Settlement - RO. Additionally, t-shirts and uniforms were	4.3.1	The project has provided 2024 donations for the Guerreiros da Natureza project, impacting around 9 young people and children and 15 adults from the Morrinhos Resettlement, Porto

	provided to enable the athletes to participate in competitions.		Velho (RO) up to the time of writing this report.
3) Castration of domestic and feral dogs and cats: Population control of dogs and cats present on project farms to reduce the impact of predation and disturbance on local biodiversity	During this monitoring period, a field survey on the presence of dogs and cats in the project area was conducted in November 2024. The collected data will serve as both a baseline and a guide for defining priorities in areas with higher risk.	5.1.2	The project conducted a field survey on the presence of dogs and cats in the project area, establishing a baseline scenario and assessing risks across the project properties.

1.2 Standardized Benefit Metrics

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
	Net estimated emission reductions in the project area, measured against the without-project scenario	658,967 tc02e	2	2,884,577 tC02e
Forest[1] cover	For REDD[2] projects: Number of hectares of reduced forest loss in the project area measured against the without-project scenario	1,494ha[3]	5	6,374ha
	For ARR[4] projects: Number of hectares of forest cover increased in the project area measured against the without-project scenario	Not applicable	-	Not applicable
Improved land management	Number of hectares of existing production forest land in which IFM[5] practices have occurred as a result of the project's activities, measured against the without-project scenario	Not applicable	-	Not applicable
	Number of hectares 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

[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] The value is obtained subtracting actual deforestation from projected deforestation in the monitoring period. For more details, see the 4th MR ER spreadsheet, table "MR section 1.2" which contains the applicable values and the traceable memory of the data.
[4] 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*)
[5] 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*)

Training	Total number of community members who have improved skills and/or knowledge resulting from training provided as part of project activities	160[6]	4.3.1	185[7]
	Number of female community members who have improved skills and/or knowledge resulting from training provided as part of project activities of project activities	82[8]	4.3.1	87[9]
Employment	Total number of people employed in of project activities,[10] expressed as number of full-time employees[11]	0	2.3.16 2.3.15	0
	Number of women employed in project activities, expressed as number of full-time employees	0	-	0
Livelihoods	Total number of people with improved livelihoods[12] or income generated as a result of project activities	170[13]	4	170
	Number of women with improved livelihoods or income generated as a result of project activities	87[14]	4	87
Health	Total number of people for whom health services were improved as a result of	Not applicable	-	Not applicable

[6] Persons who participated in the "Arbor Day": Community members from Morrinhos Resettlement (20), employees from Grupo Rovema Farm (26), and students and employees from Flor do Cupuaçu School (114).
[7] Concerning the 3rd MR, the training sessions impacted: 18 nut extractors and 4 farm employees from Grupo Tupá Farm. Concerning the 4th MR, the training sessions impacted: 20 community members from Morrinhos Resettlement, 26 employees from Grupo Rovema Farm, and 114 students and employees from Flor do Cupuaçu School.
8 Female community members from Morrinhos Resettlement (11), female residents on Grupo Rovema Farm (13), and female students and employees from Flor do Cupuaçu School (58).
9 Concerning the 3rd MR, the training sessions impacted: 3 female nut extractors and 2 female residents on Grupo Tupá Farm. Concerning the 4th MR, the training sessions impacted: 11 female community members from Morrinhos Resettlement, 13 female residents on Grupo Rovema Farm, and 58 female students and employees from Flor do Cupuaçu School.
[10] 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.
[11] 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])
[12] 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.
[13] 25 members of the "Guerreiros da Natureza" group from the Morrinhos Resettlement were impacted by the donation of the karate dojo and team uniform shirts. 145 students, teachers, and staff from the Flor do Cupuaçu School were impacted by the renovation of the school's electrical system.
[14] 14 female members of the "Guerreiros da Natureza" group from the Morrinhos Resettlement were impacted by the donation of the karate dojo and team uniform shirts. 61 female students, and 12 female teachers, and staff from the Flor do Cupuaçu School were impacted by the renovation of the school's electrical system.

	project activities, measured against the without-project scenario			
	Number of women for whom health services were improved as a result of project activities, measured against the without-project scenario	Not applicable	-	Not applicable
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	145[15]	4.3.1	167[16]
	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	73[17]	4.3.1	77
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	Not applicable	-	Not applicable
	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	Not applicable	-	Not applicable
Well-being	Total number of community members whose well-being[18] was improved as a result of project activities	170[19]	4.3.1	170
	Number of women whose well-being was improved as a result of project activities	87[20]	4.3.1	87

[15] Number of students (122), teachers (12), and staff (11) from Flor do Cupuaçu School who were impacted by the electrical system reform.
[16] Considering 3rd Monitoring Report, 22 community members took part in the training courses. In the 4th Monitoring Report, 145 stakeholders benefited from the electrical system reform at Flor do Cupuaçu School.
[17] Twelve female teachers or Flor do Cupuaçu employees, and 61 female students were impacted by the electrical system reform
[18] 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.
[19] The same description from the Livelihood topic: 25 members of the "Guerreiros da Natureza" group from the Morrinhos Resettlement were impacted by the donation of the karate dojo and team uniform shirts. 145 students, teachers, and staff from the Flor do Cupuaçu School were impacted by the renovation of the school's electrical system.
[20] The same description from the Livelihood topic: 14 female members of the "Guerreiros da Natureza" group from the Morrinhos Resettlement were impacted by the donation of the karate dojo and team uniform shirts. 61 female students, and 12 female teachers, and staff from the Flor do Cupuaçu School were impacted by the renovation of the school's electrical system.

Biodiversity conservation	Change in the number of hectares significantly better managed by the project for biodiversity conservation,[21] measured against the without-project scenario	Not applicable	-	Not applicable
	Number of globally Critically Endangered or Endangered species[22] benefiting from reduced threats as a result of project activities,[23] measured against the without-project scenario	1	5.1.3	1

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 VCS PD was validated by the Validation and Verification Body (VVB) RINA Services S.p.A. and this present monitoring report is under verification by Verifit SAS.

The project activity includes banning of illegal logging, fire prevention activities, socioeconomic activities and supervision of deforestation by a management team and through satellite images.

Instance 1: ROVEMA

Most of the activities carried out in instance 1 during the monitoring period were related to the community axis.

In February, the Rovema Group donated money to build the Dojo for the Guerreiros da Natureza Project, a karate school for children and young people in the Morrinhos Settlement. From then on, the project entered a partnership that would bear good fruit for the students, who during 2024 were able to take part in various fighting championships, winning several medals. Also linked to the Warriors of Nature, t-shirts were donated in October, 2024 so that the students could participate of a competition that would take place later.

In the area of community and climate, an event was held to commemorate Tree Day in September, organized by the Rovema Group and Future Carbon in two different locations: at the Porto Velho Natural Park and the Flor do Cupuaçu School. The purpose of this activity was to plant more than 300 seedlings of various species. There was also an environmental education session with a

[21] 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.
[22] Per IUCN's Red List of Threatened Species
[23] In the absence of direct population or occupancy measures, measurement of reduced threats may be used as evidence of benefit

biologist, who explained about the local fauna and flora species and presented some taxidermy animals. The action was extended to the Flor do Cupuaçu School, where a vegetable garden was inaugurated, planted by the students themselves.

Also, in Flor do Cupuaçu School, an electrical renovation was carried out, providing better infrastructure and safety for students and teachers.

Finally, instance 1 has also installed new placards informing the REDD project and restrictions within the forest areas in 2024.

During this monitoring period there were no sustainable forest management activities. Evidence was shared with VVB team.

Instance 2: Leite

During the monitoring period, Leite Group carried out a refurbishment of the staff canteen at Fazenda Santa Carmem in the whole year of 2024, improving conditions and well-being.

Regarding monitoring, satellite monitoring continues to take place during 2024.

Instance 3: Tupá

In June-2024, the partnership with EMBRAPA Acre and the Rio Madeira Project was formalized to carry out training in good practices in Brazil nut management. Besides handling and treatment of this product, it will be possible to map the most productive Brazil nut trees in the property, improving the routes currently taken, as well as establishing a better division of “sectors” among Brazil nut extractors.

At the second semester of 2024, Future Carbon hired a professional to join the project's remote monitoring team, with the aim of and monitoring conservation activities and detecting possible threats in the project areas on the 4 properties that are part of the project. Also, at the end of the second semester of 2024, a team of four professionals specialized in forest area surveillance started to carry out initial protection activities and begin identifying individuals within the communities and the territory who have the necessary skills to lead the planned monitoring activities. Additionally, accommodations for this team were built through the individual initiative of the owner of Instance 3. Further details on the hiring of these professionals can be found in section 2.3.16.

In addition, instance 3 also carried out SFMP during the monitored at unit Forest Production Unit named ‘UPF4’. During the period, 3,538.10 m^3 were extracted from logging activities. Evidence was shared with VVB.

Although part of the abovementioned activities is in place prior to the monitored period, they represent continuous and important initiatives to monitor the area and, consequently, avoid deforestation within the property.

The table below shows a summary of the technologies and measures implemented during this monitoring period. More details about their impact are available in Section 2.2.1.

Table 1. Summary description of the technologies/measures and its implementation status

Instance	Activities implemented during the current monitoring period (2024)	Activities implemented in previous years (2019-2023)
1-ROVEMA	• February-2024: The Dojo was built for the Guerreiros da Natureza Project, a karate school for children and young people in the Morrinhos Settlement. • September-2024: Tree day at the Porto Velho Natural Park and the Flor do Cupuaçu School. • October-2024: T-shirts donation for Guerreiros da Natureza Project. • 2024: New placards informing the REDD project. • 2024: No SFMP activities were carried out.	• October 2019: Contract with a private company of surveillance – **still in place** • 2019-2022: SFMP activities were carried out. • 2023: no SFMP activities were carried out[24]. • April-2023: cooperation with 'Flor do Cupuaçu' school by buying tires for the school bus[25] - **One-off activity conducted in 2023.** • October-2023: donation of one Internet antenna to 'Flor do Cupuaçu' school, contributing to the connectivity of the school and students' educational development – **still in place** • November-2023: Instance 1 farms joined the Rural Patrol Program, a governmental program to carry out rural policing – **still in place**
2-Leite	• 2024: Refurbishment of the staff canteen at Fazenda Santa Carmem. • 2024: Satellite monitoring continues to take place during this monitoring period.	• January 2020: Contract with satellite monitoring to monitor deforestation – **still in place** • May 2021: Contract with third-part surveillance company – **discontinued** • 2022: Santa Carmem farm joined Rural Patrol program – **still in place** • August-2023: Purchase of a vehicle to monitor the project area – **still in place** • August 2023: Santa Carmem Farm joined Rural Patrol program – **still in place**
3-Tupá	• June-2024: the partnership with EMBRAPA Acre and the Rio Madeira Project was formalized to carry out training in good practices in Brazil nut management	• January 2020: Contract with "mateiro", responsible for surveillance in the farm boundaries – **still in place**

[24] Althought this is not a project activity, the initiative demonstrates the landowners' commitment with community
[25] Althought this is not a project activity, the initiative demonstrates the landowners' commitment with community.

	• 2024: SFMP at unit Forest Production Unit named 'UPF4'. • 2024: Establishment of accommodations for the field team (described below) were built through the individual initiative of the owner of Instance 3.	• January 2022: Agreement between the landowner and Brazil nut extractivists – **still in place** • 2022: Installation of a geodesic landmark on the property boundaries – **still in place** • 2022: firebreak maintenance – **still in place** • 2019-2022: SFMP activities were carried out • 2023: No SFMP activities were carried out • October and December-2023: Two training sessions with the Brazil nut collectors about good practices for collecting and processing nuts, provided by Embrapa - **still in place**[26] • September 2023: birdwatching assessment and photographic report – **still in place**[27] • October 2023: Nova Fronteira farm joined Rural Patrol program – **still in place**
All Instances	• Future Carbon hired a professional to join the project's remote monitoring team, with the aim of and monitoring conservation activities and detecting possible threats in the project areas on the 4 properties that are part of the project. • A team of four professionals specialized in forest area surveillance started to carry out initial protection activities and begin identifying individuals within the communities and the territory who have the necessary skills to lead the planned monitoring activities.	• Establishing communication channels with stakeholders – **still in place** • 2022: consultation of stakeholders – **still in place** • 2022: installation of project identification placards – **still in place** • July - August 2023: A socio-environmental diagnosis was performed by a third-party company hired by the project. The goal was to interview residents and government institutions in order to characterize the socioeconomic and environmental context surrounding the project area - **One-off activity conducted in 2023.** • July - August 2023: A biodiversity diagnose (fauna assessment) was carried out in all instances by a third-party company hired

[26] Although no formal training sessions took place in 2023, the partnership with Embrapa was officially established in 2024, and collaborative work is ongoing
[27] In July 2024, another group conducted a new ornithological survey in the Legal Reserves of Fazenda Nova Fronteira, aiming to photographically document the species and record them in a checklist using the eBird platform.

		by the project - **One-off activity conducted in 2023.**

Non permanence risk is monitored according to AFOLU Non-Permanence Risk Tool 4.2, with a score of 12%. This is managed together with the owners in order to reduce risk. In addition, leakage follows the same approach, where deforestation is monitored in the LB and actions in the LMAs (under planning) are designed to reduce deforestation in these areas.

The monitoring data was kept according to the monitoring plan described in the approved VCS PD. This Monitoring Report refers to the fourth monitoring period of this project and includes data from 01-January-2024 to 31-December-2024.

When assessing deforestation rates within the Project Area, the actual deforestation during the monitoring period was of 21.53 ha. Meanwhile, the predicted area in the baseline scenario that would be deforested during this monitoring period from 01-01-2024 to 31-12-2024 would be 1,590.24 ha. In general, the ex-ante and ex-post analysis of deforestation in the project boundaries is available in the table below:

Boundaries	Ex-ante (ha)	Ex-post (ha)
Project Area	1,590.24	96.15
Reference Region	13,600.39	4,542.03
Leakage Belt	694.63	496.05

The total reductions or removals of GHG emissions[28] in this monitoring period is 658,967 tCO2e.

The net carbon stock change within project area during the present monitored period represents 61,637 tCO2e. When compared to VCUS already issued (2,534,851 VCUs), the ratio represents less than 5%, thus not characterizing a loss event according to VCS Program Definitions 4.5[29] of more than five percent of previously verified emission reductions and removals.

The map with the annual areas of deforestation within the project area during the current monitoring period is showed below. Reference region accumulated deforestation map is also available below. The analyses carried out are based on Sentinel classification image[30].

[28] For more information, please see ER sheet.
[29] Available at: < https://verra.org/documents/vcs-program-definitions-v4-5-final/>
[30] The monitoring data were produced through the supervised classification of Sentinel images with a spatial resolution of 10 meters. The process of producing and validating these data is documented in Section 3.1.3, CLASSIFICATION METHODOLOGY FOR ANALYZING LAND USE COVER CHANGE.

Figure 1. Deforestation in Project Area during 2024[30]

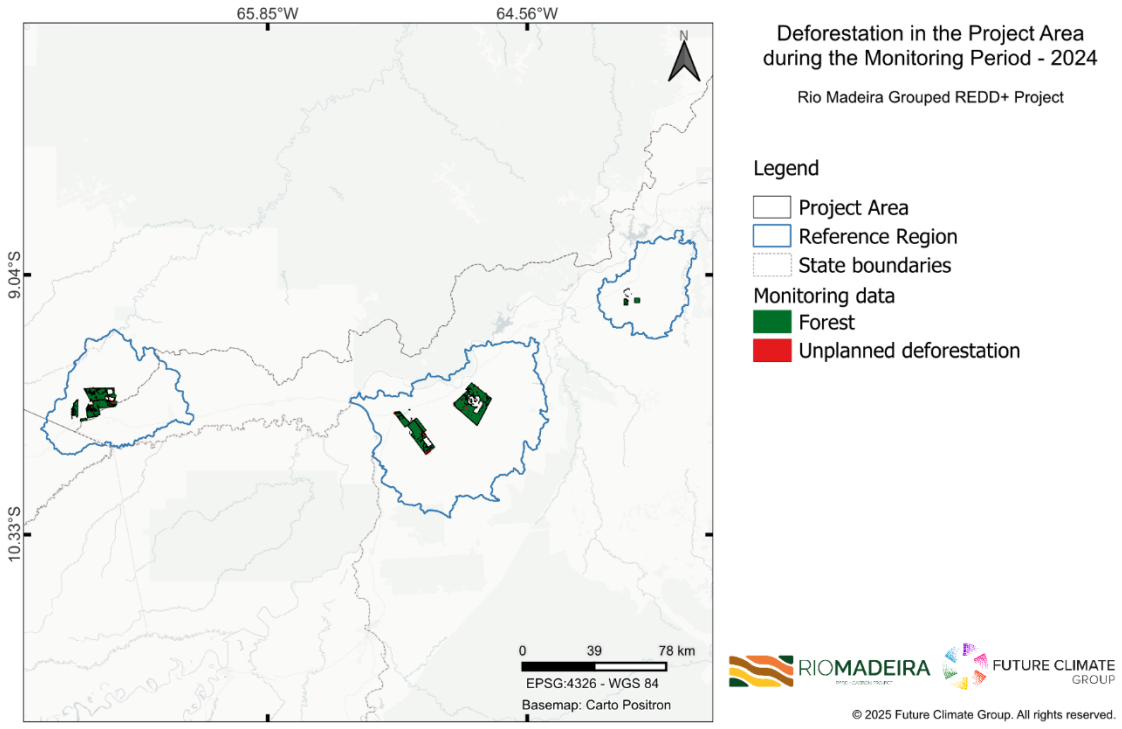


Figure 2. Cumulative deforestation Serra Verde farm (Instance 1) during the monitoring period (January 2024 to December 2024) [30]

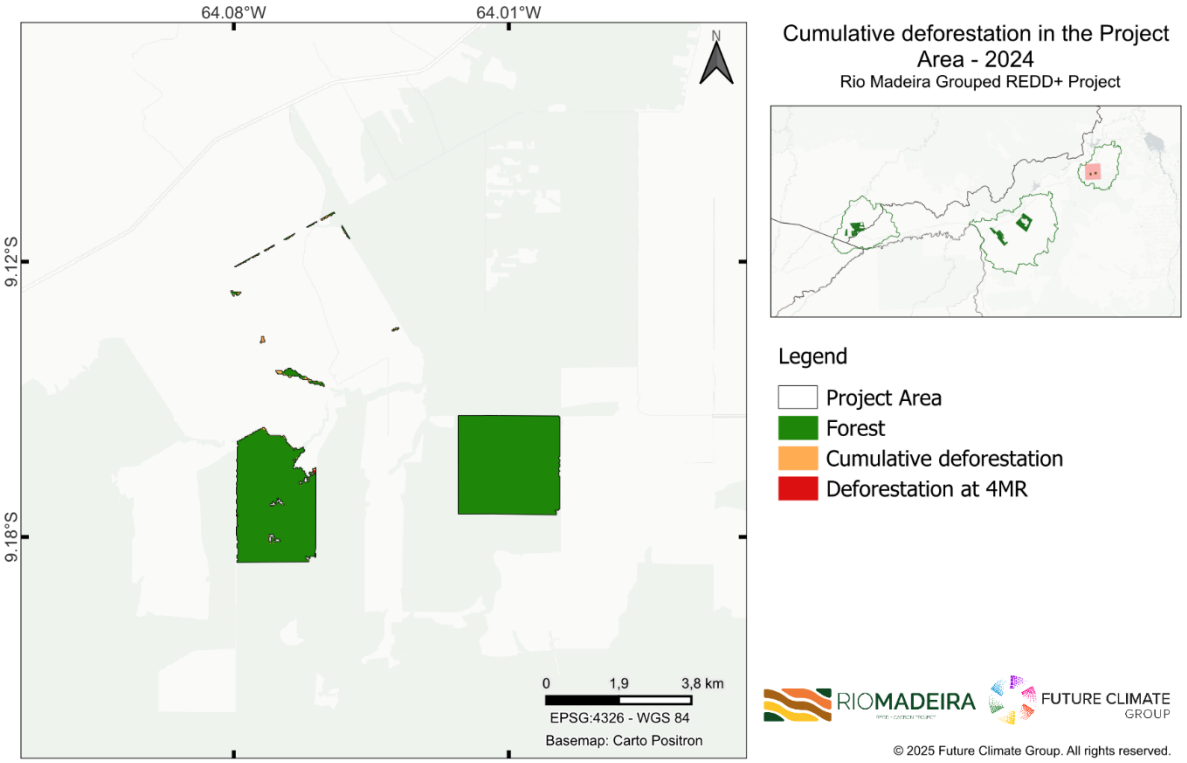


Figure 3. Cumulative deforestation at Santa Carmen farm (Instance 2) during the monitoring period (January 2024 to December 2024)[30]

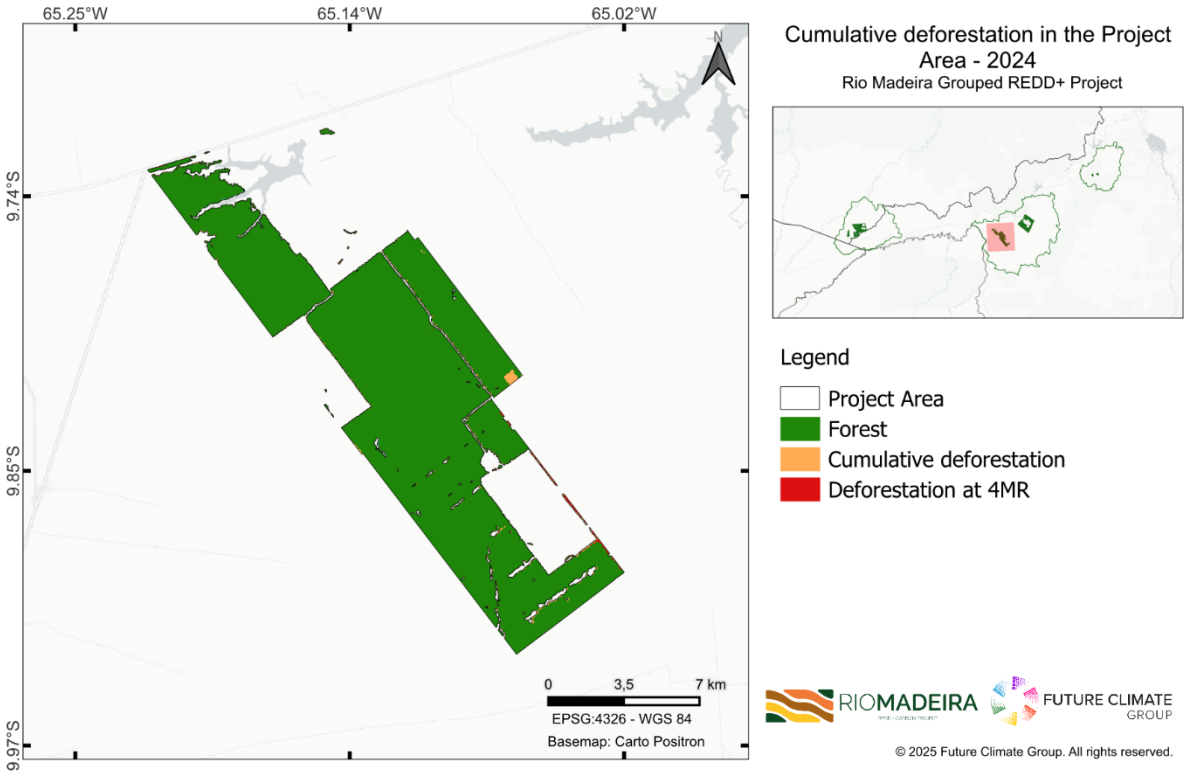


Figure 4. Cumulative deforestation at Rio Madeira farm (Instance 1) during the monitoring period (January 2024 to December 2024)[30]

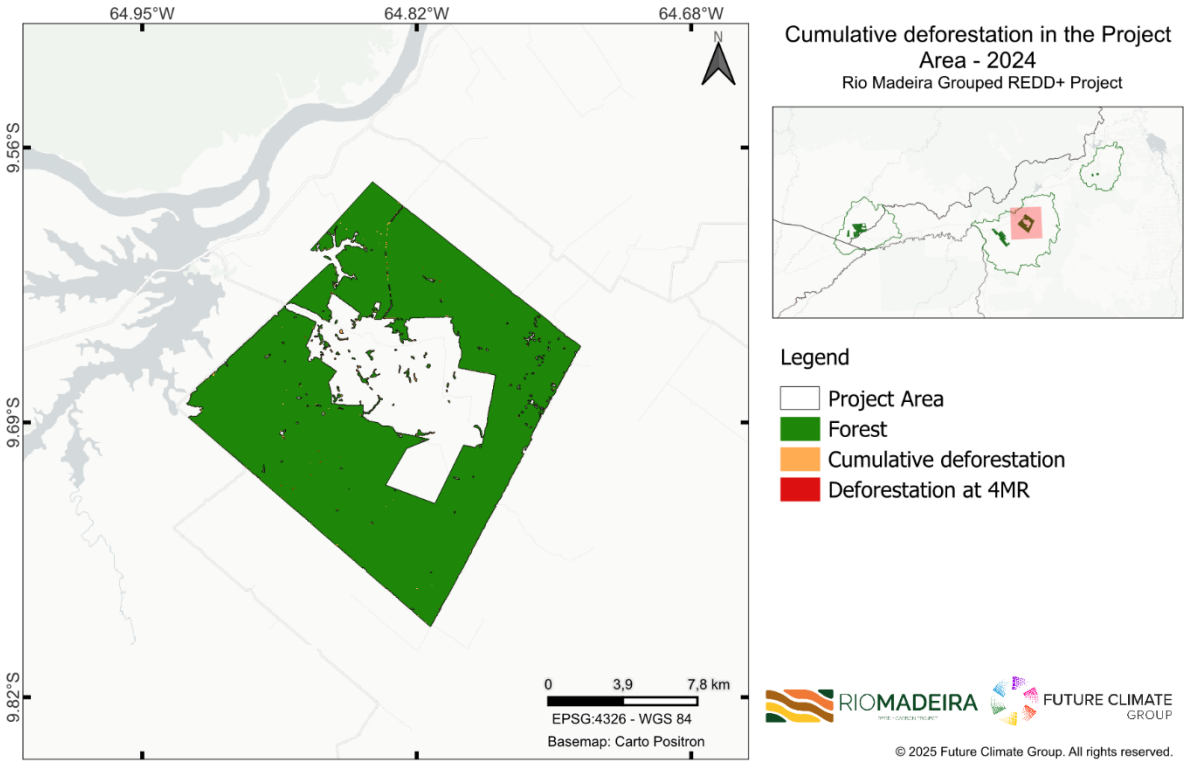


Figure 5. Cumulative deforestation at Nova Fronteira farm (Instance 3) during the monitoring period (January 2024 to December 2024) [30]

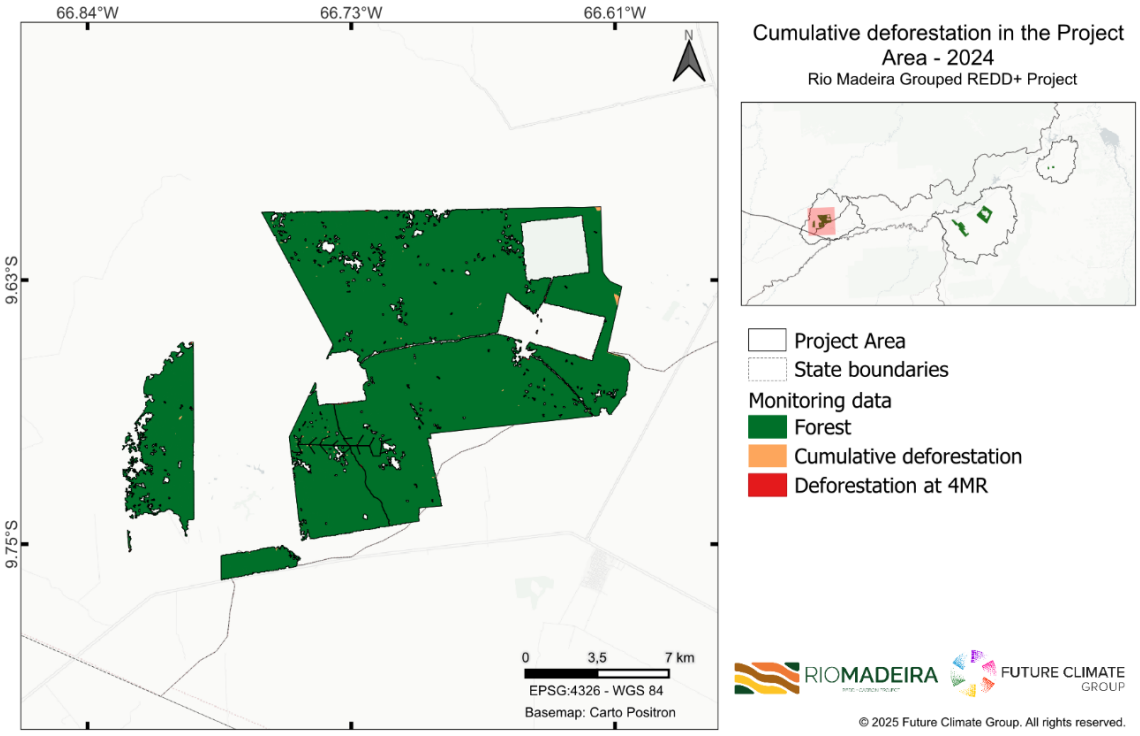


Figure 6. Cumulative deforestation in the Reference Region (Serra Verde Farm – Instance 1)[30]

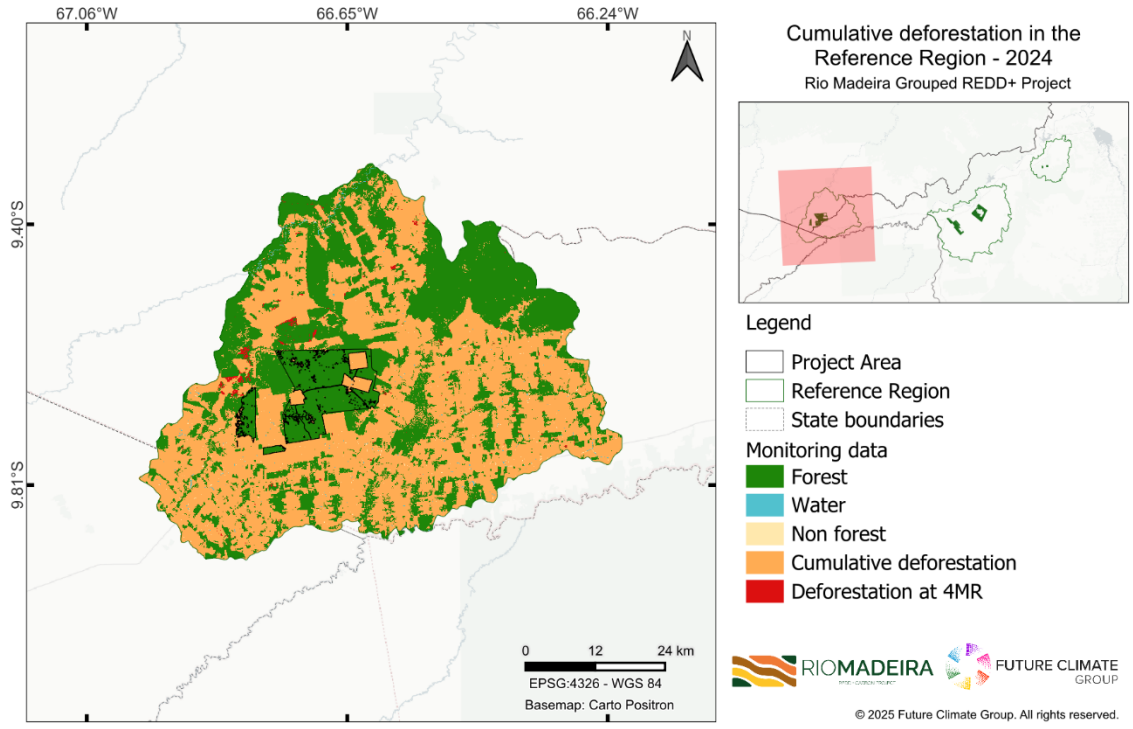


Figure 7. Cumulative deforestation in the Reference Region (Rio Madeira and Santa Camem Farm – Instances 1 and 2)[30]

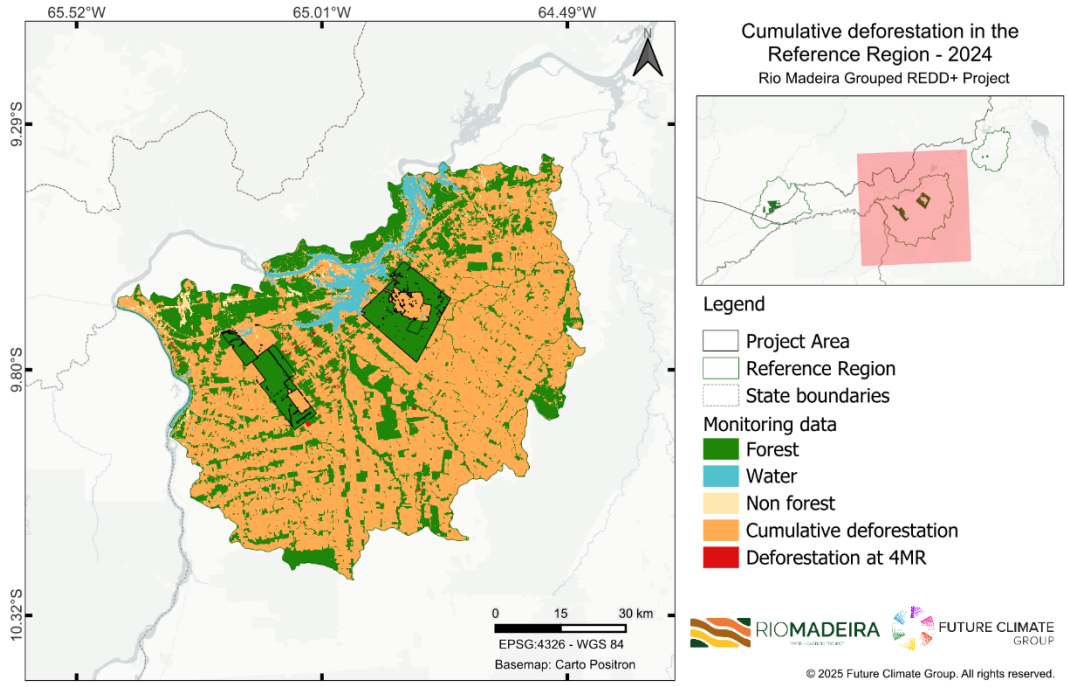
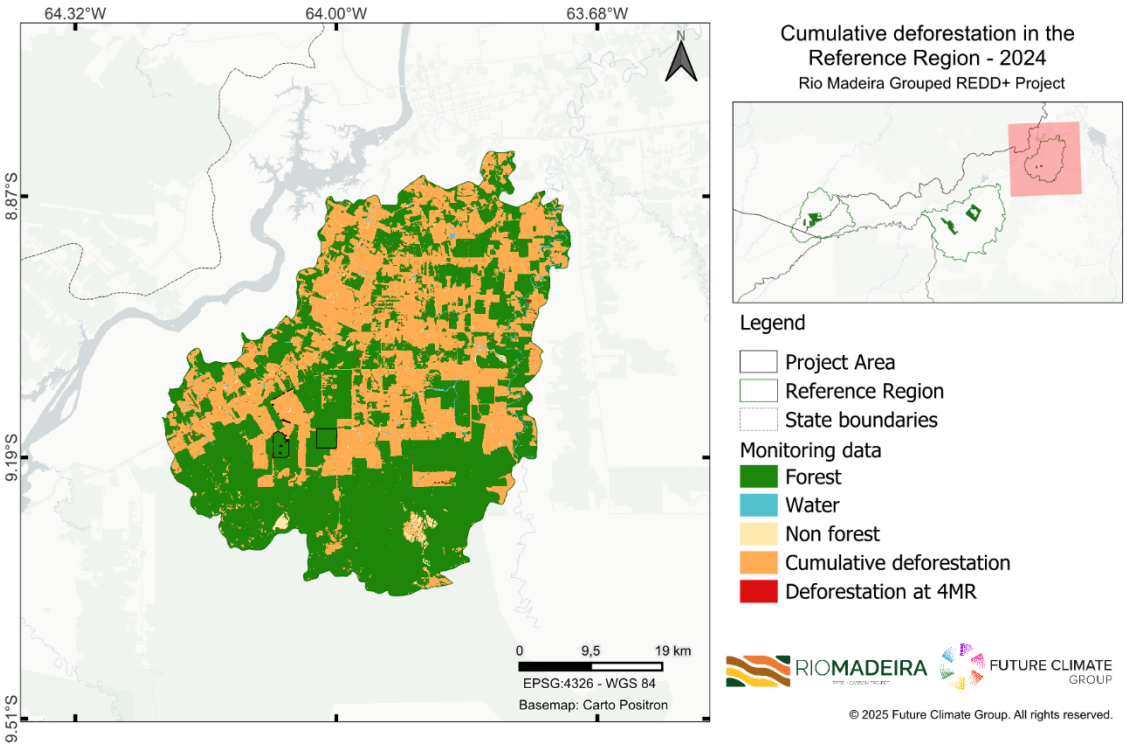


Figure 8. Cumulative deforestation in the Reference Region (Nova Fronteira Farm – Instance 3)[30]

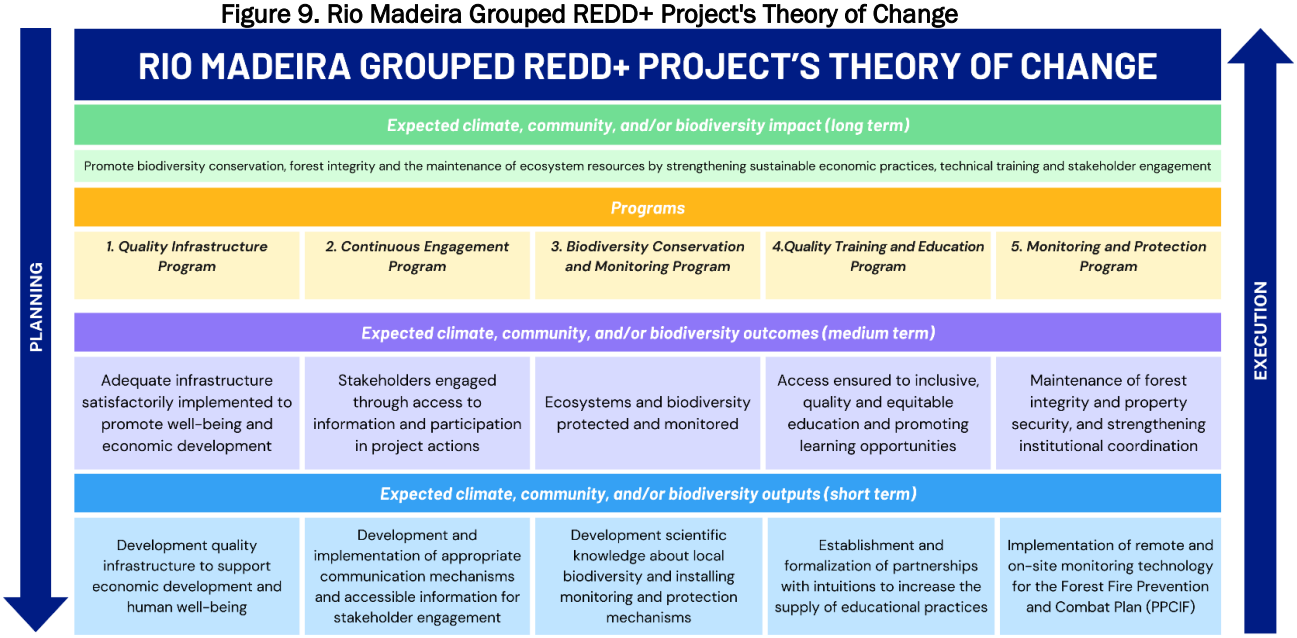


As a CCB (Community, Climate and Biodiversity) project, the construction of the Theory of Change was based on the conducted socio-environmental diagnoses and stakeholder consultation, considering establish a clear cause-effect relationship between the unsatisfied basic needs of communities and each critical factor such as unsustainable land use and limited knowledge of ecosystem services.

Therefore, the **Theory of Change for the RIO MADEIRA GROUPED REDD+ PROJECT** consists of using the benefits of carbon credits to develop activities that promote biodiversity conservation, forest integrity and the maintenance of ecosystem resources by strengthening sustainable economic practices, technical training, and stakeholder engagement.

To achieve these objectives and to generate positive impacts on climate, community, and biodiversity in the short, medium, and long term, five key programs have been designed and are currently being implemented: **(1)** Quality Infrastructure, **(2)** Continuous Engagement, **(3)** Biodiversity Conservation and Monitoring, **(4)** Quality Training and Education, and **(5)** Monitoring and Protection. These programs are illustrated in the framework below:

Figure 9. Rio Madeira Grouped REDD+ Project's Theory of Change



In order to achieve the main project objective, the project proponent has divided into specific objectives Climate, Community and Biodiversity below.

- Climate Objective: Protect 52,274.05 of Amazon rainforest from illegal deforestation and forest fires

- Community Objective: Promote technical training aimed at diversifying sources of income, adopting best practices in agriculture and increasing the employability of young people and women. Implement and repair infrastructure to guarantee safe spaces that promote the well-being and social integrity of communities.

- Biodiversity Objective: Protect the Southwestern Amazon Rainforest, habitat for *Ateles chamek*, the black spider monkey, listed as Endangered by the IUCN Red List of Threatened Species. This species is estimated to have declined by at least 50% over the past 45 years. In Brazil, it is pressured mostly by deforestation and habitat loss on the deforestation arc, where the project area is located. The project also aims to safeguard habitat for nine other threatened species listed as vulnerable or near threatened in the IUCN Red List (see section 5.1.3), including *Mico rondoni* and *Panthera onca*, both listed in CITES Appendix as well.

2.1.2 Audit History (VCS, 4.1)

Audit Type	Period	Program	VVB Name	Number of years
Validation	23-October-2019 to 22-October-2049	VCS	RINA S.p.A.	30 years

Verification	23-October-2019 to 31-December-2021	VCS and SOCIALCARBON®	RINA S.p.A.	2 years and 70 days
Verification	01-January-2022 to 31-December-2022	VCS and SOCIALCARBON®	Ecolance Private Limited	1 year
Validation	01-January-2023 to 22-October-2049	CCB	Ecolance Private Limited	1 year
Verification	01-January-2023 to 31-December-2023	VCS and CCB	Ecolance Private Limited	1 year
Verification	01-January-2024 to 31-December-2024	VCS and CCB	Verifit SAS	1 year
Total	**23-October-2019 to 22-October-2049**	**VCS**	-	**30 years**

2.1.3 Sectoral Scope and Project Type (VCS, 3.2)

Sectoral Scope	14: Agriculture, forestry, and other land use
AFOLU Project Category	Reducing Emissions from Deforestation and Degradation (REDD)
Project Activity Type	Avoided Unplanned Deforestation (AUD)

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

Organization name	Future Carbon International LLC
Contact person	Fábio Galindo Silvestre
Title	Chief Executive Officer
Address	150 SE 2nd Ave, Suite 906 Miami – Florida, United States Postal Code: 33131
Telephone	(11) 99831-3474
Email	riomadeira@futurecarbon.com.br

2.1.5 Other Entities Involved in the Project

Organization name	Grupo ROVEMA
Role in the project	Owner of Instance 01 properties

Contact person	Lediana Ghedin
Title	Chief Executive Officer
Address	Av. Calama, 1383 – São João Bosco – Porto Velho RO Postal Code – 76803-705
Telephone	(69) 3216-9600
Email	lediana@ceo.grupoROVEMA.com.br

Organization name	Grupo Leite
Role in the project	Owner of Instance 02 property
Contact person	José Marcos Leite Junior
Title	Chief Executive Officer
Address	BR-364 km 904 Porto Velho – RO Postal Code – 78900-000
Telephone	(68) 99903-7883
Email	joseleitejunior@gmail.com

Organization name	Grupo Tupá
Role in the project	Owner of Instance 03 property
Contact person	Tulio Villela Lemos Batista da Costa
Title	Chief Executive Officer
Address	BR 364 km 135 Lábrea – AM Postal Code – 69830-000
Telephone	(68)-3224-3192
Email	ciatupa@uol.com.br

2.1.6 Project Start Date (VCS, 3.8)

Project start date	23-October-2019
Justification	According to the concept established by the VCS Standard v4, "the project start date of an AFOLU project is the date on which activities that lead to the generation of GHG emission reductions or removals are implemented (e.g., preparing land for seeding, planting, changing agricultural or forestry practices, rewetting, restoring hydrological functions, or implementing management or protection plans)". The project start date was on 23-October-2019 and was defined considering the date on instance 01 properties owner started to intensify the monitoring of the property boundaries. To do so, it was hired a monitoring company who conducts patrols at property boundaries. Such monitoring activities help the landowners to plan and optimize their field surveillance using vehicles and other equipment. For more information regarding plans to project activity implementation, please see section 2.2 implementation status. Therefore, the project start date is 23-October-2019, and it was defined taking into consideration the date on which the Grupo ROVEMA started a patrolling routine in the property named Rio Madeira. Such service includes security agents in order to avoid land encroachers and wood grabbers, as an action to help forest conservation due to the numerous invasions that are common in other farms in the region. Evidence was presented for the audit period, where Grupo ROVEMA signed a contract with a monitoring team ("S.S.M – Serviços de Segurança Eireli") to increase surveillance activities and thus guarantee the conservation of the forest areas. The other two Project Activity Instances are nearby and suffer from the same invasion risks. Thus, the Grupo Leite (instance 2), on 08-January-2020, hired an assessor ("Verine Projetos e Assessoria Ltda – ME") which is specialized in forest coverage satellite images monitoring service. Thus, with such intel service, it was possible to prevent encroachers. Grupo Tupá (instance 3) signed a contract with a security service provider ("Elzo Santos de Oliveira"), on 02-January-2020. Such professional is an expert on identifying tracks and settlements in the forest and stablished a routine of patrolling Grupo Tupá borders in order to prevent invasions and consequent forest coverage loss. Thus, briefly, below is the project start date of the 3 instances:

Table 2. Project Start Date

Instance	Project Start Date
Grupo ROVEMA	23-October-2019
Grupo Leite	08-January-2020
Grupo Tupá	02-January-2020

These actions were the first step to the conservation of the project area due to the increase of invasions within the properties.

	The documents supporting the project start date will be made available to the VVB team during the validation process.

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

Crediting Period	According to the concept established by the VCS Program Definitions v4, "The time period for which GHG emission reductions or removals generated by the project are eligible for issuance as VCUs, not including any potential crediting period renewals. Also referred to as the "Project Crediting Period". The project crediting period starts in project start date, on 23-October-2019 when the GHG reductions or removals began to take place and it ends on 22-October-2049, when the project ends.
Start Date of First or Fixed Crediting Period	23-October-2019 to 22-October-2049
Total Number of Years of Crediting Period	30 years
CCB Benefits Assessment Period	26 years

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

The Rio Madeira Grouped REDD+ Project is situated in the municipalities of Porto Velho in State of Rondônia and Lábrea, in State of Amazonas, both in the north of Brazil, a region known as Southern Amazon. Belonging to the South-Amazonian Mesoregion and Microregion of Madeira, Porto Velho population, according to the Brazilian Institute of Geography and Statistics (IBGE) in 2022, had about 460,434[31] inhabitants, while Lábrea had 68,262,680[32]. Their territorial areas sum up to around 102,352 km², which makes them among the largest municipalities in Brazil in the territorial area.

The area of the first project activity instance comprehensively belongs to Grupo ROVEMA, the second project activity instance belongs to Grupo Leite and the third belongs to Grupo Tupá[33] (Figure below). In accordance with VCS requirements, stipulated in Approved VCS Methodology VM0015, version 1.1, they are areas which include only "forest"[34] for a minimum of ten years prior to the project start date'. To define the project area, areas within the three properties that

[31] Brazilian Institute of Geography and Statistics (IBGE). Available at: https://www.ibge.gov.br/cidades-e-estados/ro/porto-velho.html
[32] Brazilian Institute of Geography and Statistics (IBGE). Available at: https://www.ibge.gov.br/cidades-e-estados/am/labrea.html
[33] More information about the split properties, see section "1.7 – Ownership" of the registered JointVCSPD
[34] The applied definition of forest is from the FAO: "Land with tree crown cover (or equivalent stocking level) of more than 10 percent and area of more than 0.5 hectares (ha). The trees should be able to reach a minimum height of 5 meters (m) at maturity *in situ*." Available at: http://www.fao.org/docrep/006/ad665e/ad665e06.htm

were defined as forest for ten years prior to the project start date were identified and utilized to compose the project area.

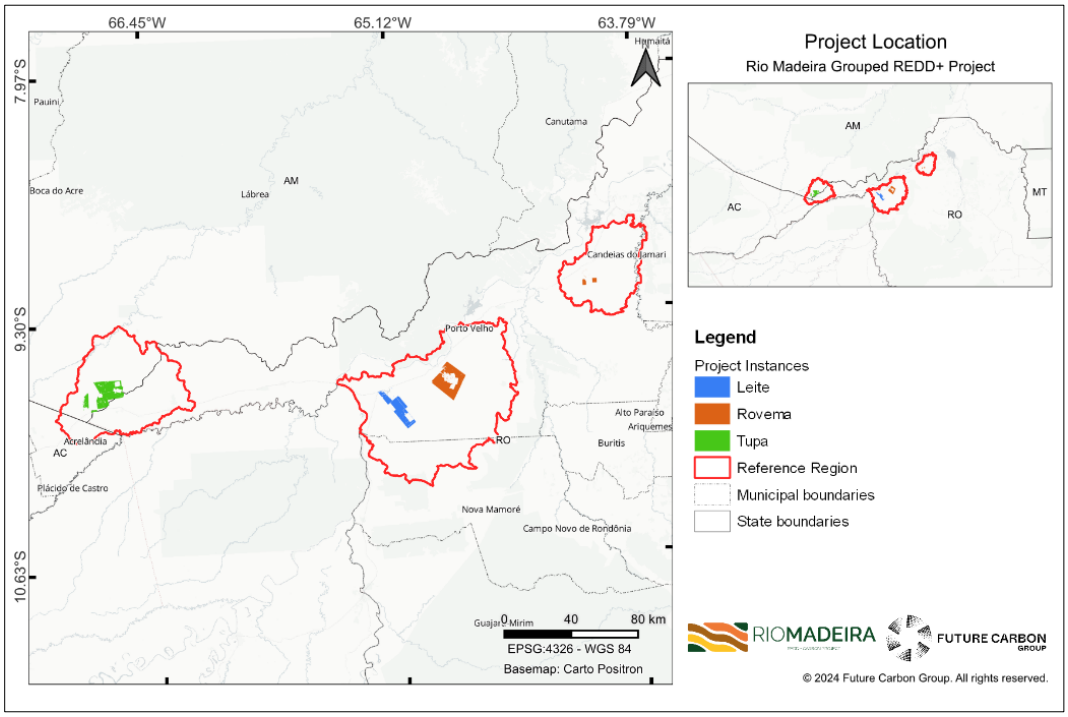
Table 3. Centroid location coordinates by property

Ownership	Properties	Centroids location coordinates
Grupo Rovema	Rio Madeira Farm	9°40'41.22"S; 64°49'40.57"W
	Serra Verde Farm	9°07'33.76"S; 64°03'21.22"W
Grupo Leite	Fazenda Santa Carmem	9°46'01.89"S; 65°07'25.50"W
	Fazenda Santa Carmem I	9°52'20.83"S; 65°04'24.96"W
	Fazenda Santa Carmem II	9°46'39.08"S; 65°09'42.32"W
Grupo Tupá	Fazenda Beleza	9°41'38.45"S; 66°43'15.96"W
	Fazenda Fronteira	9°43'04.65"S; 66°41'39.67"W
	Fazenda Iracema I	9°39'33.69"S; 66°38'49.99"W
	Fazenda Iracema II	9°37'16.84"S; 66°39'45.12"W
	Fazenda Seringal Novo A	9°37'25.59"S; 66°43'54.66"W
	Fazenda Seringal Novo B	9° 42'43.80"S; 66° 48'33.02"W

☒ KML file has been provided

The location of instances is available below:

Figure 10. Initial instances that compose the project



The table below shows the distribution of project area in each instance:

Table 4. Project Area distribution

Instance	Group Name	Project Instance Area (ha)	Total Project area (ha)	Project Area representation (%)
1	**Rovema**	20,232.24	52,274.053	38.7
2	**Leite**	13,204.20		25.2
3	**Tupá**	18,837.60		36

2.1.9 Title and Reference of Methodology (VCS, 3.1)

Type (methodology, tool, module)	Reference ID (if applicable)	Title	Version
Methodology	VM0015	VM0015 – Methodology for Avoided Unplanned Deforestation (AUD)	1.1[35]

[35] Published on 03-December-2012. Available at: https://verra.org/methodology/vm0015-methodology-for-avoided-unplanned-deforestation-v1-1/

Tool	VT0001	Tool for the Demonstration and Assessment of Additionality in VCS Agriculture, Forestry and Other Land Use (AFOLU) Project Activities	3.0[36]
Tool	-	AFOLU Non-Permanence Risk Tool	4.2[37]

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

2.1.10.1 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**

2.1.10.2 Registration in Other GHG Programs

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

☐ Yes ☒ **No**

2.1.10.3 Projects Rejected by Other GHG Programs

Has the project been rejected by any other GHG programs?

☐ Yes ☒ **No**

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

2.1.11.1 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**

2.1.11.2 No Double Claiming with Other Forms of Environmental Credit

[36] Published on 01-February-2012. Available at: https://verra.org/methodology/vt0001-tool-for-the-demonstration-and-assessment-of-additionality-in-vcs-agriculture-forestry-and-other-land-use-afolu-project-activities-v3-0/
[37] Available at: https://verra.org/wp-content/uploads/2023/10/AFOLU-Non-Permanence-Risk-Tool-v4.2-FINAL.pdf

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**

2.1.11.3 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

As per section 3.23 of the VCS Standard, this project falls within items 3.23.8 and 3.23.9 where a project GHG emissions reductions are in a supply chain, and the retailers of the impacted good or service are not involved in the project.

During the monitoring period, instance 3 conducted a Sustainable Forest Management Plan in the Project Area, that may be affected directly or indirectly by the GHG emission reductions of the project.

Thus, the landowner has notified the partners in order to avoid potential risk of Scope 3 emissions double claiming. Also, a public statement was made available at Future Carbon's publication on the website page[38]. Evidence was shared with the VVB team.

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[38] Available at: https://www.linkedin.com/posts/futureclimategroup_futureclimategroup-conservaaexaeto-impacto-activity

2.1.12 Sustainable Development Contributions (VCS, 3.17)

The project strengthened community health and well-being by supporting the karate team "Guerreiros da Natureza" with uniforms and equipment, contributing to SDG 3. Regarding SDG 4, the project renovated the electricity grid and installed internet at Escola Flor do Cupuaçu during this period. For SDG 13, the project promoted Arbor Day by organizing tree planting activities, lectures, and environmental workshops. Additionally, under SDG 13, the project avoided 658,967 tCO_2 during the monitoring period. These actions enhance quality of life, strengthen climate education, and contribute to the conservation of 51,936.18 ha of the Amazon rainforest.

Table 5. Sustainable Development Contributions

Row number	SDG target	SDG indicator	Net impact on SDG indicator	Current project contributions	Contributions over project lifetime
1)	3	3.4 Promote the physical and mental health and well-being of the communities involved in the project by implementing activities and infrastructure that encourage healthy lifestyles.	Implemented activities to increase	Support the acquisition of equipment for the dojo and uniforms for the "Warriors of Nature" team from the Morrinhos resettlement.	Increase sports teams' capacity by donating uniforms and equipment, as well as promoting their participation in championships. So far, the project has impacted 25 members of the "Warriors of Nature" karate team.
2)	4.a	4.a.1 Proportion of schools offering basic services, by type of service	Implemented activities to increase	Electricity grid of the Flor do Cupuaçu School renovated.	Support the improvement of infrastructure and promotion of necessary services for the schools benefiting from the project. So far, electrical renovations and the installation of the Star Link antenna have taken place at Flor do Cupuaçu School.

3)	13.0	Tonnes of greenhouse gas emissions avoided or removed	Implemented activities to increase	Avoided 658,967 tonnes of CO2 emissions by conserving 52,010.80 hectares of Amazon rainforest during the monitoring period.	Cumulatively avoided 2,884,577 tonnes of CO2 emissions through forest conservation initiatives over the project duration, contributing to climate change mitigation.
4)	13	13.3 Improve education, awareness-raising and human and institutional capacity on climate change mitigation, adaptation, impact reduction and early warning	Implemented activities to increase	Development of activities in celebration of Arbor Day: planting seedlings, lectures on biodiversity, soap and seed bomb making, presentation of the Rio Madeira project, and delivery of the educational garden to Flor do Cupuaçu School.	Promote climate education for stakeholders throughout the entire project lifecycle.
5)	15.2	15.2.1 Progress towards sustainable forest management	Implemented activities to increase	Forest Cover Satellite Monitoring	51,936.18 ha of Amazon rainforest protected from deforestation
6)	15.5	15.5.1 Red List Index	Implemented activities to decrease	Protected the habitat of 227 species of fauna, including 24 mammals, 182 birds, and 21 amphibians/reptiles, with 10 threatened species per the IUCN Red List Index (and 1 in the National List).	The project protects 51,936.18 hectares of Amazon rainforest from deforestation, which consequently protects the habitat of 227 species of fauna identified to date.

2.2 Project Implementation Status

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

The table below provides the key dates and relevant milestones in the development and implementation of the Rio Madeira Grouped REDD+ Project, according to the defined project objectives.

The details about the activities implemented by the project for social co-benefits can be found in section 4.3.1, and the activities implemented for biodiversity co-benefits are detailed in section 5.1.1.

Table 6. Implementation Schedule

Date	Milestones(s) in the project development and implementation	Status
01-Jan-2024	Start of 4th Monitoring Period under VCS and CCB Standards	Concluded
15-Fev-2024	Project activity: Sponsoring the activities of the "Guerreiros da Natureza" project	Concluded
23-Fev-2024	Remote Consultation: Presentation on the accumulated results of the project to institutional stakeholders.	Concluded
02-Apr-2024	On-site Visit: 1st CCB PD Validation audit and MR3 Verification audit	Concluded
24-Jun-2024	Project Activity: Maintenance of the Flor do Cupuaçu School electrical system (Instance 1)	Concluded
05-July-2024	Project activity: Signing of the partnership agreement between Embrapa Acre and Future Carbon	Concluded
27 and 29 Sep-2024	Project activity: Activity to commemorate the "Arbor Day" with the Flor do Cupuaçu School, Morrinhos Resettlement residents and employees from Instance 1	Concluded
08-Oct-2024	Project activity: Donation of uniforms for the "Guerreiros da Natureza" project	Concluded
18-Nov-2024 to 22-Nov-2024	On-site visit: Local Stakeholder Consultation focused on presenting the results of the 3rd and 4th monitoring periods and validating the actions planned for 2025.	Concluded

Nov-2024	Start of patrol activities by a team hired by the project	Concluded
05-Dec-2024	Listing of CCB/PDD as "Validated" for Registration	Concluded
31-Dec-2024	End of 4th Monitoring Period under VCS and CCB Standards	Concluded
05-Feb-2025	Remote Stakeholder Consultation: presentation of the results of the 4th monitoring period	Concluded
24-Feb-2025 to 28-Feb-2025	4th Verification Audit (CCB+VCS)	Concluded
12-Feb-2025 to 14-Mar-2025	Public Commenting Period of 4th Monitoring Period	Concluded

In addition, the activities implemented in this monitoring period are better described in Section 2.1.1 and the table below shows a summary of the activities performed so far:

Table 7. Project Activities Implementation Status

Project Activity	Activity monitoring	Impact on the GHG emission reductions	Implementation Schedule	Activity performance
Implement and intensify patrimonial surveillance and local patrolling	As these are security services contracted by the landowners' team, the equipment is available during the project activities and in case of maintenance, the receipts are registered as evidence, along with contracts and payment invoices. During this monitoring period, the services contracted by the landowners' team carried out **70** on-site patrols events. In addition, **5** professionals were hired by the PP to compose a specialized team in forest area surveillance: 4 for field activities and 1 to the project's remote monitoring team. As a result: **2,747** km were travelled during patrols in 2024 by the team contracted by the PP. **05** patrols events were carried out during 2024	This activity guarantees the security of the property and the project area, ensuring that the forest is conserved and emissions reduced.	Since Project Start Date (Instances 1 and 3) Since 2021 (Instance 2)	During this monitoring period, it was performed 75 events, including on-site patrols. Regarding the team members involved in this activity, the composition is as follows: • Instance 1: 2 farm managers and a private company (S3A/Multiservise); • Instance 2: 1 farm manager • Instance 3: 1 farm manager and 1 "mateiro" • Field agents (hired by PP): 4 agents

Project Activity	Activity monitoring	Impact on the GHG emission reductions	Implementation Schedule	Activity performance
	by the team contracted[39].			
Rural patrol program	Since the Police Department cannot enter private property, this is a State Program where a landowner officially allows officers to make rural patrols anytime within the properties. The four properties (**100%**) that compose the project area has joined the program.	The presence of police officers within properties discourages encroachers. This is a complementary surveillance action, since landowners have their own surveillance teams[40].	Since 2023 (all instances)	The four properties (100%) that compose the project area has joined the program.
Remote and satellite monitoring in the project area	As these are security services contracted by the owners, there is a guarantee that the work will be carried out as planned through a contract and payment invoices, as well as the resulting maps. In this monitoring period, **15** monitoring maps were done as remote project monitoring. In this monitoring period, weekly images were analyzed by the remote	This activity makes it possible to monitor deforestation periodically, to avoid possible invasions and, consequently, deforestation of the project area.	Since Project Start Date (Instance 2) Since 2024 (all instances)	In this monitoring period, 15 monitoring maps were done as remote project monitoring for instance 2. Regarding the weekly images analysed by the remote monitoring teams hired by PP, 30 weeks and 90 images (one image for each Instance) were analyzed during 2024.

[39] It is very likely that more patrols occurred. However, for this indicator, it was considered the events that were traceable and registered.

[40] It is worth emphasizing property surveillance teams do not use firearms.

Project Activity	Activity monitoring	Impact on the GHG emission reductions	Implementation Schedule	Activity performance
	monitoring team since May-2024 as described in this present section after this table and in Section 3.1.3. In total, **30** weeks and **90** images (one image for each Instance) were analyzed during 2024.			
Structure and implement the Forest Fire Prevention and Combat Plan (PPCIF).	To be implemented	To be implemented. When implemented, it plans to prepare the farms to effectively prevent and control fires within the project area and avoid GHG emissions.	Rescheduled to be implemented in 2025	Not applicable, there were no results in 2024. The change in the implementation schedule stems from the need to deepen technical and environmental feasibility studies to properly structure certain activities—especially those related to wildfire prevention and control. During the monitoring period, it was identified that the territorial and socio-environmental complexity of the project area required more detailed analyses to ensure that the actions to be implemented are aligned with local realities and promote long-term effectiveness and sustainability. Additionally, the rescheduling was also due to operational challenges faced, such as limited financial and logistical resources for the immediate execution of certain actions. These constraints demanded strategic adjustments to ensure the feasibility and continuity of the initiatives set out in the project. Despite the postponement of the formal implementation of the Wildfire Prevention and Control Plan (PPCIF), the absence of this action during the monitored period did not compromise the achieved GHG emission reductions, since the patches of deforestation did not occur due to forest fire. Although hotspots were detected, none of them caused a loss of forest cover. It is worth mentioning that the employees have fire-fighting training provided by the owners, and, in addition,

Project Activity	Activity monitoring	Impact on the GHG emission reductions	Implementation Schedule	Activity performance
				other measures — such as monitoring (in field and through satellite images) and territorial control, as well as working practices that are in line with the culture and customary practices of the communities —remained active, contributing to the protection of native vegetation and the integrity of the carbon stock. The implementation of the PPCIF remains a priority for the next monitoring period, with its finalization and operationalization planned as soon as climatic and operational conditions allow for the resumption of preparatory activities.
Implement and strengthen a communication channel with farm neighbors.	To be implemented	To be implemented. Establishing a network of contacts and partnerships with neighboring farms is essential for the project. This collaboration enables rapid and coordinated responses to critical events such as forest fires, land invasions, and timber theft, strengthening mutual support and increasing the security and resilience of everyone involved.	Rescheduled to be implemented in 2025	Not applicable, there were no results in 2024. Although the project's communication channels were widely publicized in 2024, the focus was on publicizing to community groups that will benefit from the project activities and to local institutions. Communication with farm's neighbors will be carried out from 2025, aiming to strengthen a collaborative network for exchanging information and resources to combat illegal events and fire. Finally, the change on the implementation of this activity has had any effect on the GHG emissions reductions or removals during the current monitoring period, since the patches of deforestation did not occur due to activities caused by neighbors.
Establish partnerships to provide technical training.	Through indicators described in the Community Monitoring Plan (See Section 4.1.3)	It is expected that through technical training, it increases income generation through the efficient use of resources and reduces deforestation pressure within the project area.	In 2024, the project took a remarkable step by signing a Technical Cooperation Agreement with Embrapa, a national reference in agricultural research. The partnership includes technical workshops to improve the processing and storage of Brazil nuts,	During 2024, in addition to the signing and formalization of the partnership agreement, activities were planned, developed, and aligned to be carried out by EMBRAPA. An initial meeting with the extractivists was held in November 2024 to present the program. More information is included in section 4.1.3.

<table>
<tr><th>Project Activity</th><th>Activity monitoring</th><th>Impact on the GHG emission reductions</th><th>Implementation Schedule</th><th>Activity performance</th></tr>
<tr><td></td><td></td><td></td><td>as well as training focused on sustainable management practices for the extractivsts from Instance 03. More information is included in section 4.3.1.</td><td></td></tr>
<tr><td>Implement social and recreational spaces and improve infrastructure of public schools.</td><td>Through indicators described in the Community Monitoring Plan (See Section 4.1.3)</td><td>This activity does not impact directly on the GHG emission reductions; however, improving public schools enhances environmental education, fostering awareness and long-term behavioral changes that support GHG emissions reductions.</td><td>Since 2023. Rio Madeira Project continued to be a sponsor of the community karate project "Nature Warriors", located in the Morrinhos resettlement, in 2024. The sponsorship allowed the group of students to expand and participate in new championships. Besides that, the project also renovated the electrical grid of the Flor do Cupuaçu school, aiming to improve the stability of the Starlink that was donated in 2023 by the project. The school also received a vegetable garden for educational purposes.
More information about these activities is included in section 4.3.1.</td><td><table><tr><th>Year</th><th>No. of infrastructures</th></tr><tr><td>2019 - 2023</td><td>1</td></tr><tr><td>2024</td><td>3</td></tr></table>
One infrastructure improvement was implemented at Morrinhos community, for “Nature warriors” project and two in Flor do Cupuaçu School (renovation of the electrical grid and an educational garden).</td></tr>
<tr><td>Promote educational opportunities and activities for young people.</td><td>Through indicators described in the Community Monitoring Plan (See Section 4.1.3)</td><td>This activity does not impact directly on the GHG emission reductions, however, promoting educational opportunities and activities for young people may contribute to reducing GHG emissions in the long term by fostering environmental awareness, technical skills,</td><td>In September 2024, the commemorative event "Arbor Day" was held at the Flor do Cupuaçu school, engaging 114 students and teachers in the activity. More detail about this event is included in section 4.3.1.</td><td><table><tr><th>Year</th><th>No. of infrastructures</th></tr><tr><td>2019 - 2023</td><td>0</td></tr><tr><td>2024</td><td>2</td></tr></table>
2 events were promoted to celebrate the “Arbor Day”. More information is included in section 4.3.1.</td></tr>
</table>

Project Activity	Activity monitoring	Impact on the GHG emission reductions	Implementation Schedule	Activity performance
		and a sense of stewardship over natural resources. When youth are engaged and informed, they are more likely to adopt sustainable practices, support conservation initiatives, and pursue livelihoods that do not depend on deforestation or illegal activities, generating a positive impact on forest preservation and, consequently, on the reduction of greenhouse gas emissions.		
Offer training courses and workshops for women.	To be implemented	To be implemented. When implemented. This activity does not impact directly on the GHG emission reductions.	Rescheduled to start in 2026.	Not applicable, there were no results in 2024. The plan to start implementing the activity was changed, as it was identified that there was a need to further explore the needs and interests of this specific group, in addition to prospecting possible institutions that carry out training in the region. Although the action did not actually begin in 2024, there were prior conversations with the women to map out the activities that could be implemented. The change on the implementation of this activity has any effect on the GHG emissions reductions or removals during the current monitoring period, since the patches of deforestation did not occur due to activities caused by this group. Also, despite the activity did not start yet, the women who took part in the first talks held by socioenvironmental team are aware of the project and its objective.
Set up communication channels and committees with the participation of local	Through indicators described in the Community Monitoring Plan (see Section 4.1.3) and the PO.SAM.02	This activity does not impact directly on the GHG emission reductions; however, it reinforces good communication, relationships and active	Since Project Start Date, but the procedure and standardization of these communication flows were fully established in 2023.	

<table>
<tr><th>Project Activity</th><th>Activity monitoring</th><th>Impact on the GHG emission reductions</th><th>Implementation Schedule</th><th>Activity performance</th></tr>
<tr><td>community representatives.</td><td>GRIEVANCE AND REQUEST MANAGEMENTS (see Section 2.3.10).</td><td>participation of the local communities and its representatives.</td><td></td><td>
<table>
<tr><th>Year</th><th>N° of Meetings held</th><th>Total N° of Participants[41]</th></tr>
<tr><td>2022</td><td>2</td><td>62</td></tr>
<tr><td>2023</td><td>3</td><td>269</td></tr>
<tr><td>2024</td><td>2</td><td>164</td></tr>
</table>
Two meetings/trainings or consultations were conducted during 2024. Also in 2024, the communication channel and the procedure for receiving complaints were established and communicated to the relevant stakeholders. No communication was received. More information is included in section 2.3.9.
</td></tr>
<tr><td>Conduct fauna and flora diagnosis.</td><td>Through indicators described in the Biodiversity Monitoring Plan (See Section 5.3.1)</td><td>This activity does not impact directly on the GHG emission reductions; however, it helps identify ecologically sensitive areas or areas of high conservation value, avoiding environmental impacts, and in the long term, reduce pressure on ecosystems and associated emissions.</td><td>Implemented in 2023</td><td>This activity was not conducted during the current monitoring period.</td></tr>
<tr><td>Continuous species monitoring, especially with some degree of vulnerability (IUCN).</td><td>Through indicators described in the Biodiversity Monitoring Plan (See Section 5.3.1)</td><td>To be implemented. This activity does not impact directly on the GHG reduction, however, it indirectly impacts by supporting conservation strategies that maintain forest ecosystem stability and helping adaptive project decisions.</td><td>In November 2024, a mapping exercise was conducted to identify areas of significant use by wildlife within the project area, including key sites such as salt licks.
The resulting map will serve as a foundation for the strategic placement of camera traps that will be installed in 2025.</td><td>Not applicable.</td></tr>
</table>

[41] The total number of participants does not represent the number of unique individuals, as there are participants who were present at more than one meeting.

Project Activity	Activity monitoring	Impact on the GHG emission reductions	Implementation Schedule	Activity performance
Develop environmental education activities.	Through indicators described in the Community Monitoring Plan (See Section 4.3.1)	This activity does not impact directly on the GHG reduction. However, it raises awareness, fosters sustainable practices, and strengths community engagement in forest and biodiversity conservation.	In September 2024, **2** events were implemented regarding the "Arbor Day". In total, 160 stakeholders from the project's target groups (Flor do Cupuaçu school, Morrinhos Resettlement and Instance 01 employees) were engaged, in addition to 324 people from the general public, totaling 484 participants in these educational initiatives. More detail about this event is included in section 4.3.1.	2 events were promoted to celebrate the "Arbor Day". More information is included in section 4.3.1.

Through the continuation of previously implemented activities and the introduction of new initiatives in 2024, the deforestation within the Project Area during the monitoring period was around 6% when compared to the projected deforestation (96.15 hectares were deforested, while 1,590.24 hectares were projected). In other words, it can be concluded that all the activities implemented mentioned in ***Table 7*** above contributed to avoid deforestation, and therefore, built the 94% Effectiveness Index.

In addition, the carbon stock decreases due to avoided unplanned deforestation within project area during the present monitored period (61,637 tCO2e), when compared to VCUs already issued (2,534,851 VCUs), represents less than 5%, thus not characterizing a loss event according to VCS Program Definitions 4.5.[42]

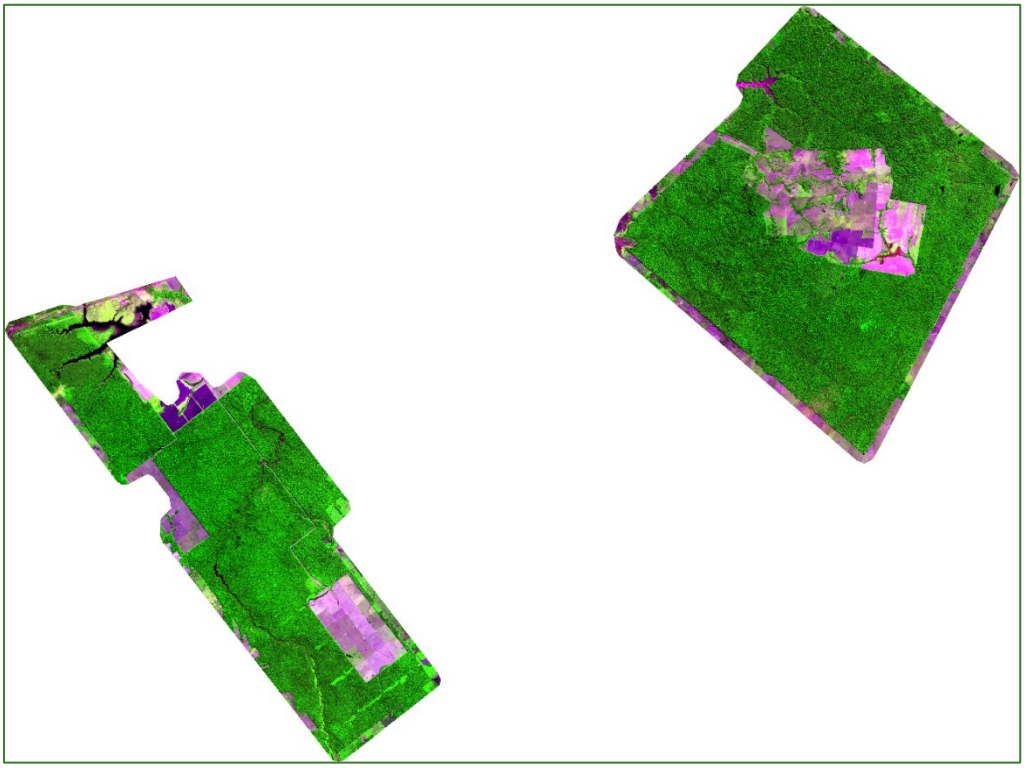
Activity Implemented: Remote monitoring of Project Areas using Planet[43] images

The remote monitoring of the Rio Madeira project area was conducted for all three instances of the project in 2024, resulting in the identification of six alerts, two of which were of a preventive nature. For these preventive cases, where fires did not reach the project area (P.A.), there was no damage or imminent risks, and therefore, no formal reports were generated. Among the recorded alerts, one fire alert and three deforestation alerts were identified throughout the year.

The methodological analysis applied relied on data obtained through weekly monitoring of high-resolution satellite images provided by the PlanetScope platform, with validation conducted using QGIS v. 3.28.8 software. This information was complemented by on-site visits, during which photographic evidence was captured, and additional data were collected to support the decision-making process. The methodology also included the identification and vectorization of impacted areas, ensuring the accuracy and integrity of the analyzed data.

[42] Available at: https://verra.org/documents/vcs-program-definitions-v4-5-final/
[43] Available at: https://www.planet.com

Figure 11. Example of PlanetScope image of Rio Madeira Project



The four occurrences identified in 2024 took place at Fazenda Santa Carmem, located in Porto Velho (RO), near the intersection of the federal highways BR-364 and BR-425. This farm is part of the private partnerships within the Rio Madeira REDD+ project. However, information validation revealed that all deforestation events occurred outside the boundaries of Santa Carmem property, in adjacent areas belonging to other landowners. Thus, these events posed no risks or impacts to the project.

The first event was identified on July 4, 2024, involving deforestation. Upon on-site validation, it was confirmed that the affected area was outside the property limits, and no mitigation actions were required. A second event, recorded on July 31, 2024, involved a deforested area of 2.36 hectares, also outside Fazenda Santa Carmem's boundaries. Similarly, validation confirmed there were no impacts on the project. A third event was detected on November 28, 2024, involving deforestation of 7.9 hectares in an adjacent area, with no effect on the project area.

Lastly, on September 13, 2024, a fire was identified that began in a deforested area of Fazenda Santa Carmem and partially spread into the project area. The rapid mobilization of water trucks by the farm owners enabled the flames to be controlled within 24 hours. Validation of the information indicated that the burned areas within the project consisted of small strips previously deforested, without compromising the project's objectives.

The results underscore the importance of continuous monitoring and prompt validation of alerts, ensuring the protection of priority areas and the integrity of environmental conservation and sustainable land management initiatives.

The evidence of communication with the landowners and the detailed reports prepared for each of the four occurrences were made available as supporting documentation for the project audit. These materials provide a comprehensive record of the events, validations, and mitigation actions taken, ensuring transparency and compliance with the project's monitoring and reporting standards.

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 methodology deviations were applied.

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

During the monitoring period, there is *one* minor change to project description:

1. Inclusion of community groups in section "4.2.2 Net Impacts on Other Stakeholders"

In the validated Project Description, three stakeholders were classified as "Interested Stakeholder":

a) Young people, educators and other school staff from the schools benefited

b) Small farmers

c) Morrinhos Resettlement

In the PD and in the previous monitoring period (year 2023), these three stakeholder groups mentioned above were reported within the "Net Positive Community Impacts" section, without differentiating them from the stakeholders classified as "Community Groups".

However, for greater clarity and transparency, during the fourth monitoring period, it was decided to change the classification of these stakeholders to "Other Stakeholders." Unlike the other groups classified as "Community Groups," these three groups do not rely on or utilize any resources from the project areas. Therefore, these three stakeholders are now reported in section 4.2.2 Net Impacts on Other Stakeholders.

This minor deviation does not change the objectives, activities and indicators to be developed with each stakeholder group mentioned, it only changes their classification and the reporting section.

Table 8. Summary of minor deviation

Stakeholder Group	Classification	Report Section [PD and MR3 (year 2023)]	Report Section [Current MR4 (year 2024)]
Women who live on project farms (Santa Carmem, Rio Madeira and Nova Fronteira farms)	Community Group	Net Positive Community Impacts	Net Positive Community Impacts (no change)
Employees and their families who live on the farms (Santa Carmem, Rio Madeira and Nova Fronteira farms)	Community Group	Net Positive Community Impacts	Net Positive Community Impacts (no change)
Brazil nut Extractivists	Community Group	Net Positive Community Impacts	Net Positive Community Impacts (no change)
Young people, educators and other school staff from the schools benefited	Other Stakeholders	Net Positive Community Impacts	Net Impact on Other Stakeholder Impacts
Small farmers	Other Stakeholders	Net Positive Community Impacts	Net Impact on Other Stakeholder Impacts
Morrinhos Resettlement	Other Stakeholders	Net Positive Community Impacts	Net Impact on Other Stakeholder Impacts

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

According to the VCS Standard v4.7[44], item 3.21.1 (Project Description Deviations), which defines "where the deviation does not impact the applicability of the methodology, additionality or the appropriateness of the baseline scenario, and the project remains in conformance with the applied methodology, the deviation shall be described and justified in the monitoring report."

[44] Available at: https://verra.org/documents/vcs-standard-v4-7/ . Although the project was validated under VCS version 4.4, it was adopted the most recent version of the VCS Standard version to assure update compliance.

According to the CCB Program Rules v3.1[45], items 3.5.7 and 3.5.10 (Project Description Deviations): "Significant changes in the project activities or substantial changes in the impacts of the project that are not described in a validated project description would make verification impossible and need to be addressed via a project description deviation. Both types of modifications to the original project description should be documented in the verification report." and "The project description deviation shall be described and justified in the monitoring report. This shall include a description of when the changes occurred and the reasons for the changes. The deviation shall also be included in all subsequent monitoring reports."

Carbon stock increment due to logging

In order to reinforce the project conservativeness approach, the carbon stock increase due to logging was omitted in the present monitoring report. Since such increment was considered in the registered Joint VCS PD, this approach in the current monitoring period is considered a Project Description deviation.

As per the adopted methodology VM0015 v1.1[46], item 7.1.1, *"If the project activity generates an increase in carbon stocks, ignoring the carbon stock change is conservative".*

Once ignoring the carbon stock increase due to logging does not impact in the aforementioned VCS Standard guidelines and reduces the amount of VCUs that would be generated during the current monitoring period, this deviation reinforces the conservativeness of Rio Madeira Project. Such deviation is applicable up to the next baseline reassessment.

Baseline approach

As detailed in Joint VCS PD section "5.1 Baseline Emissions", the assessment carried out to select the baseline approach during the project's initial phase (validation) revealed that the deforestation rates measured in different sub-periods of the historical reference period in the Reference Region showed a clear increasing trend. The analysis of the evidence presented regarding the main deforestation agents (cattle ranching), their drivers, and the underlying causes allowed the conclusion that deforestation was driven by the action of these agents and showed a tendency to intensify in the future. Therefore, the most appropriate baseline approach for the Rio Madeira Grouped REDD+ Project at that time was approach "b" (Time Function).

It is important to highlight that the Time Function approach, previously adopted, was the most suitable for the earlier monitoring periods (MR1 and MR2 - 2019 to 2022), as demonstrated by the analyses included in the Joint VCSPD and the Second Monitoring Report (MR2). However, as described in sections 2.2.5 and 3.2.1 of 3rd MR document, the Project Proponent conducts ex-ante and ex-post comparative analyses for each monitoring period to assess whether the baseline

[45] Available at: https://verra.org//documents/ccb-program-rules-v3-1/
[46] Available at: <https://verra.org/documents/vm0015-methodology-for-avoided-unplanned-deforestation-v1-1/>

approach defined during the validation phase, based on the historical reference period, remains appropriate.

Accordingly, to ensure the use of the most suitable approach for the current monitoring period, a comparative analysis was carried out between the two approaches set forth in methodology VM0015 v1.1, section 4.1.1 ("Selection of the Baseline Approach")[47] Time Function and Historical Average. The analysis is available at section 3.2.1.

As detailed in Section 3.2.1 of 3rd MR, the ex-post deforestation observed in the Reference Region during 2023 displayed different behavior compared to previous periods (2019–2022). As a result, the baseline approach was reassessed considering its compatibility with the observed data. The analysis compared the 2023 ex-post data with the estimates generated by both the Time Function approach (used in the first two monitoring periods) and the Historical Average approach. Based on the results, it was determined that the Historical Average approach is the most appropriate to represent the deforestation dynamics from 2023.

Therefore, the baseline approach was changed (from Time Function to Historical Average) for the current monitoring period. This deviation will apply until the next baseline reassessment.

Below is a description of the methods and parameters used in the Historical Average Approach.

Regarding the “Quantitative projection of future deforestation”, it is important to note that, following the change in baseline approach (based on the criteria and justification provided in section 3.2.1 of 3rd MR), the methodological procedure to project deforestation within the Reference Region was, from 2023 onward, assumed to follow the continuation of the average annual rate observed during the historical reference period (Historical Average approach), instead of being estimated by extrapolating the historical trend as a function of time using linear regression (Time Function approach). Thus, for the deforestation baseline, the average deforestation rate during the historical reference period was 0.03059, estimated using the Puyravaud (2003)[48] equation. The application of the average deforestation rate is presented in detail in the MR Calculation sheets (tab ‘Equation 3 RR’).

As for the “Projection of the annual areas of baseline deforestation in the Reference Region”, this step was carried out based on the selected baseline approach, applying the Historical Average approach from 2023 onward, in accordance with methodology VM0015 v1.1.

It is worth noting that from 2019-2022 the baseline deforestation for the Reference Region, Project Area and Leakage Belt are from time function baseline approach and after that, that is, from 2023,

[47] The Modelling Approach c) was not considered in the analysis as it had been discontinued as per VERRA communication on 14 February 2023 (2.5.4 Section 4.1.1: Selection of the baseline approach)(https://verra.org/wp-content/uploads/2023/02/Summary-of-Proposed-Errata-and-Clarifications-and-Minor-Revisions-to-AUDD-Methodologies.pdf). Moreover, the condition/criteria for modeling approach have been removed in the latest VM0015 methodology v1.2. Therefore, no demonstration was performed for modelling approach.

[48] According to VM0015, page 44.

the data have been updated, and the full updated baseline approach PD calculation has been shared with the VVB team. The tables below show the applied changes:

Table 9. Annual areas of baseline deforestation in the Reference Region[49]

Project year t	Stratum i in the reference region (ha)	Total (ha)	
	Forest	annual $ABSLRR_t$	cumulative ABSLRR
2019	4,154.25	4,154.25	4,154.25
2020	21,737.22	21,737.22	25,891.47
2021	21,736.76	21,736.76	47,628.23
2022	21,667.80	21,667.80	69,296.03
2023	14,015.05	14,015.05	83,311.08
2024	13,600.39	13,600.39	96,911.47
2025	13,177.44	13,177.44	110,088.91
2026	12,774.36	12,774.36	122,863.27
2027	12,377.21	12,377.21	135,240.47
2028	12,010.97	12,010.97	147,251.44
2029	11,637.46	11,637.46	158,888.90
2030	11,281.51	11,281.51	170,170.41
2031	10,930.74	10,930.74	181,101.15
2032	10,607.32	10,607.32	191,708.47
2033	10,277.48	10,277.48	201,985.95
2034	9,963.13	9,963.13	211,949.08
2035	9,653.30	9,653.30	221,602.38
2036	9,367.75	9,367.75	230,970.13
2037	9,076.46	9,076.46	240,046.59
2038	8,798.68	8,798.68	248,845.27
2039	8,525.19	8,525.19	257,370.46
2040	8,272.99	8,272.99	265,643.45
2041	8,015.63	8,015.63	273,659.08
2042	7,770.46	7,770.46	281,429.54
2043	7,528.88	7,528.88	288,958.41
2044	7,306.13	7,306.13	296,264.55
2045	7,079.00	7,079.00	303,343.54
2046	6,862.33	6,862.33	310,205.87
2047	6,649.01	6,649.01	316,854.89
2048	6,452.29	6,452.29	323,307.17

[49] "Table 9a" from updated PD calculation sheet, shared with the VVB team.

2049	5,082.54	5,082.54	328,389.72

Table 10. Annual areas of baseline deforestation in the Project Area[50]

Project year t	Stratum i in the project area (ha)			Total (ha)	
	Grupo Rovema	Grupo Tupá	Grupo Leite	annual $ABSLPA_t$	cumulative ABSLPA
2019	167.16	0.00	0.00	167.16	167.16
2020	926.37	355.62	60.77	1,342.77	1,509.93
2021	1,159.14	422.24	92.01	1,673.39	3,183.31
2022	1,175.51	411.01	109.98	1,696.50	4,879.81
2023	1,214.34	354.43	52.19	1,620.96	6,500.77
2024	1,120.79	380.76	88.69	1,590.24	8,091.01
2025	1,052.59	414.63	96.23	1,563.45	9,654.46
2026	1,017.12	419.24	128.75	1,565.11	11,219.57
2027	925.10	426.92	150.25	1,502.27	12,721.84
2028	806.67	434.69	153.22	1,394.58	14,116.42
2029	745.89	430.84	156.01	1,332.73	15,449.16
2030	754.90	458.42	186.58	1,399.89	16,849.05
2031	678.02	435.62	240.09	1,353.73	18,202.78
2032	600.73	464.68	295.13	1,360.53	19,563.31
2033	585.18	439.00	338.58	1,362.76	20,926.08
2034	542.03	447.59	381.49	1,371.10	22,297.18
2035	461.08	458.16	407.98	1,327.22	23,624.40
2036	440.27	447.57	446.62	1,334.47	24,958.87
2037	430.67	428.52	479.83	1,339.02	26,297.89
2038	363.40	380.95	505.98	1,250.33	27,548.22
2039	328.13	375.02	530.29	1,233.43	28,781.65
2040	330.41	375.23	506.70	1,212.34	29,993.99
2041	325.68	367.36	522.71	1,215.75	31,209.75
2042	270.63	373.63	547.65	1,191.91	32,401.66
2043	245.10	370.58	539.41	1,155.09	33,556.75
2044	239.67	399.57	497.98	1,137.22	34,693.97
2045	230.89	373.25	450.95	1,055.09	35,749.06
2046	199.27	343.91	428.97	972.15	36,721.20
2047	194.95	338.85	397.45	931.25	37,652.45
2048	183.68	356.25	335.52	875.45	38,527.90
2049	140.25	268.22	264.09	672.57	39,200.47

[50] "Table 9b" from updated PD calculation sheet, shared with the VVB team.

Table 11. Annual areas of baseline deforestation in the Leakage Belt[51]

Project year t	Stratum i in the leakage belt (ha)	Total (ha)	
	Forest	annual $ABSLLK_t$	cumulative ABSLLK
2019	144.36	144.36	144.36
2020	779.17	779.17	923.53
2021	883.43	883.43	1,806.96
2022	833.42	833.42	2,640.38
2023	695.11	695.11	3,335.48
2024	694.63	694.63	4,030.11
2025	702.17	702.17	4,732.28
2026	708.96	708.96	5,441.24
2027	753.34	753.34	6,194.58
2028	766.70	766.70	6,961.28
2029	749.64	749.64	7,710.93
2030	737.10	737.10	8,448.02
2031	725.16	725.16	9,173.19
2032	702.48	702.48	9,875.67
2033	663.79	663.79	10,539.45
2034	654.81	654.81	11,194.26
2035	632.63	632.63	11,826.89
2036	610.15	610.15	12,437.04
2037	584.82	584.82	13,021.86
2038	523.14	523.14	13,545.00
2039	507.03	507.03	14,052.03
2040	502.87	502.87	14,554.90
2041	497.57	497.57	15,052.47
2042	471.03	471.03	15,523.50
2043	448.97	448.97	15,972.46
2044	437.22	437.22	16,409.69
2045	437.62	437.62	16,847.31
2046	398.95	398.95	17,246.26
2047	420.43	420.43	17,666.69
2048	376.71	376.71	18,043.40
2049	315.83	315.83	18,359.23

Regarding the "Projection of the location of future deforestation", which is based on the assumption that deforestation is not a random phenomenon but occurs in areas that combine bio-

[51] "Table 9c" from updated PD calculation sheet, shared with the VVB team.

geophysical and economic attributes attractive to deforestation agents, the factor maps, the selected model, and the weights of evidence remained the same as those presented in section "5.1 Baseline Emissions" of the Joint VCS PD document. This is because these elements are not affected by the choice of baseline approach, as they rely solely on the historical reference period. However, the spatial location of future deforestation is influenced by the baseline approach. Accordingly, the maps projecting deforestation in the Reference Region, Leakage Belt, and Project Area — presented below — as well as all tables related to the 'calculation of baseline activity' for the 3rd monitoring period (2023) and for projected years through 2049, have been updated.

Figure 12.Deforestation projection in Reference Region (Serra Verde Farm – Instance 1)

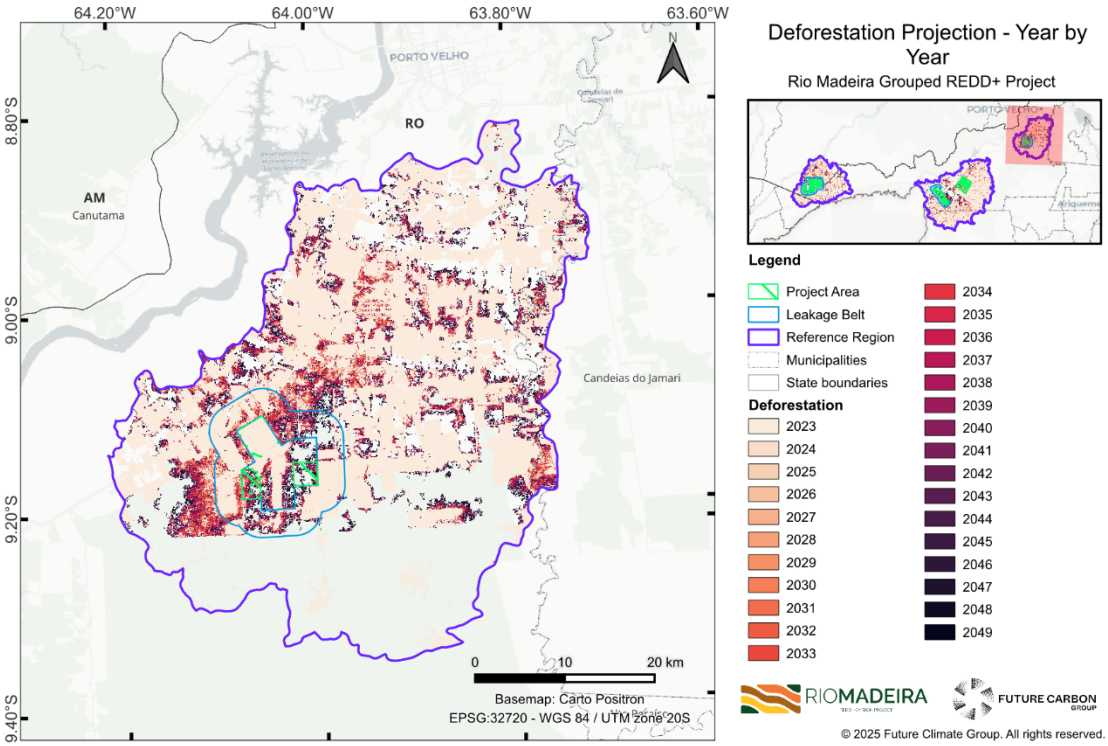


Figure 13.Deforestation projection in Reference Region (Rio Madeira and Santa Carmem Farm Instances 1 and 2)

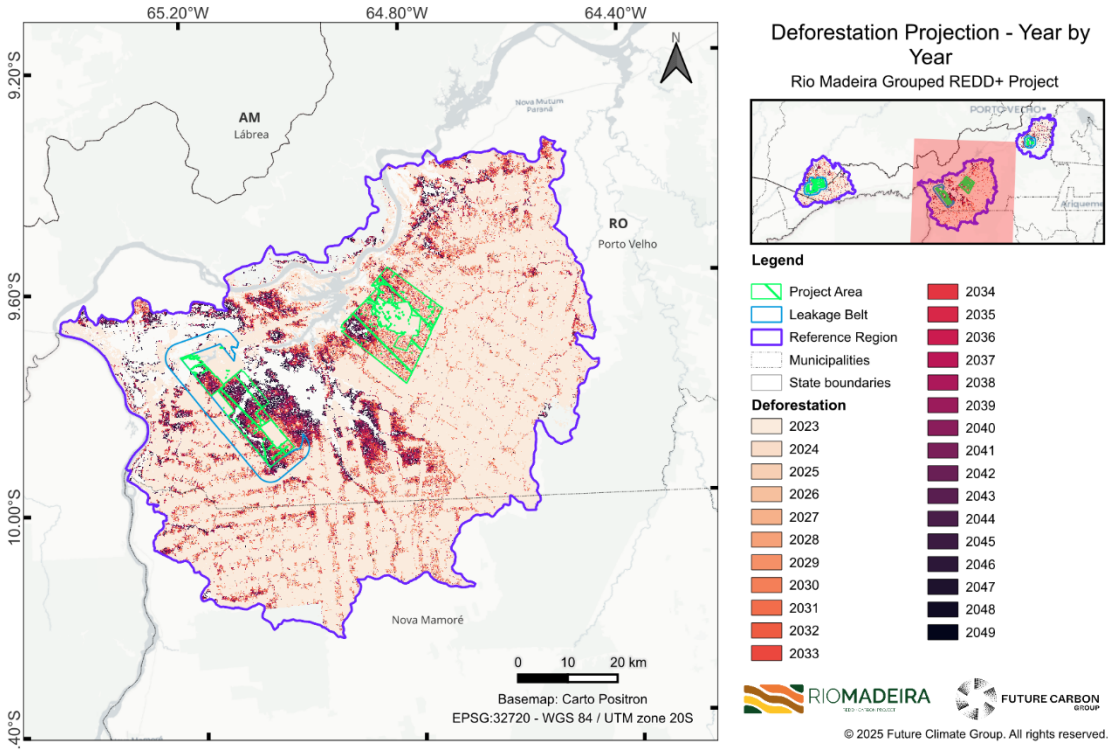
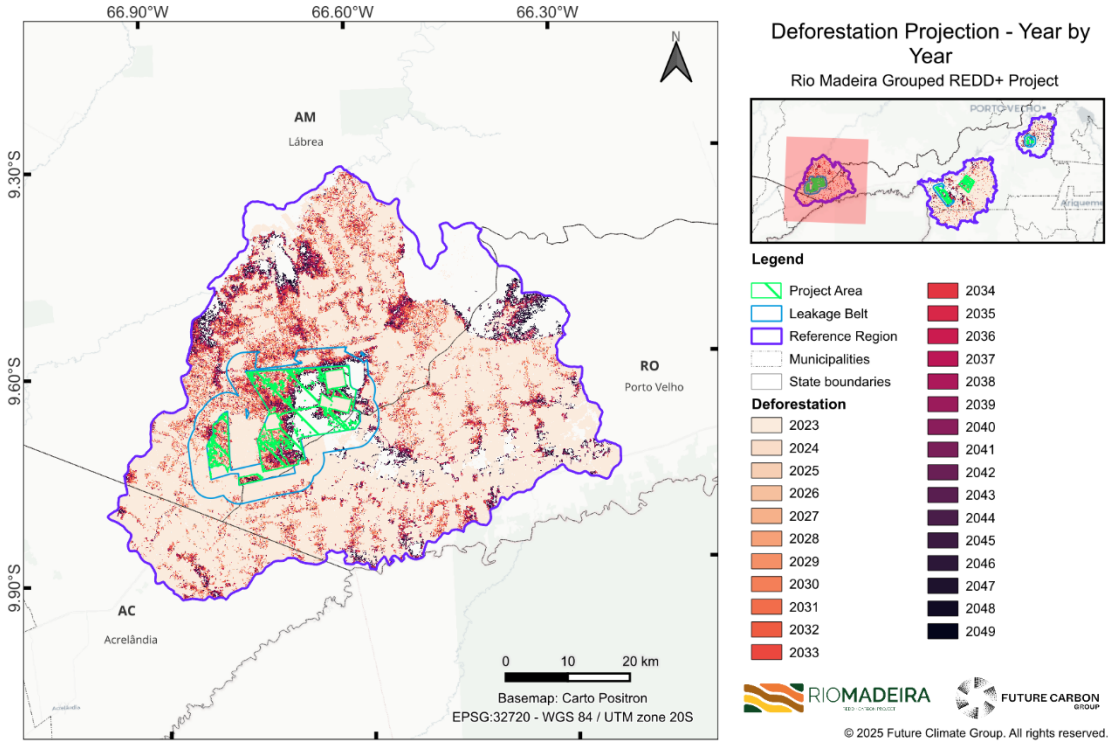


Figure 14.Deforestation projection in Reference Region (Nova Fronteira Farm – Instance 3)



The tabs from the updated baseline ER sheet “Table 36” and “Estimated GHG ERs” are presented below, showing the updates in the ex-ante estimated net anthropogenic GHG emission reductions (ΔREDDt) and Verified Carbon Units (VCUt) and a summary of the estimated GHG emission reductions:

Table 12. Updated ex-ante estimated net anthropogenic GHG emission reductions ($\Delta REDD_t$) and Verified Carbon Units (VCU_t)

Project year	Baseline carbon stock changes		Baseline GHG emissions from biomass burning		Ex ante project carbon stock changes		Ex ante project GHG emissions from biomass burning		Ex ante leakage carbon stock changes		Ex ante leakage GHG emissions		Ex ante net anthropogenic GHG emission reductions		Ex ante VCUs tradable		Ex ante buffer credits	
	annual	cumulative	annual	cumulative	annual	cumulative	annual	cumulative	annual	cumulative	annual	cumulative	annual	cumulative	annual	cumulative	annual	cumulative
	$\Delta CBSLPA_t$	$\Delta CBSLPA$	$EBBBSLPA_t$	$EBBBSLPA$	$\Delta CPSPA_t$	$\Delta CPSPA$	$EBBPSPA_t$	$EBBPSPA$	ΔCLK_t	ΔCLK	ELK_t	ELK	$\Delta REDD_t$	$\Delta REDD$	VCU_t	VCU	VBC_t	VBC
	tCO_2e	tCO_2e	tCO_2e	tCO_2e	tCO_2e	tCO_2e	tCO_2e	tCO_2e	tCO_2e	tCO_2e	tCO_2e	tCO_2e	tCO_2e	tCO_2e	tCO_2e	tCO_2e	tCO_2e	tCO_2e
2019	88,622	88,622	1,977	1,977	21,132	21,132	296	296	13,293	13,293	296	296	55,580	55,580	47,481	47,481	8,099	8,099
2020	713,187	801,809	15,877	17,853	156,409	177,542	2,382	2,678	106,978	120,271	2,382	2,678	460,913	516,493	394,100	441,581	66,813	74,912
2021	898,977	1,700,786	19,786	37,640	183,775	361,317	2,968	5,646	134,847	255,118	2,968	5,646	594,206	1,110,699	508,381	949,962	85,824	160,736
2022	924,327	2,625,113	20,060	57,699	187,075	548,392	3,009	8,655	138,649	393,767	3,009	8,655	612,644	1,723,343	524,174	1,474,137	88,470	249,206
2023	897,557	3,522,669	19,166	76,866	182,557	730,949	2,875	11,530	134,633	528,400	2,875	11,530	593,782	2,317,126	507,983	1,982,119	85,800	335,006
2024	893,956	4,416,625	18,803	95,669	181,514	912,464	2,820	14,350	134,093	662,494	2,820	14,350	591,510	2,908,636	506,017	2,488,136	85,493	420,499
2025	892,201	5,308,826	18,486	114,155	180,749	1,093,212	2,773	17,123	133,830	796,324	2,773	17,123	590,563	3,499,199	505,189	2,993,325	85,374	505,874
2026	905,313	6,214,139	18,506	132,661	182,213	1,275,425	2,776	19,899	135,797	932,121	2,776	19,899	600,257	4,099,456	513,485	3,506,810	86,772	592,646
2027	884,248	7,098,387	17,763	150,424	178,551	1,453,976	2,664	22,564	132,637	1,064,758	2,664	22,564	585,494	4,684,950	500,811	4,007,621	84,684	677,329
2028	838,914	7,937,301	16,490	166,913	171,248	1,625,223	2,473	25,037	125,837	1,190,595	2,473	25,037	553,372	5,238,322	473,252	4,480,872	80,120	757,449
2029	815,731	8,753,032	15,758	182,672	167,268	1,792,491	2,364	27,401	122,360	1,312,955	2,364	27,401	537,135	5,775,456	459,319	4,940,191	77,816	835,265
2030	851,258	9,604,290	16,552	199,224	172,094	1,964,586	2,483	29,884	127,689	1,440,643	2,483	29,884	563,061	6,338,518	481,562	5,421,753	81,500	916,764
2031	824,642	10,428,932	16,007	215,231	167,599	2,132,185	2,401	32,285	123,696	1,564,340	2,401	32,285	544,551	6,883,069	465,706	5,887,459	78,845	995,610
2032	825,568	11,254,499	16,087	231,318	167,236	2,299,421	2,413	34,698	123,835	1,688,175	2,413	34,698	545,758	7,428,826	466,758	6,354,217	79,000	1,074,609
2033	824,712	12,079,211	16,113	247,431	166,605	2,466,025	2,417	37,115	123,707	1,811,882	2,417	37,115	545,680	7,974,506	466,707	6,820,924	78,973	1,153,582
2034	827,352	12,906,563	16,212	263,643	166,498	2,632,524	2,432	39,546	124,103	1,935,984	2,432	39,546	548,099	8,522,605	468,797	7,289,721	79,302	1,232,885
2035	802,584	13,709,147	15,693	279,336	162,280	2,794,804	2,354	41,900	120,388	2,056,372	2,354	41,900	530,901	9,053,506	454,065	7,743,785	76,836	1,309,721
2036	804,563	14,513,710	15,779	295,115	162,075	2,956,879	2,367	44,267	120,684	2,177,056	2,367	44,267	532,849	9,586,355	455,750	8,199,536	77,099	1,386,820
2037	805,663	15,319,373	15,833	310,948	163,381	3,120,259	2,375	46,642	120,849	2,297,906	2,375	46,642	532,516	10,118,871	455,442	8,654,977	77,074	1,463,894
2038	758,209	16,077,581	14,784	325,732	156,263	3,276,522	2,218	48,860	113,731	2,411,637	2,218	48,860	498,564	10,617,435	426,330	9,081,307	72,234	1,536,127
2039	748,604	16,826,186	14,584	340,316	154,822	3,431,344	2,188	51,047	112,291	2,523,928	2,188	51,047	491,701	11,109,135	420,447	9,501,754	71,254	1,607,381
2040	736,122	17,562,308	14,335	354,651	152,950	3,584,293	2,150	53,198	110,418	2,634,346	2,150	53,198	482,789	11,591,924	412,808	9,914,562	69,981	1,677,362
2041	736,824	18,299,132	14,375	369,026	153,055	3,737,348	2,156	55,354	110,524	2,744,870	2,156	55,354	483,308	12,075,232	413,256	10,327,818	70,052	1,747,414
2042	723,052	19,022,184	14,093	383,119	150,989	3,888,337	2,114	57,468	108,458	2,853,328	2,114	57,468	473,470	12,548,702	404,823	10,732,641	68,648	1,816,062
2043	702,191	19,724,374	13,658	396,777	147,860	4,036,197	2,049	59,517	105,329	2,958,656	2,049	59,517	458,563	13,007,265	392,043	11,124,684	66,520	1,882,581
2044	691,025	20,415,400	13,447	410,224	146,185	4,182,382	2,017	61,534	103,654	3,062,310	2,017	61,534	450,599	13,457,864	385,218	11,509,902	65,381	1,947,962
2045	645,998	21,061,398	12,475	422,699	139,431	4,321,813	1,871	63,405	96,900	3,159,210	1,871	63,405	418,400	13,876,265	357,612	11,867,514	60,788	2,008,750
2046	599,839	21,661,237	11,495	434,194	132,507	4,454,320	1,724	65,129	89,976	3,249,186	1,724	65,129	385,402	14,261,667	329,322	12,196,837	56,080	2,064,830
2047	575,284	22,236,521	11,011	445,205	128,824	4,583,144	1,652	66,781	86,293	3,335,478	1,652	66,781	367,875	14,629,542	314,300	12,511,137	53,575	2,118,405
2048	543,208	22,779,729	10,351	455,556	124,012	4,707,156	1,553	68,333	81,481	3,416,959	1,553	68,333	344,960	14,974,503	294,657	12,805,794	50,303	2,168,709
2049	349,834	23,129,562	6,427	461,984	86,850	4,794,006	964	69,298	52,475	3,469,434	964	69,298	215,008	15,189,511	183,450	12,989,244	31,558	2,200,267

Table 13. Updated estimated GHG Emission Reductions or Removals[52]

Year	Estimated GHG emission reductions or removals (tCO_2e)
2019	55,580
2020	460,913
2021	594,206
2022	612,644[53]
2023	593,782
2024	591,510
2025	590,563
2026	600,257
2027	585,494
2028	553,372
2029	537,135
2030	563,061
2031	544,551
2032	545,758
2033	545,680
2034	548,099
2035	530,901
2036	532,849
2037	532,516
2038	498,564
2039	491,701
2040	482,789
2041	483,308
2042	473,470
2043	458,563
2044	450,599
2045	418,400
2046	385,402
2047	367,875
2048	344,960
01/01/2049 - 22/10/2049	215,008
Total estimated ERs	15,189,511
Total number of crediting years	30

[52] "Estimated GHG ERs" tab from updated PD calculation sheet.
[53] The 2022 estimated value is different from validated PD since the baseline approach has been updated effective in 2023 (from time function to historical average). Thus, since the ER estimation considers the upcoming year forest cover, the 2022 calculation was updated once 2023 forest cover was updated with the historical average approach.

Average annual ERs	506,317

It is worth noting that such deviation is applicable up to the next baseline reassessment.

Leakage Management Areas (LMA)

During the design and validation process of the PD CCB, the Leakage Management Areas were modified. These modifications were made to align the planned leakage reduction activities with the project's Theory of Change, a phase that only occurred during the project's adaptation to the CCB Standard.

It is important to clarify that the Future Carbon team began drafting the PD VCS in the first half of 2022, while the PD CCB process started in the second half of 2023. Therefore, at the time of adapting the project to the CCB Standard, the team had more comprehensive information to accurately define the communities to be included in the Leakage Management Area (LMA) and the Project Zone.

In August 2022, the Future Carbon team conducted the first site visit to identify local stakeholders. Following this visit, six stakeholders (

Table 14) were identified as potential LMAs. In July 2023, Ambiens was contracted to perform a socioeconomic diagnosis of the surrounding communities, assessing local realities in terms of income, employment, education, health, housing, infrastructure, and other factors. The results of this diagnosis enabled the identification of community needs and issues, guiding the strategic planning of the Theory of Change and the selection of priority actions to be developed, thereby optimizing resources and efforts.

Furthermore, to comprehensively understand the causes of illegal deforestation and define the strategic actions the project will implement to mitigate the risk of leakage, a cause and effect flowchart was developed, detailed in Appendix 6: CAUSES AND EFFECTS FLOWCHART

It is acknowledged that the causes of illegal deforestation and land grabbing in the Brazilian Amazon are inherently multifactorial, encompassing a myriad of socioeconomic, political, and environmental influences. This complex scenario reflects dynamic interactions among economic practices, territorial governance, and climatic pressures. Given this context, the presented flowchart constitutes a simplified version, focusing on the specific spatial scope and local context of the project. However, it is essential to highlight that, due to the inherent complexity of the subject, the flowchart is subject to certain limitations and potential inaccuracies. This simplification aims primarily to offer a structured view but should be interpreted with caution, recognizing that additional factors may emerge, affecting the comprehensiveness of the analysis.

During the development of the Theory of Change and the mentioned flowchart, a rigorous analytical process was undertaken to determine the potential scopes of project intervention aimed at mitigating deforestation leakage. Recognizing the inherent constraints faced by private projects in this domain—such as political influences and interests, limited resource availability, and the necessity for robust community engagement—it was strategically concluded that the project's main areas of intervention should focus on four key strategies: enhancing primary education, providing technical training for rural youth and adults, strengthening social organizations, and intensifying monitoring efforts in the project area.

Consequently, rural schools have been identified as the principal stakeholders for forming the Leakage Management Area (LMA), the main reasons for this decision are:

- **Enhancement of Primary Education**: By improving primary education, the youth can acquire new skills and competencies, thereby increasing their access to employment opportunities that are not linked to illegal deforestation activities. This may create a pathway for economic diversification within the region.
- **Strengthening Environmental Education:** Empowered with environmental education, young people can act as multipliers within their social circles, promoting sustainability and fostering a generation of environmentally conscious citizens.
- **Rural Schools as Community Hubs:** Serving as important socialization centers within communities, rural schools provide a unique platform to disseminate capacity-building initiatives not only to students but also to their parents and guardians. In this way, it is possible to engage adults in technical training activities on good agricultural practices, strengthening social organizations, environmental education, among others.

Therefore, the communities initially chosen to comprise the LMA were revised during the current monitoring period (MR4), which spans from 01-Jan-2024to 31-Dec-2024:

Table 14. Composition of the leakage management area (LMA)

Period	Programs Standards	LMA [ha]	Stakeholders Identified in the LMA[54]
23-Oct-2019 to 31-Dec-2022	VCS + SocialCarbon	372.5	RECA Association (Nova California District) [ID 8], Marechal Rondon Municipal School (Abunã District) [ID 9],

[54] The ID corresponds to the Stakeholders Identified maps Available at section 2.1.7 and in the Appendix 1 on CCB PD Document on Verra Website: https://registry.verra.org/app/projectDetail/VCS/2878

			Flor do Cupuaçu School (Santa Rita Resettlement) [ID 10], USF Santa Rita (Santa Rita Resettlement) [ID 20], União Bandeirantes District [ID 49], FIMCA Farm School [ID 51]
01-Jan-2023 to 31-Dec-2023	VCS + CCB	372.5	RECA Association (Nova California District) [ID 8], Marechal Rondon Municipal School (Abunã District) [ID 9], Flor do Cupuaçu School (Santa Rita Resettlement) [ID 10], USF Santa Rita (Santa Rita Resettlement) [ID 20], União Bandeirantes District [ID 49], FIMCA Farm School [ID 51]
01-Jan-2024 to 31-Dec-2024	VCS + CCB	115.5	Marechal Rondon Municipal School (Abunã District) [ID 9][55], Flor do Cupuaçu School (Santa Rita Resettlement) [ID 10]

The table below describes the impact assessment of this deviation, in accordance with the rules mentioned in the CCB Program Rules v3.1, sections 3.5.6 to 3.5.10. Through this impact analysis, it is concluded that this change does not have significant impacts on the project.

Table 15. Evaluated criteria

Possible Impact	Impact Assessment

[55] For clarification purposes, in the latest available version of the Rio Madeira REDD+ Project VCS PD (Section 3.3 – Project Boundary, available at https://registry.verra.org/app/projectDetail/CCB/2878), the District of Abunã is mentioned as one of the potential stakeholders for partnerships aimed at promoting the Project's social impact. However, after analyses and the completion of the socioeconomic diagnosis (MR3 – 2023) for the structuring of the CCB PD, it was concluded that activities with the Marechal Rondon School, located in the District of Abunã, were better aligned with the Project's objectives at this time, leading to the prioritization of this partnership.As described in the CCB PD, the criteria for selection were:
(i) Relationship of the communities with the project area;
(ii) Proximity to the project area;
(iii) Geopolitical boundaries within the project reference region;
(iv) Socioeconomic vulnerability of the communities;
(v) Identification through stakeholder mapping methods used in the project;
(vi) Absence of conflicts of interest.
Therefore, although the project does not foresee activities with other community groups in the District of Abunã during this period, since the school in question is located within this district (Abunã), the project's activities may indirectly generate benefits for the local community through the school.

Change in the project area	Not applicable. The change in the LMA does not change the Projet Area.
Change in the project activities	The change in the LMA does not change the category of the project activity (AFOLU - REDD - AUD), so this impact is not applicable.
Substantial change in the expected climate, community, or biodiversity impacts of the project	Not applicable. The change in the LMA did not impact the planned co-benefit activities mentioned in Appendix 2 from the PD CCB[56], so that there was no change in the expected benefits for the community, biodiversity or climate. The exclusion of the communities mentioned in Table 14 does not cause any negative impact on them. These communities do not rely on resources from the project area, so their inclusion was initially done with the strategy of containing leakage and generating additional co-benefits. During this period, no formal or verbal agreements were established regarding the implementation of activities with these groups. Only preliminary discussions to introduce the project and an initial socioeconomic diagnosis were conducted, solely aimed at understanding and further analyzing the local context, without the intention of creating expectations of support or inclusion from the project. Thus, the primary impact of this change lies in institutional relationships rather than directly affecting the communities involved. The only exception was RECA, as the association submitted a request for financial investments, however, the financial contributions were of high value and were not directly associated with leakage reduction activities. Therefore, RECA was informed that the Rio Madeira project would not financially support the projects they submitted. Despite this, the Rio Madeira project recognizes RECA as a very important and relevant potential partner, so new attempts will be made to develop other partnership models. This change was formally communicated by email to representatives of these stakeholder groups, and to date no response has been received.
Change of the project proponent(s)	Not applicable, the project proponents continue to be the same (section 2.1.1).
Climate Section waiver	Not applicable. The LMA change does not affect the applicability of the Climate Section waiver, as the project has been validated and verified by the VCS Standard and remains within the same GHG program.
Gold Level	Not applicable, the project is not including a Gold Level certification.

[56] Available at: https://registry.verra.org/app/projectDetail/VCS/2878

Procedures for measurement and monitoring

This monitoring report uses a different remote sensing data source for the ex-post analysis than the one used in the registered Joint VCSPD and previous monitoring reports. Previous reports used 30-meter resolution land use maps from MapBiomas[57] to monitor the land use and land cover change. MapBiomas data is published annually, typically around September of the following year. Therefore, the 2024 MapBiomas data will not be available until approximately September 2025[58]. Due to this unavailability and to improve the quality of the monitoring dataset, a decision was made to use a 10-meter resolution supervised classification of Sentinel imagery.

Accuracy assessments, evaluating both producer and user accuracy, were conducted using high-resolution (4.78m) multispectral Planet imagery provided by the Norway's International Climate and Forest Initiative (NICFI, https://www.nicfi.no/). These Planet NICFI Normalized Analytic Basemaps include red, green, blue, and near-infrared bands, cover tropical forest regions between 30°N and 30°S, and have a monthly temporal resolution (Pandey & Curdoglo, 2023)[59], comprising the best daily acquisitions within each month. This provides a largely cloud-free, freely accessible dataset ideal for monitoring tropical LULC change which allows the reliable extraction of information using visual inspection of the results by an expert analyst, in accordance with GOFC-GOLD Sourcebook[60] on REDD map accuracy guidelines.

According to section 2.6 of VM0015 v1.1: "In general, the same source of remotely sensed data and data analysis techniques must be used within a period for which the baseline is fixed (fixed baseline period). However, if remotely sensed data have become available from new and higher resolution sources (e.g., from a different sensor system) during this period, these can only be used if the images based on interpretation of the new data overlap the images based on interpretation of the old data by at least one year and they cross-calibrate to acceptable levels based on commonly used methods in the remote sensing community."

As detailed in section 3.1.3, all the criteria mentioned above have been met. Since the consistency and accuracy of the data remain equivalent to the previously used product, this change does not affect the applicability of the methodology, additionality, or the appropriateness of the baseline scenario.

Carbon stock: aboveground biomass

[57] The land use and land cover data from MapBiomas Collection 9 (accessed on January 13, 2025) are available at https://brasil.mapbiomas.org/en/colecoes-mapbiomas/. Detailed information about the methodology (accessed on January 13, 2025) can be found at https://brasil.mapbiomas.org/en/metodo_cobertura_e_uso/.
[58] Which is not timely for the current project delivery schedule.
[59] Pooja Pandey, Joe Kington, Anudeep Kanwar, Robert Simmon and Leanne Abraham, 2023. Planet Basemaps for NICFI data Program. Addendum to basemaps product specification. v02. NICFI Basemaps. Available at: < https://assets.planet.com/docs/NICFI_Basemap_Spec_Addendum.pdf>.
[60] GOFC-GOLD, 2016, A sourcebook of methods and procedures for monitoring and reporting anthropogenic greenhouse gas emissions and removals associated with deforestation, gains and losses of carbon stocks in forests remaining forests, and forestation. GOFC-GOLD Report version COP22-1, (GOFC-GOLD Land Cover Project Office, Wageningen University, The Netherlands).

According to VM0015 v1.1, item 6.1.1: *"Collect existing carbon-stock data for these classes from local published studies and existing forest and carbon inventories. Do additional field measurements for the classes for which there is insufficient information. Follow the guidance below:*

a. *Assess the existing data collected and, where appropriate, use them. It is likely that some existing data could be used to quantify the carbon stocks of one or more classes. These data could be derived from a forest inventory or perhaps from scientific studies. Analyze these data and use them if the following criteria are fulfilled:*

- ***The data are less than 10 years old;***
- *The data are derived from multiple measurement plots;*
- *All species above a minimum diameter are included in the inventories;*
- *The minimum diameter for trees included is 30 cm or less at breast height (DBH);*
- *Data are sampled from good coverage of the classes over which they will be extrapolated."*

Since the above ground biomass value applied to the previous monitored periods (1st, 2nd, and 3rd Monitoring Reports) were taken from Silva (2014), which no longer can be used and has therefore been updated to a more recent source for the current monitoring period.

The current above ground biomass stock adopts the National Forest Inventory (FNI) of Rondônia state, 2019[61]. For the current carbon stock, a technical analysis was carried out using aboveground biomass data provided by the 2019 National Forest Inventory for the state of Rondônia. The estimation process involved the following steps:

- Land use analysis considering trees with a diameter at breast height (DBH) greater than 10 cm;
- Selection of sample subunits with vegetation types similar to those in the project area;
- Selection of subunits categorized as forest type;
- Estimation of aboveground biomass using equations recommended by the National Forest Inventory;
- Statistical analysis including mean, standard error, and uncertainty calculations.

[61] Inventário Florestal Nacional, Rondônia, 2019. Available at: https://snif.florestal.gov.br/images/pdf/publicacoes/periodo_eleitoral/publicacoes_ifn/relatorios/IFN_RO_2019_periodo_eleitoral.pdf

Additionally, a discount factor was applied to account for the presence of forest management areas within the project site, based on the study by Pantoja.

This change is reflected in section 3.1.2, especially in the ab_{icl} and bb_{icl} parameter. Other effects of the update can also be found in the ER spreadsheet shared with VVB. In addition, the stepwise analysis for the ab_{icl} parameter was shared with VVB team.

Such deviation is applicable up to the next baseline reassessment.

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)

No new project areas and communities were included since the validation.

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

There were no changes in the project area during the monitored period.

In relation to the communities, as explained in section 2.2.5, the following stakeholders were excluded from the leakage management area (LMA)[62]:

- RECA Association;
- USF Santa Rita;
- União Bandeirantes District;
- FIMCA Farm School.

As explained in detail in section 2.2.5, the removal of these communities and institutions does not cause negative impacts on them. These stakeholders do not rely on any resources (natural or financial) from the project area and have no direct relationship with the project area. These stakeholders were removed before activities were implemented with them, so there was no generation of expectations or interruption of activities that had been initiated. Representatives of these stakeholders were formally informed through shared communication channels, and we have received no response to date.
The updated list of stakeholders who will benefit from the project is found in Appendix 3: Stakeholders identification table.

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

Not applicable. No new project areas and communities were included since the last validation or verification.

[62] See appendix 2

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

Not applicable. No new project areas were included since the last validation or verification.

2.2.6.5 Project Zone Map (CCB, G1.13)

As described in Section 2.2.5, the Leakage Management Areas (LMA) were reviewed and modified for this monitoring period. These modifications were made to align the planned leakage reduction activities with the project's Theory of Change, a phase that only occurred during the project's adaptation to the CCB Standard. The changes are detailed in Table 15 of this document. Below are updated maps of the Project Zones (PZ), illustrating the project zone boundaries, as well as the key resources and stakeholders involved in its implementation.

Figure 15. Location of the Rio Madeira Grouped REDD+ Project Zone (Instance 1)

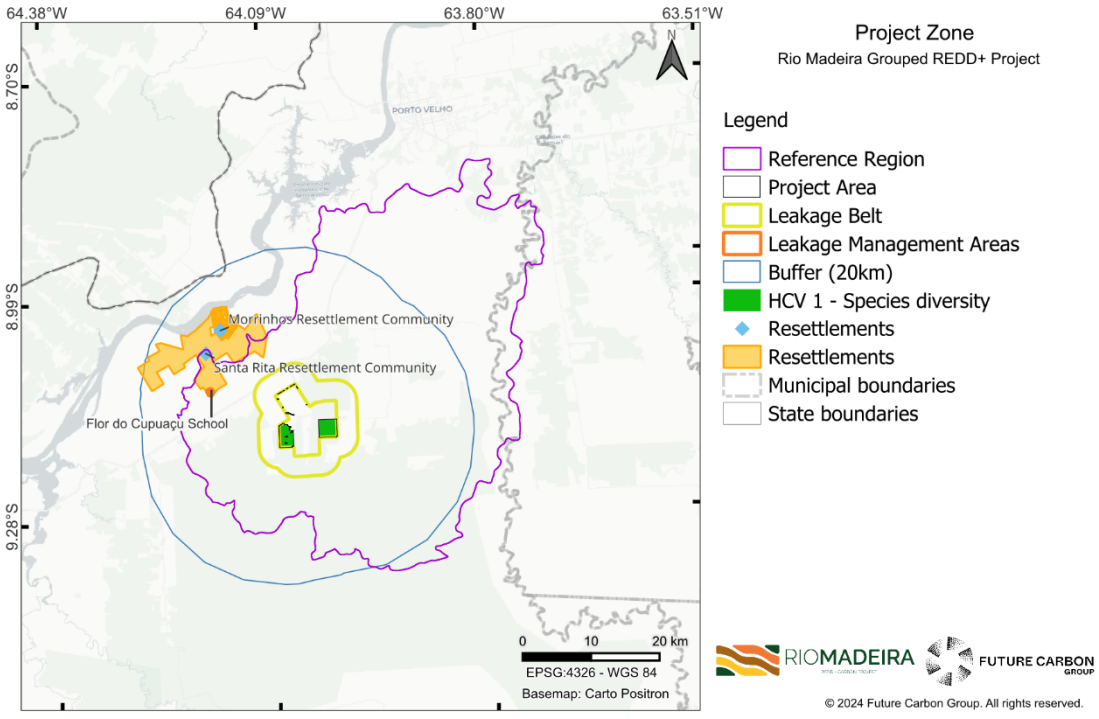


Figure 16. Location of the Rio Madeira Grouped REDD+ Project Zone (Instances 1 and 2)

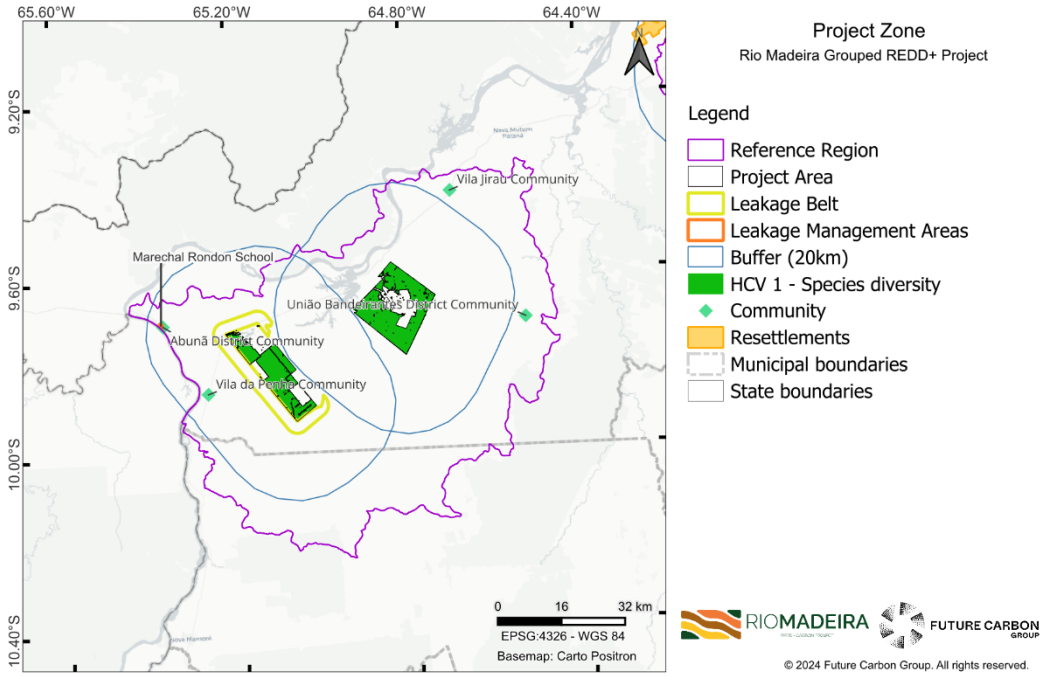
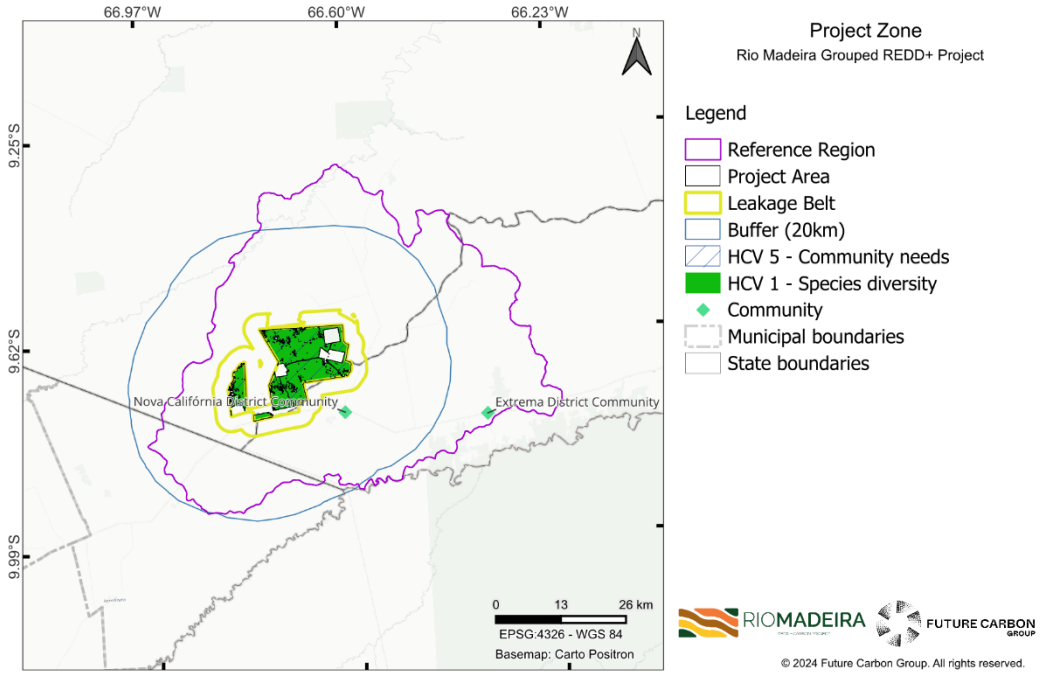


Figure 17. Location of the Rio Madeira Grouped REDD+ Project Zone (Instance 3)



2.2.6.6 Changes to Management (CCB, G4.1)

Not applicable. No changes in the management structure resulted from new entities joining the project occurred during this monitoring period.

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

The risks to the expected climate, community, and biodiversity benefits were mapped using the guidelines from the VCS AFOLU Non-Permanence Risk Tool v4.2 (Table 16). Additionally, potential socio-environmental risks not addressed in the NPRR but still relevant to the project were also identified and included in the Appendix 2: PROJECT RISKS TABLE.

Table 16. Main risks to the project and mitigation actions implemented

Identified Risk	Potential impact of risk on climate, community and/or biodiversity benefits	Actions needed and designed to mitigate the risk
Financial Viability The payback period is equal to 6 years from the current risk assessment.	The lack of sufficient cash flow in the initial years to cover the establishment and maintenance of project activities could hamper the positive climate, community, and biodiversity impacts expected from project implementation.	As a business model, the project proponent has the funds needed for the project activities obtained through internal funding sources from the landowners and Future Carbon Group. In this sense, the Rio Madeira Grouped REDD+ Project has secured the funds needed for its implementation and maintenance until 2025. The socio-environmental actions planned to be implemented on the basis of the Theory of Change began to be implemented with the revenue from carbon credits in 2024.
Financial Viability Project has secured less than 15% of funding needed to cover the total cash out before the project reaches breakeven	Currently, the project does not have available callable funds to cover the total cash out before the project breaks even.	From the start date project until the project reaches the break-even point (NPV = 0), the project proponent through external funding sources obtained from investors such as pre-issuance credit buyers, have covered more than 15% of the funds needed to implement and maintain the project activities.
Project Longevity Non continuity of the management practice beyond project lifetime with legal agreement or requirement	Landowners have a 100-year contract signed with Future Carbon, on which they must guarantee the native forest conservation within	The project is protected by legally binding commitment to continue management practices that protect the credited carbon stocks over the length of the project crediting period. The contract signed between the project proponent and the landowners for 100

	the project area. Furthermore, instances 1 and 3 carry out a sustainable forest management plan authorized by the Brazilian Environmental Agency, which guarantees the maintenance of the project area for at least 30 years from the first harvesting activity.	years is considered legally valid, as it is signed by all parties, including suitable witnesses, as required by the Civil Code (Art. 104) . In addition, there is an addendum signed on May 24, 2024, which confirms the validity of the contract until the first 100-year period, according to clause 1.1, also signed by the owners and witnesses. The contract is legally binding, as it meets all the formal requirements, such as signatures, appropriate witnesses and the explicit definition of the object. In the event of non-compliance with the clauses, the contract can be terminated by either party, with 30 days' notice, in situations of fraud or bad faith, according to clause 5.5. Clause 6 also states that the owners confirm that the contract does not violate any pre-existing agreements and that they are not involved in illicit practices such as bribery or money laundering. If such practices are proven, the contract can be terminated immediately, with no liability for the party requesting termination. In addition, the project area is protected by the Brazilian Forest Code (Law nº 12.651/2012 and CAR – in Portuguese, Cadastro Ambiental Rural) and the remainder is protected as an environmental forest reserve, in accordance with Brazilian law and agreements already instituted by the landowners.
Political Risk Discontinuation of project activities due to changes in government policy and legislation	The most recent legislative initiative of the Brazilian government is Bill 412/2022, which proposes a nationwide carbon market regulation, the Brazilian Greenhouse Gas Emissions Trading System (SBCE), that would set up a mandatory trading	As a result of the approval draft bill (PLS) 412/2022 in October 2023, the Brazilian government could be inclined to recentralize their forest management systems because SBCE requires governments to establish National Forest Emission Reference Levels as reliable baseline, MRV mechanisms, and national institutions for the trading and payment of carbon stocks in the forests. The draft law already included provisions for the eligibility of international carbon credits generated

	system to cut greenhouse gas emissions by 50% from 2005 levels by 2030. Changes in legislation or new policies should have a positive impact on the rules for the Brazilian carbon credits to be marketed internationally under the Article 6.4 mechanism of the Paris Agreement.	under Article 6 of the Paris Agreement, for example by REDD+ activities. In addition, there are no risks of discontinuation of project activities due to the approval of Bill 412/2022 and other government policy and legislation since the project occurs on private lands.
Fire (F) Increase of fire outbreaks	Fire outbreaks in the project boundaries can negatively affect climate and biodiversity generate forest cover loss, habitat and species burned by fires, and can also affect the loss of carbon stocks through GHG emissions. During this monitoring period, 4 heat spots were identified within the property boundaries, where no hectare of forest was loss within the project area, which corresponds to 0% of project area instance, or also 0% of VCUs previously issued by the project. Thus, no loss occurred during the monitored period due to heat spots.	During this monitoring period local rural patrolling and remote satellite monitoring continued to operate, allowing to identify possible fire spots and report to the management team to take the appropriate measures, if necessary. During the monitoring rounds of the project area, the management team can identify if a fire has broken out and report it to a team trained to take the appropriate measures to contain the fire. During the monitoring period, weekly satellite monitoring of the properties that are part of the project began, making it possible to prevent any outbreak of fire that started inside or outside the farms from causing a loss of forest cover.
Projected future climate change Climatic impact drivers (CIDs) were assessed to project future climate change, due to the project location in the IPCC Reference Region	According to the project future climate change, there is a high confidence of increase in mean air temperature, extreme	No climate adaptation measures were implemented during this monitoring period to reduce the risks of projected future climate change.

classified as South American Monsoon.	heat, agricultural and ecological drought and fire weather in the South American-Monsoon Reference Region (IPCC), where the project is located. These changes may potentially have a negative impact on the project. For this monitoring period, the Future Climate Impact Factor is equal to 1.20, indicating a moderate level.	
Ability to adapt to climate change and climate variability Impact of climate change on the project	Risk of severe droughts, floods or other extreme weathers	No significant climate-related events—such as droughts or floods—have been reported within the properties covered by the project. Due to the presence of extensive forested areas, the ecosystem shows natural resilience and adaptability to events like flooding, where vegetation often acts as a buffer, mitigating the potential impacts. Furthermore, ongoing and planned monitoring activities serve as key mitigation measures against climate variability. These actions enable the early detection of potential climate-related events, allowing for timely and context-specific responses aimed at minimizing their effects on forest integrity and project outcomes.

The risks were evaluated based on an assessment of the risk factors and a score was assigned to each factor by category and subcategory, that are added together to determine the total risk rating (see Non-Permanence Risk Report). The result of the non-permanence risk for the Rio Madeira Grouped REDD+ Project estimates a 12% rating for the determination of the Risk Buffer, as summarized in the table below and per the supporting documents. Detailed information on the risk assessment can be found in the NPRR.

Table 17. Overall Non-Permanence Risk Rating and Buffer Determination for Rio Madeira Grouped REDD+ Project

Risk Category	Rating

Internal Risk	4.00
External Risk	1.00
Natural Risk	4.20
Overall Risk Rating (a + b + c)	**12**[63]

During this monitoring period, activities or plans to mitigate risk factors are presented to demonstrate to the carbon offset program and the project proponent has the capacity to address the identified risks, thereby reducing the assigned risk score. These activities or plans have been presented considering the strategic lines and activities of the project (see section 2.1.8 in the CCB PD). Detailed information on the risk assessment can be found in the NPRR.

2.2.8 Benefit Permanence (CCB, G1.11)

To maintain and expand the climate, community, and biodiversity benefits beyond the project's duration, a set of activities has been adopted. These activities have been divided into specific objectives for climate, community, and biodiversity, with the purpose of strengthening the project's long-term sustainability. In this regard, the project aims to implement five programs aligned with the Theory of Change (see section 2.1.8 in the CCB PD), namely: (i) adaptation and improvement of infrastructure, (ii) continuous communication and stakeholder engagement, (iii) conservation and monitoring of biodiversity and ecosystem resources, (iv) training and support to promote sustainable production practices, and (v) forest monitoring and integrity. These programs enable the project to enhance the quality of life and well-being of communities while protecting the natural environment and strengthening connectivity between forest cover and wildlife.

Climate

All project activities focused on climate benefits have the primary objective of reducing deforestation and decreasing greenhouse gas (GHG) emissions. To achieve this, forest integrity and asset security will be maintained throughout the project's duration. During this monitoring period, asset surveillance and local rural patrols continued operating in all three project areas, along with remote satellite monitoring in Project Area 2, allowing the identification of potential illegal activities that could compromise climate benefits. Additionally, an on-site surveillance team initiated monitoring and patrolling activities in the project area during this period (more details in section 2.3.16).

Community

[63] According to AFOLU Non-Permanence Risk Tool v4.2, the minimum risk rating shall be 12. Available at: https://verra.org/documents/afolu-non-permanence-risk-tool-v4-2/.

All project activities aimed at communities primarily seek to promote inclusive, quality, and equitable education and training, as well as adapt community infrastructure to strengthen well-being and socioeconomic development in the region. The project is also committed to developing and implementing appropriate communication mechanisms and providing accessible information to engage stakeholders.

During this monitoring period, in-person visits were conducted to update communities on project developments, validate the action plan and Theory of Change, and support the planning and implementation of future activities based on local stakeholder participation.

A survey on domestic animals in farms was also conducted, collecting primary data on the number of resident animals, their species, received care, and other aspects. This survey helped identify and characterize essential information on the topic, functioning as a census/diagnosis to guide the development of activities and potential improvements within the project. Key aspects mapped included types of food, frequency of vaccination, and sterilization.

Furthermore, the project supported the "Nature Warriors" Karate project in the Morrinhos resettlement in Porto Velho (RO) in two ways: the construction of a dojo for student training and the donation of training t-shirts for participants. In the Santa Rita resettlement, the project contributed by funding the electrical renovation of the Flor do Cupuaçu School, which is essential for the institution's operations and the proper conduct of classes and general services.

Additionally, a Tree Day celebration event was held at the school, including the planting of seedlings both at the school and in Natural Park in Porto Velho. The planting event at the park was also attended by farm employees from Project Area 1 and community members from the Morrinhos resettlement.

To strengthen and support small extractivists, a partnership was established between the Rio Madeira Project and Embrapa Acre, focusing on developing better sustainable practices for Brazil nut production and extraction in Project Area 3.

Biodiversity

All project activities aimed at biodiversity benefits primarily seek to protect and monitor ecosystems while developing scientific knowledge about local fauna and flora.

During this monitoring period, remote monitoring of the project area was maintained and the acquisition of trap cameras was made, with the aim of contributing to the preservation and protection of wildlife and vegetation.

2.3 Stakeholder Engagement & Safeguards

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

Not applicable. There have been no changes since the validation of the PD CCB regarding the stakeholder identification process. However, 4 stakeholders were excluded from the leakage management area (LMA). This exclusion is described in section 2.2.6.2 and 2.2.5 of this document.

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

The Rio Madeira Grouped REDD+ Project adopted three methods of making accessible the Project Description Documentation and Project Monitoring Reports to communities and Interested Stakeholder via oral and virtual formats during this monitoring period, as well as the distribution of graphic materials, as presented below.

- **Virtual:** all documents related to the Project are available on the VCS CCB Registry Page[64].
- **Oral:** all relevant information related to the project design and implementation were made accessible to communities and interested stakeholders during the on-site visits that took place on April and November 2024. Technical terms and definitions of the carbon market were explained in a didactic way, in a language and manner that is understandable to the public. The results of the third and fourth monitoring periods of the Rio Madeira project, the presentation of the impacts generated by the theory of change, and the presentation and delivery of graphic materials with the project's communication channels and information were also addressed during these visits.
- **Graphic materials:** Printed materials, such as banners and folders, were created and distributed to stakeholders during in-person visits. These documents detailed important information about the Rio Madeira Grouped REDD+ Project in order to guarantee sustainability and transparency in the relationship with the relevant stakeholders, as detailed in section 2.3.3.

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

The project proponent actively disseminated summary project documents to communities and stakeholders through a variety of methods during the third monitoring period. The distribution of summary documents, including project goals, design, long-term viability, and monitoring reports, were distributed through on-site visits and virtual mechanisms. This combination of direct and digital communication ensured that the project information was accessible and aligned with the community's understanding and needs.

To enhance accessibility, supporting informational materials such as folders and information booklets in Portuguese (local language) were distributed widely. These materials covered key aspects of the project, including:

[64] https://registry.verra.org/app/projectDetail/VCS/2878

- **Main Project Topics:** Details on the project area, stakeholders' location, the role of the Madeira River, main objectives of the Project and the socioenvironmental benefits provided by the Project.
- **Project Certification:** Detailed explanations of the Verified Carbon Standard (VCS), co-benefits measured by the Climate, Community & Biodiversity (CCB) standards.
- **Carbon Credits:** An overview of what carbon credit represents and how it is generated.
- **Project's Audit Information:** A description of the validation and verification audit process, and information on the validation/verification body audit visit to the Project Area and surrounding communities.
- **Sustainable Development Goals (SDGs):** A summary of the SDGs the project contributes to.
- **Net Positive Impact:** Results demonstrating the project's positive impact on climate, community, and biodiversity.
- **Communication Channels:** In all visits conducted by the project, the communication channels are reaffirmed and shared again.

Figure 18. Rio Madeira Grouped REDD+ Project – Communication Channels Card

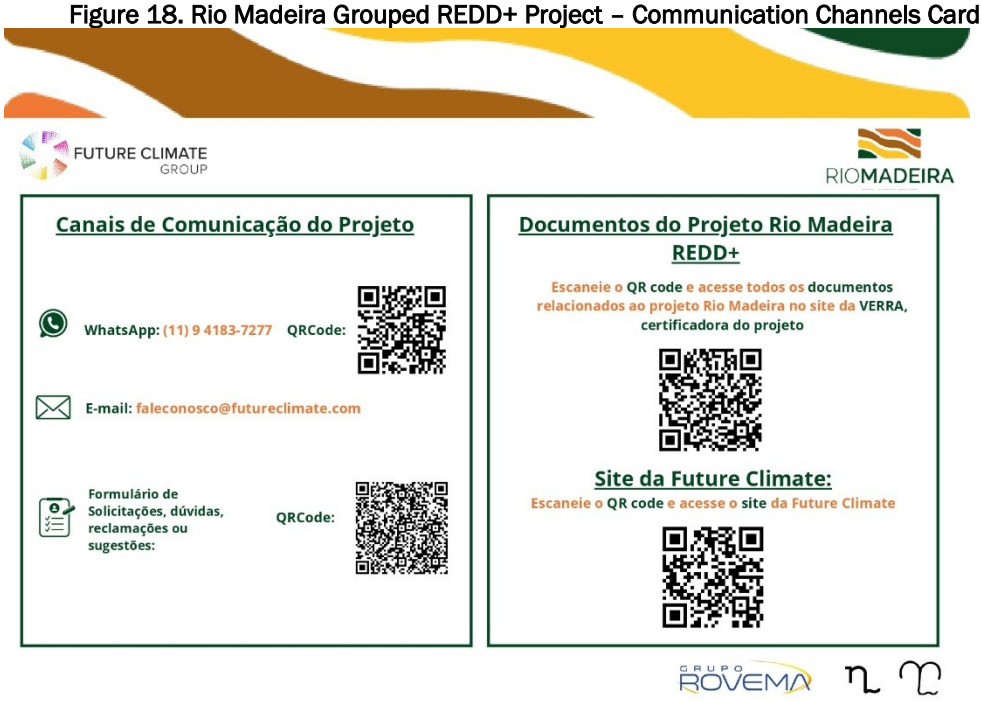


Figure 19. Rio Madeira Grouped REDD+ Project - Information booklet - Page 07[65]

PÁGINA | 07

RESULTADOS do projeto em 2023

As **principais ações** e os **principais resultados** alcançados durante o **3º período de monitoramento** estão descritos a seguir.

Clima

Desmatamento na área do projeto em 2023

Estimado	Real
2,378 ha	28,99 ha

Índice de efetividade: 98,78%

ODS (Objetivos de desenvolvimento sustentável):



Comunidade

Atividade: ***Instalação de Antena de Internet.***

Período: ***Outubro de 2023.***

Objetivo: ***Reduzir a carência de espaços e equipamentos que afetam diretamente o desempenho educacional dos jovens e a gestão das práticas escolares, visando assim diminuir a probabilidade de abandono escolar.***

Impacto : ***130 alunos e 7 professores.***

ODS (Objetivos de desenvolvimento sustentável):



A Escola Municipal de Ensino Fundamental Flor do Cupuaçu foi beneficiada com a instalação de um equipamento de internet via satélite em Outubro de 2023.

[65] The full document was shared with stakeholders during visits in the period and will be shared with VVB when requested.

Figure 20. Rio Madeira Grouped REDD+ Project - Information booklet - Page 11[66]



PÁGINA | 11

PROGRAMAS

PROGRAMA DE INFRAESTRUTURAS DE QUALIDADE

O objetivo é ampliar as áreas e instalações para atividades de bem-estar, educação e desenvolvimento econômico, melhorando a qualidade de vida das pessoas.

ATIVIDADES IMPLEMENTADAS

Atividade: Implementação de um Dojô de karatê

Período: Março de 2024

Objetivo: Incentivar a prática esportiva, promover a inclusão social , e proporcionar oportunidades de crescimento e reconhecimento na comunidade.

Impacto : 23 participantes.

Local: Reassentamento Morrinhos - Projeto Guerreiros da Natureza

CONSERVAÇÃO E MONITORAMENTO DA BIODIVERSIDADE

O objetivo é monitorar e conservar a biodiversidade, mantendo serviços da natureza como fornecimento de água, alimento, regulação do clima, entre outros, além de proteger espécies ameaçadas.

Atividade: Inventário de Fauna

O inventário identificou um total de 203 espécies da fauna silvestre.

Araracanga (Ara macao)

Jaguatirica (Leopardus pardalis)

During the fourth monitoring period, there were several opportunities to disseminate the project monitoring results through consultations with stakeholders held in April and November of 2024. It is important to note that during the period, no comments were received outside of the public comment period throughout the communication channels implemented (via email: ***faleconosco@futurecarbon.com.br,Whatsapp Number:+55 (11) 9.4183-7277 or by Forms: https://forms.office.com/r/KR0xdJ51AF***). Only contacts related to requests or demands from

[66] The full document was shared with stakeholders during visits in the period and will be shared with VVB when requested.

the communities were received through the channels. No criticisms or questions were recorded regarding the project description or the information contained in the monitoring reports (see section 2.3.10).

Furthermore, a summary of the fourth monitoring report for VCS & CCB Verification, also in Portuguese, was open for public comments from February 12, 2025, to March 14, 2025, on the Verra.

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

Informative and engagement meetings were held with local communities and interested stakeholders to present key information about the Rio Madeira Grouped REDD+ Project during this period. Additionally, these visits were essential for initiating the participatory validation process of the Theory of Change and the Impact Plan.

In this context, 2 on-site visits were conducted to the Project Area and its surroundings on, and 1 remote consultation was held:

- **February** 23, 2024: Remote consultation
- **April** (April 2, 2024 – April 5, 2024): On site consultation
- **November** (November 18, 2024 – November 22, 2024): On site consultation

Remote Consultation (February 23,2024)

The remote consultation was planned to better serve institutional stakeholders, such as government agencies, NGOs and universities, unions, Conservation Unit managers, technical institutions and local associations. In total, the invitation was sent by email to 75 representatives of these different stakeholder groups. Three invitations were sent to invite and remind guests about the event. The invitations were sent on January 22, February 7, and February 22 (the day before the online event).

On the day of the online event, 7 guests from 5 different institutions participated, as detailed in the table below:

Institucional Stakeholder	Nº of Participants
CPPT[67] CUNIÃ	2
EMBRAPA Rondônia	1
Federal University of Rondonia	1
IDAM	1
WWF	2

[67] CCCP – Cuniã: Centro de Pesquisas de Populações Tradicionais (Traditional Populations Research Center)

TOTAL	7

The focus of this remote consultation was to present the context and objectives of the Rio Madeira project, the stakeholder mapping process, the results of emissions avoided up to 2023 and the results of the socio-environmental activities implemented in 2023. The project's communication channels were also reinforced, and guests were encouraged to send suggestions, criticisms and other requests through these channels.

At the end, guests had time to ask questions and make comments about the project. The focus of the remote consultation was to present the context and objectives of the Rio Madeira project, the stakeholder mapping process, the results of emissions avoided up to 2023, and the results of the socio-environmental activities implemented in 2023. The project's communication channels were also reinforced, and guests were encouraged to send suggestions, criticisms, and other requests through these channels.

At the end, guests had time to ask questions and make comments about the project. They did not raise any concern about the project, or the activities implemented. The CPPT Cuniã team praised the initiative and highlighted the importance of forest conservation projects aligned with social development for the region. The representative of EMBRAPA Rondonia expressed interest in understanding more about the partnership established with EMBRAPA Acre. The representative of the University of Rondonia commented that he found the number of birds observed in the project area to be very low, but it was explained that this result was from a single event carried out in a short space of time, so that other observation events should occur in order to have a representative diagnosis.

At the end of the presentation, an attendance list form with some questions was made available, and we obtained the following results:

- All participants expressed that they would like to participate in the next remote consultation on the project
- 6 guests said they had no additional comments about the presentation or the project. The representative from the University of Rondonia raised concerns about the perception of low bird diversity.
- On a scale of 0 to 5, the average satisfaction score of participants regarding the presentation was 4.75

First On-Site Visit (April 2, 2024 – April 5, 2024)

During this visit, the Future Carbon team, the landowners, farm managers, and auditors from Ecolance visited five communities: Santa Rita (Flor do Cupuaçu School), Abunã (Marechal Rondon School), and the Rio Madeira, Santa Carmem, and Nova Fronteira farms.

The main objective of the visit was to present project information and results related to the third monitoring period, as well as to conduct the audit process. During visits to the schools and

discussions with farm employees and Brazil nut extractivists, in addition to presenting the achieved results, it was possible to collect feedback and suggestions from community members regarding the project.

The Brazil nut extractors shared with the team that they have already started applying the knowledge acquired during the training conducted in November 2023 in partnership with Embrapa Acre. Meanwhile, Flor do Cupuaçu School provided positive feedback regarding the installation of the Starlink antenna at the beginning of 2023, highlighting the benefits of improved connectivity in their daily school activities.

Among the requests raised, Marechal Rondon School (Abunã District) expressed interest in developing initiatives aimed at teachers, such as training sessions and specialized courses for educators.

Figure 21. First On-Site Visit (April 2, 2024 – April 5, 2024)



Second On-Site Visit (November 18, 2024 – November 22, 2024)

During this visit, the Future Carbon team and farm managers visited six communities: Santa Rita (Flor do Cupuaçu School), Morrinhos (Nature Warriors Project), Abunã (Marechal Rondon School), and the Rio Madeira, Santa Carmem, and Nova Fronteira farms.

The main objective of the visit was to present project information and results up to that point (November 2024) and to initiate the validation process of the Theory of Change and the Socioenvironmental Action Plan with stakeholders.

During visits to schools, communities, and discussions with farm employees and Brazil nut extractivists, in addition to presenting the achieved results, the opening ceremony of the partnership between Embrapa Acre and the Rio Madeira Project was held. This initiative focuses on implementing best practices for managing and harvesting Brazil nuts in the project areas of Instance 3.

Additionally, a brief assessment of domestic animals on the project's farms was conducted, gathering data on care, number of animals, vaccination, sterilization, and other aspects.

Figure 22. Second On-Site Visit (November 18, 2024 – November 22, 2024)



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

For this period, the identified human-induced risk is related to deforestation.

The project is located in an area of high deforestation pressure, which increases the risks related to intentional deforestation caused by humans. During this period and throughout the life of the project, monitoring of the project areas has been conducted by the project proponent and outsourced to a third party with sufficient capacity to carry out the monitoring tasks. The monitoring tasks and responsibilities were carried out by both the project proponent (Future Carbon) and the landowners (Grupo ROVEMA, Grupo Leite, and Grupo Tupá). The project proponent managed the technical aspects of monitoring, including GIS analysis and emission tracking, and carried out the monitoring activities for the VCS and CCB Standards. The landowners focused on the operational side, such as monitoring forest conditions and responding to natural disturbances on-site.

During 2024, both field and satellite monitoring was reinforced for all the instances that are part of the project. In mid-July, Future Carbon hired a professional dedicated to monitoring the boundary of the project area via satellite, with the aim of better protecting the forest area and preventing deforestation events that begin outside the project area from advancing inside, by being in constant contact with the field team on site. In addition, in the last few months of the year, the hiring of new staff dedicated exclusively to ground patrols of the project boundaries was formalized.

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

In 2024, the Rio Madeira Grouped REDD+ Project ensured that relevant and adequate information about potential costs, risks, and benefits was shared with local communities through a participatory and transparent process. This approach aimed to provide clear and timely information in an understandable form before any decisions regarding participation in the project were made by community members.

Throughout the year, the project team conducted two additional field visits, engaging directly with community members and stakeholders to address their concerns and provide updates. During these visits, updated educational materials, such as flyers and videos, were distributed, and oral presentations were delivered. The expanded use of WhatsApp as the primary communication channel facilitated real-time updates and enabled two-way communication between the project team and the communities.

No new risks for the communities were identified during 2024. The project team's emphasis on transparent communication and the participatory process ensured that all community members were aware of potential challenges while understanding the project's direct and indirect benefits. By maintaining continuous dialogue and incorporating community feedback, the Rio Madeira Grouped REDD+ Project successfully empowered communities to make informed decisions about their participation, aligning with the principles of inclusivity and sustainability.

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

In 2024, the Rio Madeira Grouped REDD+ Project maintained its commitment to transparent and participatory engagement with local communities and stakeholders by providing clear and timely information about the independent validation and verification processes under the Verified Carbon Standard (VCS) and Climate, Community and Biodiversity (CCB) Standards.

During the year, two additional field visits were conducted to inform stakeholders about the verification process and its significance. These visits included detailed explanations of the steps involved in validation, registration, and verification, ensuring that communities and interested stakeholders were fully aware of the procedures and their implications for the project. Stakeholders were also reminded of the voluntary nature of their participation in the project, emphasizing that their involvement did not impose any obligations or restrictions.

The project utilized both in-person meetings and digital communication channels to effectively disseminate information. WhatsApp was employed as the primary digital tool, providing a direct and accessible platform for updates and dialogue. Educational materials, including updated flyers and presentations, were distributed during field visits to ensure that information was delivered in an understandable and culturally appropriate manner. These materials included visual aids and simplified language to accommodate diverse audiences.

Specific sessions were held at key locations, such as the Escola Flor do Cupuaçu in Porto Velho/RO and the Marechal Rondon School in Abunã District, where stakeholders were informed about the VCS and CCB Standards. The project team highlighted that the VCS is the most widely used standard globally for validating and accounting for greenhouse gas (GHG) emission reductions and the generation of carbon credits, while the CCB Standard monitors socio-economic and environmental benefits.

The results of the validation and verification processes were shared with stakeholders through public platforms, including the registry websites for the VCS and CCB Standards. These platforms provide open access to project documentation, fostering transparency and accountability.

The project team also emphasized the importance of stakeholder participation in the planning, implementation, and monitoring phases, ensuring that their feedback and concerns were integrated into the project's ongoing development. By maintaining clear communication and providing comprehensive information, the Rio Madeira Grouped REDD+ Project reinforced its dedication to inclusivity and stakeholder empowerment throughout the verification process.

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

The initial communications regarding the audit dates have begun, and the auditors' contact information has been properly shared.

The audit will take place from 24 to 28 of February 2025 by an external company, ensuring an impartial evaluation. The Rio Madeira Grouped REDD+ Project undergoes annual audits for each monitoring period to ensure continuous quality and compliance with the guiding and mandatory rules for its classification category.

Figure 23. First invitation sent to stakeholders



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

Based on stakeholder consultation requirements, the Project Proponent conducted two stakeholder consultations for the REDD+ Grouped Rio Madeira Project in April 2024—focused on auditing MR3 and validating the PD CCB—and in November 2024, following an inclusive and participatory approach.

Additionally, a remote consultation was carried out in February 2024 with institutional stakeholders. This consultation was primarily intended to present the cumulative project results up to 2023 and, therefore, will not be detailed below. Further information on this remote consultation can be found in Section 2.3.4.

The main objectives of the consultations held in April and November were to ensure that all representative stakeholder groups were well-informed about the project's outcomes, to demonstrate that the project delivered net positive benefits for the climate, community, and biodiversity, and to offer stakeholders the opportunity to express their concerns, comments, and suggestions.

Below is a detailed description of the consultation process and its results:

Ongoing consultation	The first visit of 2024 took place from April 2 to April 5, 2024, and primarily focused on the following topics: • Presentation of the results from the third monitoring period of the Rio Madeira Project; • Theory of Change; • Conducting the audit procedure. The consultations were attended by representatives of community groups, rural workers, representatives from the Flor do Cupuaçu and Marechal Rondon schools (Abunã District), and non-timber forest product extractors (specifically Brazil nut gatherers). Each group was represented to ensure broad and inclusive participation. During the sessions, the project proponent provided a detailed overview of the project, covering its objectives, methodology, and the results achieved in 2023. Participants were also reintroduced to key concepts related to the project, such as carbon credits and forest conservation. In addition to communicating the results of the third monitoring period and the audit process, this visit also addressed feedback received during a previous visit in 2023 regarding limited access to project information and communication channels. As a response, the project's communication channels were shared, and the Continuous Engagement Program was established as one of the project's priority action areas for 2024. Beyond the previously identified needs from past visits, teachers highlighted the necessity of support for improving the school's electrical infrastructure[68], as well as infrastructure improvements for the computer lab and teachers' dormitory. They also expressed interest in receiving training, courses, and workshops aimed at their continuous development as educators.

[68] The improvement of the school's electricity grid was completed and delivered as a project activity in the second half of 2024.

Figure 24. Stakeholder consultation April 2024



At the end of the visit, it was delivered the sponsorship plaque for the Guerreiros da Natureza project to Paulo Neri and Jocilane, two of the project's representatives from the Morrinhos Resettlement.

Figure 25. Stakeholders consulted April – 2024

Stakeholders	02/04/2024	03/04/2024	04/04/2024	05/04/2024
CPPT Cuniã	1			
Embrapa Acre				1
Flor do Cupuaçu School	2			
Guerreiros da Natureza Project	1			
Marechal Rondon School			8	
Morrinhos Resentllement Community	1			
Nova Fronteira Farm			11	
Brazil Nut Extractors			7	
Rio Madeira Farm	14			
Santa Carmem Farm		15		
Total Per Day	**19**	**15**	**26**	**1**
Total People Consulted in loco	**61**			

During this visit, the project received positive feedback from the principal of Escola Flor do Cupuaçu, who expressed gratitude and highlighted improvements in the school's daily activities following the installation of the Starlink antenna[69]. Additionally, Brazil nut extractors reported that they had begun applying some of the knowledge acquired during the two training sessions conducted in December 2023[70], as part of a partnership with Embrapa Acre.

Date(s) of stakeholder consultation	02-April-2024 to 05-April-2024
Communication of monitored results	In-person informational meetings were held with the communities to present key information and results of the REDD+ Rio Madeira Project during the third monitoring period and the audit

	procedure. Additionally, these visits were essential for gathering community perceptions on the project's progress, addressing questions, and fostering engagement to collaboratively present the first version of the Theory of Change.
Consultation records	The process for documenting the outcomes of the stakeholder consultation involved several methods: ▪ **Stakeholder Consultation Report:** to document the questions, concerns, and inputs raised by stakeholders during the consultations. This report serves as the primary written record, capturing the key themes discussed, the responses provided by the project management team, and any follow-up actions that were planned based on stakeholder feedback. ▪ **Multimedia Documentation:** photos and video recordings were used to capture important moments of the consultation process, stakeholder interactions, ensuring that the audit team has access to visual evidence of the engagement activities. ▪ **Attendance Lists:** to ensure transparency and accountability, attendance lists were maintained for each consultation session. These lists recorded the names and affiliations details of all participants, demonstrating who was involved in the discussions.
Stakeholder input	The participatory consultations allowed for valuable feedback from community members and farm workers. The insights gathered helped refine the project's design to better align with community needs. All stakeholder feedback has been analyzed and incorporated into the project's theory of change and future actions, contributing to a more inclusive and effective project implementation. During this visit, the project received positive feedback from the principal of Escola Flor do Cupuaçu, who expressed gratitude and highlighted improvements in the school's daily activities following the installation of the Starlink antenna[71]. Additionally, Brazil nut extractors reported that they had begun applying some of the knowledge acquired during the two training sessions conducted in December 2023[72], as part of a partnership with Embrapa Acre.

[69] More information is available in the project's third monitoring report. Available at: https://registry.verra.org/app/projectDetail/VCS/2878
[70] More information is available in the project's third monitoring report. Available at: https://registry.verra.org/app/projectDetail/VCS/2878
[71] More information is available in the project's third monitoring report. Available at: https://registry.verra.org/app/projectDetail/VCS/2878
[72] More information is available in the project's third monitoring report. Available at: https://registry.verra.org/app/projectDetail/VCS/2878

Ongoing consultation	The second visit took place from November 18 to 22, 2024, focusing on presenting project results, validating impacts, planning future actions, and strengthening local partnerships. On the first day, November 18, 2024, the Future Climate team visited the Morrinhos Resettlement in Porto Velho/RO to meet with local leaders. The objective was to share the results of the project's monitoring periods, validate the generated impacts, and plan actions for 2025. During the meeting, discussions covered improvements such as the creation of a library and a computer room for the community, as well as initiatives related to coffee cultivation and native seedling production. Later, the team visited Escola Flor do Cupuaçu, where they presented the project's results to the principal and aligned future actions, including the installation of a computer room and improvements to the school garden. The last visit of the day took place at Fazenda Serra Verde, where internal audits were conducted, validation of locations for camera trap installations was carried out, and discussions on legal compliance and biodiversity monitoring took place. On the second day, November 19, 2024, the team visited Fazenda Rio Madeira, continuing internal audits and validating locations for biodiversity monitoring, as well as conducting a domestic animal assessment. Later, at Fazenda Santa Carmem, meetings were held with employees to raise awareness about labor rights and validate camera trap installations. The visit also highlighted improvements in worker infrastructure, which resulted from previous audits.

Figure 26.Stakeholders consulted November - 2024



On the third day, November 20, 2024, activities continued at Fazenda Nova Fronteira, where geographic points for camera trap installations were validated. Additionally, an internal audit was conducted to verify legal compliance, assess domestic animals, and identify necessary improvements in extractivist housing. These actions aimed to ensure better working conditions and environmental preservation.

Figure 27. Stakeholders consulted November - 2024

Stakeholders	18/11/2024	19/11/2024	21/11/2024	22/11/2024
Embrapa Acre				4
Flor do Cupuaçu School	1			
Guerreiros da Natureza Project				
Marechal Rondon School				
Morrinhos Resettlement Community	2			
Nova Fronteira Farm			18	1
Brazil Nut Extractors				14
Rio Madeira Farm		19		
Santa Carmem Farm		25		
Santa Rita Resettlement Community	2			
Serra Verde Farm	17			
Total Per Day	**22**	**44**	**18**	**19**
Total People Consulted in loco	**103**			

On the last day, November 22, 2024, the team met with Brazil nut e extractors and EMBRAPA representatives at Fazenda Nova Fronteira. During the meeting, the results of the Rio Madeira Project and the Theory of Change were presented, along with the alignment of technical training initiatives for extractors, focusing on best post-harvest practices. A socioeconomic assessment was conducted to understand the group's profile, and the harvest initiation agreement was formalized, marking the beginning of Brazil nut collection activities for the 2024-2025 season.

Date(s) of stakeholder consultation	18-November-2024 to 22-November-2024
Communication of monitored results	Informational and engagement meetings were held in person with the communities to present the action plan for activities to be implemented in 2025, as well as the results achieved by the REDD+ Rio Madeira Project up to November 2024 (the date of the visit). Additionally, these visits played a key role in gathering community insights on the project's progress, addressing questions, strengthening engagement, and formalizing, on-site, the partnership between the Rio Madeira Project and Embrapa Acre for the implementation of activities with Brazil nut extractors (Instance 3).
Consultation records	The process for documenting the outcomes of the stakeholder consultation involved several methods: ▪ **Stakeholder Consultation Report:** to document the questions, concerns, and inputs raised by stakeholders during the consultations. This report serves as the primary written record, capturing the key themes discussed, the responses provided by the project management team, and any follow-up actions that were planned based on stakeholder feedback. ▪ **Multimedia Documentation:** photos and video recordings were used to capture important moments of the consultation process, stakeholder interactions, ensuring that the audit team has access to visual evidence of the engagement activities. ▪ **Attendance Lists:** to ensure transparency and accountability, attendance lists were maintained for each consultation session. These lists recorded the names and affiliations details of all participants, demonstrating who was involved in the discussions.
Stakeholder input	During the visit on 11/18/2024, the Director of Flor do Cupuaçu School suggested organizing more activities similar to those held on Tree Day, highlighting their positive impact on the students. Additionally, she proposed sending the school calendar to the project's socio-environmental team to support the development of new actions and initiatives similar to Tree Day in partnership with the school. The community leader of the Morrinhos Resettlement expressed interest in setting up a computer room and library at the headquarters of ASDAMOR (Association for Agricultural and Environmental Development of Rural Producers of the Vale de Morrinhos and Surroundings). Additionally, she highlighted the need for support to strengthen the cassava flour production chain,

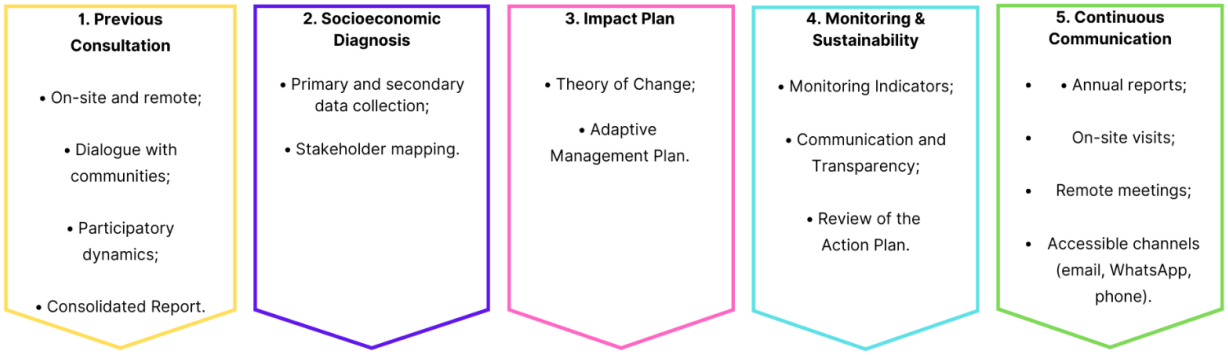
	one of the main sources of income in the region. The other consulted groups did not provide any contributions.[73]

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

The project was open for public comment period on the VERRA website from 12-Feb-2024 to 14-Mar-2024, however, no comments were received during or after this period.

The project proponent has developed a Stakeholder Engagement Operational Procedure (PO.SA.01 – Stakeholder Engagement in Carbon Projects) to ensure effective communication with local stakeholders throughout all stages of the project's design and implementation. The procedure is divided into five stages, as outlined below:

Figure 28. Stakeholder Engagement Procedure



For the Rio Madeira Grouped REDD+ Project, stages one and two were completed in previous monitoring periods. In the 2024 update, stage two was revisited, incorporating new socioeconomic surveys to reflect recent demographic and economic changes in the project area.

Stages three and four involved organizing meetings and interviews with relevant stakeholders, particularly community members, using participatory methodologies. These interactions helped identify key local interests and demands, which guided the development of the Impact Plan in stage four.

Based on the socio-environmental diagnosis and on-site visits conducted by the Future Carbon Socio-Environmental Team, the main socio-economic, environmental, and territorial factors in the project area and its surroundings were identified. These also included the availability of public infrastructure for the communities. Key topics covered were:

- Basic infrastructure for public services and transport

[73] It is important to note that the project intends to develop activities throughout its duration, with the aim of benefiting small rural producers in the communities served by the project.

- Public safety
- Local productive activities
- Education, health, environment, and social organization
- Culture and leisure
- Communication, basic sanitation, and water resources
- Women's representation
- Other local demands

This information shaped the Theory of Change and Socio-Environmental Impact Plan, emphasizing the involvement of community groups in governance and decision-making through the Continuous Communication and Stakeholder Engagement Program. All community leaders have regular internet access, which enables continuous and effective communication with the project proponent via WhatsApp, email, and phone calls. These communication channels are also reflected in materials such as folders, banners, and booklets.

Communication Processes and Categorization of Interactions

The Future Carbon Grievance and Request Management Procedure (PO.SAM.02) ensures that all feedback, requests, and concerns from stakeholders are addressed efficiently. In 2024, the mechanism was updated to include anonymous reporting through a secure online form.

The primary communication channels include the project proponent's email (faleconosco@futureclimate.com) and a WhatsApp contact number (+55 11 94183-7277). Information was provided in a timely manner, using language and formats that were easily understood by communities and stakeholders.

Interactions with stakeholders are categorized based on complexity and impact, using the following matrix:

Interaction Type	Low Complexity	Medium Complexity	High Complexity
Proactive	Simple updates (e.g., sharing PDD summaries).	Scheduling meetings; Approval of requested activities;	Significant changes to engagement strategy.
Request	Information requests or minor adjustments in activities	Requests impacting schedules or priorities.	Requests affecting budget or project scope.
Feedback	Operational feedback; Positive feedback about implemented activities	Suggestions influencing multiple project areas; Negative feedback about implemented activities;	Feedback requiring strategic review; Need to activate other teams;

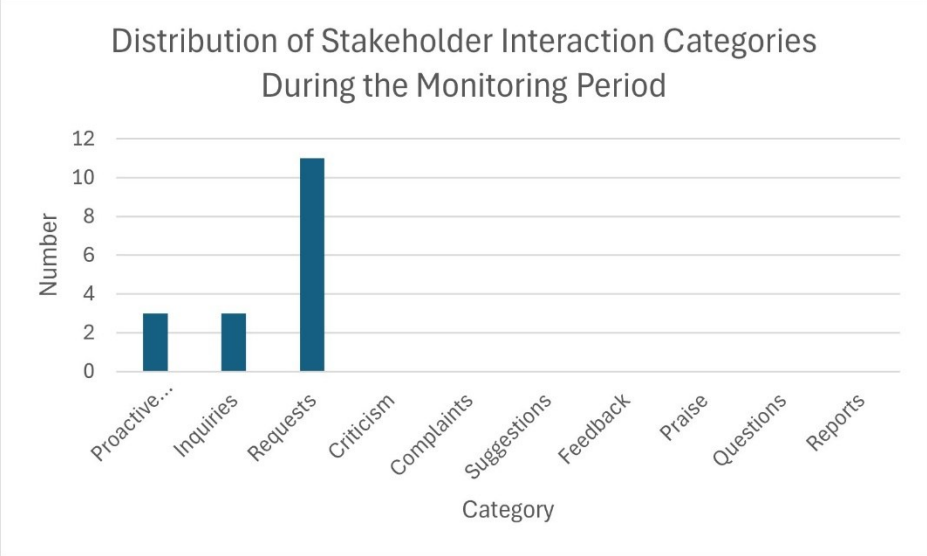
The responses are tailored to the complexity level:

- **Low Complexity:** Resolved within 5 business days.
- **Medium Complexity:** Requires up to 17 business days.
- **High Complexity:** May take up to 30 business days or more, depending on the case's impact.

Summary of Stakeholder Interactions in 2024

A total of **17 communications** were recorded during this monitoring period, categorized as follows:

Figure 14. Distribution of Stakeholder Interaction Categories During the Monitoring Period – 2024.



Among the interactions:

- **16 low-complexity requests/inquiries, such as minor adjustments or additional information inquiries.**
- **1 medium-complexity proactive communication:** Related to the virtual meeting with RECA representatives to update them on the Rio Madeira project and inform them which stakeholder groups the project will prioritize in co-benefit actions. This communication was classified as medium due to the sensitivity at the time of informing RECA that the institution would not be a direct beneficiary of the project, but rather a potential implementing/enabling partner. Despite the sensitivity, the RECA team understood the decision and the relationship remained positive.

All interactions were addressed promptly, ensuring transparency and responsiveness.

Examples include:

1. **Community Requests**:

   - A request for donations for a community health event was respectfully declined, as it did not align with the project's objectives of fostering long-term impact.
   - Conversely, a proposal to sponsor the "Warriors of Nature" karate project was approved, as it aligned with the project's goals of supporting wellness activities and community development.

2. **Proactive Engagement**:

   - Direct outreach to the Marechal School to propose educational activities, including tree planting and fauna awareness sessions, demonstrated the project's ongoing commitment to environmental education.

   Of the requests received in 2024, only those described below resulted in the inclusion, or not, of new activities by the project. The complete list of communications received/made was made available with VVB.

Summary of comments received	Actions taken
The ASDAMOR community association requested sponsorship for the "Nature Warriors" karate project.	The activity was evaluated and considered relevant to the project, since it is aligned with the engagement of young people and adults, improvement in well-being and permanence in the territory. Therefore, the Rio Madeira project decided to be a sponsor of the project, as described in sections 4.1.1 and 4.1.3.
Two requests were made at different times by the ASDAMOR association: 1. The ASDAMOR community association requested financial support to hold a Mother's Day event at the Morrinhos and Santa Rita resettlements site. 2. They also requested donation of toys for the Children's Day event that would take place at the resettlement site.	Both activities were denied, and the formal response was: "We analyzed internally whether the activity "Tribute to the mothers of the Morrinhos and Santa Rita communities" is aligned with the priority programs of the Rio Madeira project. We believe that this activity has an important symbolism and strengthens community ties, however, it is not associated with the project's development programs. It is worth remembering that the Rio Madeira REDD+ programs most related to social actions are:

	• Infrastructure Adaptation and Improvement: Support the improvement of infrastructures that promote well-being, education and economic development. • Educational Practices: Promote access to quality educational activities, especially on environmental conservation and sustainable development topics. It also includes technical training aimed at income diversification, increasing the productivity of small farmers, etc. Activities that are aligned with these objectives are more likely to be supported by the Rio Madeira project. However, requests are reviewed by our Socio-Environmental Committee to assess the relevance of the activity, the social impact generated and the available budget. We remain at your disposal for other partnership possibilities." The refusal to donate toys followed a response similar to that described above.

2.3.11 Stakeholder Consultation Channels (CCB, G3.5)

As described in previous sections, consultations and participatory processes in 2024 were conducted directly with community leaders, farm workers, and other stakeholders, or through their legitimate representatives. These processes were designed to ensure transparent and participatory engagement, providing adequate levels of information sharing about the project's objectives, potential costs, risks, and benefits.

During field visits conducted in April and November 2024, the project team presented updates on the project's progress and addressed specific concerns raised by stakeholders. These meetings provided an opportunity to introduce or reinforce the availability of the project's official communication channels, including contact details and access points for additional information or feedback.

Digital platforms, particularly WhatsApp, continued to serve as essential tools for maintaining active communication with stakeholders. This channel was emphasized for its accessibility and

widespread use in rural and remote areas of Brazil. In 2024, WhatsApp was actively utilized to share updates, address queries, and receive feedback. Messages were tailored using clear and localized language to ensure accessibility and comprehension for all community members, regardless of their digital literacy levels.

The project also prioritized transparency by updating its project summaries and full descriptions on the Verra Registry website. Stakeholders were informed of these updates and encouraged to access these resources during in-person meetings and through digital communications. The summary of the fourth monitoring report for VCS & CCB Verification, also available in Portuguese, was open for public comments from February 12, 2025, to March 14, 2025, on Verra, ensuring that remote stakeholders had the opportunity to engage with the project and provide feedback on it.

During the consultations, informational materials such as banners, folders, and updated maps of the project area were distributed to stakeholders. These materials outlined key project details, including the names of participating farms, expected benefits, and official communication channels. This ensured that all participants were aware of how to contact the project team and access further information.

Throughout 2024, the project's consultations reinforced its commitment to inclusivity and transparency. By combining direct engagement with the use of accessible communication tools, the project ensured that all stakeholders, including those in remote locations, were provided with sufficient information to make informed decisions and actively participate in the project.

These efforts demonstrate the project's dedication to fostering participatory processes, maintaining clear and accessible communication channels, and addressing stakeholder needs in a meaningful and inclusive manner.

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

The Stakeholder Engagement Procedure was developed to ensure the effective participation of all communities and interested stakeholders throughout all phases of the project—from its design to implementation, monitoring, and evaluation.

During the monitoring period, meetings and interviews were conducted with the communities. These interactions made it possible to map perceptions regarding the project's development and the activities implemented from the stakeholders' perspective. As a result, the process of validating the Theory of Change and the Impact Plan with these groups was initiated (see section 2.3.9).

Additionally, in November 2024, a specific consultation was conducted with farm workers who have pets. The objective was to understand their routine care for the animals and inform them about the project's intention to develop activities focused on animal health and zoonosis control. The project considers this topic relevant both for biodiversity conservation in the project area and for the health of the animals and their caregivers (see section 5.1.6).

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

The Rio Madeira Grouped REDD+ Project and its proponent, Future Carbon Group, uphold internationally recognized human rights standards, including the Universal Declaration of Human Rights, the United Nations Declaration on the Rights of Indigenous Peoples, ILO Convention 169 on Indigenous and Tribal Peoples, and the International Labour Organization's Declaration on Fundamental Principles and Rights at Work. The project ensures that its design and implementation processes are free from discrimination or complicity in violence, human rights abuses, or sexual harassment.

Future Carbon Group is committed to non-discrimination and promotes the inclusion and equal treatment of all workers, local communities, indigenous peoples, and other stakeholders involved in the project. This includes providing equal pay for equal work, regardless of gender, race, religion, sexual orientation, or other characteristics. Measures are in place to ensure that participation in project activities, consultations, and employment opportunities is equally accessible to all individuals, with special emphasis on fostering women's participation in project-related processes.

To safeguard against potential violations, Future Carbon's Compliance Department conducts due diligence prior to project initiation. This includes thorough analyses of the property and landowners to confirm the absence of any human rights violations, such as sexual harassment, forced labor, child labor, or human trafficking. These evaluations are reinforced during project implementation through regular on-site visits, stakeholder and landowner interviews, and documentation reviews.

Future Carbon Group's institutional policies and Code of Conduct strictly prohibit any form of discrimination or sexual harassment in all stages of project design and implementation. These policies actively promote social inclusion and provide a framework for addressing ethical concerns. Any grievances or potential violations can be reported via the Ethics Channel available on the Future Carbon Group website (https://contatoseguro.com.br/futureclimate). This secure and confidential platform ensures that all reported issues are addressed promptly and effectively.

Furthermore, Future Carbon is committed to gender equality and ensures that women have equal opportunities for participation and leadership in project consultations and activities. Specific measures include actively encouraging women to engage in consultation processes and ensuring their voices are considered during decision-making stages.

By maintaining these practices, the Rio Madeira Grouped REDD+ Project ensures a safe, inclusive, and equitable environment for all participants and stakeholders, upholding the highest ethical and human rights standards.

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

During the monitoring period, no grievances were received through the established communication channels, which include the email addresses forest@futurecarbon.com.br, socioambientalforest@futurecarbon.com.br, and faleconosco@futureclimate.com, as well as WhatsApp (+55 11 94183-7277) and informal interactions during field visits.

The grievance mechanism has been updated in 2024 to include a more robust procedure for receiving, recording, and resolving grievances, as outlined in the PO.SAM.02 Grievance and Request Management. This updated procedure ensures accessibility, transparency, and impartiality in addressing stakeholder concerns.

The communication channels were widely publicized through field visits and stakeholder consultations held in February 2024. These interactions aimed to ensure that all stakeholders, including local communities, have access to the grievance mechanism for ongoing consultation. Additionally, stakeholders were provided with informational materials, as detailed in section 2.3.3, to facilitate access to these communication channels.

Grievances received	Resolution and outcome
N/A	N/A

The updated grievance mechanism guarantees timely responses, with a maximum resolution timeframe of 30 calendar days for complex cases. All grievances, if raised, are tracked and recorded in Future Carbon's Grievance and Request Registration Document to ensure transparency and accountability.

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

The Rio Madeira Grouped REDD+ Project remains dedicated to building local capacity through comprehensive orientation and training programs for project workers and community members. During the 2024 monitoring period, the project mobilized a team of highly specialized personnel from Future Carbon in late November to support the project's initial phases. These professionals bring extensive expertise in monitoring activities in remote forest environments, local engagement and stakeholder articulation, and proficiency with monitoring equipment.

Training for Project Workers:

During this monitoring period, no local workers were directly hired for project implementation due to the project's focus on planning, baseline assessments, and structuring foundational systems. Instead, Future Carbon's experienced team was engaged to ensure the technical precision required during this critical stage. Their contributions include:

- Monitoring in remote forest areas, requiring adaptability and precision.
- Engaging and communicating effectively with diverse stakeholders, including local partners and community representatives.
- Employing advanced monitoring equipment and systems to ensure data accuracy.

To standardize knowledge retention and enhance reporting, the team has been guided to structure a monthly reporting pattern, which consolidates all relevant activities and findings into a consistent format. This initiative aims to ensure that information is thoroughly documented and can serve as a reference for future activities.

Community Engagement and Future Capacity Building:

The project recognizes the importance of long-term local involvement and the need for effective capacity-building measures. Plans are underway to involve local workers in future project phases, ensuring that the skills and knowledge shared during initial training are retained and expanded.

To prepare for this transition, a series of training topics has been outlined, focusing on key areas for capacity building. Below is a summary of the planned training sessions, their themes, descriptions, durations, and statuses:

Table 9. Training planned for future implementation – monitoring period overview

Topic	Training Focus	Status
Traditional Territories, Conservation Units and Socio-environmental Conflicts	Explore the legal frameworks that regulate traditional territories and protected areas. Discuss and analyze conflicts that may arise within the intersections of traditional territories, protected areas, and socio-environmental contexts.	Not implemented, Planned for 2025
Field Safety Integration	Integrate safety concepts into fieldwork practices, risk identification, emergency procedures, and the adherence to safety protocols. The training covered essential elements of trip preparation, including logistical considerations, equipment readiness, communication protocols, and emergency preparedness.	Not implemented, Planned for 2025
Theory of Change – part 1	Explore the fundamental concepts underlying a Theory of Change, including inputs, activities, outputs, outcomes, and the impact of a project. Establish clear cause-and-effect relationships.	Not implemented, Planned for 2025

Theory of Change – part 2	Learn how to integrate the Theory of Change into strategic planning, project design, and evaluation frameworks for project implementation and impact assessment.	Not implemented, Planned for 2025
QGIS	Build participants' proficiency in using open-source Geographic Information System software. Enable to import, manage, and organize spatial data within QGIS, including designing maps and employing spatial analysis techniques.	Not implemented, Planned for 2025
Qgis - Qfield Socio-Environmental	Provide an overview of the integration of QGIS and QField for socio-environmental data collection, including methods for data input, GPS tracking, and synchronizing collected field data.	Not implemented, Planned for 2025

Documentation and Knowledge Retention:

To ensure that local capacity is not lost, the project is committed to through documentation of all training-related activities. Records include attendance sheets, training materials, and participant feedback, which collectively form a robust knowledge base for ongoing and future training efforts.

By involving local workers in subsequent phases and implementing the planned training programs, the Rio Madeira Grouped REDD+ Project aims to build, sustain, and enhance local capacity, contributing to its long-term success and alignment with socio-environmental goals.

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

Both project entities already have staff who perform some activities related to the project, such as monitoring the property boundaries, identifying potential irregularities (e.g., invasions, timber theft, illegal hunting, etc.), fighting forest fires, and other activities related to forest area protection. However, these staff members do not perform activities exclusively for the Rio Madeira project, as they also engage in other agricultural activities on the farm.

In addition, all three entities rely on third-party companies hired to carry out regular patrols on the properties. These professionals work under a legal entity framework, being directly contracted by the landowners. In the second half of 2024, Future Carbon assigned a team of four professionals[74] specialized in forest area surveillance to the Rio Madeira Project. These professionals, who had already been working on other company projects and are not part of the project's stakeholder group or communities, were hired also under the legal entity model, to carry out initial protection activities and begin the process of identifying individuals in the communities and surrounding territory with the necessary skills to lead the planned activities. Specifically for the monitoring activity, the role would be Field Agent, and the main activities and responsibilities include: Regularly monitoring and patrolling the project area to prevent illegal activities such as deforestation, hunting, and illegal logging, as well as interventions in local wildlife and flora habitats; identifying and reporting any signs of environmental degradation or threats to the forest; fighting and/or assisting in fighting fires inside and around the property that threaten the project area, etc. starting monitoring with a specialized team is part of the strategy to identify the best local professionals for territorial protection activities, considering the high deforestation pressure in the region.

All locally generated positions by the Project will follow the guidelines defined in the Future Carbon Code of Conduct. The project proponent values regulated professions and favours the work of professionals with the appropriate qualifications. Furthermore, the project proponent rejects discriminatory practices in hiring, compensation, access to training, promotion, and dismissal or retirement based on race, ethnicity, caste, religion, disability, gender, sexual orientation, union affiliation, or political beliefs. Equal opportunities will be offered in terms of gender for employment and participation in consultations and project activities to ensure the participation of women during the project design and implementation.

All stages of the selection process and worker hiring are based on the criteria specified in the job description provided and require minimum qualifications.

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

For the identification and assessment of occupational risks that could arise due to project implementation, Project Proponent is in compliance with the mandatory applicable occupational health and safety laws and regulations established by the federal and state governments.

In this context, all risks present in the work environment to each function or activity carried out by all instances of the Rio Madeira Grouped REDD+ Project were identified, evaluated, and classified in accordance with the Brazilian Regulatory Standards (also known as NR' in Portuguese), which regulate and provide guidance on mandatory procedures related to occupational health and safety, as stated by the Brazilian Ministry of Labor.

[74] It is important to note that these professionals are not part of the project's stakeholder group or communities. Therefore, these hires do not meet the project's employability indicator.

The main tool to manage occupational risks for the project are the Risk Management Programs, which can be named Rural Work Risk Management Program (PGRTR[75]), Risk Management Program (PGR[76]), Preliminary Risk Analysis (PRA[77]). Although the name can vary, such programs aim to identify, control, train workers and track occupational health and safety risks. The following 2024 occupational programs were shared with VVB team:

- **Grupo ROVEMA:**
  - 2024 PGRTR from Fazenda Rio Madeira;
  - 2024 PGRTR from Fazenda Serra Verde;
  - 2024 PGR from Fazenda Rio Madeira;
  - 2024 PGR from Fazenda Serra Verde.
  - 2024 Fire prevention and fighting training
- **Grupo Leite:**
  - PGRTR from Fazenda Santa Carmem;
  - Work safety integration course.
- **Grupo Tupá:**
  - PGRTR from Fazenda Nova Fronteira.

It is worth mentioning specialized the abovementioned programs are developed by Health and Safety specialized companies.

Table 18. Measures to manage identified occupational risks

Activity	Risk(s)	Mitigation Measures
Forest Surveillance Monitoring	Falls, getting lost in isolated areas, exposure to venomous animals as snakes and spiders, conflicts with deforestation agents	Risk assessment was performed by specialized companies and results were shared with employees[78].
Biodiversity Monitoring		
Fire Fighting	Burns, dehydration, asphyxiation, exposure to extreme heat, firebreaks	During the project lifetime, farm employees will be trained in fire prevention and firefighting to structure the fire brigade. Such

[75] In Portuguese: Programa de Gerenciamento de Riscos de Trabalhadores Rurais (PGRTR)
[76] In Portuguese: Programa de Gerenciamento de Riscos (PGR)
[77] In Portuguese: Análise Preliminar de Risco (APR)
[78] Risk assessments are documented in the Programs PGR and PGRTR mentioned above. Both assessment and attendance lists were shared with VVB team.

		initiative is under planning and might be carried out from 2025 onwards.

2.4 Management Capacity

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

Throughout his time as the project proponent, Future Carbon Group has increasingly established itself as one of the most relevant and impactful companies specializing in forest conservation projects in the Amazon, ensuring the quality and effectiveness of REDD+ activities developed, standing out both in Brazil and internationally for its work with rural producers, forest owners, communities, and investors.

The monitoring of Rio Madeira Grouped REDD+ Project, since its inception and throughout this period, has required a wide range of technical skills from various areas of expertise, focusing on the development and management of forest conservation projects in the Amazon biome. This includes a deep understanding of methodologies related to the VCS and CCB standards from Verra, aligned with the development of AFOLU projects, such as the application of socioeconomic and territorial diagnostics, stakeholder engagement, biodiversity assessment and monitoring, management of community impacts, projections and modeling necessary for calculating forest carbon stocks, and the application of GIS, among others, to ensure the quality and effectiveness of the REDD+ activities carried out.

The project team consists of highly qualified multidisciplinary professionals for the planning, implementation, and monitoring of the Rio Madeira Grouped REDD+ Project, including professional researchers and academics specialized in biodiversity, social, and climate aspects, such as forest and environmental engineers, territorial and social analysts, spatial analysts in geoprocessing, and other related fields.

The management team of the Rio Madeira Grouped REDD+ Project comprises a wide range of staff and professionals, specifically the Forestry Team, involved in the technical REDD+ aspects of the project. Some of the technical skills required for the successful implementation of the project and specific activities of the collaborators who participated in the project during this period include:

Table 19. Key technical skills required by role

Roles	Required Technical Skills
Head of Forest	Supervision of the development, implementation, and monitoring of the high-level Forest REDD+ project, providing or sourcing technical assistance and support where necessary, to achieve project validation and certification and sale of carbon credits; Expertise in the planning, design, management, development and evaluation of REDD+ projects

	and carbon certification under Verra's Voluntary Carbon Standard (VCS) and Climate, Communities and Biodiversity Standards (CCBS); Relevant work experience in climate finance, voluntary carbon markets, carbon credit value chain or similar, and financial management of forest conservation projects; Experience in leading the REDD+ forestry technical team in a diverse portfolio of carbon projects in the Brazilian Amazon region; Knowledge of forest and/or landscape conservation issues, and related funding mechanisms and trends.
REDD+ Technical Coordinator	Technical expert on REDD+ and related methodologies, including Verra's Voluntary Carbon Standard (VCS) and Climate, Communities and Biodiversity Standards (CCBS), providing guidance on technical aspects of REDD+ programme design, implementation and monitoring, and follow-up to support capacity to develop and implement multiple projects simultaneously; Support the entire formulation of the project document (PD) and preparation of the due diligence response; Follow-up of external validation and verification bodies to project audit process; Lead the project field visit and audits processes.
REDD+ Technical Analyst	Experience in writing and developing full Project Document (PD) and Monitoring Report (MR), baselines, carbon accounting, leakage, additionality and risks of non-permanence, and managing the data essential for these calculations in various methodologies, including Avoided Unplanned Deforestation and Degradation, Avoided Planned Deforestation and Degradation, Afforestation, Reforestation and Revegetation based on VCS and CCB standards.
Socioenvironmental Coordination	Background experience in developing activities with social focus, stakeholder consultation and engagement for carbon projects, and analysis of drivers and causes of deforestation to establish project baseline; Ability to lead carbon projects involving multiple stakeholders across various sectors, geographies, and cultural backgrounds; Develop activities in conjunction with the community and monitoring and evaluation of biodiversity to formulate strategies and frameworks for REDD+ safeguards, including governance structures and monitoring systems; Provide technical guidance and support to define sustainable development impact accounting and assessment methodologies, including the establishment and monitoring of social and biodiversity co-benefit indicators in various AFOLU activities based on sustainable development objectives.
Socioenvironmental Analyst	Knowledge of social sciences and experience in approaching community engagement; communicating with stakeholders about opportunities to contribute to the collection and production of data and information on REDD+ activities;

	Experience in sustainable practices for local/rural development, conservation and management of biodiversity and ecosystem services, continuous monitoring of biodiversity indicators by service providers' specialists to ensure local species, their habitat, status, and protection; Experience in the application and development of socio-economic and territorial diagnostics; monitoring of socio-environmental indicators.
GIS Coordinator	Coordinate outsourced GIS mapping tasks; develop and select baseline model; generate and analyze satellite land use monitoring information on carbon stocks from deforestation rates and greenhouse gas emissions produced or avoided during the project.
GIS Analyst	Capacity to manage the Geographical Information System and databases and to produce all necessary cartographic analyses; Spatial data analysis for REDD+ projects based on proven methodologies using ArcGIS, QGIS, R and Google Earth Engine. Conducting projections and modelling necessary for the calculation of carbon stocks in forests.
Command and Control Lead Executive	Management of the Integrated Carbon Command and Control Center (CI3C), production of risk analyses, monitoring of threats and vulnerabilities and actions aimed at protecting project areas. The CI3C team is also responsible for monitoring the project areas via satellite images (updated every 7 days) and informing the field team and owners in case of any incident.

In addition to the skills of the internal Forestry team, during this period the partnership between Future Carbon and EMBRAPA[79] was formalized. The Brazilian Agricultural Research Corporation (Embrapa) was established by the country's federal government in 1973 to develop the technological foundation for a genuinely tropical model of agriculture and animal farming. The initiative has been tasked with providing Brazil with food security and a leading position in the international market for food, fiber and energy. Embrapa today is one of the largest agricultural research corporations of the world, with over half a century of contributions focused on innovation, efficiency, sustainability and social inclusion. The aim of this partnership is to train the Brazil nut extractors, present in instance 3, in good practices in the cultivation of the non-timber product, as well as optimizing the harvest from both a social and environmental point of view.

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

[79] Available at: https://www.embrapa.br/home

The resumes of the Project Management Team (PMT) members, along with their respective positions and qualifications, are detailed below. These serve as proof of their expertise and experience in successfully implementing forest management and carbon projects at a scale comparable to this project.

Name	Marcelo Hector Sabbagh Haddad
Role in the project	Head of Future Forest
Education	Environmental engineer and master's in environmental technology from the Institute of Technological Research (IPT)
Resume Summary	Marcelo has been active in the carbon market and in the development of projects to reduce greenhouse gas emissions since 2008. Marcelo is the Head of Future Forest, where he manages the company's carbon credit projects and other activities related to forest carbon projects. Marcelo developed approximately 55 carbon credit projects and participated in the audit of more than 200 monitoring reports during his period as the technical officer for Sustainable Carbon and Ecológica Assessoria.

Name	Gabriel Fernandes de Toledo Piza
Role in the project	REDD+ Technical Coordinator
Education	Environmental Engineer with Specialization at University of São Paulo (USP), and a master's degree at the University of Cádiz (UCA, Spain)
Resume Summary	Coordination of the team of technical analysts in the development and revision of REDD+ project documents, as well as the alignment of technical and commercial concepts. Over ten years of experience in consulting, construction, manufacturing, and climate change. He is currently Forestry Project Leader at Future Carbon. Between developing and monitoring carbon credit projects, Gabriel has worked on approximately 30 different projects by Future Carbon, Sustainable Carbon and Ecológica Assessoria.

Name	Igor Oliveira Ribeiro
Role in the project	GIS Coordinator
Education	Forestry Engineer from the Federal University of Espírito Santo, Master's and PhD in Climate and Environment (Geosciences) from the National Institute for Amazonian Research, with a sandwich period at the Harvard School of Engineering and Applied Science, focusing on remote sensing applied to the impacts of changes in land use and fires on the chemistry of the atmosphere in terms of biosphere-atmosphere interaction and climate impacts.

Resume Summary	Technical coordination in geoprocessing, remote sensing and spatial modelling of projects, including the team of internal technical analysts and external consultants. He has been working in the carbon market since 2019, providing consultancy services to companies to develop feasibility analyses for REDD+ projects. He has more than 10 years' experience in geotechnologies applied to land use change.

Name	Jéssica Guin
Role in the project	Socioenvironmental Coordinator
Education	Forestry Engineer from the Luiz de Queiroz College of Agriculture (Esalq/USP) and Specialist in Conservation, Restoration and Sustainable Use of Tropical Forests at the Yale School of Forestry and Environmental Studies.
Resume Summary	She is currently the Social and Environmental Coordinator at Future Forest. She has experience with the FSC (Forest Stewardship Council) Chain of Custody certification process and strategic forestry planning, but has more expertise in forest conservation projects, with a focus on the carbon market and nature-based solutions. In the last 3 years, she has participated in the development of 11 REDD+ projects, having worked on the validation, verification, public consultation, stakeholder engagement and implementation of socio-environmental activities.

Name	Joelson Geraldo Sampaio
Role in the project	Command and Control Lead Executive
Education	He has a degree in Law and a postgraduate degree in Public Security Management (UNEMAT/PMMT) and Intelligence Analysis (EsIMEx)
Resume Summary	Colonel of the Paid Reserve of the Military Police of the State of Mato Grosso, graduated from the Barro Branco Military Police Academy (PMESP). He was Cmt of the Special Operations Battalion (BOPE) and Operational Coordinator of PMMT. He chaired the Special Commission for Security of Major Events and coordinated the Integrated Regional Command and Control Center (Cuiabá Headquarters) in Operation Security WORLD CUP 2014. He ended his career as a PMMT Officer occupying the role of Deputy Secretary of State for Operational Integration at SESP/MT.

Name	Jade Cavalhieri
Role in the project	GIS Analyst

Education	Bachelor's degree in Sciences and Humanities and in Territorial Planning from the Federal University of ABC.
Resume Summary	Carrying out technical activities in geoprocessing and remote sensing processes and methods for the production and interpretation of REDD+ project analyses. She has professional experience in geotechnologies, geoprocessing, remote sensing and cartographic production, particularly in the areas of agricultural crop monitoring, protected area monitoring and sustainability promotion.

Name	Carolina Chiarello de Andrade
Role in the project	GIS Analyst
Education	Geographer graduated from the Fluminense Federal University (UFF)
Resume Summary	Carolina has 5 years of experience in the area of geotechnology with a focus on geoprocessing and remote sensing. Experience in developing REDD+ carbon projects. Knowledge of ArcGIS, QGIS and GEE.

Name	Mayara do Nascimento
Role in the project	REDD+ Technical Analyst
Education	Environmental and Sanitary Engineer, postgraduate in Environmental Licensing and Auditing
Resume Summary	Environmental and Sanitary Engineer, postgraduate in Licensing and Environmental Auditing and specialist in Project Management. She is currently a Technical Analyst, working on the development of REDD+ and ARR forestry projects, actively participating in the preparation of complementary project documents, audit visits and responses to findings. She has also worked on the design, validation, verification and registration of 5 projects in this segment.

Name	Yasmin Villa Nova Mascarenhas
Role in the project	Socio-environmental Analyst
Education	BA in Business Administration from São Judas Tadeu University.
Resume Summary	She has been working in the socio-environmental field since the beginning of 2023, carrying out visits and socio-environmental diagnoses in rural and vulnerable communities. In 2021, she worked in the third sector on environmental remediation and circular economy projects in contaminated areas, carrying out administrative activities, presenting workshops and seminars,

	mapping data, attracting investors, participating in and scripting a podcast on contaminated areas and possible sustainable solutions, as well as providing administrative support and assistance in dam failure projects. She has also had experience in the administrative and financial sector since August 2018, working with accounts payable and receivable, invoicing, purchasing, real estate, facilities and general administration.

Name	Maria Clara Cruz Moura
Role in the project	Socio-environmental Analyst
Education	Bachelor's degree in Forest Engineering and Degree in Agricultural Sciences at the University of São Paulo (USP).
Resume Summary	She has experience in environmental education, climate change public policy and agroecology since 2018. Worked for four years in rural extension with agrarian reform farmers, developing skills in technical assistance and community engagement. She has experience in developing indicators for the evaluation and monitoring of socio-environmental actions in collaboration with Brazilian Agricultural Research Corporation (EMBRAPA). In the private sector, she has experience in designing and implementing initiatives focused on the social organization of traditional communities, aiming to strengthen local capacities and enhance the value chain of sociobiodiversity products in the Amazon.

Name	Lucas de Souza
Role in the project	Biodiversity Analyst
Education	Bachelor's Degree in Biological Sciences (USP) with a teaching degree
Resume Summary	He has been working since 2020 on biodiversity conservation initiatives. In his academic background, he has been involved in developing tools to assess the potential risk of invasive species and is currently reviewing the impacts of offshore wind farms on seabirds. He also has experience in environmental education and the management and rehabilitation of wildlife. In the private sector, he has worked in the carbon market with forestry projects. He has experience with the CCB (Climate, Community, and Biodiversity) standard for co-benefits certification, with an emphasis on biodiversity conservation actions. Currently, he works as a Biodiversity Analyst at Future Climate Group, dedicated to advancing the company's biodiversity agenda.

Name	Júlia Maria Siqueira
Role in the project	Socio-environmental Analyst

Education	Bachelor's Degree in Forest Engineering and a Licentiate in Agricultural Sciences from the University of São Paulo
Resume Summary	She has experience in the socio-environmental field since 2019, focusing on environmental education, agroecology, and public policy. Involved in rural community extension projects centered on sustainability and urban forest resource management in municipal initiatives, with a background in public administration, forest restoration, and sustainable urban green space solutions. Currently part of the Future Climate Group, contributing to feasibility analyses for carbon credit generation in forestry and agrocarbon sectors using methodologies such as REDD+, ARR, SAF, biogas, and soil carbon, alongside market research to identify new project opportunities and initial due diligence of potential areas through geoprocessing tools. Additionally engaged in consulting projects related to forest conservation and restoration, with experience in Verra VCS, CCB standards, and the Socialcarbon standard.

Name	Paulo Zidane Ferreira da Silva
Role in the project	Monitoring Operator
Education	Bachelor's degree in Geography from the State University of Maranhão.
Resume Summary	He interned at the Brazilian Institute of Geography and Statistics (IBGE), participating in projects related to the supervision of the territorial base, and was part of the technical team for the Economic and Ecological Zoning of the State of Maranhão (Cerrado Biome and Coastal System Stage), where he carried out activities related to land use and vegetation cover mapping, climatology, and tourism. He has skills in geographic information systems (GIS) programs, such as Qgis and Arcgis software. He is currently a civil servant at the Maranhão Institute of Socioeconomic and Cartographic Studies (IMESC), conducting research for the Department of Environmental and Cartographic Studies, focusing on environmental, territorial, and political activities. He is also part of the Integrated Carbon Command and Control Center (CI3C) team as a satellite/remote monitoring analyst for private REDD+ projects.

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

While the Future Carbon Group has not entered partnerships for the development of the Rio Madeira Grouped REDD+ Project, the collaborative efforts showcased within the project structure emphasize its commitment to building and utilizing key partnerships where necessary.

As explained in the CCB PDD's Project Governance Structure section, the Forest Team plays a crucial role in coordinating daily activities crucial for the project's success. Not only does the team create and execute the PDD, but it also monitors the project's progress, providing necessary technical knowledge and support. Moreover, the Forest Team serves as the main contact for

building relationships with the project's landowners. This internal structure highlights the robust partnerships and organizational structure essential for maintaining a high-integrity carbon project.

The project proponent has established a notable collaboration with EMBRAPA for training nut extractors in "Good Practices for Brazil Nut Production." This collaboration not only enhances the project's social and educational aspects but also demonstrates a proactive approach to engaging and working with reputable organizations to improve the project's overall impact.

The Future Carbon Group's strategic collaborations with internal teams, environmental experts, and research institutions underscore a deliberate and effective approach to building the necessary alliances for the successful development and implementation of the Rio Madeira Grouped REDD+ Project.

No gaps or lack of relevant experience were identified in the previous CCB verification.

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

The financial cash management for the Rio Madeira Grouped REDD+ Project is systematically addressed within a dedicated Socio-environmental Committee. The committee comprises members from the Project Proponent and landowners who collaboratively strategize the best way to manage of financial resources arising from credit sales. The aim is to ensure proper allocation for each project activity, promoting co-benefits and preventing leakage.

As indicated in the Non-Permanence Risk Report, the Rio Madeira Grouped REDD+ Project's cash flow breakeven point, in the worst-case scenario corresponds to 6 years based on the current risk assessment. However, positive Net Present Value (NPV) is anticipated in the subsequent years. To avoid non-permanence of the project activities, the project proponent, landowners and co-investors contribute funds upfront until breakeven is achieved. The contributions paid are based on the management agreement, projected action plan, and periodically reviewed annual budgets, providing the Project Management Team (PMT) with visibility into anticipated expenses, including those related to project execution.

Thus, this proactive approach ensures that project ownerships have the necessary funds to maintain project activities until breakeven, as presented in the Non-Permanence Risk Report. No new instances were added to the project during this monitoring period.

The documents detailing Future Carbon's financial health are confidential and will be shared exclusively with VVB during the verification process.

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

Future Carbon Group has a common Code of Conduct that is used by the entire Economic Group to which it belongs, the Code is based on strict ethical principles and respect for the laws, which seeks to achieve a high level of integrity through a commitment to professionalism and transparency in its business and relationships.

The document establishes the guidelines and responsibilities for its managers, employees and service providers and internal and external relations to combat and encourage the denunciation of all forms of corruption, especially when its objective is the control of information, and also provides, as prohibited acts in the corporate environment, the maintenance of any involvement in irregular or corrupt practices, which ensures and strengthens the company's commitment to preventive practices and combat corruption and other similar illegalities established in the legislation in force (Lei Anticorrupção Brasileira (Lei 12.846/2013).

Regarding the measures adopted by other entities, since they have any kind of relationship with Future Carbon, they are responsible for knowing, accepting, respecting and disclosing the information in this Code of Conduct, as well as ensuring strict compliance with its provisions. In this way, before concluding any type of contract, the owner is obliged to accept the PP conditions relating to corrupt actions. In addition, an analysis of the conduct of business partners annually through labor and judicial certificates is carried out by legal team.

In addition, internationally, the countries of the Organization for Economic Cooperation and Development (OECD), among which is Brazil, in 2022 became an active key partner[80], setting the terms of the Convention on Combating Bribery of Foreign Public Officials in International Business Transactions[81] (also known as the "Anti-Bribery Convention"), which aims to ensure free competition untainted by corrupt practices. However, there are still major policy issues and challenges for Brazil to become an OECD member.

The other two main legal instruments adopted at the national level aimed at preventing acts of corruption and unethical attitudes are (i) Law No. 12,846/2013 (Anti-Corruption Law)[82] and (i) Law No. 8,429/1992 (Law on Administrative Misconduct)[83]. Law No. 12,846/2013, known as the Anti-Corruption Law, establishes rules regarding the administrative liability and civil liability of legal entities in the case of the practice of acts against the public administration, national and/or foreign.

According to Law 8,429/1992, administrative impropriety is an immorality qualified by the dishonesty and bad faith of the public agent. Both practices, in addition to the legal risks, could represent an enormous reputational risk for the project proponent and the project. Because of these risks, Future Carbon Legal Compliance aims to verify and, if possible, mitigate any involvement of the landowner (partner) in such practices.

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

[80] Implementing the OECD Anti-Bribery Convention in Brazil. Available at: https://www.oecd.org/corruption/anti-bribery/brazil-phase-4-report.pdf
[81] Convention on Combating Bribery of Foreign Public Officials in International Business Transactions. Available at: https://legalinstruments.oecd.org/en/instruments/OECD-LEGAL-0293
[82] LEI Nº 12.846, DE 1º DE AGOSTO DE 2013. Disponível em: https://www.planalto.gov.br/ccivil_03/_ato2011-2014/2013/lei/l12846.htm.
[83] LEI Nº 8.429, DE 2 DE JUNHO DE 1992. Disponível em: https://www.planalto.gov.br/ccivil_03/Leis/l8429.htm.

For the Rio Madeira Grouped REDD+ Project, some relevant information required by the VCS and/or CCB Standards is considered commercially sensitive and will not be included in the public version of the monitoring report. Instead, the project proponent will exclusively share this information with the VVB audit team during the verification process. Below is a list of commercially sensitive documents that will be made available to the VVB:

- Financial Performance Worksheet (budget) and other related documents;
- Agreements and contracts signed between the parties involved;
- Legal status and property right documents[84]; and
- Trade agreements.

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 national and local laws and regulations of Brazil that have gone into effect, changed or was eliminated since the project's last verification that are relevant to the project activities are listed in the table below:

[84] Legal status and property right documents are not explicit because they would expose the owner's name. However, section 2.5.1 of the PD indicates the registry number of each of the properties that compose the PA.

Table 20. Table of National and Local Laws

Regulation Instrument	No	Date	Implementation Sphere	Topic	Summary Description	Compliance
Law	15,042[85]	11-December-2024	Federal	**Brazilian Greenhouse Gas Emissions Trading System (SBCE)**	Establishes the Brazilian Greenhouse Gas Emissions Trading System (SBCE); and amends Laws 12.187, of December 29, 2009, 12.651, of May 25, 2012 (Forest Code), 6.385, of December 7, 1976 (Securities Commission Law), and 6,015, of December 31, 1973 (Public Records Law).	The Rio Madeira Project is registered and follows an international certification methodology, is audited by competent bodies and is always transparent in its processes. In addition, the project guarantees real and measurable compensation for greenhouse gas emissions by issuing carbon credits that can be sold.

[85] Available at: https://www.planalto.gov.br/ccivil_03/_ato2023-2026/2024/lei/L15042.htm

Law	12,187[86]	Updated date: 11-December-2024	Federal	**National Policy on Climate Change - PNMC**	Art 3, item XXVII provides for the scope of carbon credits: carbon credits: a tradable, autonomous asset, with the legal nature of a civil fruit in the case of forest preservation or reforestation carbon credits, except those originating from jurisdictional programs, provided that all the limitations imposed on such programs by this Law are respected, representing the effective retention, reduction of emissions or removal of 1 tCO2e (one ton of carbon dioxide equivalent), obtained from GHG reduction or removal projects or programs carried out by public or private entities, subject to national or international methodologies that adopt criteria and rules for measuring, reporting and verifying emissions, outside the Brazilian Greenhouse Gas Emissions Trading System (SBCE).	The project is in compliance, since the credits generated are obtained from GHG reduction or removal projects or programs carried out by public or private entities, subject to international methodology, adopting criteria and rules for measuring, reporting and verifying emissions.

[86] Available at: https://www.planalto.gov.br/ccivil_03/_ato2007-2010/2009/lei/l12187.htm

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

The Rio Madeira Grouped REDD+ Project adheres meticulously to all applicable laws and regulations safeguarding workers' rights. This commitment encompasses compliance with Decrees, Service Orders, and Normative Instructions outlined by the Ministry of Social Security and the Ministry of Labour. Furthermore, the project upholds Brazil's adherence to international agreements, particularly those enshrined in the fundamental conventions of the International Labour Organization (ILO), ratified and respected by the country.

Workers of the Future Carbon Group (project proponent) are formally associated with the company through fixed-term contracts, aligning with the regulations stipulated in Federal Decree-Law No. 5.452 (1943)[87], commonly known as the Consolidation of Labor Laws (CLT). This comprehensive framework addresses various aspects, including prescribed hourly, daily, weekly, and monthly working hours, regulations for the employment of minors and women, the definition of a minimum wage, provisions for worker safety and a secure work environment, the imposition of penalties for employer non-compliance, and the establishment of a judicial process to address all issues related to workers.

In instances where the provision of services falls outside the scope of labor laws or fails to adhere to the criteria defining an employment relationship, agreements are consistently crafted in accordance with the stipulations outlined in Law No. 10.406/2002, also known as the Brazilian Civil Code, specifically in articles 593 to 609.

When hired by the Future Carbon Group, employees are thoroughly briefed on their rights, as part of the Code of Conduct and Compliance Guideline, in strict accordance with the legal framework for worker rights specified in the PDD at the Validation stage. Beyond these protocols, the project proponent adopts additional frameworks to demonstrate its commitment to complying with labor laws and ensuring employees are well-informed about their rights. These include:

Table 21. Activities, processes and/or frameworks implemented to inform workers about their rights

Framework	Description	Application
Manuals and Internal Policies	Internal manuals and policies are designed to provide a clear delineation of employee rights and responsibilities.	The code of conduct and compliance guideline are made available to all employees, ensuring straightforward access and comprehension.

[87] Reference: DECRETO-LEI Nº 5.452, DE 1º DE MAIO DE 1943. Available at: https://www.planalto.gov.br/ccivil_03/decreto-lei/del5452.htm.

Periodic Trainings	Regular training sessions are conducted to keep employees abreast of changes in labor laws and reinforce fundamental concepts.	These training sessions, whether in-person, online, or a combination of both, cover internal policies, vacation protocols, and occupational safety measures.
Open Communication Channels	Effective communication channels are established to enable employees to address doubts and access information regarding their rights.	Electronic channels such as emails (gente@futurecarbon.com.br), intranet, or internal applications are used for regularly disseminating information about labor rights, legal updates, and news relevant to employees (https://contatoseguro.com.br/futurecarbon).Additionally, routine question-and-answer sessions are conducted, and suggestion boxes are made available for the human resources department.
Employee Feedback	Employees are regularly invited to provide feedback on the efficacy of communication and training practices related to labor rights.	Each employee is encouraged to participate annually in completing the "Satisfaction Survey", which aims to evaluate the organizational climate, identify areas for continuous improvement, and facilitate planning for the upcoming year.

For this monitoring period, the following labor laws and regulations continue in force:

Table 22. Relevant Laws and Regulations Related to Worker's Rights

Regulatory Framework	Description	Compliance
Constitution of the Federal Republic of Brazil (1988)[88]	Establishes Chapter II – Social Rights, Articles 7-11, which addressed: i) minimum wage, (ii) normal working hours; (iii) guidance on vacation and weekly leave; liv) guidance on maternity and paternity leave; (iv) recognition of collective bargaining; (vi) prohibition of discrimination.	Formal employees of the three instances and Future Carbon, registered under the CLT employment system (Federal Law No. 13.467, cited below), are guaranteed the rights mentioned in Chapter II of the Federal Constitution.
Federal Decree-Law Nº 5.452 (1943) – Consolidation of Working Laws (CLT)[89]	Approves the Consolidation of Labor Laws. Gave more clarification on the following subjects: (i) hourly, daily, weekly, and monthly working hours; (ii) employment of minors and women; (iii) establishment of a minimum wage; (iv) worker safety and safe working environments; (v) definition of penalties for employer's non-compliance; (vi) establishment of a judicial work-	Formal employees of the three instances and Future Carbon, registered under the CLT employment system (Federal Decree-Law No. 5.452 and Federal Law No. 13.467, cited below), are guaranteed the rights mentioned through the law.

[88] Available at: https://www.planalto.gov.br/ccivil_03/constituicao/constituicao.htm
[89] Available at: https://www.planalto.gov.br/ccivil_03/decreto-lei/del5452.htm

	related process for addressing all worker related issues.	
Federal Law Nº 5.889 (1973)[90]	Establishes Regular Norms for Rural Workers. Prior to 1973, rural workers did not have the same rights as urban workers. Federal Law Nº 5.889 established the equality between urban and rural workers, along with compensation overtime.	Farm employees who work in agricultural and livestock activities are covered by this law, which establishes rights and duties for rural workers.
Federal Law Nº 6.514 (1977)[91]	Provides for infractions and administrative sanctions to the environment, established the federal administrative process for the investigation of these infractions and make other provisions. Amendments to Chapter V of Title II of Consolidation of Labor Laws (CLT) on the matter of occupational safety, medicine, and other measures.	The employees of the 3 instances and Future Carbon have adequate working conditions regarding the health and safety of workers. This can be proven through the Prevention Programs adopted by the farms, such as the PGR.[92]
Federal Law nº 13.467 (2017)[93]	Amends articles of Federal Decree-Law Nº 5.452 (1943) - Consolidation of Working Laws (CLT) concerning working hours, holidays, compensatory time, overtime pay and wages.	Formal employees of the three instances and Future Carbon, registered under the CLT employment system are guaranteed the rights mentioned through the law.

2.5.3 Human Rights (VCS, 3.19)

The Rio Madeira Grouped REDD+ Project demonstrates its commitment to recognizing, respecting, and promoting the protection of the rights of Indigenous Peoples (IPs), Local Communities (LCs), and customary rights holders by adhering United Nations Declaration on the Rights of Indigenous Peoples and the International Labour Organization (ILO) Convention 169 on Indigenous and Tribal Peoples. This commitment includes ensuring their consultation and participation in decisions that affect, as well as adhering to key national human rights laws such as the Indigenous statute.

Moreover, the project has established an effective mechanism for resolving conflicts and grievances that may arise between the project proponents and all stakeholders, including IPs, LCs, or customary rights holders. This mechanism is culturally appropriate, accessible, and responsive to the needs and concerns of these communities.

[90] Available at: https://www.planalto.gov.br/ccivil_03/leis/l5889.htm
[91] Available at: https://www.planalto.gov.br/ccivil_03/leis/l6514.htm
[92] Occupational Risk Managament Program, which can also be named PGRTR or PPRA. Occupational programs were shared with VVB team.
[93] Available at: https://www.planalto.gov.br/ccivil_03/_ato2015-2018/2017/lei/l13467.htm

Table 23. Human Rights laws

Regulation	Description	Rio Madeira Project Compliance
Law No. 6.001/ 1973.[94]	Commonly known as the Statute of the Indian (Estatuto do Índio), establishes the legal framework for the protection of the rights of indigenous peoples in Brazil. It recognizes the social organization, customs, languages, and traditions of indigenous communities, while also implementing measures to protect their cultural heritage and ensure their physical and moral integrity.	The project complies with the Statute of the Indian by recognizing and respecting the rights of indigenous peoples. This includes respecting their territorial rights, supporting the preservation and promotion of indigenous cultural practices, languages, and traditions. The project activities are designed to prevent cultural assimilation and safeguard the integrity of indigenous identities.
Constitution of the Federal Republic of Brazil - 1988[95]	The Federal Constitution recognizes and protects the rights of indigenous peoples and quilombola communities, guaranteeing them territorial, cultural, social, and economic rights. It establishes that indigenous peoples are recognized for their social organization, customs, languages, beliefs, and traditions, as well as rights over the lands they traditionally occupy.	The project recognizes and respects the customary land tenure rights of IPs and LCs and ensures that they have secure and equitable access to and control over their lands, territories, and resources. This includes refraining from any activities that could lead to the displacement or dispossession of these communities from their lands.
Decree No. 6.040/2007[96]	Establishes the National Policy for the Sustainable Development of Traditional Peoples and Communities, recognizing and guaranteeing their	The project doesn't encroach upon or negatively impact indigenous lands, territories, and natural resources. It respects the demarcation and protection of indigenous territories established under Brazilian law.

[94] Available at: https://www.planalto.gov.br/ccivil_03/leis/l6001.htm
[95] Available at: https://www.planalto.gov.br/ccivil_03/constituicao/constituicao.htm
[96] Available at: https://www.planalto.gov.br/ccivil_03/_ato2007-2010/2007/decreto/d6040.htm

	territorial, cultural, and environmental rights.	
Law No. 9.985/2000[97]	Establishes the National System of Nature Conservation Units (SNUC) and sets guidelines for the creation, implementation, and management of conservation units. It recognizes and protects the rights of traditional communities, including quilombolas, riverside dwellers, artisanal fishermen, among others, ensuring their right to participate in decisions affecting their territories and ways of life.	The project contributes to the conservation and sustainable management of natural resources in alignment with the traditional ecological knowledge and practices of indigenous communities. It is important to emphasize that the project is being developed entirely on privately-owned properties. Thus, if there are any plans to extend project activities beyond the project area boundaries, including traditional communities, indigenous territories, or government-owned lands, prior consent will be sought. Therefore, the obtaining Free, Prior, and Informed Consent (FPIC) is not deemed necessary, as the project does not impact property rights.

In addition to these international conventions ratified by Brazil and national legislation, there are other regulations and decrees that also contribute to the protection of the rights of indigenous peoples and traditional communities, but these are the main ones. By adhering to this regulatory framework and practices, the Rio Madeira Grouped REDD+ Project can demonstrate its commitment to upholding the rights of IPs, LCs, and customary rights holders, and contribute to the achievement of sustainable development goals in line with international human rights standards and the interests of Indigenous Peoples (IPs) and Local Communities (LCs).

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

The Rio Madeira Grouped REDD+ Project reaffirms its commitment to preserving and protecting cultural heritage as an integral part of its activities. This is achieved through the following measures:

- **Geospatial and Socioenvironmental Assessments:** Before implementing any project activities, detailed socioenvironmental impact assessments are conducted as part of the due diligence process. Using geospatial mapping, these assessments identify potential risks to cultural heritage sites or practices, ensuring that project actions are planned to avoid or mitigate adverse impacts.

[97] Available at: https://www.planalto.gov.br/ccivil_03/leis/l9985.htm

- **Adherence to Cancun Safeguards:** The project remains aligned with the Cancun Safeguards, which guide REDD+ initiatives to address sensitive issues effectively. These safeguards encompass key principles such as respecting the rights of Indigenous Peoples and traditional communities, promoting social participation, conserving natural ecosystems, ensuring the permanence of achieved REDD+ results, and mitigating the risk of deforestation displacement. The project's compliance with these safeguards reinforces its commitment to upholding cultural heritage while achieving its conservation goals.

- **Integration of Traditional Practices and Partnerships:** In 2024, the project continued to integrate and promote traditional land management practices, advancing both conservation and cultural heritage preservation. A key focus remained on the sustainable extraction of Brazil nuts.

To strengthen these efforts, the project formalized a cooperation agreement with Embrapa Acre, aimed at enhancing the sustainable management of Brazil nuts through research and capacity-building initiatives. This partnership includes the development of best practices for harvesting and post-harvest handling, with training sessions tailored to the needs of local extractivist communities. By combining scientific expertise and traditional knowledge, this collaboration seeks to ensure the long-term sustainability of Brazil nut practices, supporting both environmental conservation and the preservation of cultural heritage.

Through these comprehensive actions, the Rio Madeira Grouped REDD+ Project demonstrates its ongoing commitment to preserving and protecting cultural heritage, fostering a harmonious balance between traditional practices and conservation objectives.

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

Disputes over rights to territories and resources	N/A
Respect for property rights	The Rio Madeira Grouped REDD+ Project maintains its commitment to recognizing, respecting, and supporting property rights within its project area and reference region. This commitment encompasses statutory and traditional rights of indigenous peoples (IPs), local communities (LCs), and other stakeholders. The following measures were implemented during the monitoring period to ensure property rights are protected and preserved: **Legal Framework and Documentation**: - All lands within the project area remain privately owned, with full rights of ownership, access, and use secured by title deeds or equivalent legal documentation.

	- The chain of ownership for all properties, from their detachment from the public domain to private ownership, is thoroughly documented and available for audit purposes. - All properties included in the project comply with legal requirements and have been duly authorized by the National Institute of Colonization and Agrarian Reform (INCRA). **Due Diligence Processes**: - The Compliance team of Future Carbon conducted regular due diligence assessments during the monitoring period to ensure that all land rights remain intact and protected. These assessments aim to mitigate any potential risks of property rights violations, verifying the integrity of ownership and compliance with legal frameworks. **Ethical Practices and Community Engagement**: - The project strictly adheres to ethical practices, avoiding encroachment on private property or relocation of individuals without their explicit consent. - In cases where disputes could arise, the project refrains from engaging in activities that might exacerbate conflicts or influence dispute outcomes. **Support for Local Communities and Stakeholders**: - Beyond safeguarding property rights, the project actively supports communities through programs that enhance their well-being and access to sustainable resources. This includes technical assistance and capacity-building initiatives aimed at strengthening land and resource management skills. As of this monitoring period, there are no known disputes with third parties regarding land ownership, natural resource use, or property use. The Rio Madeira Grouped REDD+ Project continues to uphold its principles of transparency and collaboration, ensuring the rights and interests of all stakeholders are respected and protected.

2.5.6 Benefit Sharing Mechanism (VCS, 3.18, 3.19)

Not applicable. Since the project has been developed in a private area, there are no issues related to customary rights in the project area. Also, there are no communities living within the project area and the Project Proponent's legal team hasn't identified any conflicts or disputes regarding property rights, real estate use, or access to natural resources in the project area. Therefore, benefit sharing is not applicable.

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

The project is being developed on private properties. Therefore, it does not aim to undertake any activities on properties outside the project area, traditional communities, indigenous lands, or government-owned lands without consent. In this sense, Free, Prior, and Informed Consent (FPIC) does not need to be obtained since property rights are not affected by the project. During field visits for the Socio-environmental Diagnosis, presentations were conducted for nearby communities and stakeholders mapped about the project's objectives and impacts. These moments also provided space for discussion, perceptions, and understanding of these stakeholders regarding the project's goals. Stakeholder engagement is a practice that will be adopted and conducted throughout the project's lifespan, aiming to facilitate effective and participatory dialogue.

Consent	Not applicable.
Outcome of FPIC	Not applicable.

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

No instances of involuntary removal or relocation have occurred as a consequence of the project activities. The project remains committed to upholding the rights and well-being of local communities, recognizing the significance of their cultural practices and activities to their overall livelihood.

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

In Rio Madeira Project context, there are some illegal activities that could affect the project's climate, community or biodiversity impact in the project zone, such as deforestation or animal poaching for example. During the monitoring period, the following measures was taken regarding these risks:

- Monitoring of project areas: in addition to the other measures related to monitoring the project area, such as field patrols and satellite images in the case of instance 2, during the monitoring period the protection of the areas was reinforced. The Future Carbon team began monitoring the borders of the project area using weekly Planet images. Another measure that has taken place is in relation to the field team. All instances now have employees who will be allocated 100% to patrolling the boundaries of the project area.

- Meetings on environmental education with the communities involved.

In addition to the actions already in place, as a way to combat and control illegal activities, the project aims to adopt mitigation and prevention measures, as presented in section 2.1.8 of the CCB PD, Project Activities and Theory of Change:

- Register a police report in cases of illegal actions in the project areas;

- Prevent illegal timber extraction and trade through intensified monitoring;
- Train communities on environmental education topics, sustainable use of non-timber forest resources, etc.;
- Promote technical training aimed at good agricultural practices associated with sustainable techniques;
- Promote training for income diversification.

Future Carbon's Compliance team is responsible for carrying out due diligence on all carbon credit and service projects. This analysis includes the evaluation of reputational, socio-environmental, labor and other relevant factors, with detailed reports and periodic updates. The analyses are carried out in order to ensure greater credibility and trust with stakeholders and full compliance with national and international regulations.

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

In the areas that compose the Rio Madeira Grouped REDD+ Project, there are no ongoing or unresolved conflicts, disputes, or legal issues regarding land rights, land use, or access to natural resources. There are also no disputes with third parties or squatters that challenge the right to property.

3 CLIMATE

3.1 Monitoring GHG Emission Reductions and Removals

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

Data / Parameter	CF
Data unit	tC/tdm
Description	Default value of carbon fraction in biomass
Source of data	2006 IPCC Guidelines for National Greenhouse Gas Inventories. Data can be found at Table 4.3, page 4.48 Available at: https://www.ipcc-nggip.iges.or.jp/public/2006gl/pdf/4_Volume4/V4_04_Ch4_Forest_Land.pdf
Value applied	0.47

Justification of choice of data or description of measurement methods and procedures applied	National Forest Inventory adopted the 2006 IPCC Guidelines for National Greenhouse Gas Inventories [98] values to carbon fraction of biomass, that has a default of 0.47.
Purpose of data	This parameter is used to calculate the baseline, project and leakage emissions from deforestation occurred in the baseline and project scenarios. Provides an estimate of the carbon content of the vegetation biomass within the project reference region.
Comments	If new and more accurate carbon fraction data become available, these can be used to estimate the net anthropogenic GHG emission reduction of the subsequent fixed baseline period. The value applied to this parameter follows the conversion factor used to estimate above ground biomass, relative to the abi_{cl} parameter. It is worth emphasizing the CF parameter follows the National Forest Inventory (IFN), as mentioned in the cell Justification of choice of data above.

Data / Parameter	$Ctot_{fcl}$
Data unit	tCO2e/ha
Description	Average carbon stock per hectare in anthropic areas in equilibrium of post-deforestation class fcl in tCO2e/ha
Source of data	The average classification of post-deforestation land-uses within the reference region during the historical reference period was conducted Sentinel classification. Average carbon stocks of pastureland, agriculture and other land uses – National GHG Emissions Communication of Brazil to the UNFCCC (2019) Page 296 - Available at: https://www.gov.br/mcti/pt-br/acompanhe-o-mcti/sirene/publicacoes/comunicacoes-nacionais-do-brasil-a-unfccc/arquivos/3tcn_volume_3.pdf Secondary Forest average carbon stocks - Pereira, Izaura Cristina Nunes. Estoque de biomassa e carbono florestal em unidades de paisagem na Amazônia: uma análise a partir da abordagem metodológica. Universidade Federal do Pará, , Belém, 2013. Available at: https://ppgdstu.propesp.ufpa.br/ARQUIVOS/teses/TESES/2013/IZAURA%20CRISTINA%20NUNES%20PEREIRA.pdf Belowground biomass – Root to shoot ratio available at VM0015.

[98] 2006 IPCC Guidelines for National Greenhouse Gas Inventories. Table 4.3, page 4.48 . Available at: https://www.ipcc-nggip.iges.or.jp/public/2006gl/pdf/4_Volume4/V4_04_Ch4_Forest_Land.pdf

	A weighted average of the post-deforestation carbon stocks was done, considering the % of area for each land use.
Value applied	Ctotfcl ± 90% (within PA): 41.39 Ctotfcl ± 90% (within LB): 28.38
Justification of choice of data or description of measurement methods and procedures applied	Most of post-deforestation land uses within the reference region is composed by pasturelands. In order to estimate the post-deforestation carbon stocks, the average carbon stocks of pasturelands, agriculture and other land uses were taken from the National GHG Emissions Communication of Brazil to the UNFCCC (2019). For secondary forests, a regional study was conducted. Most secondary forests in the Brazilian Amazon are young. In 2017, 65% of secondary forests was ≤10 years old. On average, 35% of annual land abandonment to secondary forests was re-cleared within 5 years, and 57% within 10 years. The half-life of secondary forests is 8 years, on average, which is also the same value found by other study that concludes that more than 50% of the secondary forests in the Amazon biome have less than 8 years old. According to the referenced study, conducted in the State of Pará, that analyzed the carbon stocks of a secondary forest with 14 years old, the average carbon stock in above ground biomass is around 19 tC/ha. Below ground biomass was estimated through the root-to-shoot ratio from the applied methodology. Therefore, the average value for secondary forests is around 22.8 tC/ha.
Purpose of data	This parameter is used to calculate the baseline emissions from deforestation occurred in the baseline scenario. Provides an average of the post-deforestation carbon stock per hectare within the reference region.
Comments	If new and more accurate biomass stock data become available, these can be used to estimate the net anthropogenic GHG emission reduction of the subsequent fixed baseline period. According to the adopted methodology, if uncertainty is higher than 10%, the lower boundary of the 90% confidence interval should be considered for final non-forest class in the leakage belt. In the other hand, the same error condition implies that the higher boundary of the 90% confidence interval should be considered for final non-forest class in the project area, as follows: Please see detailed calculation at CCB+VCS 4th MR Spreadsheet Table 16p.

Data / Parameter	DLF

Data unit	%
Description	Displacement Leakage Factor
Source of data	According to VCS requirements, where the applied methodology requires the quantification of activity-shifting leakage, projects may apply the optional default activity-shifting leakage deduction of 15 percent to the gross GHG emission reductions and/or removals.
Value applied	15
Justification of choice of data or description of measurement methods and procedures applied	The DLF was estimated as 15%, based on default value of the VCS requirements, where the applied methodology requires the quantification of activity-shifting leakage
Purpose of data	This parameter is used to calculate leakage emissions in the baseline scenario due to activity displacement leakage, providing an ex ante estimation of the decrease in carbon stocks and increase in GHG emissions. This value was calculated based on the percent of deforestation expected to be displaced outside the project boundary due to the implementation of the AUD project activity.
Comments	Ex post monitoring of the leakage belt will be done to determine deforestation rate outside the project area and the leakage emissions and carbon stock decrease.

Data / Parameter	Dm
Data unit	g/cm^3
Description	Mean wood density
Source of data	NOGUEIRA, E. M. Densidade de Madeira e Alometria de Árvores em Florestas do 'Arco do Desmatamento': Implicações para Biomassa e Emissão de Carbono a partir de Mudanças de Uso da Terra na Amazônia Brasileira (Wood Density and Tree Allometry in 'Arc of Deforestation' Forests: Implications for Biomass and Carbon Emissions from Land Use Change in the Brazilian Amazon). 2008. 151 pages. Doctor Thesis - Tropical Rainforest Science Course, INPA, Manaus, 2008. Information available at page 38, Table 2. Available at: < https://repositorio.inpa.gov.br/bitstream/1/4959/2/Euler_Nogueira.pdf>
Value applied	0.589

Justification of choice of data or description of measurement methods and procedures applied	The mean wood density presented in Nogueira (2008) was obtained from the Brazilian Amazon, where the project region is located. The value is for the Open Tropical Rainforest in the state of Rondônia. (Table 3 of the referred study).
Purpose of data	This parameter is used to calculate baseline, project and leakage emissions through the conversion from m^3 to tons for estimating above-ground biomass from local forest inventories.
Comments	Furthermore, it is also used to calculate project emissions from logging activities occurred in the project scenario due to sustainable forest management. Carbon stock decrease due to planned logging activities were calculated through multiplying the harvested volume by the mean wood density. Carbon stock increase due to natural regeneration after periodical harvest cycle can be calculated through multiplying the mean annual increment by the mean wood density.

Data / Parameter	$\Delta CBSLLK_t$
Data unit	tCO2e
Description	Annual carbon stock changes in leakage management areas in the baseline case at year t
Source of data	- Planned interventions proposed by the project proponent. - Remote sensing and GIS.
Value applied	0
Justification of choice of data or description of measurement methods and procedures applied	Leakage prevention activities generating a decrease in carbon stocks should be estimated ex ante and accounted. The leakage prevention measures proposed by the present project do not include decrease in carbon stocks due to activities implemented in the leakage management area.
Purpose of data	This parameter was used to calculate leakage emissions in the baseline scenario due to leakage prevention measures implemented in the leakage management area. It provides an *ex ante* estimation of the decrease in carbon stocks due to the activities implemented.
Comments	Since leakage management areas are non-forest areas, the projected carbon stock change is 0. This parameter will be updated at each renewal of fixed baseline period. For detailed information on this parameter calculation, please see ER sheet, Table 30c.

Data / Parameter	EBBBSLPAt
Data unit	tCO2e
Description	Baseline non-CO2 emissions from forest fire at year t in the project area during the monitoring period
Source of data	Remote sensing data and GIS, supervisor reports.
Value applied	15,869.09 (Annual value to non-CO2 emissions due to biomass burning within the project area during the crediting period)
Justification of choice of data or description of measurement methods and procedures applied	Slash-and-burn deforestation to clear the area is carried out for subsistence agriculture, which is the main cause of deforestation within the project area. Therefore, baseline deforestation in the project area involves fire and all above ground biomass is burnt. Non-CO_2 emissions from biomass burning are calculated according to requirements of methodology VM0015 v1.1. In order to estimate non-CO_2 emissions from forest fires, the average percentage of the area which contemplates the three municipalities within the RR that was cleared by burning for other land uses involving deforestation, such as cattle raising and farming (Fburnt), and the average of biomass that has commercial value, and could be removed prior to clear cutting and burning (Pburnt,p) were estimated, either for the baseline and project case. Baseline deforestation in the project area involves fire and all above ground biomass is burnt to clear the area. Therefore, this parameter is estimated as the multiplication of the annual area of deforestation of initial forest classes in the project area in the baseline scenario (ABSLPAicl,t) times the total GHG emission from biomass burning in initial forest classes (EBBtoticl,t).
Purpose of data	This parameter is used to calculate non-CO2 emissions due to forest fires within the project area in the baseline scenario, providing an ex-ante estimation.
Comments	Ex post monitoring of forest fires and non-CO2 emissions (EBBPSPAt) will be done to determine GHG emissions within the project area (when the forest fire was significant). For detailed information on this parameter calculation, please see ER sheet, Table 24.

Data / Parameter	$Fburnt_{icl}$
Data unit	%
Description	Proportion of forest area burned during the historical reference period in the forest class.

Source of data	*Fburnt* data source: 3ª Comunicação nacional do Brasil à convenção-quadro das Nações Unidas sobre Mudança do Clima (3rd national communication to UNFCCC) – volume 3, page 269, table 136[99]
Value applied	45
Justification of choice of data or description of measurement methods and procedures applied	Official data from Brazilian Government. The data considers the combustion factor for the phytophysiognomies "Florestas Ombrófilas Abertas", which can be considered similar to Open Submontane Tropical Rainforest.
Purpose of data	This parameter is the average percentage of the area within the RR that was cleared by burning for other land uses involving deforestation, such as cattle raising and farming, and is used to calculate baseline and project non-CO2 emissions from forest fire at year t in the project area (parameter EBBBSLPAt).
Comments	Monitoring is done only once at project start. For detailed information on this parameter calculation, please see ER sheet, Table 23.

Data / Parameter	$Pburnt_{icl}$
Data unit	%
Description	Average proportion of mass burnt in the carbon pool in the forest class
Source of data	Measured or estimated from literature. Pburnt data source: Anderson LO, Aragão LE, Gloor M, et al. **Disentangling the contribution of multiple land covers to fire-mediated carbon emissions in Amazonia during the 2010 drought**. Global Biogeochem Cycles. 2015; 29 (10):1739-1753. Doi: 10.1002/2014GB005008. Available at <https://agupubs.onlinelibrary.wiley.com/doi/10.1002/2014GB005008>.
Value applied	78
Justification of choice of data or description of measurement methods and procedures applied	Pburnt was estimated using the average biomass per hectare that has commercial value and could be removed prior to clear cutting and burning. Based on literature, an average value of 61.6 m^3/ha was obtained, which would correspond to approximately 11% of the total biomass in 1 ha. In this

[99] Available at https://www.gov.br/mcti/pt-br/acompanhe-o-mcti/sirene/publicacoes/relatorios-de-referencia-setorial

	way, the remaining is burned to clear the area, therefore, its new value is 88.6%. However, due to the lack of literature estimates, a study from the Brazilian Amazon in the Cerrado vegetation was used for the comparison. This study reported that the total biomass consumed by fires varies from 72% to 84% (average 78%) in denser Cerrado types, which is a forest vegetation. The most conservative value between these two estimates were used, i.e., Pburnt was estimated as 78%. It is important to note that slash and burn practices are commonly used in the Amazon region to clear the area for other land uses thus, when burning an area, the main objective is to completely remove all the remaining biomass. Therefore, assuming that 78% of the biomass is combusted, there would still be a 22% remaining biomass that shall be left to decompose, which also emits GHG to the atmosphere in this process.
Purpose of data	This parameter is the average of biomass that has commercial value, and could be removed prior to clear cutting and burning, and is used to calculate baseline and project non-CO_2 emissions from forest fire at year t in the project area (parameter EBBBSLPAt).
Comments	Monitoring is done only once at project start. For detailed information on this parameter calculation, please see ER sheet, Table 23.

Data / Parameter	EI
Data unit	%
Description	*Ex ante* estimated effectiveness index
Source of data	VCS Standard
Value applied	85
Justification of choice of data or description of measurement methods and procedures applied	Based on the VCS Standard, optional default activity shifting leakage deduction of 15% to the gross GHG emission reductions and/or removals. It was then applied to the ex-ante estimate of net carbon stock change in the project area under the project scenario. Based on the comparison between ex post and ex ante deforestation of similar REDD projects developed in Brazil, available in verified reports in VERRA database up to date.
Purpose of data	This parameter is used to calculate project emissions in the baseline scenario. Provides an ex ante estimation of the carbon stock changes due to unavoidable unplanned deforestation within the project area, based on the effectiveness of the proposed project activities to reduce the deforestation.

Comments	*Ex post* monitoring of the project area will be done to determine deforestation rate and the project emissions. This parameter will be updated at each renewal of fixed baseline period.

Data / Parameter	Logging damage factor (LDF)
Data unit	m^3/m^3 of harvested timber
Description	The logging damage factor (LDF) is a representation of the quantity of emissions that will ultimately arise per unit of extracted timber (m^3). These emissions arise from the non-commercial portion of the felled trees (the branched and stump) and trees incidentally killed during felling.
Source of data	Feldpausch et al. When big trees fall: Damage and carbon export by reduced impact logging in southern Amazonia. Forest Ecology and Management 219 (2005) 199–215. Available at: < https://www.sciencedirect.com/science/article/abs/pii/S0378112705005232?via%3Dihub>
Value applied	2.0174
Justification of choice of data or description of measurement methods and procedures applied	This parameter is added to the harvested timber volume intensity in order to calculate carbon stock decrease from planned logging activities at each forest class. The emissions resulting directly from logging are calculated by estimating the emissions resulting from dead wood created in each logging gap measured divided by the volume of wood created, adding skidder trails damage. According to Feldpausch et al. (2005), Table 6 pag 209, the mean Coarse woody debris returned to the soil as necromass following logging and damage in: (1) tree felling gap formation (trees killed by tree-fall), (2) residual canopy from the felled tree, (3) road, (4) deck construction (whole trees plowed to the ground) and (5) skid maneuvering during logging, is about 6.9 Mg C/ha. According to section 4.3 (pg 212) from this same study, this represents 2.4 times the carbon taken off site in logs. However, the MR already takes into account as planned deforestation the roads and decks constructions, which represent around 16% of the total damage. Therefore, the LDF is 2.4 * (1-0,159) = 2.0174.
Purpose of data	This parameter is used to calculate project emissions from logging activities occurred in the project scenario due to sustainable forest management, specifically for the calculation of the carbon stock decrease due to planned logging activities in the project area.
Comments	If no monitoring data is available, SFMP data shall be used.

3.1.2 Data and Parameters Monitored (VCS, 3.16)

Data / Parameter	ab_{icl}
Data unit	Mg/ha
Description	Average biomass stock per hectare in the above-ground biomass pool of initial forest class icl in Mg/ha.
Source of data	Land use data filtering was taken from National Forest Inventory. Available at <https://dados.florestal.gov.br/pt_BR/dataset/uso-da-terra-por-uf-ifn> Average values for the above-ground biomass were taken from the following study: National Forest Inventory, Rondonia state, 2019. Available at: <https://snif.florestal.gov.br/images/pdf/publicacoes/periodo_eleitoral/publicacoes_ifn/relatorios/IFN_RO_2019_periodo_eleitoral.pdf>
Description of measurement methods and procedures to be applied	The following sources will be monitored: - Biomass stock surveys - Periodic reports from area supervisor - Local Forest Inventories
Frequency of monitoring/recording	Whenever current study should be replaced to meet methodology requirements.
Value applied	

	Above-ground biomass			
	ab_{icl} (Mg/ha)			
ID_{icl}	Vegetation	Reference Region	Project Area	Leakage Belt
1	Forest	238.70	238.70	238.70

Monitoring equipment	No monitoring equipment is used to determine this parameter.
QA/QC procedures to be applied	Data shall be in accordance with VM0015 v1.1 requirements: • *The data are less than 10 years old:* the IFN publication dates from 2020. • *The data are derived from multiple measurement plots:* measurements were conducted in multiple plots, including areas within the project site. • *All species above a minimum diameter are included in the inventories:* as stated in Step 2 above, forest species with a diameter at breast height (DBH) equal to or greater than 10 cm were included.

	• *The minimum diameter for trees included is 30 cm or less at breast height (DBH):* as noted above, species with DBH equal to or greater than 10 cm were considered. • *Data are sampled from good coverage of the classes over which they will be extrapolated:* as shown in the Results section, error margins were considered to ensure accurate extrapolation.
Purpose of data	This parameter is used to calculate baseline emissions, project emissions and leakage emissions in both baseline and project scenarios.
Calculation method	To estimate the carbon stock relevant to the Rio Madeira Project, a GIS-based analysis was conducted using data from the National Forest Inventory *(Inventário Florestal Nacional - IFN)*. This analysis was carried out in the following steps: <u>1. Land Use Data Filtering</u> Land use classes were accessed for each subplot of each sampling subunit in the National Forest Inventory. The following filters were applied: - Land use classified as "Mature Forest (FM)"; - Subplots with no impediments ("N"); - Unique sampling units located within the "Open Ombrophilous Forest" vegetation type, based on phytophysiognomy data from IBGE. <u>2. Filtering of Forest Species Data</u> Using the filtered dataset from step 1, tree species data with diameter at breast height (DBH) ≥ 10 cm were analyzed. A new filter was applied to include only the sampling subunits that matched the previously selected data. <u>3. Above-Ground Biomass (AGB) Calculation</u> For each tree in the selected sampling subunits, the above-ground dry biomass (AGB, in Mg/ha) was calculated using the equation by Brown et al. (1995): $Bs= 38,49-11,79dbh+1,193\ dbh^2$ Where dbh stands for diameter at breast height Then, the biomass of all trees in each subunit was summed. To calculate AGB in Mg/ha, the total biomass was divided by the sum of the subplot areas selected in step 1. <u>4. Final Statistics</u> Finally, the following statistics were calculated: - Mean AGB

	- Standard deviation - Standard error - Absolute uncertainty at 90% confidence level - Percentage uncertainty at 90% confidence level The value obtained through this analysis was: Mean AGB biomass (Mg/ha): 275.83 Standard deviation of AGB biomass (Mg/ha): 192.22 Standard error of AGB biomass (Mg/ha): 12.23 Absolute uncertainty of AGB biomass (Mg/ha) at 90% confidence level: 20.19 Percentage uncertainty of AGB biomass (%) at 90% confidence level: 7.32
Comments	<u>5. SFMP discount</u> As some of the properties carried out or still executing logging exploitation, it was applied a SFMP discount to the carbon stock. The study by Pantoja (2017)[100] was used as reference. Pantoja analyzes changes in forest cover caused by logging activities in a forest management area in the state of Acre in part of an Exploited Unit between 2013 and 2015. According to Table 12 available below, a negative rate of change was observed in comparison to the non-harvested plots. The average rate of biomass change in the five harvested plots was -13.46% (Plot 1: -16.6%, Plot 3: -0.1%, Plot 6: -13.1%, Plot 7: -22.9%, and Plot 9: -14.6%). Therefore, to maintain a conservative approach, the average reduction due to forest management-based logging was applied as a discount to the average biomass per hectare.

Tabela 12. Valores de biomassa medidos nas parcelas permanentes da UPA-3 e a taxa de mudança para cada parcela.

Parcela	Biomassa (Mg.ha-1)		Taxa de
	2013	2015	mudança (%)
1	250,0	208,5	-16,6
2	144,1	143,9	-0,1
3	285,4	285,0	-0,1
4	181,0	185,0	2,2
5	275,7	283,24	2,7
6	309,8	269,3	-13,1
7	326,4	251,6	-22,9
8	239,5	253,9	6,0
9	176,3	150,6	-14,6
10	174,6	176,8	1,3
Total	2362,7	2207,7	

[100] PANTOJA, Nara Vidal. Alteração da cobertura florestal e biomassa em área de manejo florestal no estado do Acre integrando dados de campo e sensores remotos. Manaus, 2017. Table 12, Page 78. Available at: https://repositorio.inpa.gov.br/bitstream/1/4983/1/Nara_Pantoja.pdf

	Finally, for the Rio Madeira Project, the value of **238.70 Mg/ha** was applied to aboveground biomass. The values will be reassessed every 6 years or when data is more than 10 years old, whichever occurs first.[101] For detailed information on this parameter calculation, please see ER sheet, Table 'Carbon Stock'.

Data / Parameter	bb_{icl}
Data unit	Mg/ha
Description	Average biomass stock per hectare in the below-ground biomass pool of initial forest class icl in Mg/ha.
Source of data	Average values for the below-ground biomass were taken from the applied methodology VM0015 v1.1, which estimates a root-to-shoot ratio of 0.24 for tropical rainforest having above ground biomass values above 125 tons/ha, and 0.20 for values below 125 tons/ha.
Description of measurement methods and procedures to be applied	The following sources will be monitored: - Biomass stock surveys - Periodic reports from area supervisor - Local Forest Inventories
Frequency of monitoring/recording	Whenever current study should be replaced to meet methodology requirements.
Value applied	

	Below-ground biomass			
	bb_{icl} (Mg/ha)			
ID_{icl}	Vegetation	Reference Region	Project Area	Leakage Belt
1	Forest	57.29	57.29	57.29

Monitoring equipment	No monitoring equipment is used to determine this parameter.
QA/QC procedures to be applied	Data shall be in accordance to VM0015 v1.1 requirements
Purpose of data	This parameter is used to calculate baseline, project and leakage emissions in the baseline and project scenarios.
Calculation method	Calculation according to the applied methodology VM0015 v1.1, which estimates a root-to-shoot ratio of 0.24 for tropical rainforest having above ground biomass values above 125 tons/ha, and 0.20 for values below 125 tons/ha.

[101] The above ground biomass has been updated for this monitoring period, since the previous study have more than 10 years. For more information, please see section 2.2.5 Project Description Deviations and the ER sheet, table Carbon Stock

Comments	The values will be reassessed every 6 years or when data is more than 10 years old, whichever occurs first. For detailed information on this parameter calculation, please see ER sheet, Table 15.

Data / Parameter	$ACPA_{icl,t}$
Data unit	ha
Description	Annual area within the Project Area affected by catastrophic events at year t.
Source of data	• INMET[102] • INPE[103] • NHC[104]
Description of measurement methods and procedures to be applied	As this is secondary data, the measurement methods are available on the institutions' websites.[105][106][107]
Frequency of monitoring/recording	At each time a catastrophic event occurs or each monitoring report.
Value monitored	The value is calculated ex-post at each time a catastrophic event occurs, when significant. During the present monitoring period, there were no catastrophic events, so the affected area was 0.
Monitoring equipment	No monitoring equipment is used to determine this parameter.
QA/QC procedures to be applied	• INPE (National Institute for Space Research) is a Brazilian federal institute dedicated to space research and exploration, as well as being a Research Unit of the Ministry of Science, Technology and Innovations (MCTI). As an internationally renowned body, it follows strict standards and procedures and makes its data and results publicly available in a transparent manner. • INMET (National Institute of Meteorology) is the federal agency responsible for weather and climate measurements in Brazil. INMET represents Brazil at the World Meteorological Organization

[102] INMET. Instituto Nacional de Meteorologia. Available at: < https://mapas.inmet.gov.br >.
[103] INPE. Instituto Nacional de Pesquisas Espaciais. Available at: < https://previsaonumerica.cptec.inpe.br/>.
[104] NHC. National Hurricane Center and Central Pacific Hurricane Center. Available at: < https://www.nhc.noaa.gov/aboutsshws.php>.
[105] Available at: < http://lim.cptec.inpe.br/>
[106] Available at: <https://www.cemtec.ms.gov.br/wp-content/uploads/2019/02/Nota_Tecnica-Rede_estacoes_INMET.pdf>
[107] Available at: <https://www.nhc.noaa.gov/aboutsshws.php>

	(WMO) and can be considered a reliable institution for a number of reasons, such as being linked to the Ministry of Agriculture, Livestock and Supply (MAPA) and having its work recognized and regulated by the federal government, which reinforces its credibility and importance in the national meteorology system. • Finally, the National Hurricane Center is the division of the United States' NOAA/National Weather Service responsible for tracking and predicting tropical weather systems in some places. In addition to being made up of a team of experts on the subject, the NHC uses cutting-edge technologies to forecast natural phenomena and is recognized throughout the world. Given the credibility and knowledge of these bodies, it can be said that a QA/QC was applied to the generation of the data used in this parameter.
Purpose of the data	This parameter is used to calculate project emissions in the project scenario. Provides an ex post estimation of the area affected by catastrophic events within the project area.
Calculation method	Research was carried out on the websites of the local authorities mentioned above to verify that there had been no catastrophic events during the monitored period. To this end, was considered the types of damage listed on the National Hurricane Center website, where Sustained Winds must be between 209-251 km/h to be characterized as a catastrophic event. For the Lábrea weather station (this was chosen because it is the closest station to the project region and offers complete data for the monitored period), the wind speed did not exceed 5.8 m/s and the wind gust did not exceed 9.6 m/s. Therefore, there was no extreme or catastrophic event during the monitored period. The supporting documents were shared with VVB team.
Comments	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.

Data / Parameter	$ABSLLK_t$
Data unit	Ha
Description	Annual area of deforestation within the leakage belt at year t.
Source of data	• Previous monitoring data (2023) • Sentinel-2A Classified image for the Monitoring Period (2024).

<table>
<tr><td>Description of measurement methods and procedures to be applied</td><td>A classified mosaic image was generated using Sentinel imagery with a 10-meter resolution to produce land use data for the monitoring period. This data was then compared with historical data from previous years to analyze and address the land use dynamics that occurred. The entire procedure has been thoroughly documented in section 3.1.3, in accordance with the requirements outlined in VM0015 v1.1, ensuring transparency. For a comprehensive understanding of the methods and processes employed, please refer to section 3.1.3.</td></tr>
<tr><td>Frequency of monitoring/recording</td><td>Annually</td></tr>
<tr><td>Value monitored</td><td>The table below shows the deforestation within the leakage belt during the monitored period.
<table>
<tr><th>Rio Madeira Grouped REDD+ Project</th><th>$ABSLLK_t$ (ha) in 2024</th></tr>
<tr><td>Total</td><td>496.05</td></tr>
</table></td></tr>
<tr><td>Monitoring equipment</td><td>Remote sensing and GIS analysis tools such as QGIS and Phyton. The monitoring process is detailed in section 3.1.3.</td></tr>
<tr><td>QA/QC procedures to be applied</td><td>Quality Assurance:
Pre-classification filtering of clouds and shadows using the enhanced Cloud Score+ method.
Collection of training samples from stable classes across the time series.
Comparison of classification results with previous MapBiomas products.
Calculation of accuracy metrics, including producer, user, and overall accuracy.
Visual inspection of higher-quality images (e.g., Planet, with 5-meter resolution) during the user accuracy validation step.
Weekly monitoring outputs produced through visual inspection using Planet imagery (5-meter resolution).
Quality Control:
Analysis of MODIS images from the past ten years to define the mosaic periods.
Application of cloud cover filters to pre-select images.
Post-classification filtering to ensure compliance with minimum mapping areas.
Application of mode patches to adjust isolated pixels.</td></tr>
</table>

	• Use of delta NDVI to identify deforested areas and eliminate noise. • Generation of quality mosaic images, including information on Julian days. • The processes of Quality Assurance and Quality Control is detailed in Section 3.1.3. • Field verification of alert layers generated from weekly monitoring outputs.
Purpose of the data	This parameter is utilized to monitor the project since it provides ex post values of the deforested area within the leakage belts.
Calculation method	The deforestation calculation method is based on post-classification change detection. Land use/land cover (LULC) maps are generated for both the previous (2023) and current (2024) monitoring periods. Pixels classified as forest at the end of the previous period and reclassified to another class in the current period are identified as deforestation in the monitored year. The annual difference in LULC map pixel classes constitutes the deforestation data, which is then input into the ER sheet.
Comments	For detailed information on this parameter calculation, please see ER sheet, Table 9c.

Data / Parameter	$ABSLPA_t$
Data unit	Ha
Description	Annual area of deforestation within the Project Area at year t.
Source of data	• Previous monitoring data (2023) • Sentinel-2A Classified image for the Monitoring Period (2024). • Planet weekly mosaics (2024)
Description of measurement methods and procedures to be applied	A classified mosaic image was generated using Sentinel imagery with a 10-meter resolution to produce land use data for the monitoring period. This data was then compared with historical data from previous years to analyze and address the land use dynamics that occurred. The entire procedure has been thoroughly documented in section 3.1.3 in accordance with the requirements outlined in VM0015 v1.1, ensuring transparency. Additionally, a weekly monitoring methodology was incorporated using Planet weekly mosaics with a 5-meter resolution. For a comprehensive understanding of the methods and processes employed, please refer to section 3.1.3.
Frequency of monitoring/recording	Annually

<table>
<tr><td>Value monitored</td><td>The table below shows the deforestation within the project area during the monitored period.
<table><tr><th>Instance</th><th>ABSLPA$_t$ (ha) in 2024</th></tr><tr><td>Grupo Rovema (Instance 1)</td><td>36.69</td></tr><tr><td>Grupo Leite (Instance 2)</td><td>53.02</td></tr><tr><td>Grupo Tupa (Instance 3)</td><td>6.44</td></tr><tr><td>Total</td><td>96.15</td></tr></table></td></tr>
<tr><td>Monitoring equipment</td><td>Remote sensing and GIS analysis tools such as QGIS and Phyton. The monitoring process is detailed in section 3.1.3.</td></tr>
<tr><td>QA/QC procedures to be applied</td><td>Quality Assurance:
Pre-classification filtering of clouds and shadows using the enhanced Cloud Score+ method.
Collection of training samples from stable classes across the time series.
Comparison of classification results with previous MapBiomas products.
Calculation of accuracy metrics, including producer, user, and overall accuracy.
Visual inspection of higher-quality images (e.g., Planet, with 5-meter resolution) during the user accuracy validation step.
Weekly monitoring outputs produced through visual inspection using Planet imagery (5-meter resolution).
Quality Control:
Analysis of MODIS images from the past ten years to define the mosaic periods.
Application of cloud cover filters to pre-select images.
Post-classification filtering to ensure compliance with minimum mapping areas.
Application of mode patches to adjust isolated pixels.
Use of delta NDVI to identify deforested areas and eliminate noise.
Generation of quality mosaic images, including information on Julian days.
The processes of Quality Assurance and Quality Control is detailed in Section 3.1.3.</td></tr>
</table>

	• Field verification of alert layers generated from weekly monitoring output
Purpose of the data	This parameter is utilized to monitor the project since it provides ex post values of the deforested area within the project area.
Calculation method	The deforestation calculation method relies on post-classification change detection. Land use/land cover (LULC) maps are generated for both the previous monitoring period (2023) and the current monitoring period (2024). Pixels classified as forest at the end of the previous period (2023) that are reclassified into a different class in the current period (2024) are identified as deforestation for the monitored year. The annual difference in pixel classes between the LULC maps constitutes the deforestation data, which is subsequently inputted into the ER sheet. Finally, this data is integrated with weekly monitoring outputs produced through visual inspection of Planet imagery (5-meter resolution).
Comments	For detailed information on this parameter calculation, please see ER sheet, Table 11b.

Data / Parameter	$ABSLRR_t$
Data unit	Ha
Description	Annual area of deforestation within the Reference Region at year t.
Source of data	• Previous monitoring data (2023) • Sentinel 2A Classified image for the Monitoring Period (2024).
Description of measurement methods and procedures to be applied	A classified mosaic image was generated using Sentinel imagery with a 10-meter resolution to produce land use data for the monitoring period. This data was then compared with historical data from previous years to analyze and address the land use dynamics that occurred. The entire procedure has been thoroughly documented in section 3.1.3, in accordance with the requirements outlined in VM0015 v1.1, ensuring transparency. For a comprehensive understanding of the methods and processes employed, please refer to section 3.1.3.
Frequency of monitoring/recording	Annually
Value monitored	The table below shows the deforestation within the reference region during the monitored period.

Rio Madeira Grouped REDD+ Project	ABSLRRt (ha) in 2024
Deforestation	4,542.03

Monitoring equipment	Remote sensing and GIS analysis tools such as QGIS and Python. The monitoring process is detailed in section 3.1.3.
QA/QC procedures to be applied	**Quality Assurance:** • Pre-classification filtering of clouds and shadows using the enhanced Cloud Score+ method. • Collection of training samples from stable classes across the time series. • Comparison of classification results with previous MapBiomas products. • Calculation of accuracy metrics, including producer, user, and overall accuracy. • Visual inspection of higher-quality images (e.g., Planet, with 5-meter resolution) during the user accuracy validation step. **Quality Control:** • Analysis of MODIS images from the past ten years to define the mosaic periods. • Application of cloud cover filters to pre-select images. • Post-classification filtering to ensure compliance with minimum mapping areas. • Application of mode patches to adjust isolated pixels. • Use of delta NDVI to identify deforested areas and eliminate noise. • Generation of quality mosaic images, including information on Julian days. The processes of Quality Assurance and Quality Control is detailed in Section 3.1.3.
Purpose of the data	This parameter is utilized to monitor the project since it provides ex post values of the deforested area within the reference region.
Calculation method	The deforestation calculation method is based on post-classification change detection. Land use/land cover (LULC) maps are generated for both the previous (2023) and current (2024) monitoring periods. Pixels classified as forest at the end of the previous period and reclassified to another class in the current period are identified as deforestation in the monitored year. The annual difference in LULC map pixel classes constitutes the deforestation data, which is then input into the ER sheet.
Comments	For detailed information on this parameter calculation, please see ER sheet, Table 9a.

Data / Parameter	$APDPA_{icl,t}$
Data unit	Ha
Description	Areas of planned deforestation in forest class icl at year t in the project area
Source of data	• Annual operational plan; • Annual post-harvesting report;
Description of measurement methods and procedures to be applied	The planned deforestation activities in the project area that result in carbon stock decrease will be subject to monitoring. The forest management team records such information according to procedures established in its sustainable forest management plan.
Frequency of monitoring/recording	Annually
Value monitored	The table below shows the annual average planned deforestation expected to occur within the project area for each instance during the monitoring period.

Instance	$APDPA_{icl,t}$ (ha) in 2024
Grupo Rovema (Instance 1)	0.00
Grupo Leite (Instance 2)	0.00
Grupo Tupa (Instance 3)	1.56
Total	**1.56**

Monitoring equipment	No monitoring equipment is used to monitor this parameter, since the source is the Annual Operational Plan or Annual Post-Harvesting report.
QA/QC procedures to be applied	The pre and post-exploration reports can be considered a reliable source of data, as they comply with the legislation required to implement a Sustainable Forest Management Plan. In addition, these reports are prepared by responsible technicians.
Purpose of the data	This parameter will be used to calculate project emissions in the project scenario. Provides the ex-post value of the decrease in carbon stocks due to planned deforestation in the project area.
Calculation method	Emissions from deforestation at each forest class are quantified by multiplying the detected area of forest loss by the average forest carbon stock per unit area. For an ex ante estimation, it was considered that 1.50% of each annual production unit will be deforested for the implementation of SFMP infrastructure.

Comments	Planned deforestation mainly includes implementation of the forest management infrastructure, such as opening of main and secondary roads, skidding trails, and timber yards in each annual production unit within the project area. For detailed information on this parameter calculation, please see ER sheet, Table 25a.

Data / Parameter	$APLPA_{icl,t}$
Data unit	Ha
Description	Areas of logging activities at year t in the project area
Source of data	• Annual operational plan; • Annual post-harvesting report; • Logging permit
Description of measurement methods and procedures to be applied	The logging activities in the project area that resulted in carbon stock increase or decrease shall be subjected to monitoring, when significant.
Frequency of monitoring/recording	Annually
Value monitored	The table below shows the logging areas within the project area during the monitoring period.

Instance	$APLPA_{icl,t}$ (ha) in 2024
Grupo Rovema (Instance 1)	0.00
Grupo Leite (Instance 2)	0.00
Grupo Tupa (Instance 3)	484.22
Total	**484.22**

Monitoring equipment	Forest Management files, based on the Sustainable Forest Management Plan, AUTEX (logging permit), DOFs (Forest Origin Document)
QA/QC procedures to be applied	In addition to the procedures established in the Forest Management Plans in force, such as measuring and choosing the trees to be logged based on a forest inventory and criteria that comply with the law, the plans have the appropriate license to carry them out. The AUTEX is a document issued by the responsible environmental agency, in which the

	applicant must meet various criteria and procedures until the document is in force.
Purpose of the data	This parameter is used to calculate project emissions in the project scenario. Provides the ex post value of the increase or decrease in carbon stocks due to planned logging activities in the project area.
Calculation method	Carbon stock decrease from planned logging activities at each forest class are quantified by multiplying the detected area subject to logging by the harvested timber volume intensity, and then by the mean wood density[108]. Carbon stock increase from planned logging activities at each forest class are quantified by multiplying the detected area subject to logging by the mean annual increment due to natural regeneration of managed forests, and then by the mean wood density.[109]
Comments	The SFMP net area is obtained from the logging permit (AUTEX). Moreover, if the same logging area has been partially exploited in previous years, it was utilized linear proportion rule to define the logged area during the monitored period. Please see MR spreadsheet to check details. For detailed information on this parameter calculation, please see ER sheet, Table 26b.

Data / Parameter	$AUDPA_{icl,t}$
Data unit	Ha
Description	Areas of unplanned deforestation in forest class icl at year t in the project area
Source of data	• Previous monitoring data (2023) • Sentinel 2A Classified image for the Monitoring Period (2024).
Description of measurement methods and procedures to be applied	A classified mosaic image was generated using Sentinel imagery with a 10-meter resolution to produce land use data for the monitoring period. This data was then compared with historical data from previous years to analyze and address the land use dynamics that occurred. The entire procedure has been thoroughly documented in section 3.1.3, in accordance with the requirements outlined in VM0015 v1.1, ensuring transparency. For a comprehensive understanding of the methods and processes employed, please refer to section 3.1.3.

[108] The reduction in stock per hectare is evidenced in the post-management report and DOF's (mandatory license for the transport and storage of forest products of native origin).
[109] CONAMA (National Environmental Council) resolution, nº 406 from February 02, 2009, provides for technical parameters to be adopted in forest management areas. Available at: < https://www.mprs.mp.br/media/areas/gapp/arquivos/resolucao_conama_n_406_09.pdf>.

<table>
<tr><td>Frequency of monitoring/recording</td><td>Annually</td></tr>
<tr><td>Value monitored</td><td>The table below shows the unplanned deforestation occurred within the project area during the monitoring period
<table>
<tr><th>Instance</th><th>$AUDPA_{ICI,t}$ (ha) in 2024</th></tr>
<tr><td>Grupo Rovema (Instance 1)</td><td>36.69</td></tr>
<tr><td>Grupo Leite (Instance 2)</td><td>53.02</td></tr>
<tr><td>Grupo Tupa (Instance 3)</td><td>6.44</td></tr>
<tr><td>Total</td><td>96.15</td></tr>
</table></td></tr>
<tr><td>Monitoring equipment</td><td>Remote sensing and GIS analysis tools such as QGIS, ArcGIS, and Python. The monitoring process is detailed in section 3.1.3.</td></tr>
<tr><td>QA/QC procedures to be applied</td><td>Quality Assurance:
• Pre-classification filtering of clouds and shadows using the enhanced Cloud Score+ method.
• Collection of training samples from stable classes across the time series.
• Comparison of classification results with previous MapBiomas products.
• Calculation of accuracy metrics, including producer, user, and overall accuracy.
• Visual inspection of higher-quality images (e.g., Planet, with 5-meter resolution) during the user accuracy validation step.

Quality Control:
• Analysis of MODIS images from the past ten years to define the mosaic periods.
• Application of cloud cover filters to pre-select images.
• Post-classification filtering to ensure compliance with minimum mapping areas.
• Application of mode patches to adjust isolated pixels.
• Use of delta NDVI to identify deforested areas and eliminate noise.
• Generation of quality mosaic images, including information on Julian days.</td></tr>
</table>

	The processes of Quality Assurance and Quality Control is detailed in Section 3.1.3..
Purpose of the data	This parameter will be used to calculate project emissions in the project scenario. Provides the ex post value of the decrease in carbon stocks due to unplanned deforestation in the project area.
Calculation method	The deforestation calculation method is based on post-classification change detection. Land use/land cover (LULC) maps are generated for both the previous (2023) and current (2024) monitoring periods. Pixels classified as forest at the end of the previous period and reclassified to another class in the current period are identified as deforestation in the monitored year. The annual difference in LULC map pixel classes constitutes the deforestation data, which is then input into the ER sheet.
Comments	For detailed information on this parameter calculation, please see ER sheet, Table 25a.

Data / Parameter	$\Delta CADLK_t$
Data unit	tCO_2e
Description	Total decrease in carbon stocks due to displaced deforestation at year t
Source of data	$ABSLLK_t$
Description of measurement methods and procedures to be applied	Besides monitoring the parameter $ABSLLK_t$, it was also considered the comparison between the total ex-ante and ex-post net actual carbon stock change (parameter $\Delta CBSLLK_t$), as detailed in ER sheet, tab 21d_ex post. In summary, if ex-ante carbon stock change is greater than ex-post carbon stock change, then $\Delta CBSLLKt$ is zero. Otherwise, the difference between ex-post and ex-ante is considered the total ex-post leakage. $\Delta CADLK_t$ also considers the carbon stock per hectare (parameters ab_{icl} and ab_{icl}). All the above-mentioned parameters and its dependencies can be observed at ER sheet.
Frequency of monitoring/recording	Annually
Value monitored	
Monitoring equipment	Since $\Delta CADLKt$ data is related to deforestation data within leakage belt and carbon stock per hectare, please see related parameters Tables.

Project year t	$\Delta CADLK_t$ (tCO_2e)
2024	0.00

QA/QC procedures to be applied	Since ΔCADLKt data is related to deforestation data within leakage belt and carbon stock per hectare, please see related parameters Tables.
Purpose of the data	This parameter will be used to calculate leakage emissions in the project scenario. Provides the ex post value of the decrease in carbon stocks due to displaced deforestation in the leakage belt.
Calculation method	Ex-post deforestation within leakage belt was calculates using GIS method (please see ABSLLKt parameter table) and then subtracted from ex-ante deforestation at the same limit and period. Since ex-post data was greater, the difference between baseline and actual deforestation at baseline was multiplied by carbon stock per hectare parameters.
Comments	For detailed information on this parameter calculation, please see ER sheet, Table 35.

Data / Parameter	$\Delta CPAdPA_t$
Data unit	tCO_2e
Description	Total decrease in carbon stock due to all planned activities at year t in the project area
Source of data	• SFMP plans • Post-harvesting SFPM report and DOFs (Forestry Origin Documents)
Description of measurement methods and procedures to be applied	The planned activities in the project area that result in carbon stock decrease was monitored by SFMP records, which are available at ER sheet (Tables 25a and 25b).
Frequency of monitoring/recording	Annually
Value monitored	
Monitoring equipment	Since ΔCPAdPAt data is related to areas of logging activities at year t in the project area, please see related parameters Tables.
QA/QC procedures to be applied	Internal procedures required by the SFMP process: SFMP plans, post-exploitation records and DOFs. Such records comply legal requirements for SFM activities.

Project year t	ΔCPAdPAt (tCO2e)
2024	11,633

Purpose of the data	This parameter is used to calculate project emissions in the project scenario. Provides the ex post value of the decrease in carbon stocks due to planned activities in the project area.
Calculation method	This parameter is obtained by summing emissions from logging structure (roads and decks), and logging exploitation, as available at ER sheet, Table 25d.
Comments	For detailed information on this parameter calculation, please see ER sheet, Table 29.

Data / Parameter	$\Delta CPSLK_t$
Data unit	tCO_2e
Description	Total annual carbon stock change in leakage management areas in the project case at year t
Source of data	• Previous monitoring data (2023) • Sentinel 2A Classified image for the Monitoring Period (2024).
Description of measurement methods and procedures to be applied	A classified mosaic image was generated using Sentinel imagery with a 10-meter resolution to produce land use data for the monitoring period. This data was then compared with historical data from previous years to analyze and address the land use dynamics that occurred. The entire procedure has been thoroughly documented in section 3.1.3, in accordance with the requirements outlined in VM0015 v1.1, ensuring transparency. For a comprehensive understanding of the methods and processes employed, please refer to section 3.1.3.
Frequency of monitoring/recording	Annually
Value monitored	Project year t: 2024 — ΔCPSLKt (tCO2e): 13.07
Monitoring equipment	Remote sensing and GIS analysis tools such as QGIS, ArcGIS, and Python. The monitoring process is detailed in section 3.1.3.
QA/QC procedures to be applied	**Quality Assurance:** • Pre-classification filtering of clouds and shadows using the enhanced Cloud Score+ method. • Collection of training samples from stable classes across the time series.

	• Comparison of classification results with previous MapBiomas products. • Calculation of accuracy metrics, including producer, user, and overall accuracy. • Visual inspection of higher-quality images (e.g., Planet, with 5-meter resolution) during the user accuracy validation step. **Quality Control:** • Analysis of MODIS images from the past ten years to define the mosaic periods. • Application of cloud cover filters to pre-select images. • Post-classification filtering to ensure compliance with minimum mapping areas. • Application of mode patches to adjust isolated pixels. • Use of delta NDVI to identify deforested areas and eliminate noise. • Generation of quality mosaic images, including information on Julian days. The processes of Quality Assurance and Quality Control is detailed in Section 3.1.3.
Purpose of the data	This parameter will be used to calculate leakage emissions in the project scenario. Provides the ex-post value of the change in carbon stocks due to leakage prevention measures in the leakage management area.
Calculation method	The deforestation calculation method is based on post-classification change detection. Land use/land cover (LULC) maps are generated for both the previous (2023) and current (2024) monitoring periods. Pixels classified as forest at the end of the previous period and reclassified to another class in the current period are identified as deforestation in the monitored year. The annual difference in LULC map pixel classes constitutes the deforestation data, which is then input into the ER sheet.
Comments	The leakage prevention measures proposed by the present project do not include decrease in carbon stocks due to activities implemented in the leakage management area. *Ex post* monitoring of the leakage management area was done to determine the carbon stock decrease and the leakage emissions and is available at Table 30c of the ER sheet.

Data / Parameter	$\Delta CUDdPA_t$
Data unit	tCO_2e

<table>
<tr><td>Description</td><td>Total actual carbon stock change due to unavoided unplanned deforestation at year t in the project area</td></tr>
<tr><td>Source of data</td><td>Sentinel 2A Classified image for the Monitoring Period (2024).</td></tr>
<tr><td>Description of measurement methods and procedures to be applied</td><td>A classified mosaic image was generated using Sentinel imagery with a 10-meter resolution to produce land use data for the monitoring period. This data was then compared with historical data from previous years to analyze and address the land use dynamics that occurred. The entire procedure has been thoroughly documented in section X, in accordance with the requirements outlined in VM0015 v1.1, ensuring transparency. For a comprehensive understanding of the methods and processes employed, please refer to section 3.1.3.</td></tr>
<tr><td>Frequency of monitoring/recording</td><td>Annually</td></tr>
<tr><td>Value monitored</td><td><table><tr><th>Project year t</th><th>ΔCUDdPAt (tCO2e)</th></tr><tr><td>2024</td><td>49,044.77</td></tr></table></td></tr>
<tr><td>Monitoring equipment</td><td>Remote sensing and GIS analysis tools such as QGIS, ArcGIS, and Python. The monitoring process is detailed in section 3.1.3.</td></tr>
<tr><td>QA/QC procedures to be applied</td><td>Quality Assurance:
Pre-classification filtering of clouds and shadows using the enhanced Cloud Score+ method.
Collection of training samples from stable classes across the time series.
Comparison of classification results with previous MapBiomas products.
Calculation of accuracy metrics, including producer, user, and overall accuracy.
Visual inspection of higher-quality images (e.g., Planet, with 5-meter resolution) during the user accuracy validation step.
Quality Control:
Analysis of MODIS images from the past ten years to define the mosaic periods.
Application of cloud cover filters to pre-select images.
Post-classification filtering to ensure compliance with minimum mapping areas.
Application of mode patches to adjust isolated pixels.
Use of delta NDVI to identify deforested areas and eliminate noise.
Generation of quality mosaic images, including information on Julian days.</td></tr>
</table>

	The processes of Quality Assurance and Quality Control is detailed in Section 3.1.3.
Purpose of the data	This parameter will be used to calculate project emissions in the project scenario. Provides the ex-post value of the change in carbon stocks due to unavoided unplanned deforestation within the project area.
Calculation method	The deforestation calculation method is based on post-classification change detection. Land use/land cover (LULC) maps are generated for both the previous (2023) and current (2024) monitoring periods. Pixels classified as forest at the end of the previous period and reclassified to another class in the current period are identified as deforestation in the monitored year. The annual difference in LULC map pixel classes constitutes the deforestation data, which is then input into the ER sheet.
Comments	For detailed information on this parameter calculation, please see ER sheet, Table 25a.

Data / Parameter	$EADLK_t$
Data unit	tCO2e
Description	Total *ex post* increase in GHG emissions due to displaced forest fires at year t.
Source of data	• Sentinel 2A Classified image for the Monitoring Period (2024). • EBBtot and relative parameter at ER sheet Table 23.
Description of measurement methods and procedures to be applied	It was compared between the total ex-ante and ex-post net actual carbon stock change (parameter ΔCBSLLKt), as detailed in ER sheet, tab 21d_ex post. In summary, if ex-ante carbon stock change is greater than ex-post carbon stock change, then ΔCBSLLKt is zero. Otherwise, the difference between ex-post and ex-ante is considered the total ex-post leakage. The GWP and non-CO2 gases parameters that compose EBBtot and impact on the EADLKt parameter are available at ER sheet, Table 23
Frequency of monitoring/recording	Annually
Value monitored	**Project year t** / **EADLKt (tCO2e)** **2024** / 0.00
Monitoring equipment	Since parameter depends on ABSLLKt, it can be considered same equipment, such as remote sensing and GIS analysis tools such as QGIS, ArcGIS, and Python. The monitoring process is detailed in section 3.1.3.

QA/QC procedures to be applied	**Quality Assurance:** • Pre-classification filtering of clouds and shadows using the enhanced Cloud Score+ method. • Collection of training samples from stable classes across the time series. • Comparison of classification results with previous MapBiomas products. • Calculation of accuracy metrics, including producer, user, and overall accuracy. • Visual inspection of higher-quality images (e.g., Planet, with 5-meter resolution) during the user accuracy validation step. **Quality Control:** • Analysis of MODIS images from the past ten years to define the mosaic periods. • Application of cloud cover filters to pre-select images. • Post-classification filtering to ensure compliance with minimum mapping areas. • Application of mode patches to adjust isolated pixels. • Use of delta NDVI to identify deforested areas and eliminate noise. • Generation of quality mosaic images, including information on Julian days. The processes of Quality Assurance and Quality Control is detailed in Section 3.1.3.
Purpose of the data	This parameter will be used to calculate leakage emissions in the baseline and project scenario. Provides the ex post value of the increase in GHG emissions due to displaced forest fires in the leakage belt.
Calculation method	Estimated by multiplying $ABSLLK_t$ by EBB_{tot}.
Comments	For detailed information on this parameter calculation, please see ER sheet, Table 35.

Data / Parameter	$EBBPSPA_t$
Data unit	tCO2e
Description	Sum of (or total) of actual non-CO2 emissions from forest fire at year t in the project area

<table>
<tr><td>Source of data</td><td>• Sentinel 2A Classified image for the Monitoring Period (2024)
• EBBtot and relative parameter at ER sheet Table 23.</td></tr>
<tr><td>Description of measurement methods and procedures to be applied</td><td>It was considered the ex-post carbon stock change (parameter ABSLPAt).

The GWP and non-CO2 gases parameters that compose EBBtot and impact on the EBBPSPAt parameter are available at ER sheet, Table 23</td></tr>
<tr><td>Frequency of monitoring/recording</td><td>Annually</td></tr>
<tr><td>Value monitored</td><td><table><tr><th>Project year t</th><th>EBBPSPAt (tCO2e)</th></tr><tr><td>2024</td><td>959.49</td></tr></table></td></tr>
<tr><td>Monitoring equipment</td><td>Since parameter depends on ABSLPAt, it can be considered same equipment, such as remote sensing and GIS analysis tools such as QGIS, ArcGIS, and Python. The monitoring process is detailed in section 3.1.3.</td></tr>
<tr><td>QA/QC procedures to be applied</td><td>Quality Assurance:

• Pre-classification filtering of clouds and shadows using the enhanced Cloud Score+ method.

• Collection of training samples from stable classes across the time series.

• Comparison of classification results with previous MapBiomas products.

• Calculation of accuracy metrics, including producer, user, and overall accuracy.

• Visual inspection of higher-quality images (e.g., Planet, with 5-meter resolution) during the user accuracy validation step.

Quality Control:

• Analysis of MODIS images from the past ten years to define the mosaic periods.

• Application of cloud cover filters to pre-select images.

• Post-classification filtering to ensure compliance with minimum mapping areas.

• Application of mode patches to adjust isolated pixels.

• Use of delta NDVI to identify deforested areas and eliminate noise.

• Generation of quality mosaic images, including information on Julian days.</td></tr>
</table>

	The processes of Quality Assurance and Quality Control is detailed in Section 3.1.3.
Purpose of the data	This parameter will be used to calculate non-CO2 emissions due to forest fires within the project area in the project scenario, providing an estimate of the ex post value.
Calculation method	Estimated by multiplying $ABSLPA_t$ by EBB_{tot}.
Comments	For detailed information on this parameter calculation, please see ER sheet, Table 28.

Data / Parameter	$EBBtot_{icl,t}$
Data unit	tCO2e
Description	Total GHG emission from biomass burning in forest class icl at year t
Source of data	Calculated according to methodology VM0015 v1.1 and related parameters available at ER sheet Table 23.
Description of measurement methods and procedures to be applied	This parameter was calculated according to requirements and default values established by the VM0015 v1.1 methodology. In order to estimate non-CO2 emissions from forest fires, the average percentage of the area which contemplates the three municipalities within the RR that was cleared by burning for other land uses involving deforestation, such as cattle raising and farming (Fburnt), and the average of biomass that has commercial value, and could be removed prior to clear cutting and burning (Pburnt,p) were estimated, either for the baseline and project case. These average percentage values are assumed to remain the same in the future, according to the applied methodology.
Frequency of monitoring/recording	Annually
Value monitored	

Initial Forest Class		$EBBtot_{icl}$ tCO_2e/ha
IDcl	Name	
1	Forest	9.98

Monitoring equipment	Data was obtained from different literatures, available at ER sheet Table 23.
QA/QC procedures to be applied	Literature is considered reliable (IPCC default values, VCS Standard, Fburnt and Pburnt from governamental sources).

Purpose of the data	This parameter is used to calculate the baseline, project and leakage non-CO_2 emissions from biomass burning occurred in the baseline and project scenarios.
Calculation method	This parameter was calculated according to requirements and default values established by the VM0015 v1.1 methodology. For further information, please see ER sheet Table 23.
Comments	For detailed information on this parameter calculation, please see ER sheet, Table 23.

Data / Parameter	$EgLK_t$
Data unit	tCO2e
Description	Emissions from grazing animals in leakage management areas at year t.
Source of data	Activities report related to leakage prevention measures
Description of measurement methods and procedures to be applied	GHG emissions from grazing animals in the leakage management area (i.e. enteric fermentation or manure management) will be subjected to monitoring, when significant.
Frequency of monitoring/recording	Annually
Value monitored	Project year t: 2024 — $EgLK_t$ (tCO2e): 0.00
Monitoring equipment	Field assessment data. Interviews with Leakage Management Areas living people.
QA/QC procedures to be applied	Interviewed people from LMAs are aware of the project and he importance of providing reliable data.
Purpose of the data	This parameter will be used to calculate GHG emissions from activities implemented in the leakage management area in the project scenario, providing an ex post value.
Calculation method	Described in the methodology VM0015 v1.1, section 8.1.2: Ex ante estimation of CH_4 and N_2O emissions from grazing animals.
Comments	The community living within the leakage management area may practice grazing activities. Therefore, this shall be monitored during the monitoring period.

	For detailed information on this parameter calculation, please see ER sheet, Table 33.

Data / Parameter	$HI_{icl,t}$
Data unit	m^3/ha
Description	Harvesting intensity of timber in forest class icl at year t in the project area due to planned logging activities (i.e., sustainable forest management plan).
Source of data	• Post-harvesting report; • Logging permit (AUTEX); • DOFs (Forestry Origin Documents).
Description of measurement methods and procedures to be applied	Forest inventory and measurements of wood logs by the forest management team. Harvesting intensity followed procedures described in the Sustainable Forest Management Plan and Annual Operating Plan-AOP (POA, in Portuguese).
Frequency of monitoring/recording	Annually
Value monitored	See table below
Monitoring equipment	Post-deforestation reports, logging permit (AUTEX), DOFs (Forest Origin Documents).
QA/QC procedures to be applied	• Control procedures applied to forest inventory. • SFMP reports. • Logging permit (AUTEX) issued by Environmental Agency[110].
Purpose of the data	This parameter is used to calculate project emissions in the project scenario. Provides the ex post value of the harvested timber volume due to planned logging activities in the project area.
Calculation method	This parameter was calculated by dividing the total volume exploited (in m3) by the net logging area (in hectares).

Instance	Volume explored during monitored period (m^3)	Harvesting area (ha)	Harvesting intensity (m^3/ha)
Grupo Rovema (Instance 1)	0.00	0.00	0.00
Grupo Tupá	3,538.10	484.22	7.31

[110] The responsible environmental agency in this case is the SEDAM (for instance 1, located in the State of Rondônia) or IPAAM (for instance 3, in the State of Amazonas)

	Please see MR spreadsheet to (Table 25b) to see detailed calculation.
Comments	For detailed information on this parameter calculation, please see ER sheet, Table 25b.

Data / Parameter	RF_t
Data unit	%
Description	Risk factor used to calculate VCS buffer credits
Source of data	• Joint VCSPD spreadsheet; • SFMP plans; • Instances cashflow; • Contract between Project Proponent and landowners; • Legal documents; • GIS analysis; • Literature data.
Description of measurement methods and procedures to be applied	The procedures for calculating the RFt follow the guidelines of the Non-Permanence Risk Tool, version 4.2.[111]
Frequency of monitoring/recording	Each monitoring report
Value monitored	12
Monitoring equipment	No monitoring equipment is used to monitor this parameter directly.
QA/QC procedures to be applied	The documents considered for the analysis of this parameter are, for the most part, certified by recognized bodies or, when another source is used (such as GIS or literature), submitted to the institution's accuracy analysis.
Purpose of the data	This parameter represents the non-permanence risk rating of the project, which was used to determine the number of buffer credits that shall be deposited into the AFOLU pooled buffer account.
Calculation method	This parameter was calculated using the last available version of the AFOLU Non-Permanence Risk Tool. All the risk factors described in the VCS Non-Permanence Risk Report will be assessed.

[111] Available at: < https://verra.org/documents/afolu-non-permanence-risk-tool-v4-2/>

Comments	N/A

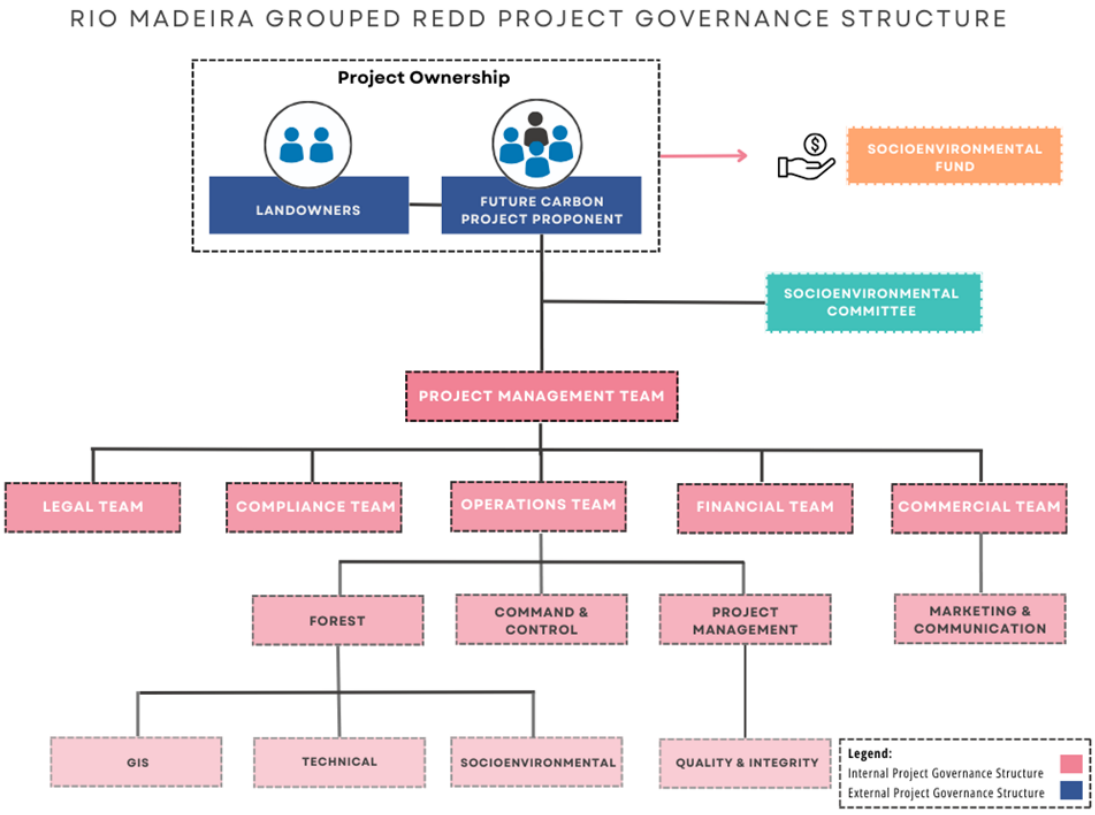
3.1.3 Monitoring Plan (VCS, 3.16, 3.20)

This monitoring plan has been developed according to the VCS Methodology VM0015 version 1.1.

Organizational structure, responsibilities and competencies

As part of the Governance Structure of Rio Madeira Grouped REDD+ Project, the project activities were designed based on information collected during interviews with the project landowners, employees within four private properties, and local stakeholders. The project activities will be operated under the guidance of the Future Carbon Group Technical Team, along with local partners responsible for the implementation and monitoring, which involves a broad expertise in environmental and social issues, as well as, in biodiversity, ensuring the efficient and successful implementation of the project. The project governance structure organizational chart below describes the roles and responsibilities team members divided into interconnected areas:

Figure 15. Project Governance Structure



The internal governance structure comprises a Project Management Team (PMT) featuring five distinct departments, as illustrated in figure above. These departments consist of eight specialized areas working collaboratively to oversee, execute, and supervise various activities. Their responsibilities include coordination, implementation, and monitoring, coupled with the provision of logistical and technical support to ensure the seamless functioning of the overall project. The PMT has a broad range of expertise in environmental, social and biodiversity issues to ensure the efficient and successful implementation of the project. Further details on the project management team capacity can be found in section 2.4.2. The roles and responsibilities of each party involved in the governance structure of the Rio Madeira Grouped REDD+ Project are detailed in the table below:

Table 24. Parties involved in the Rio Madeira governance structure, their roles and responsibilities

Roles	Responsabilities
Project Proponent	Future Carbon Group is responsible for the coordination of all activities required for the preparation of the Project Design Document (PDD) and Monitoring Reports (MR), including socio-economic and environmental assessment, baseline studies and carbon stock estimation, initial financing, monitoring and implementation of proposed GHG emission reduction/mitigation activities, dissemination of project documentation, project validation/verification, delivery of monitoring results to stakeholders, commercialization of generated credits, and co-management of the project throughout its duration.
Landowners	Grupo Leite, Rovema and Tupá are the owners who own the land titles, all property assurance of rights are recognized, are linked to the project through conservation agreements signed between each property instance and the project proponent; responsible for implementing surveillance and monitoring the project area to avoid any invasions, changes in the biome or any other activity that could lead to deforestation and loss of biodiversity; responsible for conducting operations in the field and providing logistical support for on-site technical visits; provide investment in the protection of project area, link field staff to management team, report to project management team any deforestation outbreak in the project area.
Co-Investors	Companies that become investor in early-stage project development that require up-front funding to be built and then receive their portion of the credits as they are issued over time. Alternatively, the company may wish to invest in early-stage project without purchasing the credits if they simply like what the project is trying to accomplish. This is particularly helpful in the early stages of project development, as many projects and project developers require additional financial support as they scale up to meet the project's goals and provide benefits to the community. Equity investments can also help companies build trust and a long-term relationship with project developers. In addition, companies become part of the project governance structure to ensure the delivery of high-quality carbon credits.

The project governance structure operates in two distinct spheres: internal and external.

Internal Project Governance

The internal governance structure, as illustrated in the Figure above, is centered around the Project Management Team, which includes several specialized teams (e.g., Legal, Compliance, Operations, Financial, Commercial). These teams are responsible for overseeing the project's design and implementation, ensuring adherence to legal requirements, and maintaining operational efficiency.

The Project Proponent plays a pivotal role in this structure, directly manage funds, and engaging with various internal teams to coordinate activities such as command and control, forest management, project management, quality, and integrity.

External Project Governance

The external project management governance structure is composed by landowners and local stakeholders groups, which include representatives of the different groups communities and other relevant institutional actors.

The external governance structure involves landowners and other key stakeholders. This group is vital in guiding project activities at a ground level, ensuring that the project aligns with local needs and priorities.

The link between Future Carbon and landowners is formalized through a contractual agreement, which outlines responsibilities for planning, execution, and monitoring of the project. Landowners are tasked with critical functions, including forest management and activities to reduce deforestation and degradation, surveillance, and fire prevention, among others. They are also responsible for implementing and maintaining social and environmental activities designed to minimize leakage and enhance the project's social and environmental co-benefits, as assessed by the CCB Standard.

The governance structure ensures that all parties are clear on their roles and responsibilities, thereby facilitating effective project implementation and monitoring.

Project Ownership and Responsibilities

The project ownership is shared between Future Carbon and the Landowners. Future Carbon is primarily responsible for developing project documentation, conducting monitoring activities in line with the Verified Carbon Standard (VCS) and CCB Standard. They ensure that data collection, processing, analysis, and reporting are conducted as per the monitoring plan.

In addition, it is responsible for keeping all documentation required by the project in order, as well as project maintenance expenses; Execute, monitor and maintain social and environmental activities (or designating and hiring third parties responsible for the activities).

The landowners, on the other hand, are accountable for the physical implementation and maintenance of the project. They manage on-the-ground activities, maintain essential project documentation, and ensure that the project infrastructure is operational, contributing to the overall goals of reducing deforestation and environmental degradation.

Monitoring and Reporting

Monitoring tasks are carried out by both Project Proponent (Future Carbon) and the landowners (Grupo ROVEMA, Grupo Leite, and Grupo Tupá). The project proponent manages the technical aspects of monitoring, including GIS analysis and emissions tracking, carry out the monitoring activities of VCS and CCB Standard. Landowners focus on the operational side, such as monitoring forest conditions and responding to natural disturbances, whenever necessary.

Monitoring was done by the project proponent and outsourced to a third party having sufficient capacities to perform the monitoring tasks. Specific responsibilities and frequencies for monitoring various project aspects are outlined in the table provided below:

Table 25. Type of Monitoring and Party Responsible for Monitoring

Variables to be monitored	Responsible	Frequency
Reassessment of the baseline	Future Carbon Group or its subsidiaries and external institutions qualified for the GIS analysis and monitoring	Every 6 years
Monitoring Deforestation and Project Emissions	Instance owner together with Future Carbon Group or its subsidiaries and external institutions qualified for the GIS analysis and monitoring	Prior to each verification
Monitoring of non-CO2 emissions from forest fires	Instance owner together with Future Carbon Group or its subsidiaries and external institutions qualified for the GIS analysis and monitoring	Prior to each verification
Monitoring Leakage emissions	Instance owner together with Future Carbon Group or its subsidiaries and external institutions qualified for the GIS analysis and monitoring	Prior to each verification
Monitoring of Natural Disturbance and catastrophic events	Instance owner	When a natural event occurs
Updating Forest Carbon Stocks Estimates	Instance owner	At least, every 10 years, only if necessary.

Regarding the competencies of the teams involved in the activities related to monitoring, the responsibilities and functions performed by Future Carbon's internal team are described in section 2.4.2, while the qualifications of the local monitoring team and landowners are described in the Non-Permanence Risk Report, under Project Management, which is covered under Internal Risk.

For all aspects of project monitoring, the project proponent will ensure that data collection, processing, analysis, management and archiving are conducted in accordance with the monitoring plan. The authority for the registration, monitoring, measurement and reporting is Future Carbon Group or its partners.

- **Monitoring of actual carbon stock changes and GHG emissions within the project area**
    - **Monitoring of project implementation**

The project owner is responsible for the implementation of the project activity. The monitoring of the sustainable management plan is carried out by the municipal and state secretariats.

Information from the sustainable forest management plan and post-exploratory reports was used to update parameters related to planned deforestation and was verified during the validation and verification of the carbon project.

- **Updating Forest Carbon Stocks Estimates**

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 to the requirements established by the applied methodology VM0015. New data on carbon stocks will only be used if they are validated by an accredited VVB.

- **Methods for generating, recording, aggregating, collating and reporting data on monitored parameters**

All data sources and processing, classification and change detection procedures is documented and stored in a dedicated long-term electronic archive maintained by the Project Proponent (Future Carbon International LLC or its controlled subsidiaries).

The Project Proponent will also keep a digital copy of all documents generated during the development of the VCS PD (first fixed baseline period) and the subsequent baseline reports and monitoring periods.

Given the extended time frame and the pace of production of updated versions of software and new hardware for storing data, electronic files are updated periodically or converted to a format accessible to future software applications, as needed.

All maps and records generated during project implementation are stored and made available to VCS verifiers at verification for inspection. In addition, any data collected from ground-truth points (including GPS coordinates, identified land-use class, and supporting photographic evidence) are recorded and archived.

Monitored data is to be kept for two years after the end of the crediting period or the last issuance of carbon credits for this project activity, whichever occurs later. For this purpose, the authority for the registration, monitoring, measurement and reporting is Future Carbon International LLC. Monitored parameters are described in Section 5.2 and are monitored with the frequency described further below.

Quality Assurance/Quality Control

To ensure consistency and quality of results, spatial analysts carrying out the image processing, interpretation, and change detection procedures strictly adhere to the steps detailed in the Methodology.

All of this reliable data, which is collected and documented, is used as a technical support tool for decision-making in order to improve project outcomes, and to adapt the project according to the current needs and realities. Project activities implemented within the project area must be consistent with the management plan of the project.

The implementation of the project activity is monitored by continuous monitoring activities using remote sensing techniques. Additionally, field studies will also be used.

Land-use monitoring is conducted using remote sensing techniques, applying the Random Forest algorithm to classify Sentinel imagery.

The management structure will also rely on the local community to help monitor the area. All the monitored parameters were checked with the frequency detailed in the Section 5.2 above, as requested in the VCS Methodology VM0015, version 1.1.

One of the planned activities to be develop with the carbon credits income is complement the monitoring of the project area and its surroundings, the project proponent intends to improve the remote sensing methods and data used, which meet the accuracy assessment requirements laid out in the methodology.

Procedures for handling internal auditing and non-conformities

To ensure the quality of project information, a review process was conducted as outlined below:

Response to non-conformities: Issues are initially classified in a spreadsheet by the project leader according to their nature and relevant area, such as social, GIS, among others. The technical team is then assigned to draft responses to each query, compiling all relevant information to formulate the answers. Preliminary responses are reviewed internally by the designated responsible person, who ensures that each response is clear, accurate, and fully addresses the query. It is also verified that the responses align with the project documentation and records. After this internal review, the responses are submitted to the project leader for a final review, ensuring compliance with project requirements and the accuracy of the information provided.

Quality and Integrity management: The development of procedures for quality and integrity management is designed to ensure compliance with project requirements, verify adherence to established standards, minimize and correct process deviations, and ultimately reduce non-conformities. The procedure is supervised by the Quality and Integrity committee, an internal multidisciplinary team established by the project proponent and with responsibilities assigned to Future Carbon. Such process started to be implemented in September-2023.

- **Monitoring of land-use and land-cover change within the project area**

Forest cover change due to unplanned deforestation is monitored through periodic assessment of classified satellite imagery covering the project area. Emissions from deforestation are estimated by multiplying the detected area of forest loss by the average forest carbon stock per unit area.

The entire project area has been demonstrated to meet the forest definition at the beginning of the crediting period. For subsequent monitoring periods, changes in forest cover are assessed against the preceding classified forest cover map marking the beginning of the monitoring interval. The resulting classified image is compared with the preceding classified image (forest cover benchmark map marking the start of the monitoring interval) to detect forest cover change over the monitoring interval, and subsequently becomes the updated forest cover benchmark map for the next monitoring interval. Thus, the forest benchmark map is updated at each monitoring event.

Carbon stocks increase or decrease due to planned activities in the project area are also monitored through documents and periodic assessment of classified satellite imagery covering the project area. In planned deforestation, emissions are estimated by multiplying the area of forest loss by the average forest carbon stock per unit area.

The results of monitoring shall be reported by creating ex post tables of activity data per stratum; per initial forest class icl; and per post-deforestation zone z, for the reference region, project area and leakage belt.

In addition, a map showing Cumulative Areas Credited 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.

Other applied methodologies for monitoring of deforestation are listed below:

Monitoring bases

The landowner is responsible for the implementation of monitoring bases, if necessary, to guarantee the standing forest and carbon stock.

Satellite images and remote sensing monitoring

Remote sensing monitoring was carried out based on two distinct approaches, each with specific objectives.

The first approach aims to assess land use dynamics and calculate land cover conversions. This methodology covers the entire monitored period, that is, a full year (from January 1 to December 31, 2024), and is conducted through the classification of images from the Sentinel satellite. The results include the generation of land use maps and the calculation of deforested areas. The detailed process of this approach is described in the section CLASSIFICATION METHODOLOGY FOR ANALYZING LAND USE COVER CHANGE.

The second approach involves weekly monitoring through visual inspection of weekly mosaics from the Planet satellite, with a spatial resolution of 5 meters. This process is carried out using QGIS software and Python scripts, which process the received images by separating spectral bands to create compositions such as true color, false color, NDVI (Normalized Difference Vegetation Index), and delta NDVI. These compositions aid in identifying alerts related to fires and deforestation.

After processing, verification grids are inserted to assist the CI3C operator in visual monitoring. Each image quadrant is visually inspected to identify changes compared to previous periods, considering pixel characteristics such as color and texture, as well as contextual factors like proximity to roads or other deforested areas.

The validation of the quadrants is recorded with the date and time of the inspection, and the verified areas are highlighted in reddish tones, which increases the efficiency of the process. In the end, the information is integrated into the system, allowing the field team to focus on critical areas to prevent forest loss. This monitoring contributes to a more agile response to unwanted events and reduces the recurrence of environmental damage. The annual and weekly monitoring are then integrated to ensure that there are no gaps in coverage or duplicate counting.

All reliable data collected and documented is being used as a technical support tool for decision making in order to improve project outcomes, and to adapt the project according to the current needs and reality. These decisions is being made during periodic meetings to review the Action Plan. On these occasions, the design of the Monitoring Plan will be analyzed according to its efficiency in generating reliable feedback and all the necessary information. If any changes in the Monitoring Plan or management actions are identified, a corrective action will be designed and implemented.

CLASSIFICATION METHODOLOGY FOR ANALYZING LAND USE COVER CHANGE

The methodology used to analyze land-use change dynamics at the current monitoring period (covering the period from January 1, 2024, to December 31, 2024) was based on the classification of Sentinel-2A imagery with a spatial resolution of 10 meters.

Given that the imagery and resolution adopted differ from those used in previous Monitoring Reports, this section details the procedures to validate the methodology and provides a comparative analysis with the approaches employed in prior reports. This ensures quality assurance and control of the data used in this Monitoring Report.

The methodology used can be described in three main steps, each of which will be detailed in the following sub-sections: Data source, data acquisition and pre-processing, Data classification and post-processing, Classification accuracy assessment.

DATA SOURCE, DATA ACQUISITION AND PRE PROCESSING

Data source

Table 26. Data source

Type	Source	Spatial Resolution
Remotely sensed data	Sentinel-2 satellite images	10 meters
Remotely sensed data	MODIS Terra Surface Reflectance Daily Global	1 km
Remotely sensed data	MapBiomas LULC Maps (Collection 9)	30 meters

Image Acquisition

The COPERNICUS/S2_SR_HARMONIZED Collection from the Sentinel-2 satellite is a dataset processed to provide high-quality imagery with atmospheric and geometric corrections, offering a more accurate representation of the Earth's surface. The primary feature of the COPERNICUS/S2_SR_HARMONIZED Collection is the integration of images from different Sentinel-2 missions, ensuring temporal and spatial consistency in the data and facilitating the monitoring of changes over time.

The images have a spatial resolution of up to 10 meters and a temporal resolution of 5 days, as the combined Sentinel-2A and Sentinel-2B satellites revisit the same area within this timeframe. This high resolution is particularly suitable for project-scale analyses, enhancing the ability to monitor dynamic changes in the landscape with greater precision. Additionally, the harmonized collection allows for the comparison and combination of data from different periods and sensors (Sentinel-2A and Sentinel-2B), with adjustments that ensure data consistency.

The area of interest selected for the project was defined by the boundaries of the Rio Madeira Project's Reference Region (RR). Given that the Rio Madeira project features a non-contiguous Reference Region comprising three distinct plots distributed, images were acquired individually for the bounding box of each RR to enhance processing efficiency and minimize the volume of imagery. The plots were designated as RR01, RR02, and RR03. Sentinel-2 images were acquired for the target year of 2024 and the preceding years of 2023 to 2019 to evaluate the quality of this new dataset in comparison to the project's previous data (MapBiomas). The mosaics were generated exclusively using Sentinel-2 bands B2 (Blue, 0.490µm), B3 (Green, 0.560µm), B4 (Red, 0.665µm), and B8 (NIR, 0.842µm), which have a 10-meter spatial resolution, providing the most detailed information.

Table 27. Image acquisition

Vector	Sensor	Resolution		Coverage	Acquisition date	Tiles ID
		Spatial (m)	Spectral (µm)	(Km²)	Year	
Satellite	Sentinel-2	10	0.49 - 0.84µm	34,225	2022, 2023, 2024	T20LMQ
Satellite	Sentinel-2	10	0.49 - 0.84µm	34,225	2022, 2023, 2024	T20LLQ
Satellite	Sentinel-2	10	0.49 - 0.84µm	34,225	2022, 2023, 2024	T20LMR

Satellite	Sentinel-2	10	0.49 - 0.84µm	34,225	2022, 2023, 2024	T20LKQ
Satellite	Sentinel-2	10	0.49 - 0.84µm	34,225	2022, 2023, 2024	T20LLP
Satellite	Sentinel-2	10	0.49 - 0.84µm	34,225	2022, 2023, 2024	T20LLQ
Satellite	Sentinel-2	10	0.49 - 0.84µm	34,225	2022, 2023, 2024	T19LHJ
Satellite	Sentinel-2	10	0.49 - 0.84µm	34,225	2022, 2023, 2024	T19LHK
Satellite	Sentinel-2	10	0.49 - 0.84µm	34,225	2022, 2023, 2024	T20LKQ
Satellite	Sentinel-2	10	0.49 - 0.84µm	34,225	2022, 2023, 2024	T19LHK
Satellite	Sentinel-2	10	0.49 - 0.84µm	34,225	2022, 2023, 2024	T19LGK

QA/QC prodedure: Prior to selecting the optimal time period for Sentinel-2 images acquisition for mosaic generation, a 10-years analysis of MODIS Terra Surface Reflectance Daily Global (MODIS/061/MOD09GA Collection[112]) sensor images was conducted. This analysis provided assessment on cloud cover, atmospheric conditions and overall image quality, guiding the selection of the highest quality Sentinel-2. The analysis involved calculating the monthly average cloud coverage for each year, revealing consistent patterns. The analysis identified a limited time window, typically between June and September, during which cloud cover in the images was less than 50%. Given the limitation in image quality due to the specific characteristics of the Amazon rainforest region,, two time periods were analysed and compared: 1 - August to December, selected to capture a phase with relatively lower rainfall (August and September), while also encompassing changes up to December 31, marking the conclusion of the monitoring period for the project in question; and the 2 – Full-year mosaic from January 1 to December 30, which aligns with the temporal framework adopted by the MapBiomas LULC data used in the previous monitoring reports.

[112] MODIS MOD09GA - Surface Reflectance 8-Day L3 Global 500m. Available at: <https://developers.google.com/earth-engine/datasets/catalog/MODIS_061_MOD09GA>.

Figure 29. MODIS cloud distribution for RR01 boundaries

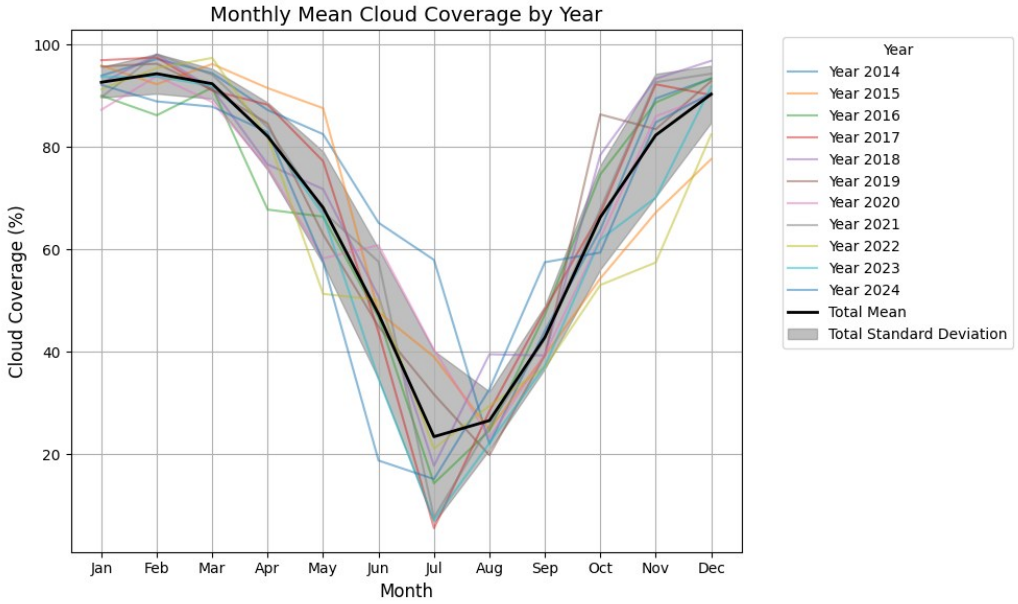


Figure 30. MODIS cloud distribution for RR02 boundaries

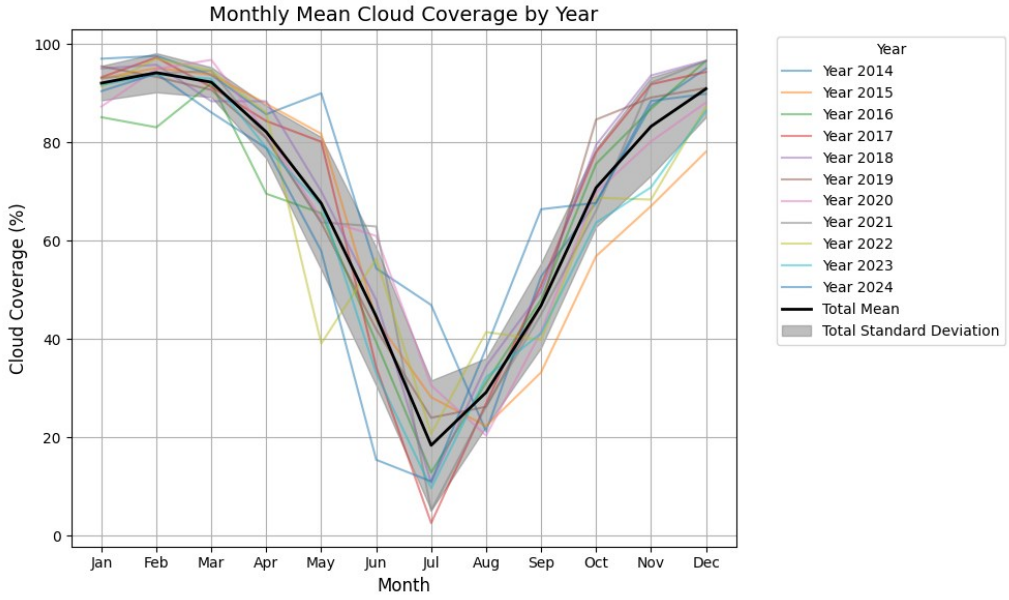
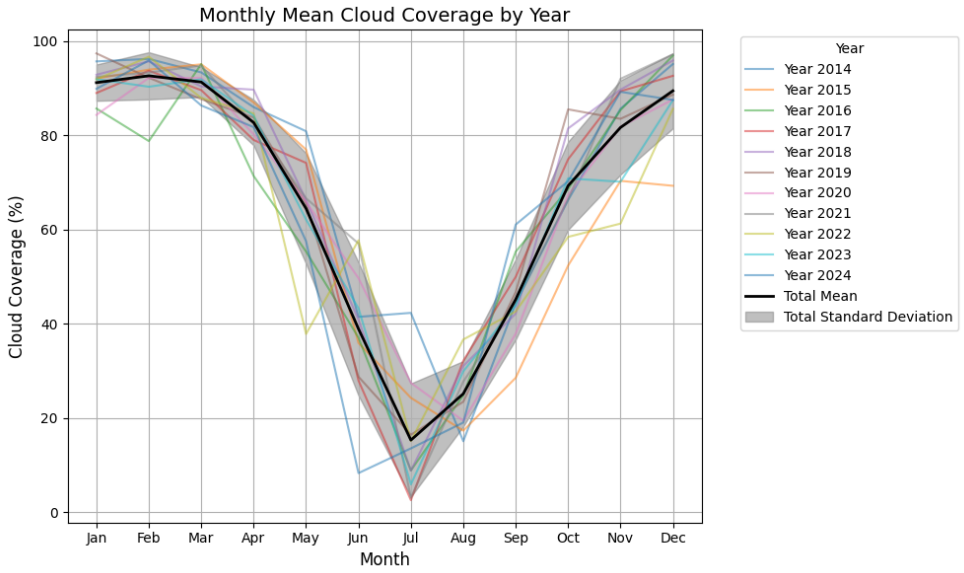


Figure 31. MODIS cloud distribution for RR03 boundaries



Only images with less than 30% cloud cover were considered, ensuring higher-quality data. Additionally, the auxiliary collection GOOGLE/CLOUD_SCORE_PLUS/V1/S2_HARMONIZED[113] was used, applying a filter based on the quality band to retain only images with a probability of clear skies above 80% (CLEAR_THRESHOLD). After these criteria were applied, the selected images were enhanced with temporal metadata, including a band representing the Julian day, enabling improved temporal organization and interpretation of the dataset.

For each year, two distinct approaches were applied to the filtered images: the maximum quality approach (quality mosaic), which selected the pixels of the image with the least cloud interference, allowing control over the pixel date and the annual median approach, which generated the median image for each band of each year to smooth seasonal and anomalous variations.

The resulting images were exported in GeoTIFF format, with a spatial resolution of 10 meters. For each year, the maximum quality image (Sentinel_Q) and the annual median image (Sentinel_M) were produced and have been provided as document annexes to this report in the SENTINEL_MOSAICS folder, corresponding to each plot (RR01, RR02, and RR03). Additionally, a table was generated to consolidate information about the images used, including acquisition date, cloud cover percentage, and a unique identifier for each image, which was exported in CSV format and has been provided as a document annex this report, also in the folder SENTINEL_MOSAICS.

The Normalized Difference Vegetation Index (NDVI) was calculated for each image using the Red and NIR bands. Subsequently, a median NDVI image was generated, to identify potential artifacts and outliers in the dataset. The resulting values were multiplied by 10,000 and converted to 16-bit

[113] Google Earth Engine, Sentinel-2 Surface Reflectance (Harmonized), available at: <https://developers.google.com/earth-engine/datasets/catalog/COPERNICUS_S2_SR_HARMONIZED?hl=en>.

integer format (Int16) to reduce file size, facilitate data export, and manipulation. The Sentinel images for bands B2, B3, B4, and B8 also use the same radiometric scale.

The first analysed period (August to December) resulted in a significant number of artifacts, particularly for the year 2024. This is evident from the comparison of NDVI histograms for the images of each year and period. Figures below present the comparison between Period 1 (August to December) and Period 2 (full year).

As a result, the Period 2 (Full-year mosaic from January 1 to December 30) was adopted as the final approach of satellite images selected and processed for the next steps of the alternative methodology.

Figure 32. Comparison of NDVI Images and Normalized NDVI Distribution Histograms for the first period (August to December) of the years 2023 and 2024 (RR01).

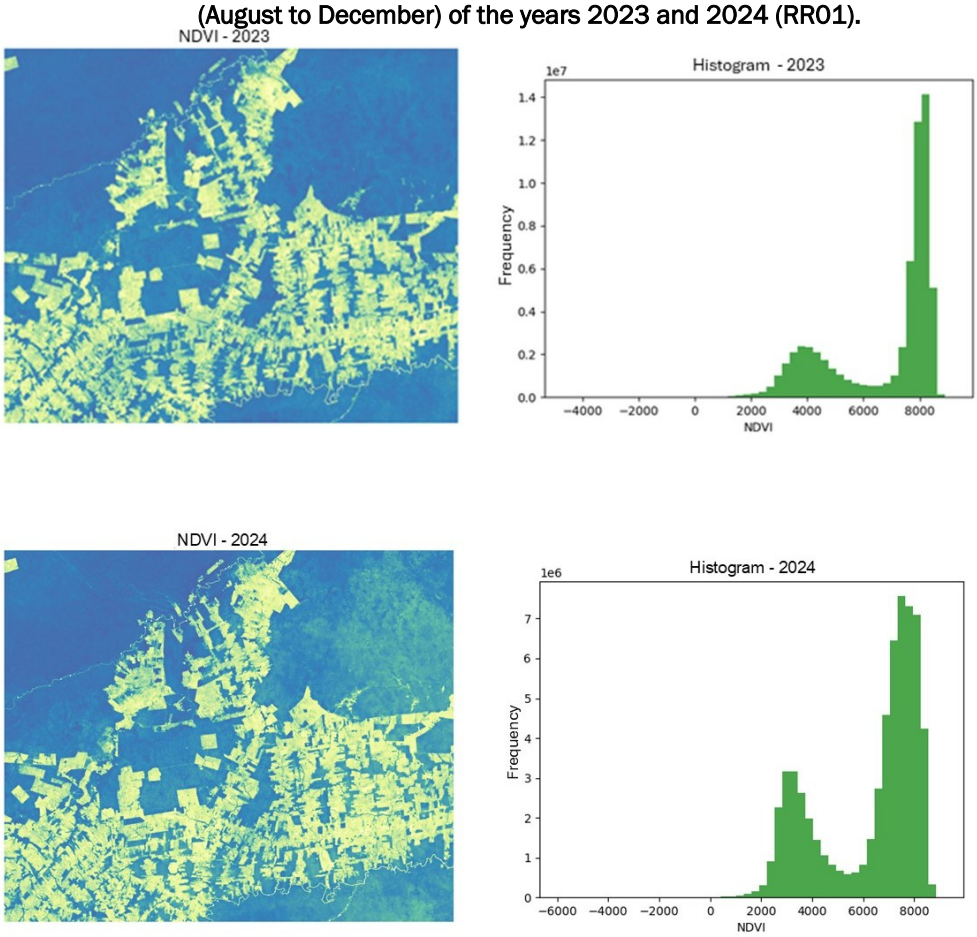


Figure 33. Comparison of NDVI Images and Normalized NDVI Distribution Histograms for the first period (August to December) of the years 2023 and 2024 (RR02).

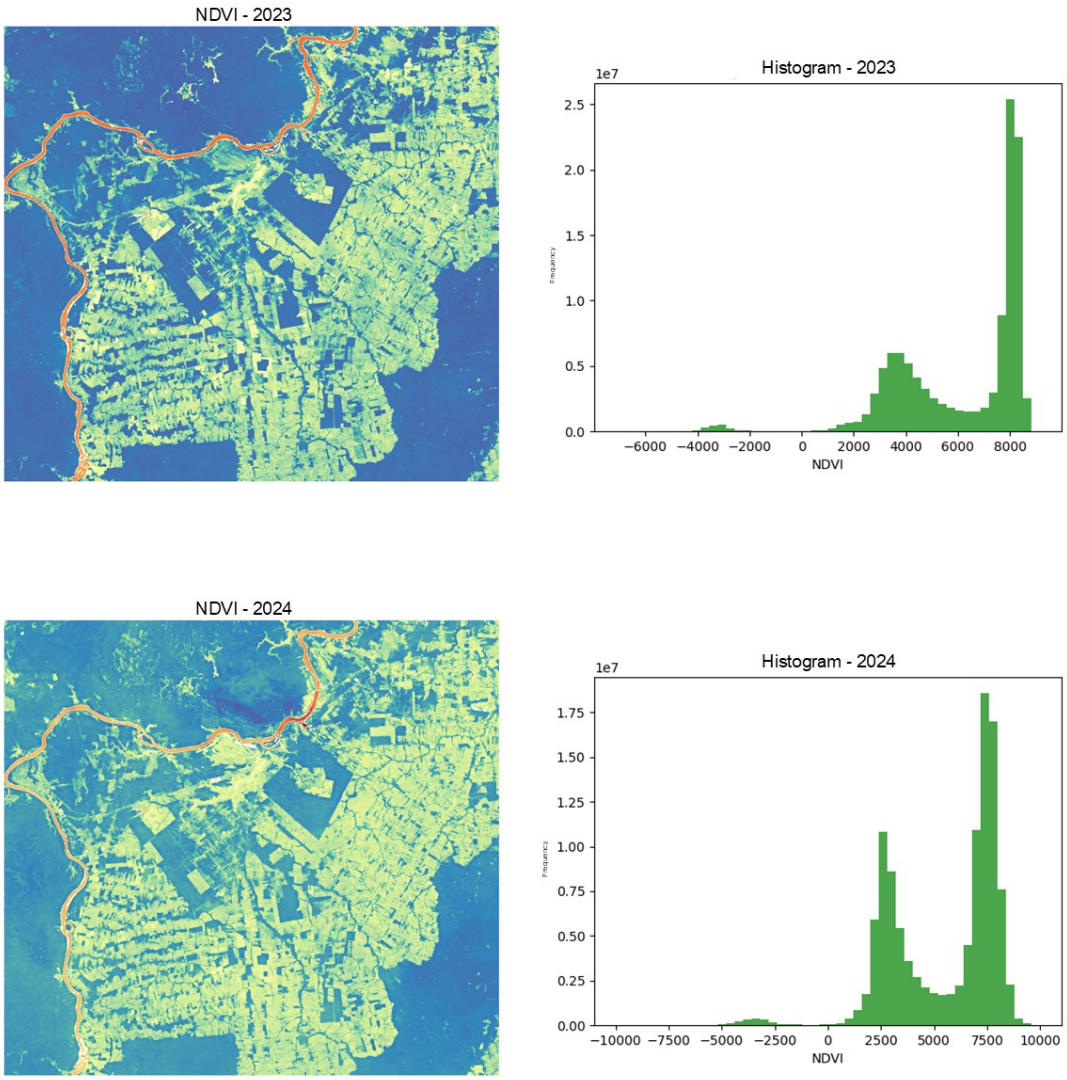


Figure 34. Comparison of NDVI Images and Normalized NDVI Distribution Histograms for the first period (August to December) of the years 2023 and 2024 (RR03).

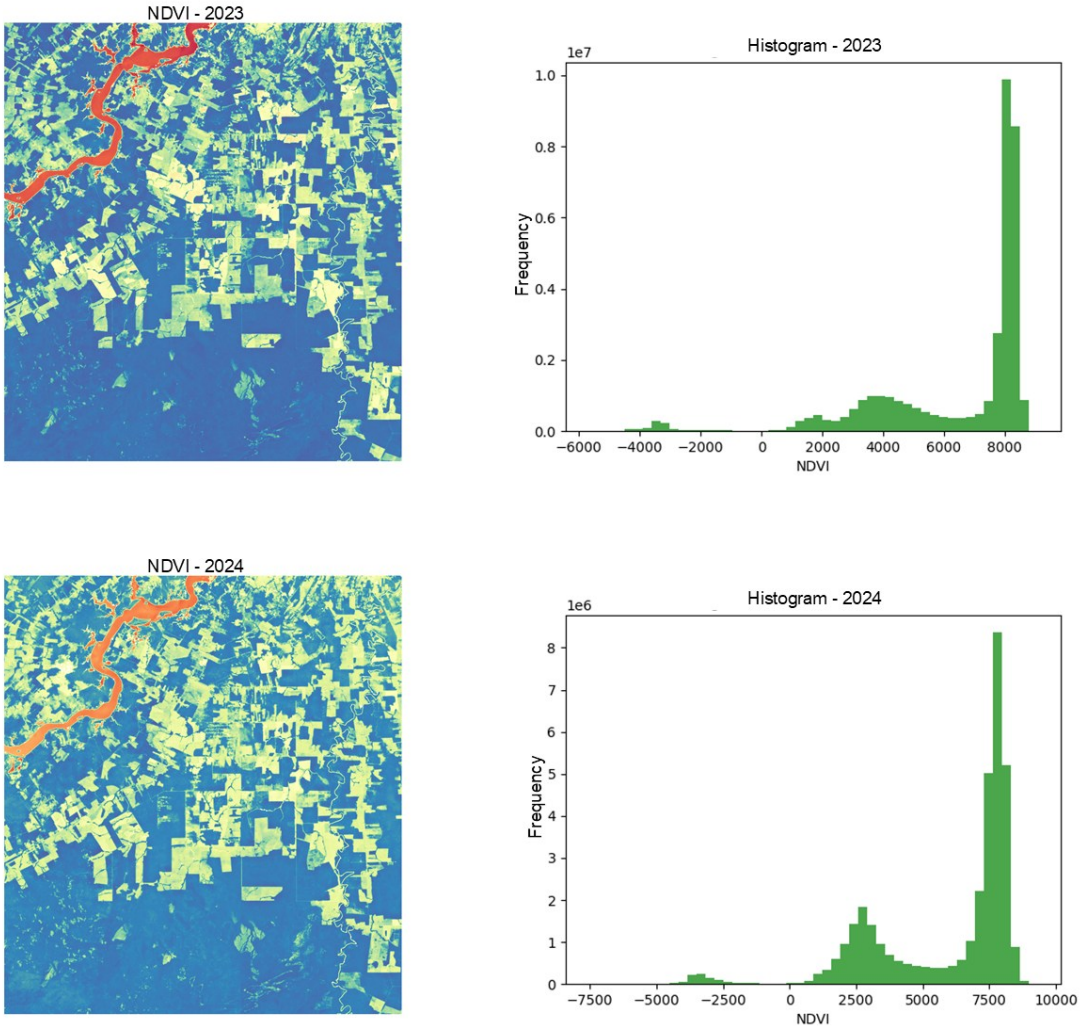


Figure 35. Comparison of NDVI Images and Normalized NDVI Distribution Histograms for the second period (full year mosaic) of the years 2023 and 2024 (RR01).

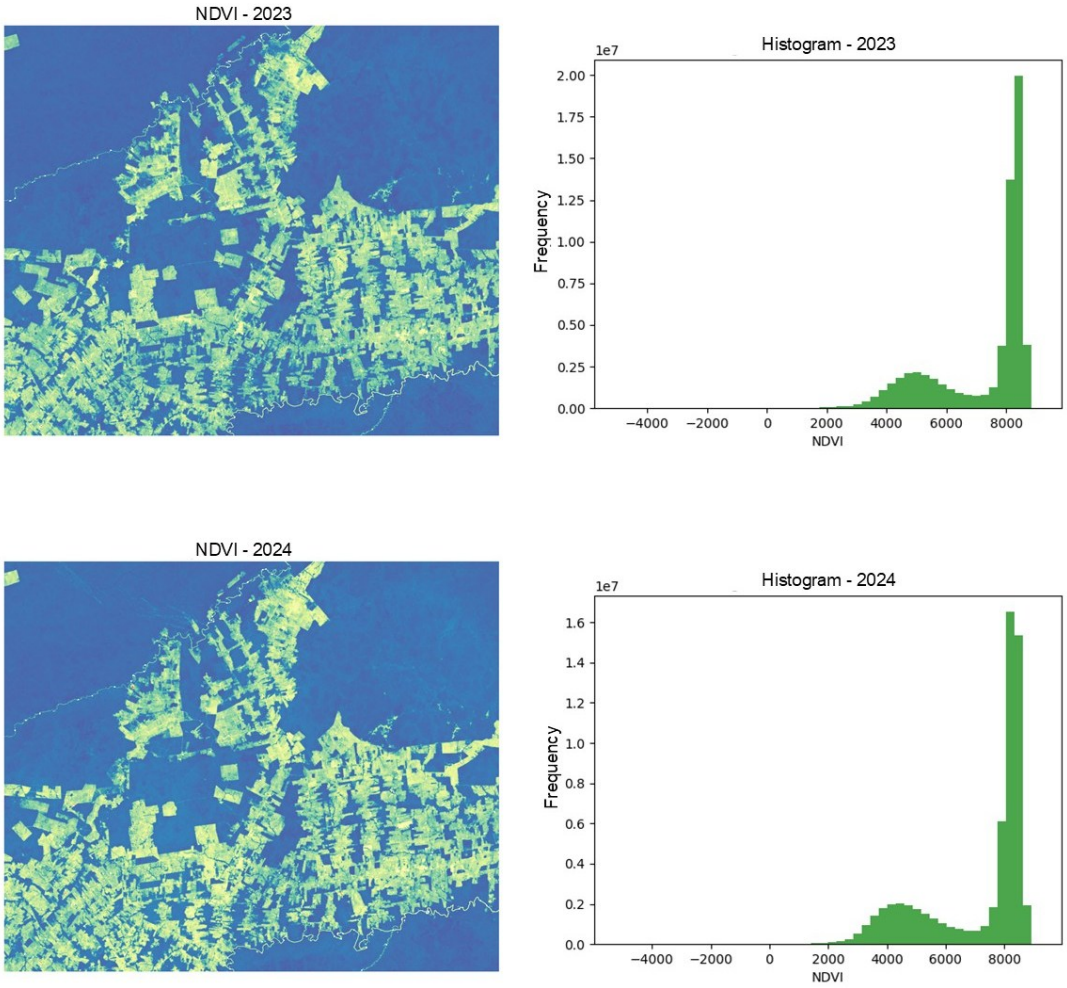


Figure 36. Comparison of NDVI Images and Normalized NDVI Distribution Histograms for the second period (full year mosaic) of the years 2023 and 2024 (RR02).

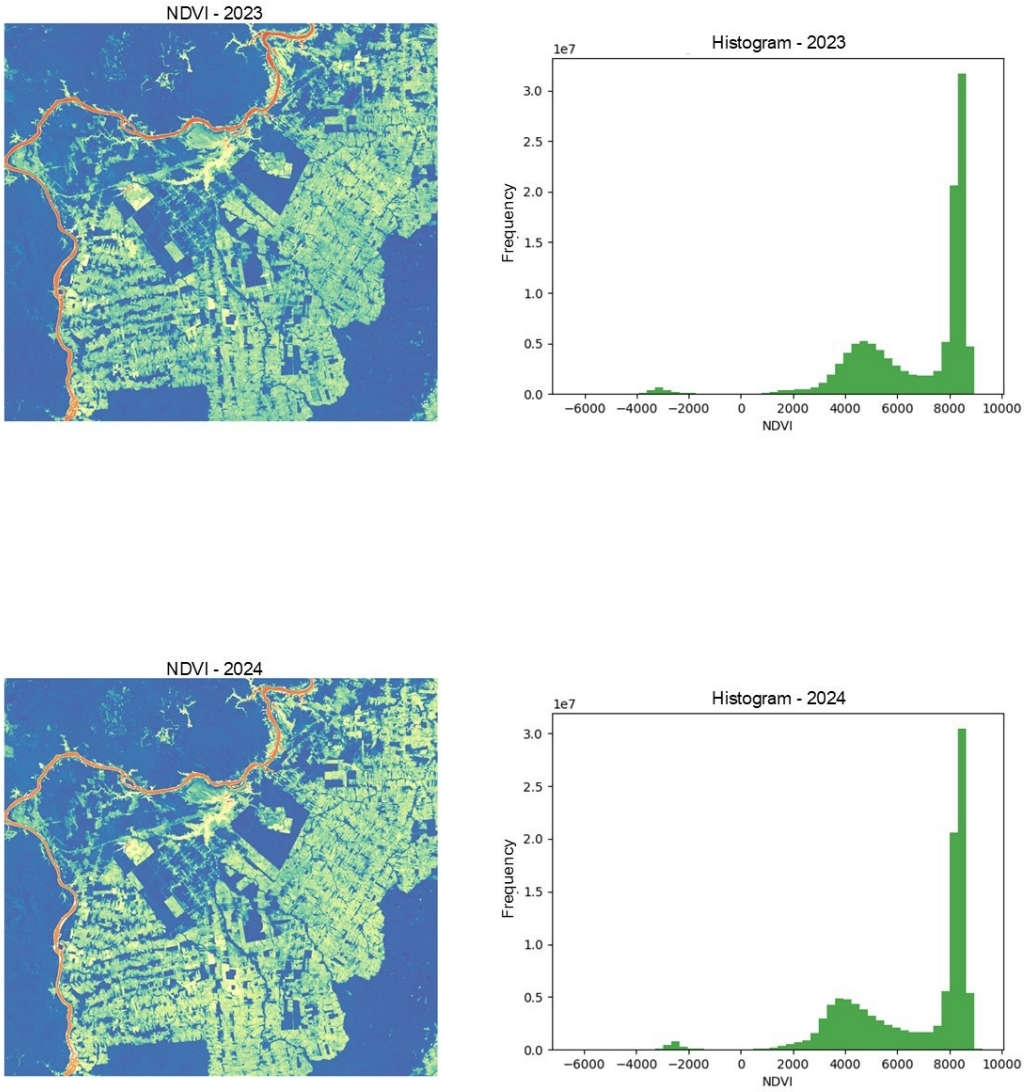
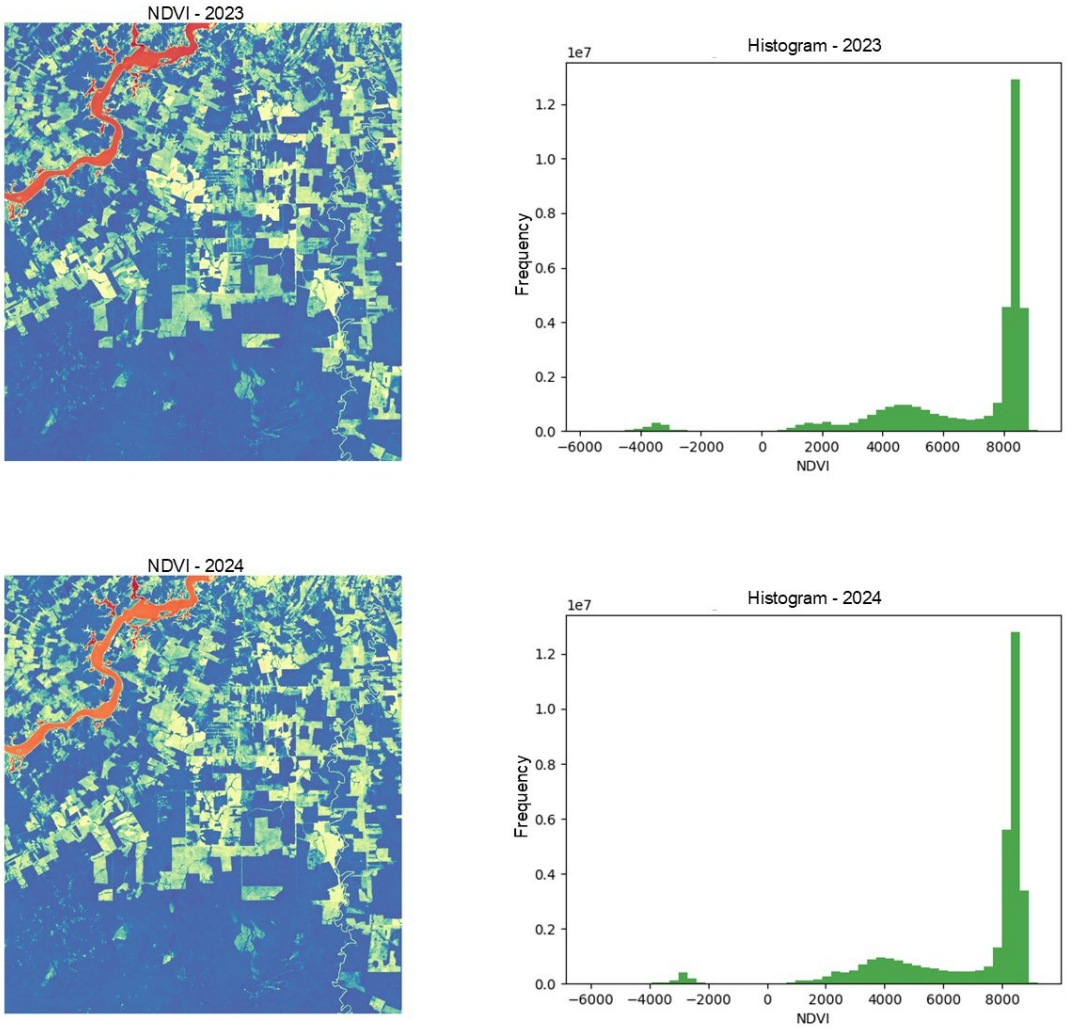


Figure 37. Comparison of NDVI Images and Normalized NDVI Distribution Histograms for the second period (full year mosaic) of the years 2023 and 2024 (RR03).



DATA CLASSIFICATION AND POST-PROCESSING

Random Forest supervised classification

Land use and land cover (LULC) classification of the Sentinel-2 annual mosaic was performed using the Random Forest algorithm[114]. This machine learning algorithm is widely recognized technique for its effectiveness in handling complex datasets and identifying patterns in LULC, particularly notable in ecologically sensitive regions like the Amazon, where spectral variability can pose significant challenges. Previous studies, such as Breiman (2001)[115] and Hansen et al. (2013)[116], have highlighted the robustness of Random Forest for image classification tasks.

For the execution of this supervised classification methodology, shapefiles containing samples with labelled classes were created , covering the categories of 1 - forest, 2 - water, and 4 - non-forest areas. The samples were selected within each Reference Region (RR), where 15 plots of 500 by 500 meters were established, totalling 2500 pixels per sample for each class. In the case of the "water" class, the samples needed to have irregular shapes, often following the course of narrow rivers present in the scenes. Additionally, samples were collected outside the RR area to increase the variability of the water samples. A total of 15 water samples was selected, with a variable number of pixels. The samples were placed in areas of the images that represents stable classes for the analysed years, between 2019 and 2024.

The samples were converted into images, with precise alignment ensured by using the images themselves as references for the transformation. Pixels whose centroids were within the vector boundaries were assigned the corresponding class value. In this way, the resulting images with the sample classes were organized as dependent variables. Subsequently, the spectral values from the Sentinel-2 full-year mosaic were used as predictor variables, while the class images were employed as dependent variables in the classification model.

[114] The Sentinel LULC data (supervised classification) used for validation (2019–2023) are stored in folders named “RF_{year}_filter” within the corresponding RR folder under ‘MAPBIOMAS_VALIDATION\SENTINEL_CLASS’.
The Sentinel LULC data (supervised classification) for the target monitoring period (2024) are located in the folder ‘Rio_Madeira_VERRA_SC_Analysis\SENTINEL_SUPERVISED_CLASSIFICATION_2024\RF_CLASSIFICATION_RESULTS’, also organized within the respective RR folder.
[115] Breiman, L. (2001). Random forests. *Machine learning*, 45(1), 5-32
[116] Hansen, M. C., Potapov, P. V., Moore, R., Hancher, M., Turubanova, S. A., Tyukavina, A., ... & Townshend, J. R. G. (2013). High-resolution global maps of 21st-century forest cover change. Science, 342(6160), 850-853.

Figure 38. Samples (vector)

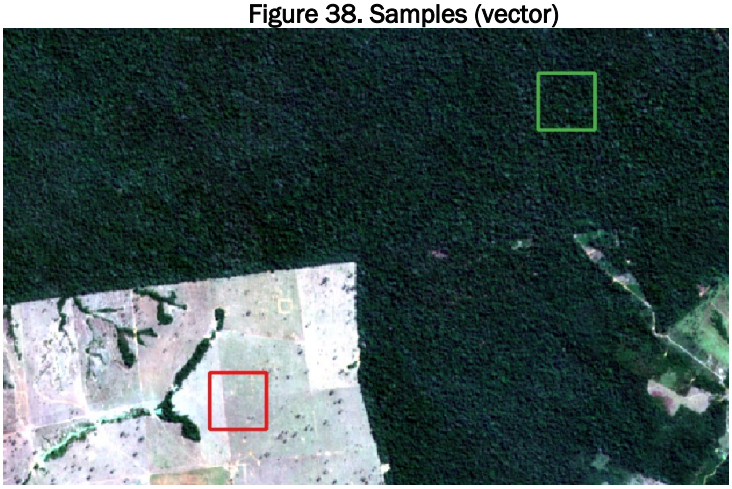
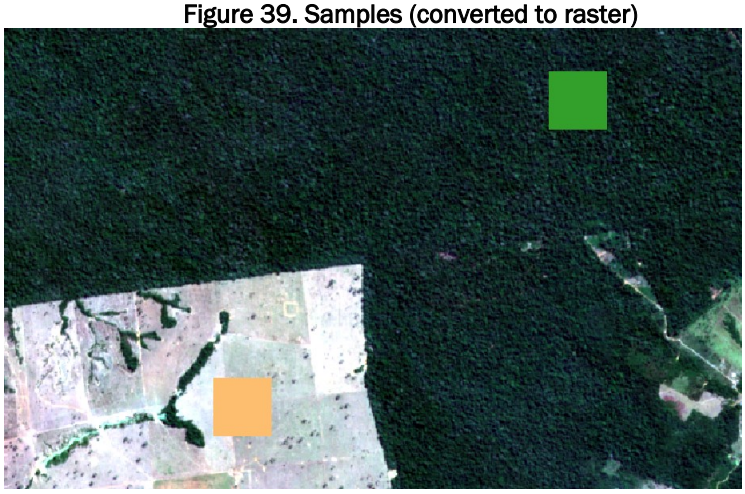


Figure 39. Samples (converted to raster)



The combined dataset — comprising the predictor variables (spectral values) and the dependent variables (rasterized class values) — was organized into arrays for training and testing the Random Forest model. No-data pixels from the class images (i.e., values outside the sample areas) were excluded from the analysis.

To optimize computational performance, the classification algorithm was executed separately for each RR plot. The execution time of the algorithm varied depending on the size of the plot, ranging from 21 minutes for the smallest area (RR3 plot) to 1 hour and 44 minutes for the largest area (RR2 plot).

The Random Forest model was trained using 70% of the sample pixels for training and 30% for the producer's accuracy testing. The model's default configuration included 100 decision trees, balancing predictive capacity with computational efficiency. After training, the model was evaluated using the remaining 30% of the data. All results and the trained model were saved to disk in the '.pkl' format, Python's native serialization format, which enables quick read and write

operations and optimized storage space usage. The processing tasks and analysis of the supervised classification were performed using proprietary Python codes.

CLASSIFICATION ACCURACY ASSESSMENT

After the initial classification performed by the Random Forest model, a 3x3-pixel mode filter was applied to smooth the results. This approach smooths the map and mitigates classification errors in homogeneous areas, following established practices such as those described by Tiede et al. (2010)[117]. In the resulting image from the mode filter, patches classified as "forest" and "non-forest" were analysed to ensure compliance with the minimum mapping area criteria. For the "forest" class, patches smaller than 0.5 hectares (equivalent to 50 pixels at Sentinel resolution) were identified and processed.

This threshold follows the forest definition provided by the Food and Agriculture Organization (FAO)[118] and adopted by VM0015 Methodology, which defines a forest as an area with at least 0.5 hectares, a tree canopy cover of more than 10%, and trees capable of reaching a minimum height of 5 meters. For the "non-forest" class, a minimum threshold of 0.1 hectare (10 pixels) was applied, which corresponds to the minimum mapping area.

Patches that did not meet the minimum area criteria were adjusted by filling their values with the values of the nearest neighboring pixels. This procedure ensured that the final mapping conformed to the definitions adopted for land use and land cover classes, while also meeting the minimum area requirements established for the project.

The final products include thematic maps in GeoTIFF format, performance reports documenting the classification process and accuracy metrics, and post-processed images that reflect the refinements applied during post-processing.

Table 28. Random Forest producer's accuracy

Year	Accuracy
2022	0.9776
2023	0.9759
2024	0.9647

117 Tiede, D., Lang, S., & Hoffmann, C. (2010). Supervised and forest-ownership-specific multi-scale segmentation for a one-level-representation of single trees. ISPRS Journal of Photogrammetry and Remote Sensing, 65(6), 445-452.

118 For more information on the definitions, refer to the official FAO (2020) document available at: < https://openknowledge.fao.org/server/api/core/bitstreams/531a9e1b-596d-4b07-b9fd-3103fb4d0e72/content>.

Validation and comparison with LULC maps and MapBiomas data

The procedure used to calculate deforested areas during the monitoring period involved subtracting the forest classes from the previous monitoring period's classified image (a classified mosaic derived from the MapBiomas Collection 9 LULC product) from the forest classes in the classified Sentinel-2 image for the current monitoring period. Given that these datasets originate from distinct sources and spatial resolution, the following steps were undertaken to ensure the quality and consistency of the results.

A confusion matrix was applied between the classified Sentinel and MapBiomas images to validate the accuracy of the classifications between the two datasets. For this purpose, 4,000 random points were selected, with a minimum distance of 100 meters between them, within the reference region. This approach ensures a proper sampling design for statistical evaluation.

Subsequently, for each selected point, the corresponding pixel values from both images were extracted and stored in attribute tables. This step reprojects the points to the coordinate system of the rasters when necessary and uses the X and Y coordinates to access the pixel values. This process was crucial to create a comparable dataset between the two sources of data.

From the values extracted from both rasters, a confusion matrix was generated to evaluate accuracy. This procedure was essential for measuring the relative performance between the two classified datasets.

Table 29. MapBiomas validation producer's accuracy

Year	Accuracy
2022	0.9378
2023	0.9448

This approach not only validates the classification results but also identifies areas of higher uncertainty, guiding improvements in classification models and refinement of decision-making processes.

Transposition of Monitoring classes between 2023 and 2024 LULC map

To ensure compatibility, consistency, and to prevent gaps between the monitored year and the previous year, the land use classes (2 – water, 3 – non-forest and 4 – accumulated deforestation) from 2023 were transposed to the 2024 dataset.

Since the datasets had different spatial resolutions, several procedures were applied to harmonize the data, ensuring methodological consistency. The specific steps undertaken for this adjustment are detailed below.

The process begins with the organization and verification of the input raster data, ensuring they are in the same geographic coordinate system. Spatial resolution and file extents were reviewed, and the data were resampled and aligned to a reference raster. This step ensures spatial consistency and compatibility for subsequent processing.

Once the raster datasets are properly aligned, the integration of classes is performed. This process involves transferring the land use and cumulative deforestation classes from the source raster (from Monitoring Report 3) to the target raster, corresponding to Monitoring Report 4. During this integration, masks are applied to isolate and incorporate specific classes into the target raster. These classes are:

- Water (class 2)
- Non-Forest Vegetation (class 3)
- Cumulative Deforestation from previous monitoring years and HRP (class 4)

Meanwhile, the target raster contains the following classes:

- Forest (class 1)
- Non-Forest (class 5)

Regarding the water and non-forest vegetation classes, they are the result of all classifications of water and non-forest vegetation over the 10-year historical reference period preceding the project start date, based on LULC maps from MapBiomas. This "mask" of water and non-forest is then locked in the monitored periods. This measure was implemented to prevent natural variations in river levels and seasonal flood and drought cycles from influencing the classification of forest and deforestation. By maintaining consistency in these classes over time, the analysis minimizes errors related to temporary changes in land cover that do not represent actual land-use transitions. Additionally, this approach enhances the reliability of deforestation assessments by ensuring that only real changes in forest cover are detected, reducing potential misclassifications caused by hydrological dynamics.

Following the integration process, the distribution of classes within the processed raster is calculated. As a result, the integration generates a raster with five classes:

- Forest (class 1)
- Water (class 2)
- Non-Forest Vegetation (class 3)
- Cumulative Deforestation from previous monitoring years and HRP (class 4)
- Deforestation in the Monitoring Period (class 5)

After the class overlay process, class 5 represents areas that were classified as forest in the Time 1 raster (2023) but transitioned to non-forest in the Time 2 raster (2024), indicating deforestation during the monitoring period.

To ensure that the results comply with the minimum mapping area and accurately reflect deforestation dynamics, filters were applied exclusively to class 5. The first filter established a minimum mapping unit of 0.1 hectares, removing small and insignificant patches from the analysis. The second filter was based on ΔNDVI (change in NDVI), excluding patches with a mean value higher than -300, which approximately corresponds to twice the standard deviation, ensuring that only areas with vegetation loss were retained.

Finally, the processed rasters and associated tables undergo a thorough a user's accuracy review to ensure the consistency of the results. Therefore, this process ensures the compatibility, consistency, and prevents gaps between the monitored year (2024) and the previous years.

ACCURACY ANALYSIS

The accuracy assessment (confusion matrix) of the supervised classification was conducted for the Project Area (PA) and the Leakage Belt (LK) from of the fourth monitoring report period (2024). A total of 600 sample points were randomly selected, and the accuracy of the classification was verified. Each sample points were checked using visual inspection tools to determine the land use at each selected point, according to the following diagram.

The images used the visual inspection were high-resolution (4.78m) multispectral Planet imagery provided by the Norway's International Climate and Forest Initiative (NICFI, https://www.nicfi.no/). These Planet NICFI Normalized Analytic Basemaps include red, green, blue, and near-infrared bands, cover tropical forest regions between 30°N and 30°S, and have a monthly temporal resolution (Pandey & Curdoglo, 2023)[119], comprising the best daily acquisitions within each month. This provides a largely cloud-free, freely accessible dataset ideal for monitoring tropical LULC change which allows the reliable extraction of information using visual inspection of the results by an expert analyst, in accordance with GOFC-GOLD Sourcebook[120] on REDD map accuracy guidelines.

The result of this process is the confusion matrix, which provides a comparison between the classified data and the actual land use observed at the sample points. The confusion matrix allows for the evaluation of classification accuracy by showing how well the classified data matches the true land use conditions.

Table 30. Monitoring confusion matrix (2024)

		REFERENCE				
CLASSIFIED		Forest	Non forest	Total	User's accuracy	Overall accuracy
	Forest	383	0	389	98.46%	
	Non forest	21	190	211	90.05%	96.09%
	Total	404	196	600		
	Producer's accuracy	94.81%	96.94%			

[119] Pooja Pandey, Joe Kington, Anudeep Kanwar, Robert Simmon and Leanne Abraham, 2023. Planet Basemaps for NICFI data Program. Addendum to basemaps product specification. v02. NICFI Basemaps.
[120] GOFC-GOLD, 2016, A sourcebook of methods and procedures for monitoring and reporting anthropogenic greenhouse gas emissions and removals associated with deforestation, gains and losses of carbon stocks in forests remaining forests, and forestation. GOFC-GOLD Report version COP22-1, (GOFC-GOLD Land Cover Project Office, Wageningen University, The Netherlands).

The LU/LC-change categories that could occur within the project area and leakage belt during the first baseline period, in both the baseline and project case, are identified in the potential LU/LC-change matrix and the list of LU/LC-change categories during the project crediting period are shown in the Tables below. It is shown that deforestation could occur in the baseline and project scenarios within both the PA and LK areas; the hectares show the quantities of deforestation during the crediting period associated with each identifier.

Table 31. Land-use and land-cover change matrix model

		Initial LU/LC class	
	Idcl	Forest	No forest
Final Class	Forest	I1/F1	0
	No forest	I1/F2	I2/F2

Table 32. Project Area Land Use and Land Cover Change Matrix – Monitoring period

Project Area					
ID_{cl}		Initial class (jan. 24)			Total (ha)
		Name	Forest	Deforestation	
			I1	I4	
LULC final class (dec. 24)	F1	Forest	51,936.18	0.00	51,936.18
	F4	Deforestation	96.15	0.00	96.15
Total (ha)			52,032.33	0.00	52,032.33

Table 33. Leakage Belt Land Use and Land Cover Change Matrix – Monitoring period

Leakage Belt					
ID_{cl}		Initial class (jan. 24)			Total (ha)
		Name	Forest	Deforestation	
			I1	I4	
LULC final class (dec. 24)	F1	Forest	23,871.26	0.00	23,871.26
	F4	Deforestation	496.05	0.00	496.05
Total (ha)			24,367.31	0.00	24,367.31

INTEGRATION WITH WEEKLY MONITORING DATA

The integration of annual and weekly monitoring data was carried out to consolidate land use and land cover information into a cohesive spatial dataset. The process utilized two primary raster inputs: the annual data, obtained through supervised classification of Sentinel imagery, and the weekly data, generated from the analysis of Planet imagery by a technician and validated by the field team.

To ensure compatibility between datasets, the weekly monitoring data was rasterized using the same unit as the reference raster. The class values of the annual raster were then multiplied by

100, allowing its categories to be represented in the hundreds place. The weekly data was subsequently incorporated by adding it to the monitoring raster, enabling the identification of relationships between the two datasets. This approach made it possible to distinguish areas detected by both processes, areas identified only by the annual or the weekly monitoring, and areas already accounted for in previous monitoring reports.

Security procedures

The project owner is responsible for the security procedures and reporting illegal activity to responsible authorities.

These actions are planned to avoid unplanned deforestation and carbon stock changes in the area. Related parameters shall be monitored and reassessed at every verification and revalidation point.

- **Monitoring of carbon stock changes and non-CO2 emissions from fires**

In addition to the mentioned above, the project owner is responsible for training monitoring, management, safety and health personnel. This may include periodic fire brigade training, including first aid, fire procedures, training of new monitoring personnel and those responsible for management during harvests

If forest fires occur, these non-CO2 emissions will be subject to monitoring and accounting, when significant.

- **Monitoring of impacts of natural disturbances and other catastrophic events**

The monitoring of natural impacts and other catastrophic events is responsibility of the project owner. The company must notify Future Carbon International LLC, Future Carbon Group or its controlled companies so that it can include the related impacts in the carbon project reports, updating the related parameters, including the buffer report. Where an event occurs that is likely to qualify as a loss event, the project proponent shall notify Verra within 30 days of discovering the likely loss event.

Decreases in carbon stocks and increases in GHG emissions (e.g. in case of forest fires) due to natural disturbances (such as hurricanes, earthquakes, flooding, drought, fires or 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, when significant. If the area (or a sub-set 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 cancelled 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.

- **Monitoring of Leakage**

Monitoring of the leakage belt and leakage management area will be carried out as in the project area and reference region.

The most recent VCS guidelines on this subject matter shall be applied. Furthermore, as the leakage belt was determined using Option 1 (Opportunity cost analysis), 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 previous period. The calculation procedure for estimating leakage emissions in the project scenario will be done by monitoring the following sources of leakage:

- Carbon stock changes and GHG emissions associated with leakage prevention activities.

The carbon stock decrease or increase in GHG emissions due to leakage prevention measures, which will probably take place inside the leakage management area, will be monitored through documents and field assessment. In areas undergoing carbon stock enhancement, the project conservatively assumes stable stocks and no biomass monitoring is conducted.

- Carbon stock decrease and increases in GHG emissions due to activity displacement leakage

Deforestation in the leakage belt area above the baseline may be considered activity displacement leakage. Activity data for the leakage belt area will be determined using the same methods applied to monitoring deforestation activity data in the project area. Leakage will be calculated by comparing the ex ante and the ex post assessment. However, where strong evidence can be collected that deforestation in the leakage belt is 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.

- **Revision of the baseline**

The current baseline is valid for 6 years, i.e. through 23-October-2025. The baseline will be reassessed every 6 years, and it will be validated at the same time as the subsequent verification.

Technical description of the monitoring task

The baseline scenario will be monitored through the assessment of agents and drivers variables and satellite images to project expected deforestation. Information on agents, drivers and underlying causes of deforestation in the reference region will be collected at the end of each fixed baseline period, as these are essential for improving future deforestation projections and the design of the project activity. In addition, in the same frequency, the projected annual areas of baseline deforestation for the reference region will be revisited and eventually adjusted for the subsequent fixed baseline period.

The location of the projected baseline deforestation will be reassessed using the adjusted projections for annual areas of baseline deforestation and spatial data. All areas credited for avoided deforestation in past fixed baseline periods will be excluded from the revisited baseline projections as these areas cannot be credited again.

Baseline monitoring task will be done in accordance with the applied methodology, VM0015, version 1.1 or the most recent.

Data to be collected

Data will be collected to comply with the parameters used in VM0015 version 1.1, listed in Appendix 5, or the most recent.

Overview of data collection procedures

Data will be collected according to measurement methods and procedures described in section 3.1.1 and 3.1.2 above. All ex ante and ex post parameters will be reassessed at the moment of revision of the baseline.

Quality control and quality assurance procedures

QA/QC will be done according to best practices in remote sensing and as stated by VM0015 methodology.

Data archiving

All data sources and processing, classification and change detection procedures will be documented and stored in a dedicated long-term electronic archive maintained by the project owner. The project proponent will also keep a digital copy of all documents generated during the development of the VCS PD (first fixed baseline period) and the first monitoring period, as well as further monitoring reports in case it participates in the development of subsequent monitoring periods in the future.

Given the extended time frame and the pace of production of updated versions of software and new hardware for storing data, electronic files will be updated periodically or converted to a format accessible to future software applications, as needed.

All maps and records generated during project implementation will be stored and made available to VVBs at verification for inspection. In addition, any data collected from ground-truth points (including GPS coordinates, identified land-use class, and supporting photographic evidence) will be recorded and archived.

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

For the monitoring period, three consultations were held to disseminate the results of the period: one Remote Local Stakeholder Consultation was held online on February 05, 2025 and in loco on February 2025, with the aim of informing stakeholders about the results for 2024, as well as presenting the project's actions since its start and in November 2024, to present the results for the year 2023, present the theory of change for some communities, jointly identify the benefits and potential risks of the planned actions, present the Future Climate team's communication channels, as well as activities related to Brazil nut extractors. During the remote presentation, a form was made available in which participants could say whether they would like to receive the

material presented, as well as any comments, doubts or suggestions regarding the project. At the on-site presentation, printed material was distributed with the results of the project, as well as a brief presentation of the project's Theory of Change. In addition, this Monitoring Report is available online only on the project's Verra platform, also in local language.[121][122]

More information about this consultation is available at Section 5.3.2 of this document.

3.2 Quantification of GHG Emission Reductions and Removals

3.2.1 Baseline Emissions (VCS, 3.15)

The total average biomass stock per hectare (Mg ha^{-1}) was converted to tCO_2e using the following equations:

$$Cab_{icl} = ab \times CF \times 44 / 12$$

Where,

Cab_{icl}	Average carbon stock per hectare in the above-ground biomass carbon pool of initial forest class *icl*; tCO_2e ha^{-1}
ab	Average biomass stock per hectare in the above-ground biomass pool of initial forest class *icl*; Mg ha^{-1}
CF	Default value of carbon fraction in biomass
44/12	Ratio converting C to CO_2e

$$Cbb_{icl} = bb \times CF \times 44 / 12$$

Where,

Cbb_{icl}	Average carbon stock per hectare in the below-ground biomass carbon pool of initial forest class *icl*; tCO_2e ha^{-1}
bb	Average biomass stock per hectare in the below-ground biomass pool of initial forest class *icl*; Mg ha^{-1}
CF	Default value of carbon fraction in biomass
44/12	Ratio converting C to CO_2e

The total baseline carbon stock change in the project area at year *t* is calculated as follows:

$$\Delta CBSLPAt = \Delta CabBSLPAicl,t + \Delta CbbBSLPAicl,t$$

[121] Available at: https://registry.verra.org/app/projectDetail/VCS/2878
[122] It is important to note that the version made available is the pre-audit version, so there will be adjustments to some topics.

Where,

$\Delta CBSLPAt$	Total baseline carbon stock changes in the project area at year *t*; tCO_2e
$\Delta CabBSLPA_{icl,t}$	Total baseline carbon stock change for the above-ground biomass pool in the project area for initial forest class at year *t*; tCO_2e
$\Delta CbbBSLPA_{icl,t}$	Total baseline carbon stock change for the below-ground biomass pool in the project area for initial forest class at year *t*; tCO_2e

$$\Delta \boldsymbol{CabBSLPA_{icl,t}} = \boldsymbol{ABSLPA_{icl,t}} \times \Delta \boldsymbol{Cab_{icl}}$$

Where,

$\Delta CabBSLPA_{icl,t}$	Total baseline carbon stock change for the above-ground biomass pool in the project area for initial forest class at year *t*; tCO_2e
$ABSLPA_{icl,t}$	Area of initial forest class *icl* deforested at time *t* within the project area in the baseline case; ha
ΔCab_{icl}	Average carbon stock change factor per hectare in the above-ground biomass carbon pool of initial forest class *icl*; $tCO_2e\ ha^{-1}$

$$\Delta \boldsymbol{CbbBSLPA_{icl,t}} = \boldsymbol{ABSLPA_{icl,t}} \times \Delta \boldsymbol{Cbb_{icl}}$$

Where,

$\Delta CbbBSLPA_{icl,t}$	Total baseline carbon stock change for the below-ground biomass pool in the project area for initial forest class at year *t*; tCO_2e
$ABSLPA_{icl,t}$	Area of initial forest class *icl* deforested at time *t* within the project area in the baseline case; ha
ΔCbb_{icl}	Average carbon stock change factor per hectare in the below-ground biomass carbon pool of category *icl*; $tCO_2e\ ha^{-1}$

Project carbon stocks were calculated as presented in section 3.1.

Average carbon stocks of post-deforestation classes

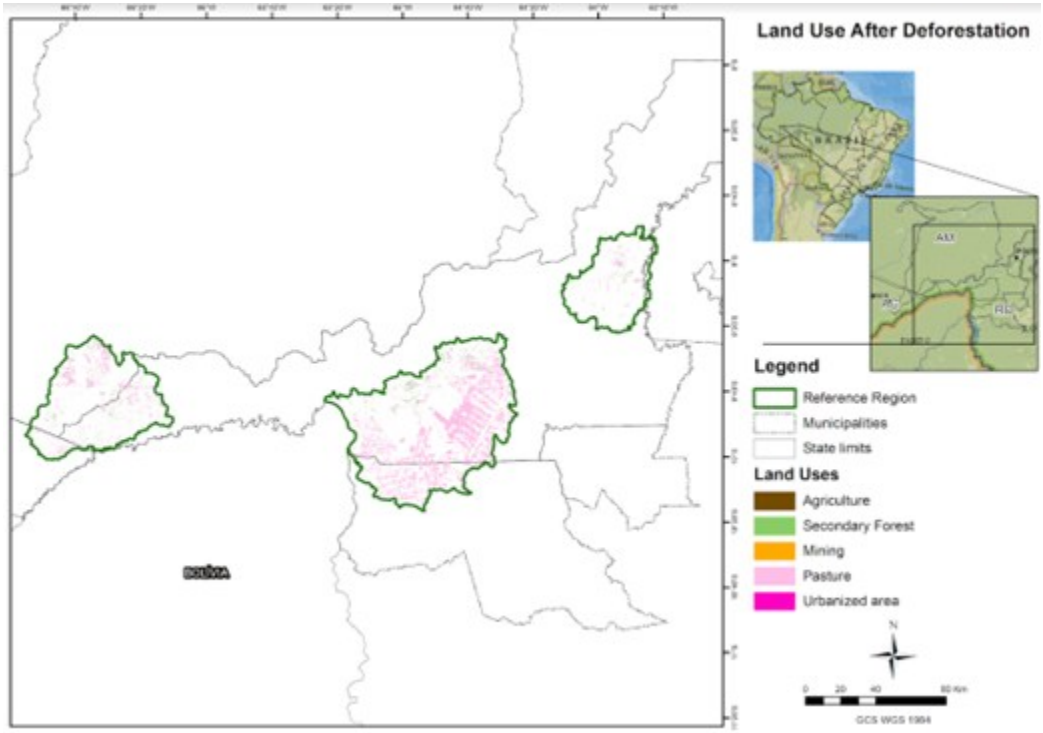
The average classification of post-deforestation land-uses within the reference region during the historical reference period (2009-2019) was conducted through MapBiomas, which is detailed below:

Land Use	Area (%)
Pasture	87.22
Secondary Forests	12.76

Agriculture	0.01
Mining	0
Urban Area	0

Therefore, most of the post-deforestation land uses within the reference region are composed by pasture lands, with more than 87%, as available in the following image:

Figure 16. Post-deforestation land use within reference region



In order to estimate the post-deforestation carbon stocks, the average carbon stocks of pasturelands, agriculture and other land uses were taken from the National GHG Emissions Communication of Brazil to the UNFCCC (2019)[123].

For secondary forests, a regional study was conducted. Most secondary forests in the Brazilian Amazon are young. In 2017, 65% of secondary forests was ≤10 years old. On average, 35% of annual land abandonment to secondary forests was re-cleared within 5 years, and 57% within 10 years[124]. The half-life of secondary forests is 8 years, on average, which is also the same value

[123] Available at: <https://www.gov.br/mcti/pt-br/acompanhe-o-mcti/sirene/publicacoes/comunicacoes-nacionais-do-brasil-a-unfccc/arquivos/3tcn_volume_3.pdf>
[124] Sâmia Nunes *et al* 2020 *Environ. Res. Lett.* **15** 034057. Available at: <https://iopscience.iop.org/article/10.1088/1748-9326/ab76db>

found by other study that concludes that more than 50% of the secondary forests in the Amazon biome have less than 8 years old[125].

According to a study conducted in the Amazon Forest that analysed the carbon stocks of a secondary forest with 14 years old, the average carbon stock in above ground biomass is around 19 tC/ha[126]. Below ground biomass was estimated through the root-to-shoot ratio from the applied methodology. Therefore, the average value for secondary forests is around 22.8 tC/ha.

It was also considered the uncertainties involved in the mentioned studies, according to the adopted methodology. Thus, the post-deforestation carbon stock with after discounts due to uncertainty was applied. It is worth highlighting that, according to the adopted methodology, if uncertainty is higher than 10%, the lower boundary of the 90% confidence interval should be considered for final non-forest class in the leakage belt. In the other hand, the same error condition implies that the higher boundary of the 90% confidence interval should be considered for final non-forest class in the project area, as follows:

Land Use	Average post-deforestation carbon stock 90% CI			
	Estimated carbon stock (tCO2e/ha)	Uncertainty (tCO2e/ha)	Ctotfcl +90% (within PA)	Ctotfcl -90% (within LK)
Pasture	27.76	7.45	35.21	20.30
Secondary Forests	83.59	4.04	83.59	83.59
Agriculture	77.00	20.68	97.68	56.32
Mining	0.00	0.00	0.00	0.00
Urban Area	0.00	0.00	0.00	0.00

Therefore, the weighted average carbon stock was calculated through the data below.

Land Use	Area (%)	Ctotfcl +90% (within PA)	Ctotfcl -90% (within LK)
Pasture	87.22	35.21	20.30
Secondary Forests	12.76	83.59	83.59
Agriculture	0.01	97.68	56.32

[125] Silva Junior, C.H.L., Heinrich, V.H.A., Freire, A.T.G. *et al.* Benchmark maps of 33 years of secondary forest age for Brazil. *Sci Data* **7**, 269 (2020). Available at: <https://doi.org/10.1038/s41597-020-00600-4>

[126] Pereira, Izaura Cristina Nunes. Estoque de biomassa e carbono florestal em unidades de paisagem na Amazônia: uma análise a partir da abordagem metodológica. Universidade Federal do Pará, , Belém, 2013. Available at: <https://ppgdstu.propesp.ufpa.br/ARQUIVOS/teses/TESES/2013/IZAURA%20CRISTINA%20NUNES%20PEREIRA.pdf>

Mining	0.00	0.00	0.00
Urban Area	0.00	0.00	0.00
Weighted average of post-deforestation carbon stocks		**41.39**	**28.38**

After converting the weighted average of post-deforestation carbon stock (in terms of tC/ha) using the conversion factor previously mentioned, the carbon stock in terms of tCO2e/ha is available as follows:

Table 34. Average carbon stocks per hectare of post-deforestation LU/LC classes present in the reference region

Post deforestation class *fcl*	
Name	Non forest
ID_{fcl}	1
Average carbon stock per hectare ±90% CI	
$Ctot_{fcl}$	
tCO_2e/ha	
41.39	

Analysis of Baseline Approach in this Monitoring Period (2024)

To ensure that the appropriate baseline approach for the current monitoring period is being used, an analysis was carried out to compare the applicability of different approaches.

When comparing the real deforestation using the Time Function approach (ex-ante used in the JointPD&MR and 2ndMR) for the monitoring period (2024), it is possible to note that the projection would be around 390% higher than the real scenario, proving not to be the best approach to use, as demonstrated in table below:

Table 35. Comparison between ex-ante and ex-post deforestation within Reference Region with Time Function approach during the monitoring period (01-January-2024 to 31-December-2024)

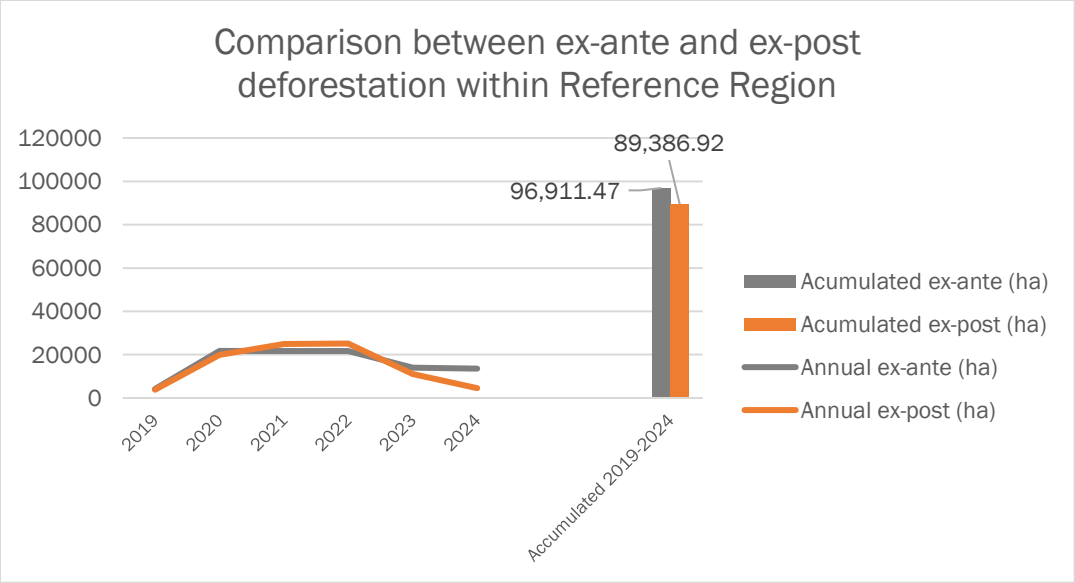
Ex-ante (ha)	Ex-post (ha)
21,316.31	4,542.03

When comparing the Historical Average approach and actual deforestation (ex-post) within the reference region during 2024, the ex-post is around 200% lower than the projection. The following table shows the historical average projection and actual deforestation in the reference region during the current monitoring period:

Table 36. Comparison between ex-ante and ex-post deforestation within Reference Region with Historical Average approach during the monitoring period (01-January-2024 to 31-December-2024)

Ex-ante (ha)	Ex-post (ha)
13,600.39	4,542.03

It is important to complement the Table above with a wider comparison between ex-ante and ex-post analysis in the Reference Region. The following Figure illustrates that the accumulated ex-post is higher than ex-ante values. In addition, the relation between both scenarios (ex-ante and ex-post) are very similar, with 92% of relation, reinforcing the projections are not inflated.



When comparing deforestation dynamic within the Reference Region with the previous monitoring period, the current monitored period (4th) is less than 50% when compared to the previous period monitored (3rd). Such deforestation dynamics observed in the region in 2023 and 2024 can be attributed to less forest coverage in the region (please see Table 39) combined with the intensification of the Environmental enforcement carried out by agencies (such as IBAMA and SEDAM). This followed after the end of the Bolsonaro administration, a period marked by significant challenges to environmental conservation. These challenges included budget cuts, management changes within Agencies, and strong support for the non-compliance parcel of the agribusiness sector. According to the registered Joint VCSPD, the former government was identified as an underlying cause for the increase in deforestation. With the start of the new government in 2023, IBAMA not only renewed its efforts to combat deforestation but also resolved pending cases, ensuring they did not expire[127]. This strengthening of enforcement actions resulted in a reduction in the deforestation rate in the Amazon. According to research

[127] Available at: https://climainfo.org.br/2025/01/19/ibama-tem-recorde-de-arrecadacao-com-multas-ambientais-em-2024/

carried out by Inpe[128], deforestation rates in the Amazon fell by 30.63% between August 2023 and July 2024 compared to the same period the previous year. The state with the biggest drop in deforestation was Rondônia, with 62.5%. The decline in deforested areas within the Reference Region reflects the general reduction in deforestation observed both at the State level and across the biome.

Additionally, as a consequence of the policies and actions during the 2018-2022 government, the intense deforestation in preceding years resulted in a significant loss of forested areas within the Reference Region.

The table below reflects the decrease in deforestation in 2024 compared to previous years, when deforestation increased considerably.

Table 37. Annual Deforestation in Reference Region since the Project Start Date

Year	Annual Deforestation (ha)
October-2019 to December-2019	3,812.99
2020	19,936.48
2021	24,943.32
2022	25,130.88
2023	11,021.22
2024	4,542.03

[128] Available at: https://www.gov.br/mma/pt-br/assuntos/noticias/taxa-de-desmatamento-na-amazonia-cai-30-6-e-25-7-no-cerrado

To illustrate the importance of the Rio Madeira Grouped REDD Project, an analysis was conducted to identify the contribution of the conserved area within the project in the context of the Reference Region. When analyzing the monitored period (2024), the area belonging to the project corresponds to approximately 11.89% of the forest area contained within the Reference Region (including private and public areas), as illustrated in the following table:

Table 38. Contribution of Project Area in the forest area present in Reference Region in the current monitoring period (01-January-2024 to 31-December-2024)

Forest in RR (ha)	Forest in Project Area (ha)	Contribution of the PA (%)
436,651.35	51,936.18	11.89

Additionally, analyzing the scope from the historical period, the contribution variation of the conserved area within the project in the context of the Reference Region between 2009 and 2024 was approximately 63.4%[129], as shown in the table and graphs below. This value represents the percentage change in the contribution of the Project Area (PA) to the forest area in the Reference Region (RR) between 2009 and 2024.

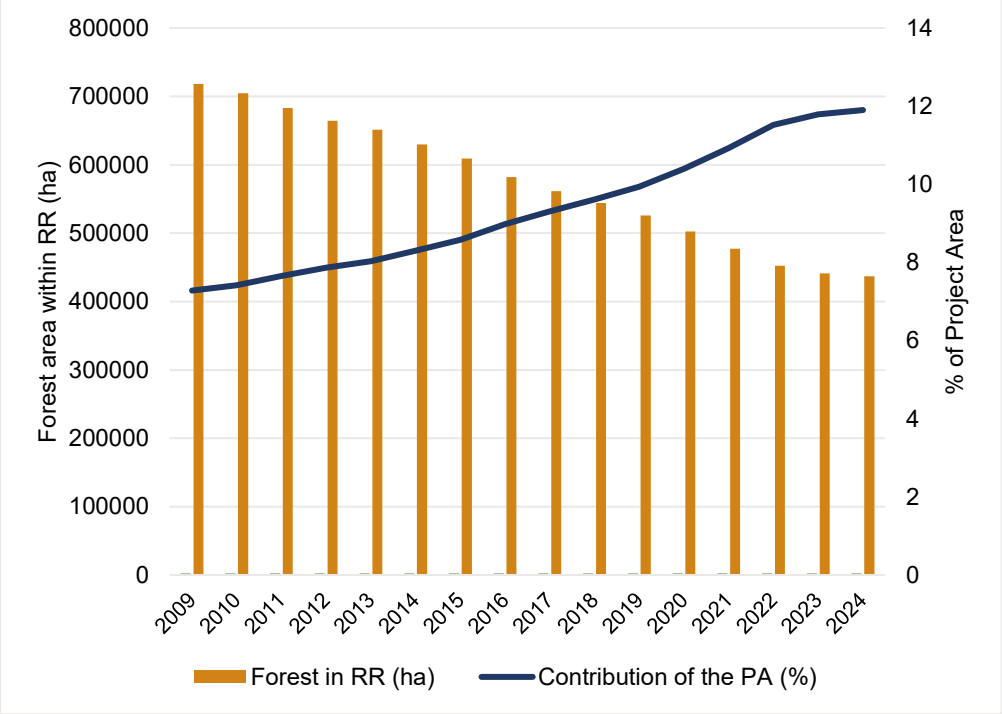
Table 39. Comparison between the participation of Project Area in the forest area present in Reference Region in Historical Reference Period and the current monitoring period (2009 to 2023)[130]

Year	Forest in RR (ha)	Forest in Project Area (ha)	Contribution of the PA (%)
2009	717,983.64	52,274.05	7.28
2010	704,812.50	52,274.05	7.42
2011	683,015.31	52,274.05	7.65
2012	664,267.59	52,274.05	7.87
2013	651,296.07	52,274.05	8.03
2014	629,801.55	52,274.05	8.30
2015	609,098.49	52,274.05	8.58
2016	581,876.46	52,274.05	8.98
2017	561,563.73	52,274.05	9.31

[129] The percentage change was calculated using the following formula: Percentage Change = [(Contribution in 2024 - Contribution in 2009) / Contribution in 2009] × 100.
[130] The values can be consulted in the ER spreasheet, tables “PSD” and “Table RR ex post”

2018	543,885.66	52,274.05	9.61
2019	526,038.27	52,269.49	9.94
2020	502,288.80	52,216.60	10.40
2021	477,345.48	52,150.46	10.93
2022	452,214.60	52,081.79	11.52
2023	441,193.38	52,032.33	11.79
2024	436,651.35	51,936.18	11.89

Figure 40. Contribution of Project Area (%) to forest areas within the Reference Region



Finally, it can be stated that the project continues to assert its importance for forest conservation in the region and the context in which it is situated.

Calculation of baseline carbon stock changes

The resulting changes in carbon stock for initial forest classes for the reference region, project area, and leakage belt are as presented as follows:

Table 40. Ex post carbon stock change in the reference region (ER sheet Table 21.a)

Carbon stock change in the above-ground biomass per initial forest class *icl*		Total carbon stock change in the above-ground biomass of initial forest class in the reference region	
ID_{cl}	1	$\Delta CabBSLRR_{icl,t}$	$\Delta CabBSLRR_{icl}$
Name	Forest	annual	cumulative
Project year	tCO_2e	tCO_2e	tCO_2e
2024	1,868,408	1,868,408	36,770,174

Carbon stock change in the below-ground biomass per initial forest class *icl*		Total carbon stock change in the below-ground biomass of initial forest class in the reference region	
ID_{cl}	1	$\Delta CbbBSLRR_{icl,t}$	$\Delta CbbBSLRR_{icl}$
Name	Forest	annual	cumulative
Project year	tCO_2e	tCO_2e	tCO_2e
2024	882,484	882,484	3,201,800

Carbon stock changes in above-ground biomass per post-deforestation zone z		Total carbon stock change of post deforestation zones in the reference region	
ID_{lz}	1	$\Delta CBSLRR_{z,t}$	$\Delta CBSLRR_{z}$
Name	Non-forest	annual	cumulative
Project year	tCO_2e	tCO_2e	tCO_2e
2024	390,207	390,207	1,080,430

Total net carbon stock change in the reference region	
$\Delta CBSLRR_{t}$	$\Delta CBSLRR$
annual	cumulative
tCO_2e	tCO_2e
2,360,685	38,891,544

Table 41. Ex post carbon stock change in the project area (ER sheet Table 21.b)

Carbon stock change in the above-ground biomass per initial forest class *icl*				Total carbon stock change in the above-ground biomass of initial forest class in the project area	
ID_{cl}	1	1	1	$\Delta CabBSLPA_{icl,t}$	$\Delta CabBSLPA_{icl}$
Name	Grupo Rovema	Grupo Tupá	Grupo Leite	annual	cumulative
Project Year	tCO_2e	tCO_2e	tCO_2e	tCO_2e	tCO_2e
2024	15,093	2,649	21,810	39,552	138,988

Carbon stock change in the below-ground biomass per initial forest class *icl*				Total carbon stock change in the below-ground biomass of initial forest class in the project area	
ID_{cl}	1	1	1	$\Delta CbbBSLPA_{icl,t}$	$\Delta CbbBSLPA_{icl}$
Name	Grupo Rovema	Grupo Tupá	Grupo Leite	annual	cumulative
Project Year	tCO_2e	tCO_2e	tCO_2e	tCO_2e	tCO_2e
2024	1,352	764	1,220	3,336	9,453

Carbon stock changes in above-ground biomass per post-deforestation zone z		Total carbon stock change of post deforestation zones in the project area	
ID_{fz}	1	$\Delta CBSLPA_{z,t}$	$\Delta CBSLPA_{z}$
Name	Non-forest	annual	cumulative
Project Year	tCO_2e	tCO_2e	tCO_2e
2024	1,112	1,112	2,850

Total net carbon stock change in the project area	
$\Delta CBSLPA_{t}$	$\Delta CBSLPA$
annual	cumulative
tCO_2e	tCO_2e
41,776	145,592

Table 42. Ex post carbon stock change in the leakage belt (ER sheet Table 21.c)

Carbon stock change in the above-ground biomass per initial forest class *icl*		Total carbon stock change in the above-ground biomass of initial forest class in the leakage belt	
ID_{cl}	1	$\Delta CabBSLLK_{l\,cl,t}$	$\Delta CabBSLLK_{l\,cl}$
Name	Forest	annual	cumulative
Project year	tCO_2e	tCO_2e	tCO_2e
2024	204,055	204,055	1,717,251

Carbon stock change in the below-ground biomass per initial forest class *icl*		Total carbon stock change in the below-ground biomass of initial forest class in the leakage belt	
ID_{cl}	1	$\Delta CbbBSLLK_{l\,cl,t}$	$\Delta CbbBSLLK_{l\,cl}$
Name	Forest	annual	cumulative
Project year	tCO_2e	tCO_2e	tCO_2e
2024	41,214	41,214	136,206

Carbon stock changes in above-ground biomass per post-deforestation zone z		Total carbon stock change of post deforestation zones in the leakage belt	
ID_{lz}	1	$\Delta CtotBSLLK_{z,t}$	$\Delta CtotBSLLK_{z}$
Name	Non-forest	annual	cumulative
Project year	tCO_2e	tCO_2e	tCO_2e
2024	11,601	11,601	30,343

Total net carbon stock change in the leakage belt	
$\Delta CtotBSLLK_t$	$\Delta CtotBSLLK$
annual	cumulative
tCO_2e	tCO_2e
233,668	1,823,113

Baseline non-CO2 emissions from forest fires

As described in the baseline scenario, slash-and-burn deforestation to clear the area is carried out for cattle ranching, which is the main cause of deforestation within the project area.

Therefore, baseline deforestation in the project area involves fire and all above ground biomass is burnt. It is worth mentioning that the effect of fire on CO2 emissions is counted in the estimation of carbon stock changes; therefore, CO2 emissions from biomass burning were ignored to avoid double counting. However, non-CO2 emissions (CH4 and N2O) from forest fires (EBBBSLPAt) were quantified and included as baseline emissions, as follows.

$$EBBtot_{icl,t} = EBBN_2O_{icl,t} + EBBCH_{4icl,t}$$

Where,

$EBBtot_{icl,t}$	Total GHG emission from biomass burning in forest class icl at year t; tCO_2e/ha
$EBBN_2O_{icl,t}$	N_2O emission from biomass burning in forest class icl at year t; tCO_2e/ha
$EBBCH_{4icl,t}$	CH_4 emission from biomass burning in forest class icl at year t; tCO_2e/ha

$$EBBN_2O_{icl,t} = EBBCO_{2icl,t} * 12/44 * NCR * ER_{N2O} * 44/28 * GWP_{N2O}$$

Where,

$EBBCO_{2icl,t}$	Per hectare CO_2 emission from biomass burning in slash and burn in forest class icl at year t; tCO_2e/ha
NCR	Nitrogen to Carbon Ratio (IPCC default value = 0.01); dimensionless
ER_{N2O}	Emission ratio for N_2O (IPCC default value = 0.007)
GWP_{N2O}	Global Warming Potential for N_2O (IPCC default value)[131]

$$EBBCH_{4icl,t} = EBBCO_{2icl,t} * 12/44 * ER_{CH4} * 16/12 * GWP_{CH4}$$

Where,

[131] Latest data from IPCC 2021 – Sixth Assessment Report. Available at: https://www.ipcc.ch/report/ar6/wg1/chapter/chapter-7/. Table 7.15, value for N2O = 273.

$EBBCO_{2icl,t}$	Per hectare CO_2 emission from biomass burning in slash and burn in forest class icl at year t; tCO_2e/ha
ER_{CH4}	Emission ratio for CH_4 (IPCC default value = 0.012)
GWP_{CH4}	Global Warming Potential for CH_4 (IPCC default value) [132]

$$EBBCO_{2icl,t} = Fburnt_{icl} * (C_{picl,t} * Pburnt_{p,icl} * CE_{p,icl})$$

Where,

$EBBCO_{2icl,t}$	Per hectare CO_2 emission from biomass burning in the forest class icl at year t; tCO_2e/ha
$Fburnt_{icl}$	Proportion of forest area burned during the historical reference period in the forest class icl; %
$C_{picl,t}$	Average carbon stock per hectare in the carbon pool p burnt in the forest class icl at year t; tCO_2e/ha
$Pburnt_{p,icl}$	Average proportion of mass burnt in the carbon pool p in the forest class icl; %
$CE_{p,icl}$	Average combustion efficiency of the carbon pool p in the forest class icl; dimensionless (IPCC default of 0.5)
p	Carbon pool that could burn, above-ground biomass

For the Fburnt, it was considered default value from MCTI (Science, Technology and Innovation Ministry)[133]. According to the governamental publication, the combustion factor for the phitophisionomy Open Tropical Rainforest (Aa, Ab, As) is 45%.

The Pburnt estimated using the average biomass per hectare that has commercial value and could be removed prior to clear cutting and burning. Based on literature, an average value of 61.6 m^3/ha was obtained, which would correspond to approximately 11% of the total biomass in 1 ha. In this way, the remaining is burned to clear the area, therefore, its new value is 88.6%.

[132] Latest data from IPCC 2021 – Sixth Assessment Report. Available at: https://www.ipcc.ch/report/ar6/wg1/chapter/chapter-7/. Table 7.15, value for CH4 = 29.8.
[133] Value of "Biomass combustion factors by phytophysiognomies group in the Amazon biome" for Open Tropical Rainforest available at the Third National Communication from Brazil to the United Nations Frameworkd Convention on Climate Change Volume 3, Table A2.4, page 305 <http://www.ccst.inpe.br/publicacao/terceira-comunicacao-nacional-do-brasil-a-convencao-quadro-das-nacoes-unidas-sobre-mudanca-do-clima-portugues/>

However, due to the lack of literature estimates, a study from the Brazilian Amazon in the Cerrado vegetation was used for the comparison. This study reported that the total biomass consumed by fires varies from 72% to 84% (average 78%) in denser Cerrado types, which is a forest vegetation.

The most conservative value between these two estimates were used, i.e., Pburnt was estimated as 78%.

It is important to note that slash and burn practices are commonly used in the Amazon region to clear the area for other land uses thus, when burning an area, the main objective is to completely remove all the remaining biomass. Therefore, assuming that 78% of the biomass is combusted, there would still be 22% remaining biomass that shall be left to decompose, which also emits GHG to the atmosphere in this process.

Thus, the total actual non-CO_2 emissions from forest fire at year t in the project area at the baseline scenario ($EBBBSLPA_t$) were calculated as follows.

$$EBBBSLPA_t = ABSLPA_{icl,t} * EBBtot_{icl,t}$$

Where,

$EBBBSLPA_t$ Total actual non-CO_2 emissions from forest fire at year t in the project area in the baseline scenario; tCO_2e/ha

$ABSLPA_{icl,t}$ Annual area of deforestation of initial forest classes icl in the project area at year t; ha

$EBBtot_{icl,t}$ Total GHG emission from biomass burning in forest class icl at year t; tCO_2e/ha

Values of all used parameters and baseline non-CO2 emissions from forest fires are available at the following tables:

Table 43. Parameters used to calculate non-CO2 emissions from forest fires (ER sheet Table 23)

Initial Forest Class		Parameters								
IDcl	Name	$Fburnt_{icl}$	Cab	$Pburnt_{ab,icl}$	$CE_{ab,icl}$	ECO2-ab	EBBCO2-tot	$EBBN2O_{icl}$	$EBBCH4_{icl}$	$EBBtot_{icl}$
		%	tCO2e/ha	%	%	tCO2e/ha	tCO2e/ha	tCO2e/ha	tCO2e/ha	tCO2e/ha
1	Open Tropical Rainforest (Forest)	45.00%	411.36	78%	50%	72.19	72.19	0.59	9.39	9.98

Table 44. Baseline non-CO2 emissions from forest fires in the project (ER sheet Table 24)

Project year *t*	Emissions of non-CO_2 gasses from baseline forest fires						Total baseline non-CO_2 emissions from forest fires in the project area	
	Grupo Rovema		Grupo Tupá		Grupo Leite		annual	cumulative
	$ABSLPA_{icl,t}$	$EBBBSLtot_{icl}$	$ABSLPA_{icl,t}$	$EBBBSLtot_{icl}$	$ABSLPA_{icl,t}$	$EBBBSLtot_{icl}$	$EBBBSLPA_t$	EBBBSLPA
	ha	tCO_2e/ha	ha	tCO_2e/ha	ha	tCO_2e/ha	tCO_2e	tCO_2e
2024	1,120.79	9.98	380.76	9.98	88.69	9.98	15,869.09	91,104.76

3.2.2 Project Emissions (VCS, 3.15)

As detailed below, the instances within the Rio Madeira Grouped REDD Project may have a sustainable forest management plan implemented. This type of economic activity enables the harvesting of an economically feasible volume of forest products, however allowing the regeneration of the natural stock in accordance with the growth and recovery rates of the biome.

During this monitoring period, Grupo Tupá had Sustainable Forest Management activities and one UPA was harvested, according to table below:

The ex post carbon stock decrease due to planned deforestation in the project area was calculated using the following equation:

$$\Delta CPDdPA_t = (APDPA_{icl,t} \times \Delta Ctot_{icl})$$

Where,

$\Delta CPDdPA_t$	Total decrease in carbon stock due to planned deforestation at year t in the project area; tCO_2e
$APDPA_{icl,t}$	Areas of planned deforestation in forest class icl at year t in the project area; ha
$\Delta Ctot_{icl}$	Average carbon stock change of all accounted carbon pools in forest class icl at time t; tCO_2e/ha

The ex post carbon stock decrease due to unplanned deforestation in the project area was calculated using the following equation:

$$\Delta CUDdPA_t = (AUDPA_{icl,t} \times \Delta Ctot_{icl})$$

Where,

$\Delta CPUdPA_t$	Total ex post actual carbon stock change due to unavoidable unplanned deforestation at year t in the project area; tCO_2e

$AUDPA_{icl,t}$	Areas of unplanned deforestation in forest class icl at year t in the project area; ha
$\Delta Ctot_{icl}$	Average carbon stock change of all accounted carbon pools in forest class icl at time t; tCO_2e/ha

Therefore, the total carbon stock decreases due to planned and unplanned deforestation in the project area could be calculated, as depicted in the Table below.

Table 45. Ex post carbon stock decrease due to planned and unplanned deforestation in the project area (ER sheet Table 25.a)

Project year t	Areas of planned deforestation x Carbon stock change (decrease) in the project area						Total carbon stock decrease due to planned deforestation		Areas of unplanned deforestation x Carbon stock change (decrease) in the project area						Total carbon stock decrease due to unplanned deforestation		Total carbon stock decrease due to planned and unplanned deforestation	
	Grupo Rovema		Grupo Tupá		Grupo Leite		annual	cumulative	Grupo Rovema		Grupo Tupá		Grupo Leite		annual	cumulative	annual	cumulative
	APDPAicl,t	Ctoticl,t	APDPAicl,t	Ctoticl,t	APDPAicl,t	Ctoticl,t	ΔCPDdPAt	ΔCPDdPA	AUDPAicl,t	Ctoticl,t	AUDPAicl,t	Ctoticl,t	AUDPAicl,t	Ctoticl,t	ΔCUDdPAt	ΔCUDdPA	tCO2e	tCO2e
	ha	tCO2e/ha	ha	tCO2e/ha	ha	tCO2e/ha	tCO2e	tCO2e	ha	tCO2e/ha	ha	tCO2e/ha	ha	tCO2e/ha	tCO2e	tCO2e		
2024	0.00	510.09	1.56	510.09	0.00	510.09	796.75	41,376.83	36.69	510.09	6.44	510.09	53.02	510.09	49,044.77	172,345.69	49,841.52	213,722.52

Figure 18. Deforestation in Serra Verde farm (Instance 1) during the monitoring period (January 2024 to December 2024)[30]

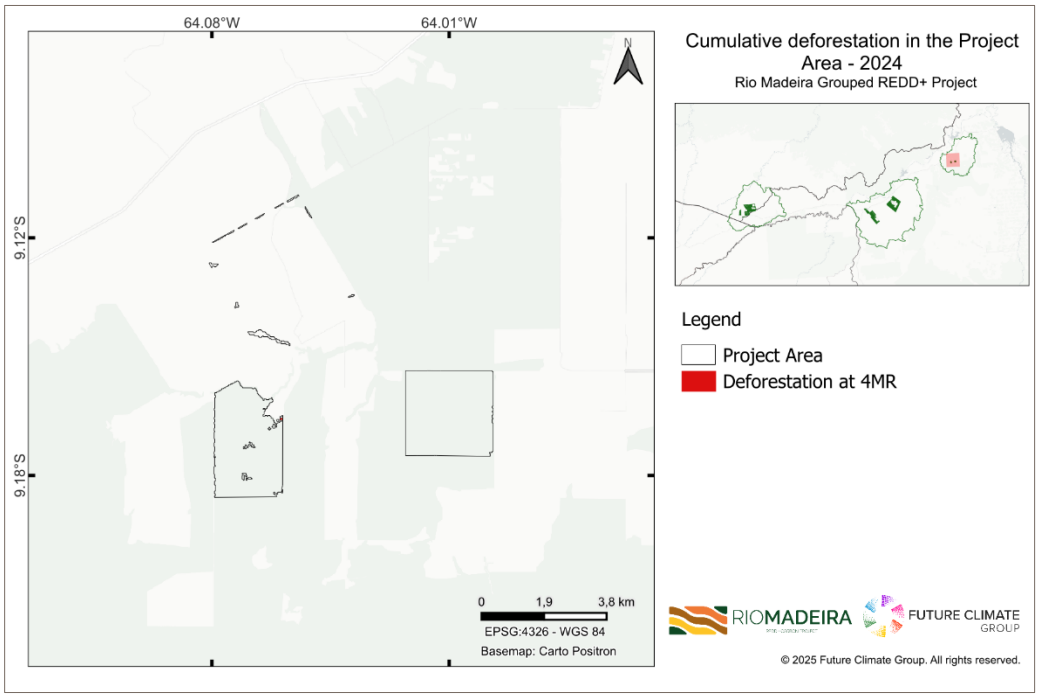


Figure 19. Deforestation in Santa Carmen farm (Instance 2) during the monitoring period (January 2024 to December 2024)[30]

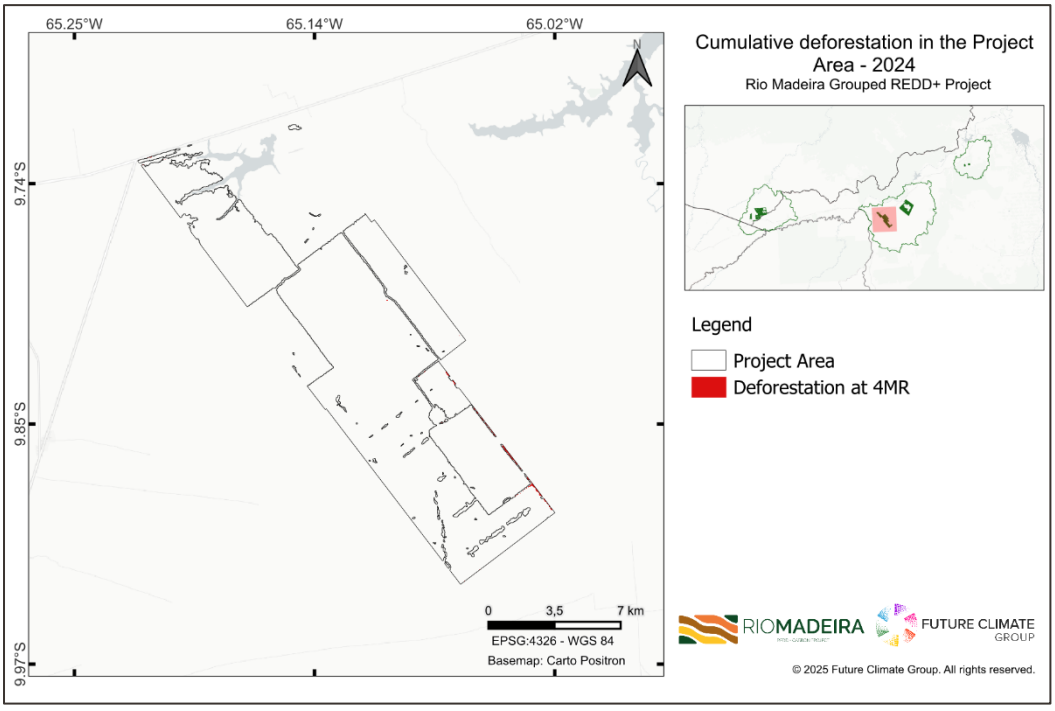


Figure 19. Deforestation in Rio Madeira farm (Instance 1) during the monitoring period (January 2024 to December 2024)[30]

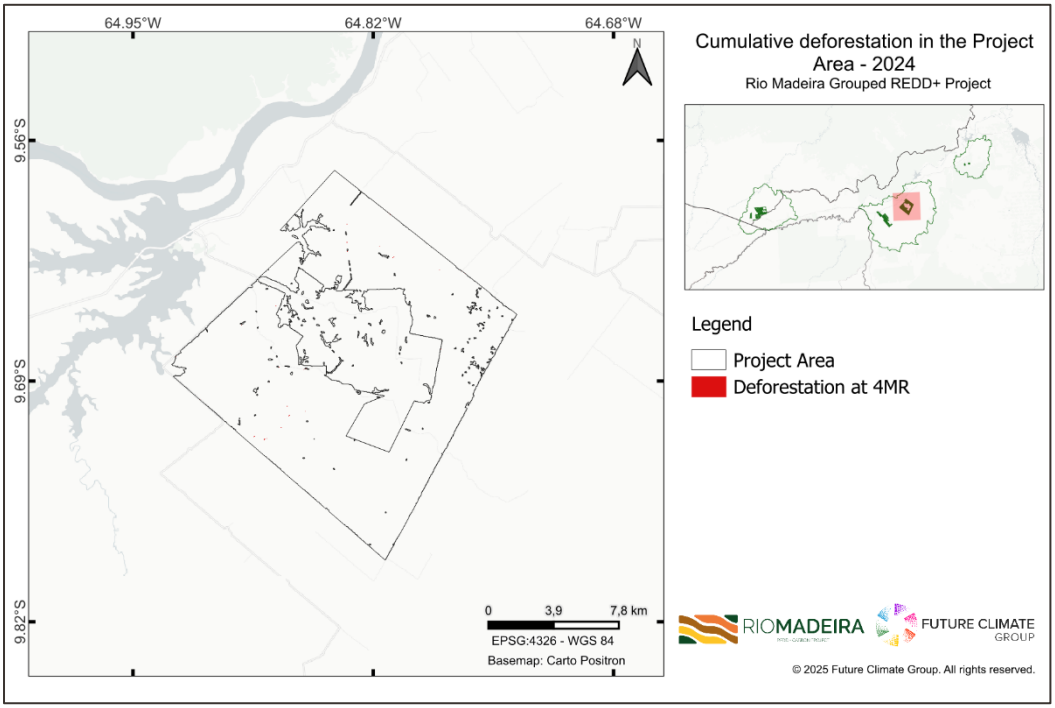


Figure 20. Deforestation in Nova Fronteira farm (Instance 3) during the monitoring period (January 2024 to December 2024)[30]

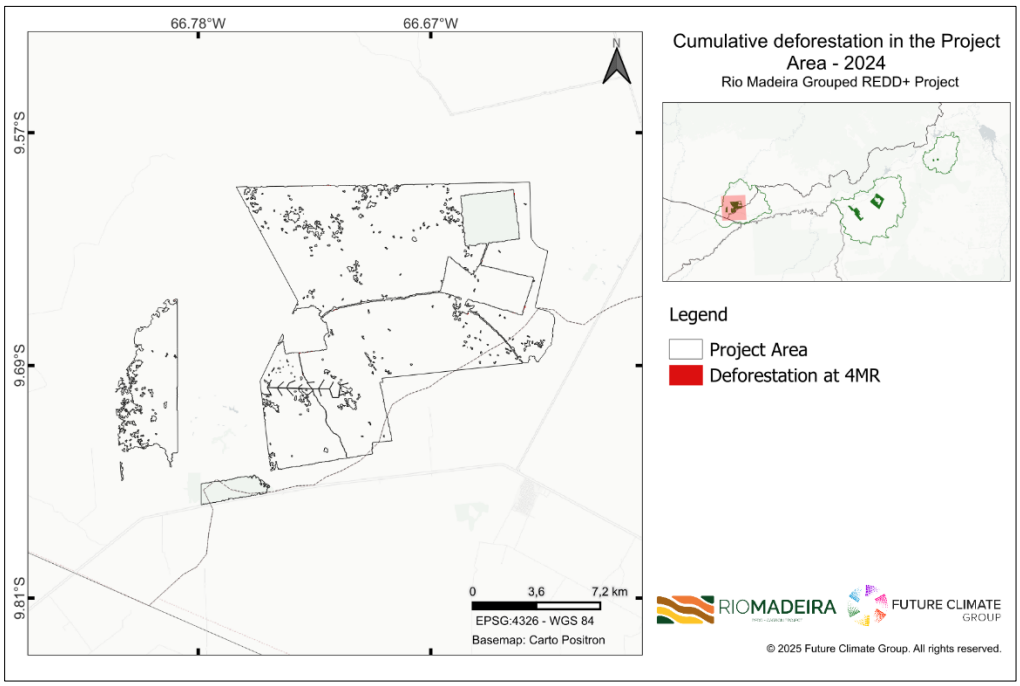


Figure 22. Cumulative deforestation Serra Verde farm (Instance 1) during the monitoring period (January 2024 to December 2024)[30]

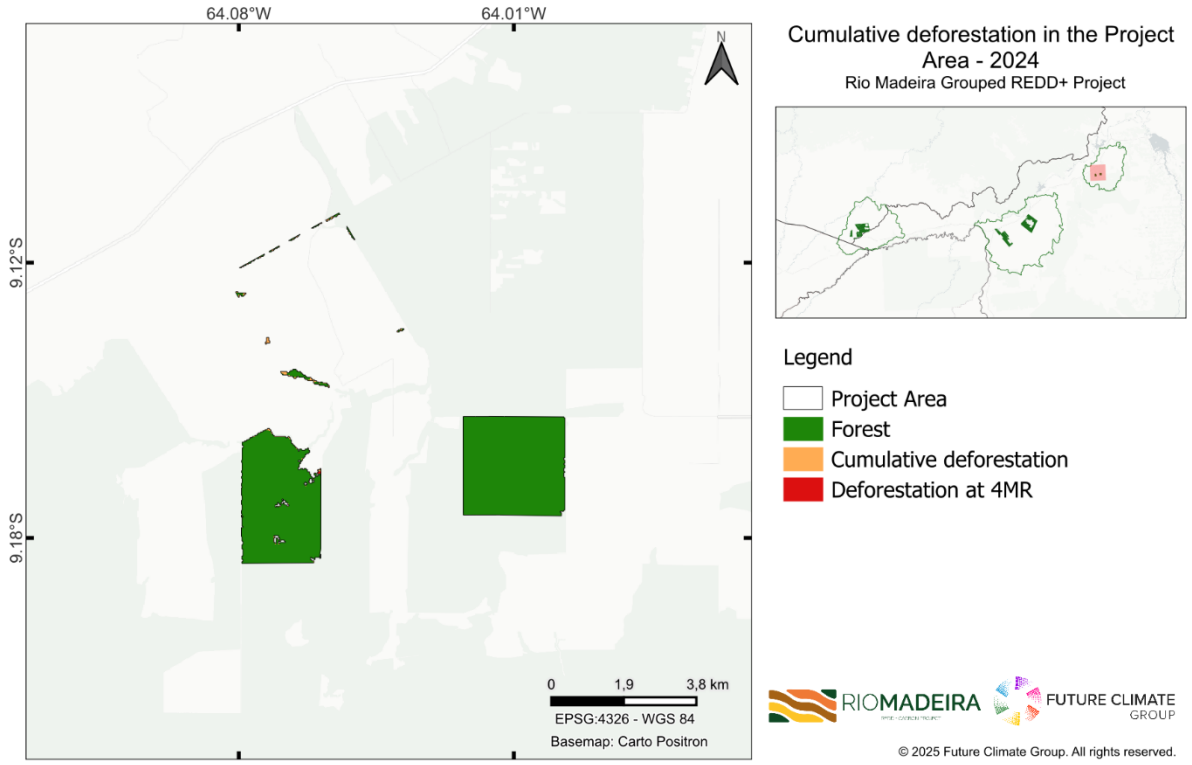


Figure 23. Cumulative deforestation at Santa Carmen farm (Instance 2) during the monitoring period (January 2024 to December 2024)[30]

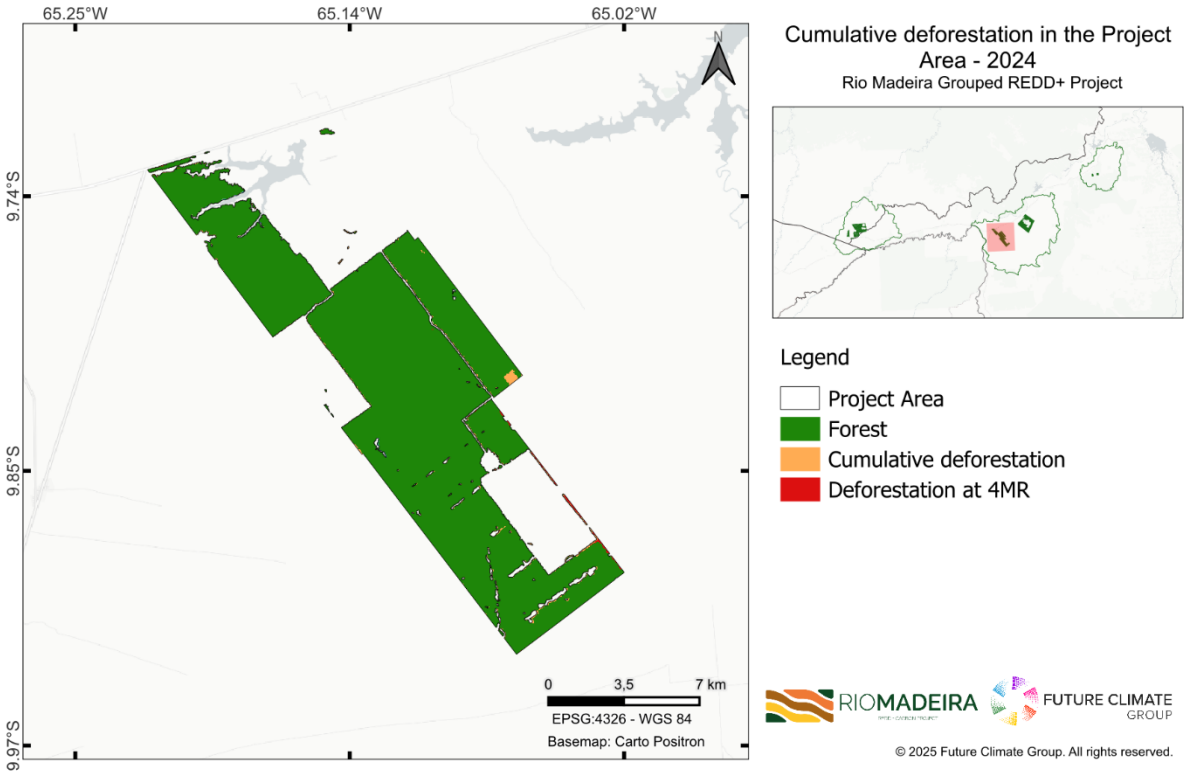


Figure 23. Cumulative deforestation at Rio Madeira farm (Instance 1) during the monitoring period (January 2024 to December 2024)[30]

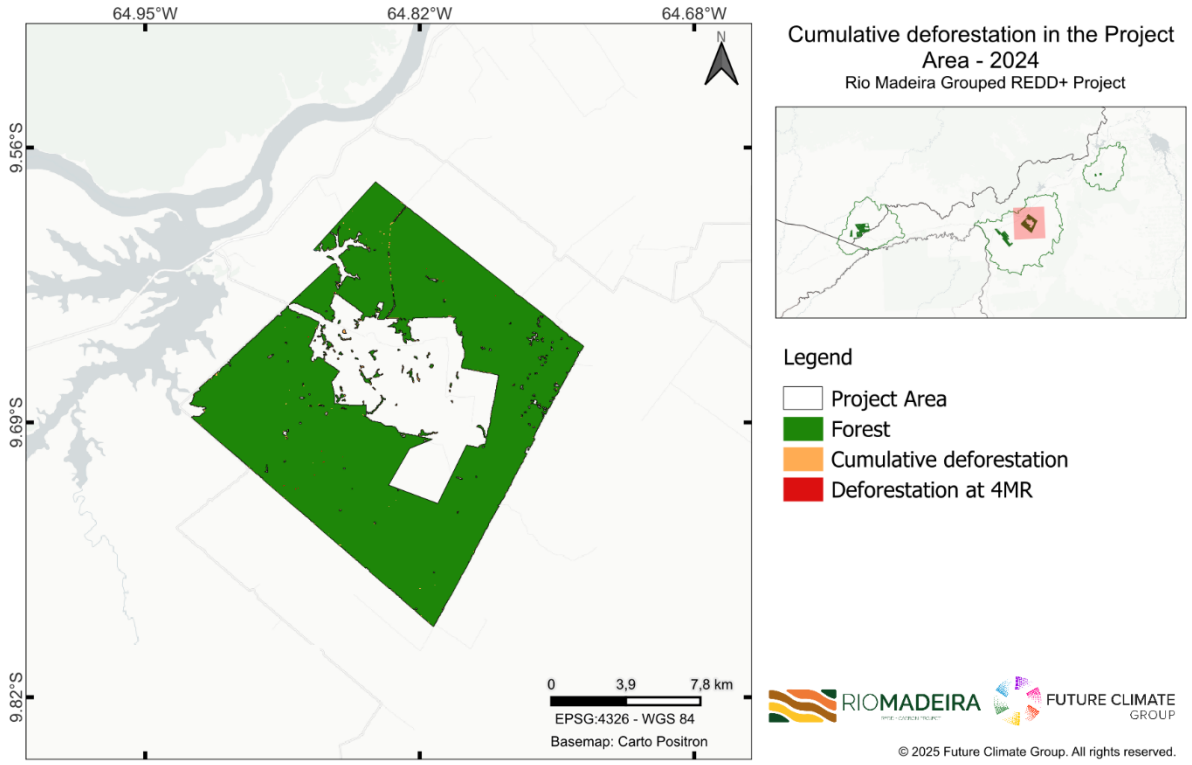
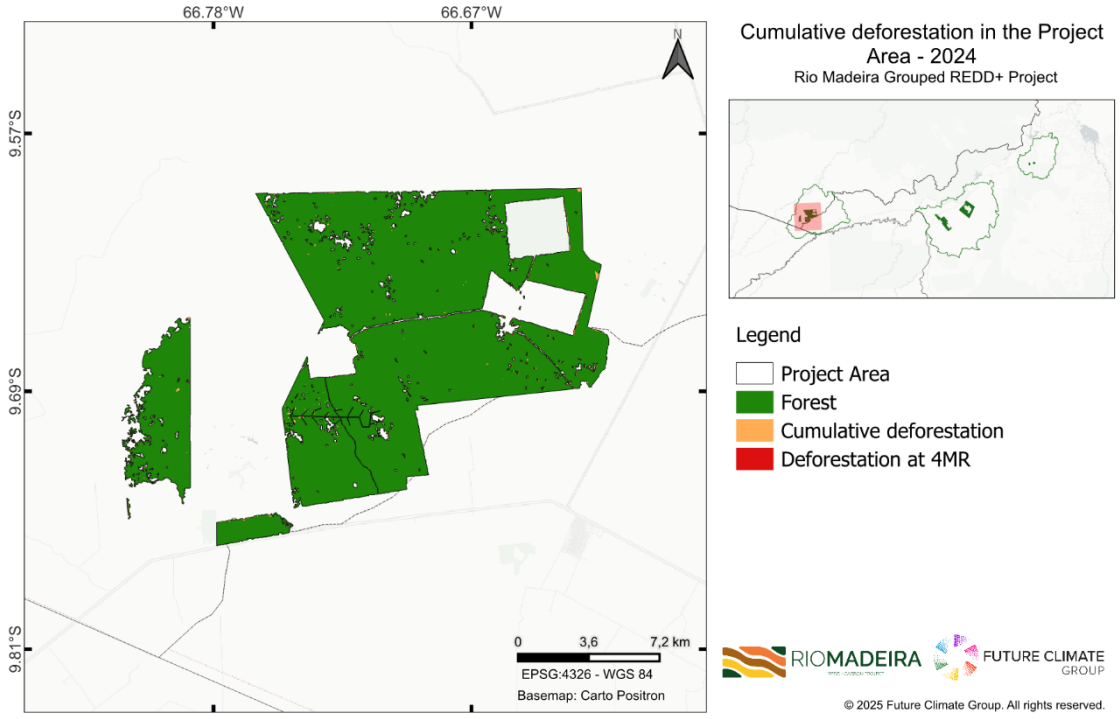


Figure 25. Cumulative deforestation at Nova Fronteira farm (Instance 3) during the monitoring period (January 2024 to December 2024)[30]



In the project scenario, emissions due to planned logging activities results from timber harvesting and also from damages to vegetation during the directional tree felling, which generate forest residues (branches, remains of logs and other damaged trees during the tree felling).

According to Feldpausch et al (2005), the mean Coarse woody debris returned to the soil as necromass following logging and damage in: (1) tree felling gap formation (trees killed by tree-fall), (2) residual canopy from the felled tree, (3) road, (4) deck construction (whole trees plowed to the ground) and (5) skid maneuvering during logging, is about 6.9 Mg C/ha. According to section 4.3 (pg 212) from this same study, this represents 2.4 times the carbon taken off site in logs.

However, the MR already takes into account as planned deforestation the roads and decks constructions, which represent around 16% of the total damage[134]. Therefore, the LDF is 2.4 * (1-0.159) = 2.0174.

Thus, GHG emissions from logging activities include the volume of harvested timber plus the logging damage factor, as follows.

$$\Delta CLd_{icl} = (HI_{icl,t} + LDF) \times D_m \times CF \times 44 / 12$$

[134] According to Feldpausch et al (2005), Table 6 shows mean damages divided into five groups, totaling 6.9 Mg/ha. However, if roads and log decks are excluded, 1.1Mg/ha should be discounted. Thus, 1.1/6.9 represent 16% of already discounted damage.

Where,

$\Delta CLd_{icl,t}$	Average carbon stock decrease due to logging activities in forest class *icl* at time *t*; tCO_2e/ha
$HI_{icl,t}$	Harvesting intensity of timber in forest class *icl* at year *t* in the project area due to planned logging activities (i.e., sustainable forest management plan); m^3/ha
LDF	Logging damage factor; m^3/ha
D_m	Mean wood density; g/cm^3
CF	Default value of carbon fraction in biomass; tC t-1 d.m.
44/12	Ratio of molecular weight of CO_2 to carbon; dimensionless

Harvested wood products were not accounted as carbon pool. Therefore, the *ex post* carbon stock decrease due to planned logging activities in the project area was calculated using the following equation:

$$\Delta CPLdPA_t = (APLPA_{icl,t} \times \Delta CLd_{icl,t}) - (APLPA_{icl,t}) \times \Delta Cwp_t$$

Where,

$\Delta CPLdPA_t$	Total decrease in carbon stock due to planned logging activities at year *t* in the project area; tCO_2e
$APLPA_{icl,t}$	Areas of planned logging activities in forest class *icl* at year *t* in the project area; ha
$\Delta CLd_{icl,t}$	Average carbon stock decrease due to logging activities in forest class *icl* at time *t*; tCO_2e/ha
ΔCwp_t	Average carbon stock per hectare in the harvested wood products carbon pool at time *t*; tCO_2e/ha

Thus, table below presents the *ex post* carbon stock decrease due to planned logging activities in the project area.

Table 46. Ex post actual carbon stock decrease due to planned logging activities in the project area (ER sheet Table 25.b)

Project year *t*	Areas of planned logging activities x Carbon stock change (decrease) in the project area						Total carbon stock decrease due to planned logging activities	
	Grupo Rovema		Grupo Tupá		Grupo Leite		annual	cumulative
	$APLPA_{icl,t}$	$\Delta CLd_{icl,t}$	$APLPA_{icl,t}$	$\Delta CLd_{icl,t}$	$APLPA_{icl,t}$	$\Delta CLd_{icl,t}$	$\Delta CPLdPA_t$	$\Delta CPLdPA$
	ha	tCO_2e/ha	ha	tCO_2e/ha	ha	tCO_2e/ha	tCO_2e	tCO_2e
2024	0.00	28.20	484.22	22.38	0.00	0.00	10,836.47	319,071.24

Fossil fuel emissions from sustainable forest management activities are likely to be less than 5% of the total GHG emissions reductions benefits generated by the present project. Considering that emissions from deforestation and forest degradation would be much higher than those associated with timber harvesting, the emissions from fossil fuel during transport and machinery use can be considered de-minimis. In addition, according to VCS AFOLU Requirements, fossil fuel emissions from transport and machinery use in REDD project activities can be considered de minimis.

Nevertheless, in order to estimate the fossil fuel emissions, it was counted all the invoices from diesel and other fossil fuel acquired from the instances during the monitored period. Then, it was estimated 5% of such volume was used for REDD project, including surveillance activities, fire break maintenance, among others. It is worth emphasizing all instances have heavy machinery for the traditional agribusiness activities (tractors, trucks, plows, harvester etc), therefore 5% is considered reasonable as informed by the landowners. Afterwards, the fuel volume was applied to the Brazilian GHG Protocol calculation tool[135] in order to estimate de fossil fuel emissions, which is summarized in the following table:

Table 47. Fossil fuel emissions during monitored period

Project year *t*	Fossil fuel emissions per instance			Total CO_2 emissions from fossil fuel
	Grupo Rovema	Grupo Tupá	Grupo Leite	
	tCO_2	tCO_2	tCO_2	tCO_2
2024	37.19	3.52	18.54	59.25

Considering the total VCUs during the monitored period (581,681 VCUs), the fossil fuel emissions during the monitored period can be considered de minimis since it represents than 5% of total VCUs.

No production of fuel wood or charcoal occurred within the project area during the monitoring period.

Thus, table below presents the total ex post carbon stock decrease due to planned activities in the project area.

[135] Available at https://eaesp.fgv.br/centros/centro-estudos-sustentabilidade/projetos/programa-brasileiro-ghg-protocol

Table 48. Total ex post carbon stock decrease due to planned activities in the project area (ER sheet Table 25.d)

Project year *t*	Total carbon stock decrease due to planned deforestation		Total carbon stock decrease due to planned logging activities		Total carbon stock decrease due to planned fuel-wood and charcoal activities		Total carbon stock decrease due to planned activities	
	annual	cumulative	annual	cumulative	annual	cumulative	annual	cumulative
	$\Delta CPDdPA_t$	$\Delta CPDdPA$	$\Delta CPLdPA_t$	$\Delta CPLdPA$	$\Delta CPFdPA_t$	$\Delta CPFdPA$	$\Delta CPAdPA_t$	$\Delta CPAdPA$
	tCO_2e	tCO_2e	tCO_2e	tCO_2e	tCO_2e	tCO_2e	tCO_2e	tCO_2e
2024	797	41,377	10,836	319,071	0	0	11,633	360,448

Neither planned protection of secondary/degraded forests without harvest nor production of fuel-wood and charcoal are expected to occur within the project area under the project scenario. Thus, carbon stock increase due to growth without harvest or due to planned fuel-wood and charcoal activities were not monitored. However, if any of these activities is implemented in the future, a measurement of the carbon stock changes will be carried out.

According to the applied methodology, if the project activity generates a significant change in carbon stocks due to these activities, the carbon stock change shall be measured *ex post*. However, if the decrease is not significant, it shall not be accounted, and *ex post* monitoring is not required.

The calculation of the *ex post* net carbon stock change in the project area under the project scenario ($\Delta CPSPA_t$) is described as follows.

$$\Delta CPSPA_t = \Delta CPAdPA_t + \Delta CUDdPA_t - \Delta CPAiPA_t$$

Where,

$\Delta CPSPA_t$ Sum of ex post actual carbon stock changes in the project area at year t; tCO_2e

$\Delta CPAdPA_t$ Total decrease in carbon stock due to all planned activities at year t in the project area; tCO_2e

$\Delta CUDdPA_t$ Total ex post actual carbon stock change due to unavoidable unplanned deforestation at year t in the project area; tCO_2e

$\Delta CPAiPA_t$ Total increase in carbon stock due to all planned activities at year t in the project area; tCO_2e

Ex post carbon stock change in the project area under the project scenario is shown below.

Table 49. Ex post net carbon stock change in the project area under the project scenario (ER sheet Table 27)

Project year *t*	Total carbon stock decrease due to planned activities		Total carbon stock increase due to planned activities		Total carbon stock decrease due to unavoided unplanned deforestation		Total carbon stock change in the project case	
	Annual	cumulative	annual	cumulative	annual	cumulative	annual	cumulative
	$\Delta CPAdPA_t$	$\Delta CPAdPA$	$\Delta CPAiPA_t$	$\Delta CPAiPA$	$\Delta CUDdPA_t$	$\Delta CUDdPA$	$\Delta CPSPA_t$	$\Delta CPSPA$
	tCO_2e	tCO_2e	tCO_2e	tCO_2e	tCO_2e	tCO_2e	tCO_2e	tCO_2e
2024	11,633	360,448	0	7,907	49,045	172,346	60,678	524,887

No forest fire was used by the landowner for carrying out planned deforestation or timber harvesting activities. However, there were 21.53 ha of unplanned deforestation within the project area during the monitored period, which conversion of forest to non-forest could have involved fires.

The effect of fire on carbon emissions is counted in the estimation of carbon stock changes in the parameter $\Delta CUDdPA_t$; therefore CO_2 emissions from forest fires were ignored to avoid double counting. However, non-CO_2 emissions (CH_4 and N_2O) from forest fires must be counted in the project scenario, when they are significant.
It was conservatively assumed that all unplanned deforestation within the project area involved fire and all above ground biomass was burnt. Therefore, non-CO_2 emissions from forest fires were quantified and deducted from emission reductions, as follows:

$$EBBtot_{icl,t} = EBBN_2O_{icl,t} + EBBCH_{4icl,t}$$

Where,

$EBBtot_{icl,t}$	Total GHG emission from biomass burning in forest class *icl* at year *t*; tCO_2e/ha
$EBBN_2O_{icl,t}$	N_2O emission from biomass burning in forest class *icl* at year *t*; tCO_2e/ha
$EBBCH_{4icl,t}$	CH_4 emission from biomass burning in forest class *icl* at year *t*; tCO_2e/ha

$$EBBN_2O_{icl,t} = EBBCO_{2icl,t} * 12/44 * NCR * ER_{N2O} * 44/28 * GWP_{N2O}$$

Where,

$EBBCO_{2icl,t}$	Per hectare CO_2 emission from biomass burning in slash and burn in forest class *icl* at year *t*; tCO_2e/ha
NCR	Nitrogen to Carbon Ratio (IPCC default value = 0.01); dimensionless
ER_{N2O}	Emission ratio for N_2O (IPCC default value = 0.007)

GWP_{N2O} Global Warming Potential for N_2O[136]

$$EBBCH_{4icl,t} = EBBCO_{2icl,t} * 12/44 * ER_{CH4} * 16/12 * GWP_{CH4}$$

Where,

$EBBCO_{2icl,t}$ Per hectare CO_2 emission from biomass burning in slash and burn in forest class *icl* at year *t*; tCO_2e/ha

ER_{CH4} Emission ratio for CH_4 (IPCC default value = 0.012)

GWP_{CH4} Global Warming Potential for CH_4[137]

$$EBBCO_{2icl,t} = Fburnt_{icl} * (C_{picl,t} * Pburnt_{p,icl} * CE_{p,icl})$$

Where,

$EBBCO_{2icl,t}$ Per hectare CO_2 emission from biomass burning in the forest class *icl* at year *t*; tCO_2e/ha

$Fburnt_{icl}$ Proportion of forest area burned during the historical reference period in the forest class *icl*; %

$C_{picl,t}$ Average carbon stock per hectare in the carbon pool *p* burnt in the forest class *icl* at year *t*; tCO_2e/ha

$Pburnt_{p,icl}$ Average proportion of mass burnt in the carbon pool *p* in the forest class *icl*; % (conservatively assumed as 100%)

$CE_{p,icl}$ Average combustion efficiency of the carbon pool *p* in the forest class *icl*; dimensionless (IPCC default of 0.5 was used)

p Carbon pool that could burn, in the project case, above-ground biomass

Thus, the total actual non-CO_2 emissions from forest fire at year *t* in the project area ($EBBPSPA_t$) were calculated as follows.

$$EBBPSPA_t = ABSLPA_{icl,t} * EBBtot_{icl,t}$$

Where,

$EBBPSPA_t$ Total actual non-CO_2 emissions from forest fire at year *t* in the project area; tCO_2e/ha

$ABSLPA_{icl,t}$ Annual area of deforestation of initial forest classes *icl* in the project area at year *t*; ha

[136] According to the VCS Standard, the six Kyoto Protocol greenhouse gases and ozone-depleting substances shall be converted using 100 year global warming potentials derived from the IPCC's Fifth Assessment Report. GWP for N_2O = 265.
[137] According to the VCS Standard, the six Kyoto Protocol greenhouse gases and ozone-depleting substances shall be converted using 100 year global warming potentials derived from the IPCC's Fifth Assessment Report. GWP for CH_4 = 28.

$EBBtot_{icl,t}$ Total GHG emission from biomass burning in forest class *icl* at year *t*; tCO_2e/ha

Table 50. Total ex post actual emissions of non-CO2 gasses due to forest fires in the project area (ER sheet Table 28)

Project year t	Areas of unplanned deforestation x Carbon stock change (decrease) in the project area						Total carbon stock decrease due to unplanned deforestation	
	Grupo Rovema		Grupo Tupá		Grupo Leite		annual	cumulative
	$AUDPA_{icl,t}$	$EBBPSPA_{icl,t}$	$AUDPA_{icl,t}$	$EBBPSPA_{icl,t}$	$AUDPA_{icl,t}$	$EBBPSPA_{icl,t}$	$EBBPSPA_t$	EBBPSPA
	ha	tCO_2e/ha	ha	tCO_2e/ha	ha	tCO_2e/ha	tCO_2e	tCO_2e
2024	36.69	9.98	6.44	9.98	53.02	9.98	959.49	3,726.41

Total *ex post* project emissions for the project area

The *ex-post* carbon stock changes and non-CO_2 emissions in the Project area during the monitoring period is summarized in Table below.

Table 51. Total ex post actual net carbon stock changes and emissions of GHG gases in the project area (ER sheet Table 29)

Project year *t*	Total *ex post* carbon stock decrease due to planned activities		Total *ex post* carbon stock increase due to planned activities		Total *ex post* carbon stock decrease due to unavoided unplanned deforestation		Total *ex post* carbon stock change		Total *ex post* estimated actual non-CO_2 emissions from forest fires in the project area	
	annual	cumulative	annual	cumulative	annual	cumulative	annual	cumulative	annual	cumulative
	$\Delta CPAdPA_t$	$\Delta CPAdPA$	$\Delta CPAiPA_t$	$\Delta CPAiPA$	$\Delta CUDdPA_t$	$\Delta CUDdPA$	$\Delta CPSPA_t$	$\Delta CPSPA$	$EBBPSPA_t$	$EBBPSPA$
	tCO_2e	tCO_2e	tCO_2e	tCO_2e	tCO_2e	tCO_2e	tCO_2e	tCO_2e	tCO_2e	tCO_2e
2024	11,633.22	360,448.07	0.00	7,906.73	49,044.77	172,345.69	60,677.99	524,887.03	959.49	3,726.41

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

According to the applied methodology, two sources of leakage are considered: a) decrease in carbon stocks and increase in GHG emissions associated with leakage prevention measures; and b) decrease in carbon stocks and increase in GHG emissions associated with activity displacement leakage.

***Ex post* estimation of decrease in carbon stocks and increase in GHG emissions due to leakage prevention measures**

To reduce the risk of activity displacement leakage, baseline deforestation agents could participate in activities within the project area and leakage management area that together will replace baseline income, product generation and livelihood of the agents as much as possible, so that deforestation will be reduced, and the risk of displacement minimized. As such, a reduction in carbon stocks and/or an increase in GHG emissions may occur compared to the baseline case. If this decrease in carbon stock or increase in GHG emission is significant, it must be accounted, and *ex post* monitoring will be required.

In order to calculate the net carbon stock changes that the planned leakage prevention measures are expected to occur during the monitoring period, the projected carbon stocks shall be estimated in the leakage management area under the baseline case and project scenario.

$$\Delta CLPMLK_t = \Delta CPSLK_t - \Delta CBSLLK_t$$

Where,

$\Delta CLPMLK_t$	Carbon stock decrease due to leakage prevention measures at year *t*; tCO_2e
$\Delta CBSLLK_t$	Annual carbon stock changes in leakage management areas in the baseline case at year *t*; tCO_2e
$\Delta CPSLK_t$	Annual carbon stock change in leakage management areas in the project case; tCO_2e

If the net sum of carbon stock changes within a monitoring period is more than zero, leakage prevention measures are not causing any carbon stock decrease. The net increase shall conservatively be ignored in the calculation of net GHG emission reductions of the project activity. Nevertheless, if the net sum is negative, it must be accounted if significant.

According to the planned interventions carried out by the Rio Madeira Grouped REDD+ Project in the baseline case, no decrease in carbon stocks due to activities implemented in the leakage management area were identified, thus ΔCBSLLK = 0.

However, during the current monitoring period, there were carbon stock changes within the leakage management area due to deforestation of regenerated forests. The deforestation of 0.1ha was detected in the LMA.

Therefore, the ex post carbon stock change in leakage management areas in the project case (ΔCPSLKt) was calculated as follows. The annual values are detailed in the Table below.

$$\Delta CPSLK_t = APSLK_{fcl,t} * \Delta Ctot_{cl}$$

Where,

$\Delta CPSLK_t$	Annual carbon stock change in leakage management areas in the project case; tCO_2e
$APSLK_{fcl,t}$	Annual area of class fcl with decreasing carbon stock in leakage management areas in the project case at year t; ha
$\Delta Ctot_{icl}$	Average carbon stock change of all accounted carbon pools in forest class icl at time t; tCO_2e/ha

Table 52. Ex post carbon stock change in leakage management areas in the project case (ER sheet Table 30.b)

Project year	Carbon stock changes in leakage management area in the project case			
	ID_{fcl}	1	annual	cumulative
	APSLKfcl,t	$Ctot_{fcl,t}$	ΔCPSLKt	ΔCPSLK
	ha	tCO_2e/ha	tCO_2e	tCO_2e
2024	0.29	45.07	13.07	23.19

The table below shows that the net sum of the changes in the carbon stock within the leakage management area during the current monitoring period is zero, i.e. the leakage prevention measures are not causing the carbon stock to decrease and therefore there are no leakage emissions.

Table 53. Ex post net carbon stock change in leakage management areas (ER sheet Table 30.c)

Project year	Total carbon stock change in the baseline case		Total carbon stock change in the project case		Net carbon stock change due to leakage prevention measures	
	annual	cumulatve	annual	cumulatve	annual	cumulatve
	$\Delta CBSLLK_t$	$\Delta CBSLLK$	$\Delta CPSLK_t$	$\Delta CPSLK$	$\Delta CLPMLK_t$	$\Delta CLPMLK$
	tCO_2e	tCO_2e	tCO_2e	tCO_2e	tCO_2e	tCO_2e
2024	0.00	0.00	13.07	23.19	13.07	23.19

Furthermore, leakage prevention measures carried out by the present project during the current monitoring period did not include agricultural intensification, fertilization, fodder production and/or other measures to enhance cropland and grazing land areas.

Therefore, the total ex post estimated carbon stock changes and increases in GHG emissions due to leakage prevention measures during this monitoring period is calculated as follows.

$$ELPMLK_t = EgLK_t + \Delta CLPMLK_t$$

Where,

$ELPMLK_t$ Annual total increase in GHG emissions due to leakage prevention measures at year t; tCO_2e

Table 54. Ex post total emissions above the baseline from leakage prevention activities (ER sheet Table 33)

Project year	Carbon stock decrease due to leakage prevention measures		Total *ex ante* GHG emissions from increased grazing activities		Total *ex ante* increase in GHG emissions due to leakage prevention measures	
	annual	cumulative	annual	cumulative	annual	cumulative
	$\Delta CLPMLK_t$	$\Delta CLPMLK$	$EgLK_t$	$EgLK$	$ELPMLK_t$	$ELPMLK$
	tCO_2e	tCO_2e	tCO_2e	tCO_2e	tCO_2e	tCO_2e
2024	13.07	23.19	0.00	0.00	13.07	23.19

<u>Ex post decrease in carbon stocks and increase in GHG emissions due to activity displacement leakage</u>

Activities that cause deforestation within the project area in the baseline case could be displaced outside the project boundary due to the implementation of the AUD project activity. A greater decrease in carbon stocks within the leakage belt during the project scenario than those predicted ex ante would indicate displacement of deforestation activities due to the project.

It is important to note that activity data for the leakage belt area was determined using the same methods applied to monitoring deforestation activity data in the project area. Leakage due to displacement activity was monitored by mapping forest cover change in the leakage belt.

As defined in the VCS Methodology VM0015 v1.1, if carbon stocks in the leakage belt area decrease more during project implementation than projected in the baseline case, this will be an indication that leakage due to displacement of baseline activities has occurred. Where strong evidence can be collected that deforestation in the leakage belt is attributable to deforestation agents that are not linked to the project area, the detected deforestation may not be attributed to the project activity and considered leakage.

From this perspective, it is possible to state that land-grabbing is a relevant phenom in the region that causes deforestation. Land-grabber is an illegal activity with the intention to have the land rights and make huge amounts of money selling areas that belong to the state or private owners[138]. Utilizes aggressive methods based on encroachment, illegal settlements, wood and cattle stealing, fire outbreaks, among other illegal methods to steal private or public lands as they are occupied. In some extreme cases, it is possible to have gun fights, facilities destruction, and tortures.

Once the land grabbers stablish in the intended area to be robbed, the usual practice is cattle ranching in order to create a productive environment and avoid different versions of the land succession rather than illegal practice[139]. When such episodes involve private areas, many times the landowners prefer to give up their lands and preserve their families and lives.

Generally, it is more likely to attack areas where the land titles are not fully legalized in notary and public authorities. Nevertheless, since the criminals are not always aware of the legal status of the land, the practice can also occur in fully legal properties.

Although the practice is undoubtedly illegal, there is no governmental efforts to stop it. Instead, there are political intentions to attenuate legal penalties for those who invade public lands in Brazil[140]. The region where the project activity instances are located is known for this illegal practice, where several episodes were publicly announced recently[141] [142] [143] [144].

Regarding leakage emissions due to activity displacement, it is calculated as the difference between the ex ante and the ex post assessments.

[138] Available at https://theintercept.com/2022/12/01/profissionais-colocam-estado-a-servico-da-grilagem-de-terras-publicas-na-amazonia/.
[139] Available at http://www.bibliotecaflorestal.ufv.br/bitstream/handle/123456789/4031/Livro_A-grilagem-de-terras-publicas-na-Amazonia-Brasileira_MMA.pdf?sequence=1&isAllowed=y.
[140] Available at https://www.greenpeace.org/brasil/blog/pl-da-grilagem-legaliza-o-desmatamento-e-o-roubo-de-terras-publicas-no-brasil/
[141] Available at https://g1.globo.com/jornal-nacional/noticia/2022/08/18/grileiros-aproveitam-tempo-seco-para-abrir-novas-areas-na-floresta-ja-desmatada-no-sul-do-amazonas.ghtml
[142] Available at https://oeco.org.br/noticias/organizacao-criminosa-envolvida-com-grilagem-de-terras-em-rondonia-e-alvo-de-acao-policial/
[143] Available at https://www.tudorondonia.com/noticias/policia-federal-deflagra-operacao-de-combate-a-grilagem-de-terras-publicas-federais,89592.shtml
[144] Available at https://www12.senado.leg.br/noticias/materias/2022/11/29/marcos-rogerio-denuncia-invasao-da-fazenda-norbrasil-em-rondonia

Furthermore, the monitoring of increases in GHG emissions within leakage belt ($EADLK_t$) was also carried out. However, as could be observed in the table above, no increase in GHG emissions within the leakage belt happened, thus non-CO2 emissions from biomass burning in the leakage belt were not associated with the project activity.

Figure 26. Cumulative deforestation in the Leakage Belt of Instance 1

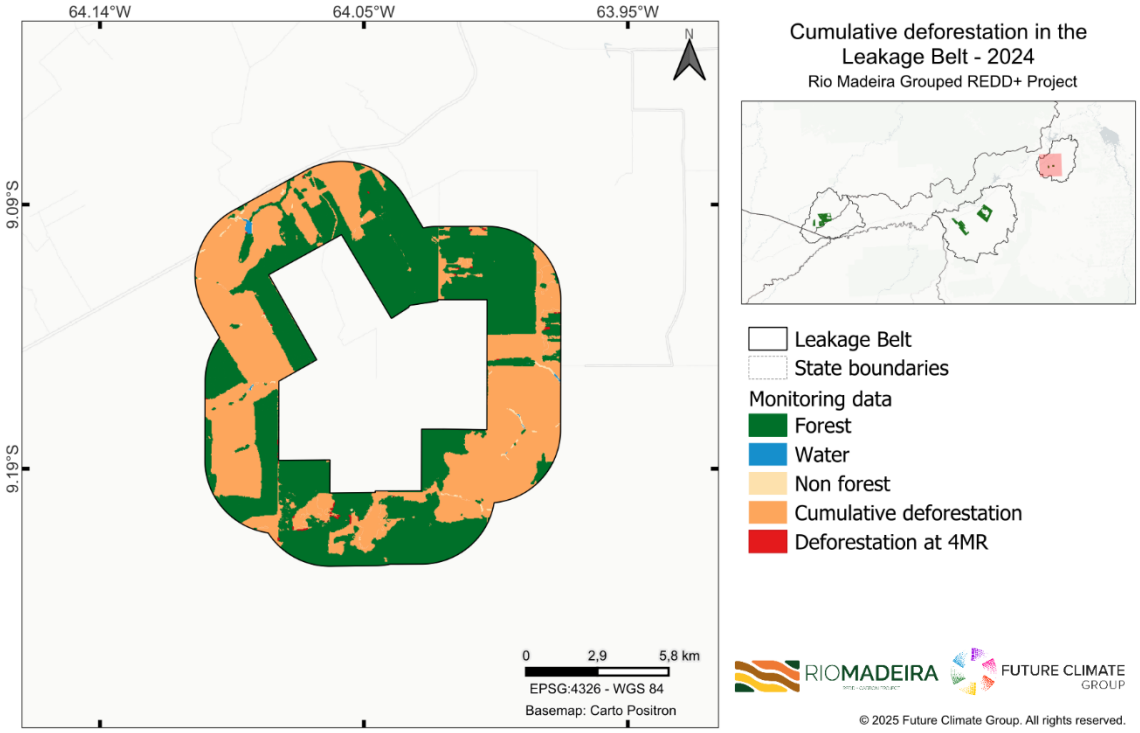


Figure 27. Cumulative deforestation in the Leakage Belt of Instance 2

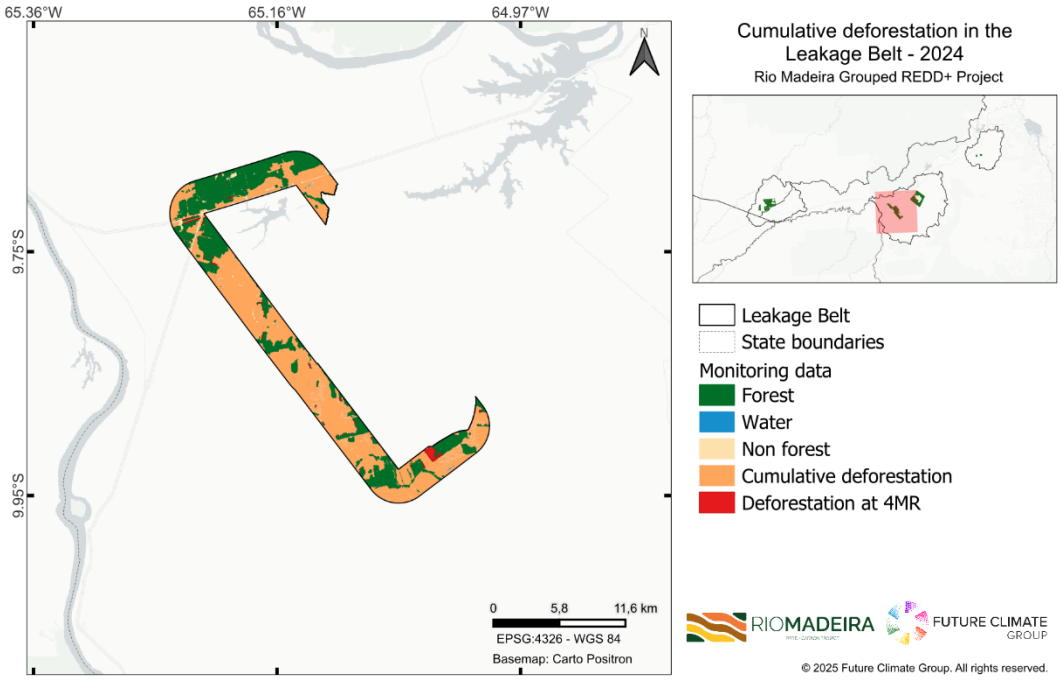
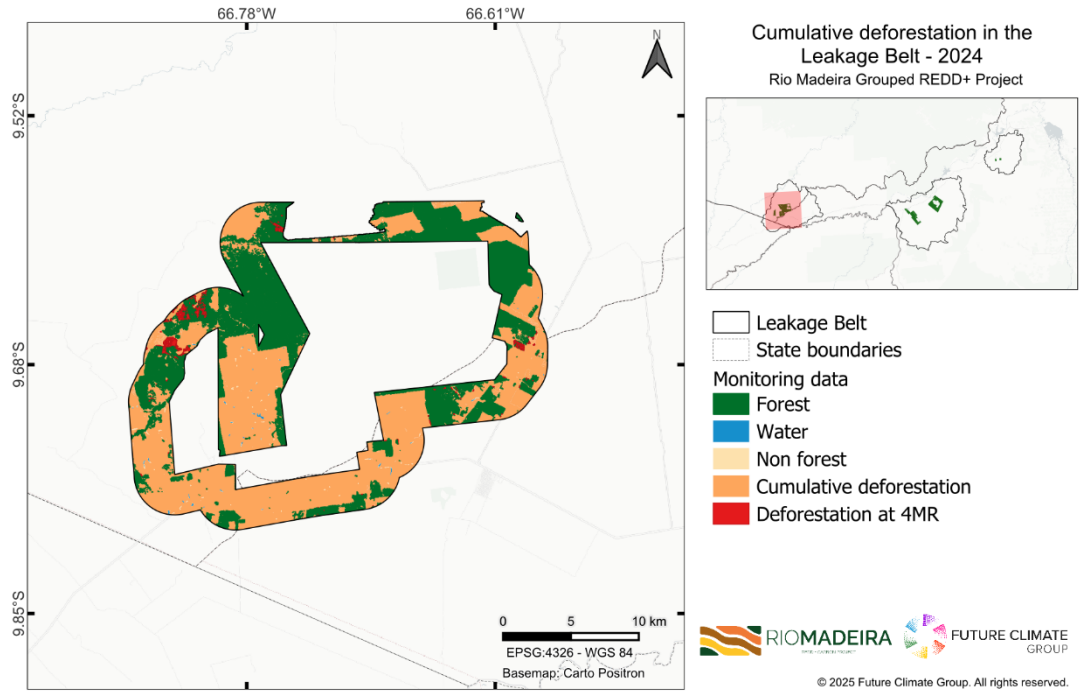


Figure 28. Cumulative deforestation in the Leakage Belt of Instance 3



<u>Ex post estimation of total leakage</u>

The result of all sources of leakage are calculated as follows:

$$\Delta CLK_t = \Delta CLPMLK_t + \Delta CADLK_t$$

Where:

ΔCLK_t Total decrease in carbon stocks within the leakage belt at year t; tCO_2e

$\Delta CLPMLK_t$ Carbon stock decrease due to leakage prevention measures at year t; tCO_2e

$\Delta CADLK_t$ Total decrease in carbon stocks due to displaced deforestation at year t; tCO_2e

$$ELK_t = EgLK_t + EADLK_t$$

Where:

ELK_t Sum of *ex post* leakage emissions at year t; tCO_2e

$EgLK_t$ Emissions from grazing animals in leakage management areas at year t; tCO_2e

$EADLK_t$ Total *ex post* increase in GHG emissions due to displaced forest fires at year t; tCO_2e

The results of all ex-post estimations of leakage are summarized in the table below.

Table 55. Ex post total leakage (ER sheet Table 35)

Project year	Total ex post GHG emissions from increased grazing activities		Total ex post increase in GHG emissions due to displaced forest fires		Total ex post decrease in carbon stocks due to displaced deforestation		Carbon stock decrease due to leakage prevention measures		Total net carbon stock change due to leakage		Total net increase in emissions due to leakage	
	annual	cumulative	annual	cumulative	annual	cumulative	annual	cumulative	annual	cumulative	annual	cumulative
	$EgLK_t$	EgLK	$EADLK_t$	EADLK	$\Delta CADLK_t$	ΔCADLK	$\Delta CLPMLK_t$	ΔCLPMLK	ΔCLK_t	ΔCLK	ELK_t	ELK
	tCO_2e	tCO_2e	tCO_2e	tCO_2e	tCO_2e	tCO_2e	tCO_2e	tCO_2e	tCO_2e	tCO_2e	tCO_2e	tCO_2e
2024	0.00	0.00	0.00	6,059.00	0.00	215,363.95	13.07	23.19	13.07	215,387.14	0.00	6,059.00

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

State the non-permanence risk rating (%)	12
Has the non-permanence risk report been attached as either an appendix or a separate document?	☒ **Yes** ☐ No
For ARR and IFM projects with harvesting, state, in tCO2e, the Long-term Average (LTA).	Not applicable
Has the LTA been updated based on monitored data, if applicable?	☐ Yes ☒ **No**
State, in tCO2e, the expected total GHG benefit to date.	591,510

If a loss occurred (including a loss event or reversal), state the amount of tCO2e lost:	Not applicable

Table 56. Net GHG emissions reductions and removals in the Rio Madeira Grouped REDD+ Project

Vintage period	Baseline emissions (tCO_2e)	Project emissions (tCO_2e)	Leakage emissions (tCO_2e)	Buffer pool allocation (tCO_2e)	Reductions VCUs (tCO_2e)	Removals VCUs (tCO_2e)
01-Jan-2024 to 31-Dec-2024	720,618	61,637	13	77,286	581,681	0

Table 57. Ex-ante GHG emission reductions and carbon dioxide removals

Vintage period	Ex-ante estimated reductions/ removals[145]	Achieved reductions/ removals	Percent difference	Explanation for the difference
01-Jan-2024 to 31-Dec-2024	591,510	658,967	11.40	The difference can be explained by the following factors: • Effectiveness Index, that achieved around 94% in this monitoring period, while the ex-ante predicted in the VCSPD is 85%[146]. • The actions implemented (such as training with Brazil nut extractors and monitoring of properties) contributed to a reduction in deforestation within the project's boundaries and, consequently, to the generation of more carbon credits than estimated. The presence of friendly and engaged groups in the project area contributes to

[145] Since the baseline approach was updated, the ex-ante values for 2024 are derived from historical average approach, available at section 2.2.5 (Project Description deviations) of the 2nd CCB VCS Monitoring Report. Moreover, the MR calculation sheet has a tab called "Ex ante and ex post ERs balance" to show calculation track of this table.
[146] It is worth highlighting the GIS monitoring process has improved in the current monitoring report: from Mapbiomas to Supervised Classification combined with weekly images analysis, as informed in section 2.2.5 (Project Description Deviations) and 3.1.3 (Monitoring Plan). Thus, the capacity of identifying deforestation is higher and can justify the effectiveness index performance when compared to previous monitoring reports.

				avoid encroachers and, thus, reduces deforestation. • In addition to the actions implemented during the monitoring period, another factor that can be considered is that there was no leakage: while 694 ha[147] was predicted, the ex-post deforestation was 496 ha in the leakage belt. • It is worth mentioning the update of carbon stock in the current monitoring period, as registered in section 2.5.5 (Project Description Deviations). Once the carbon stock has reduced, the comparison is terms of tCO2e also reduces.

3.3 Optional Criterion: Climate Change Adaptation Benefits

Not applicable. Currently, the Rio Madeira Grouped REDD+ Project is not seeking validation at the Gold level for climate change adaptation benefits.

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

Not applicable.

4 COMMUNITY

4.1 Net Positive Community Impacts

4.1.1 Community Impacts (CCB, CM2.1)

[147] 694 ha corresponds to the ex-ante deforestation in the leakage belt as per the updated baseline approach based on historical average.

This section will only detail the expected impacts for the communities classified as "Community Groups", which are: employees and residents of the three instances of the project and the nut extractors who are partners of Instance 03. The expected impacts for the other communities classified as "Interested Stakeholder" will be detailed in section 4.2.

Community group	Women who live on project farms (Santa Carmem, Rio Madeira and Nova Fronteira farms)
Impact	The expected impacts are: 1. Promote new skills and technical training so that women can carry out activities that can supplement their income 2. ii. Empowerment of women, encouraging entrepreneurship, financial independence and women's entry into the job market.
Type of benefit/cost/risk	The impact nº 1 (above) it's a predicted and direct impact, as the results will be directly associated with technical training activities. Impact nº 2 is also predicted, but it is indirect. It is expected that through technical training, women will feel more empowered and able to have financial independence, if they so desire. Both impacts are benefits. All costs related to courses and technical training will be covered by the project, so women will not have any costs. Regarding the risks, at this time, no possible risk of these trainings for women has been identified. However, the project will monitor all activities, as well as collect feedback from participants, in order to mitigate any risks that may arise.
Change in well-being	The expected changes are: • Facilitate access to educational and professional training; • More empowered women; • Generation of alternative sources of income. These well-being changes have a greater impact at the family level, as once women have a source of additional income, the entire family will benefit. It can also influence girls, daughters of these families, to seek training and greater independence in the future. During the current monitoring period, no specific and exclusive training was provided for women. Therefore, there are still no changes to be measured and reported.

Community group	Employees and their families who live on the farms (Santa Carmem, Rio Madeira and Nova Fronteira farms)
Impact	The expected impacts are:

	1. Increase in health and safety working aspects; 2. Training for fire brigade formation 3. Increased awareness of environmental education topics
Type of benefit/cost/risk	Benefits: Impacts (1) and (2) are predicted and direct, while impact (3) is predicted but indirect. Costs: All costs related to courses and technical training will be covered by the project, so the employees will not have any costs. Risks: At this time, no possible risk has been identified. However, the project will monitor all activities, as well as collect feedback from participants, in order to mitigate any risks that may arise.
Change in well-being	The activities are expected to make employees and residents more engaged in the project activities and spark interest in environmental issues. In addition, the project activities will improve the quality and safety of their work activities. During the monitoring period, an environmental education activity was carried out with employees and residents of Instance 01, contributing to the expected impact 3. The "Arbor Day" activity took place on September 29, 2024 at the Porto Velho Ecological Park. Transportation and food were provided to take employees and their families to the park. The event was organized by the Rio Madeira REDD Project and the Rovema Group (Instance 01), and featured several environmental education activities, such as: i. Trails through the forest with a guide who is an expert in local fauna and flora; ii. Educational and interactive workshops on: soap production with cooking oil, local crafts, ceramic production and healthy eating; iii. Presentation stands about the Rio Madeira REDD Project; iv. Planting of native and fruit-bearing seedlings by event participants. More information about the results is detailed in the section 4.3.1. Regarding the expected impacts 01 and 02, no activities were implemented during this monitoring period.

Community group	Brazil nut Extractivists
Impact	The expected impacts are: 1. Access to rest facilities that guarantee well-being during the harvest period.

	2. More trained and qualified extractivists
Type of benefit/cost/risk	Benefit: All of the impacts mentioned above are predicted and direct. Costs: All costs related to courses and technical training will be covered by the project, so the nut extractors will not have any costs. Risks: At this time, no possible risk has been identified. However, the project will monitor all activities, as well as collect feedback from participants, in order to mitigate any risks that may arise.
Change in well-being	During the monitoring period, a Technical Cooperation Agreement was signed with EMBRAPA. The agreement was signed in July 2024 and the opening meeting - which included representatives from EMBRAPA, Future Climate and extractivists - took place in November 2024. The agreement will last 18 months. Accordingly, the activities established under this agreement are expected to be concluded by the end of 2025. For more detailed explanation, see section 4.3.1. The activities and training sessions related to this agreement are scheduled to take place in the second semester of 2025. The main objectives of the agreement are as follows: • Train nut extractors on good management practices; • Train them on safety during harvesting and provide personal protective equipment (PPE); • Provide technical assistance during the 2025/2026 harvest periods[148]; • Optimize harvesting routes; • Provide structures for storing and drying nuts. The expected changes are: • Facilitate access to educational and professional training; • Increased efficiency of the routes taken by extractivists during the nut harvest, reducing the time spent on this activity; • Increased safety in the activities carried out by extractivists; • More sustainable management of Brazil nuts Although the technical cooperation agreement was signed in 2024 with EMBRAPA, activities with extractivitis are scheduled to be carried out in 2025. Therefore, during the monitoring period, there were no activities that resulted in a direct impact on extractivists.

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

[148] The Brazil nut harvest period in the region generally begins in October and ends in March, but there are seasonal variations, and there may be shorter or longer collection periods.

There have been no negative impacts on stakeholders caused by the project's activities. The communication channels[149] are also available to receive feedback, complaints and suggestions from communities about project activities, allowing the activities to be re-evaluated if necessary. During the monitoring period, no complaints or reports were received through communication channels.

The Code of Conduct of Future Carbon is based on strict ethical principles and respect for the laws, which seek to achieve a high level of integrity. More information about the Code of Conduct can be found in the section 2.4.5.

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

The positive impacts for each stakeholder are described in sections 4.1.1 and 4.2.2 and detailed in section 4.3.1. Based on the comparison between both scenarios, with and without the existence of the project, we can conclude that the groups affected are in a better situation than in the scenario without the project.

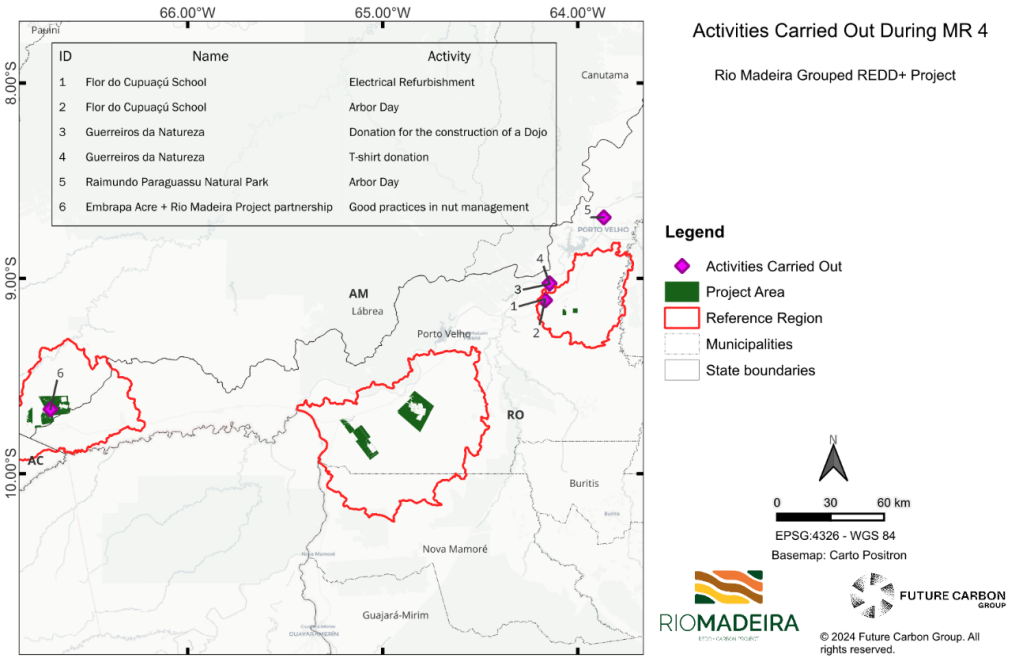
The actual net impacts of the project on the well-being of the groups are shown in the table and graphic below.

Table 58. Net Positive Community Well-Being

Community Group	Without-project land use scenario	With-project land use scenario
Employees and residents of the farms of Instance 01	Little or no access/incentive to participate in environmental education activities.	Environmental education event organized and planned to include the participation of employees and residents of the Instance 01 farms, facilitating access to educational information and leisure time.
Brazil Nut Extractivists	Low access to technical training; no access to information on good nut management practices; low access to information on safety and use of protective equipment during collection	In 2024, a technical partnership with EMBRAPA was formalized, which is a leader in technological innovation in Brazil, offering advanced research to increase agricultural productivity. In addition, the institution is a pioneer in sustainable practices and is also dedicated to capacity building, offering training and dissemination of technical knowledge to rural producers. In this way, nut extractors will receive training and technical support from the EMBRAPA team throughout 2025, with the possibility of renewing the partnership,

[149] Described in section 2.3.8 of the PD CCB.

Figure 41. Activities Carried Out During Monitoring Period



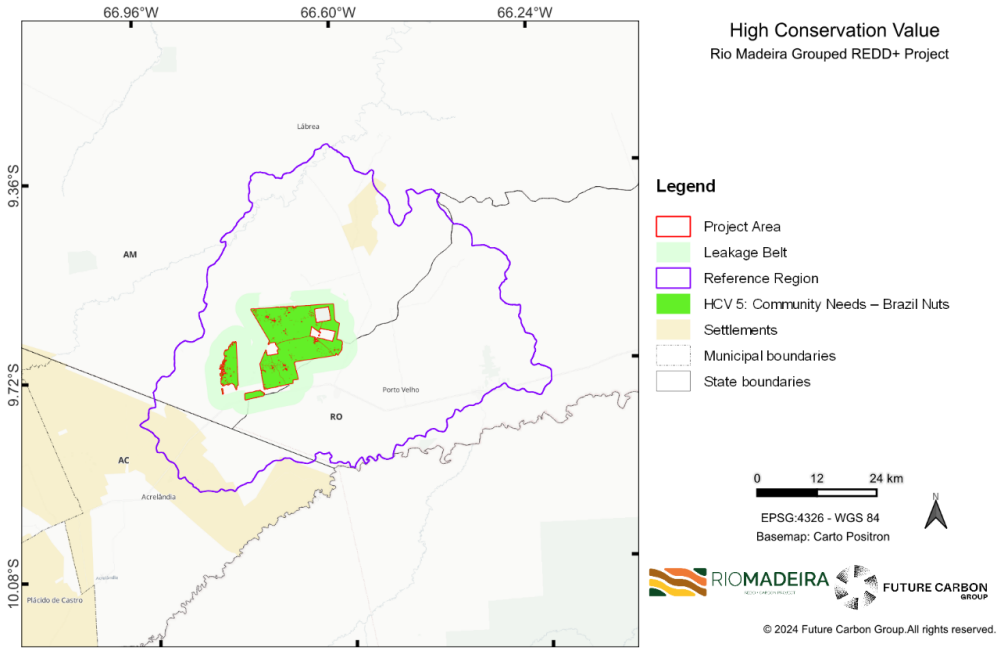
It is important to note that the communities outside the project zone did not receive any negative or positive impacts from the project, given that the project's premise is to only serve the community groups and stakeholders that are within the project zone and within the boundaries of the reference region, as described in section "2.1.5 Project Zone Map" of the "CCB Project description" document.

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

The Brazil-nut collection areas of Instance 03 were classified as HCV 05, as they represent an important area for maintaining the economic activity of local extractivists.

High Conservation Value	**Community Needs (HCV 5)** Brazilian nut collection area, which is a source of income
Focal Area	The entire project area of Instance 03. Brazil nut trees are present throughout the project's entire extent, making it necessary to conduct comprehensive monitoring of the area. The farms are: Nova Fronteira Farm, Beleza Farm, Iracema I Farm, Iracema II Farm, Seringal Novo A Farm, and Seringal Novo B Farm.
Monitoring	During 2024, deforestation within the farms mentioned above was monitored and the deforested area was 6.05ha with 4 forest fires within the project area (and no forest loss), ensuring the preservation of this HCV.

Figure 29. High Conservation Values for Community



4.2 Other Stakeholder Impacts

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

During this monitoring period, no risks to other stakeholders were identified. As a mitigation measure, feedback from the stakeholders involved was collected for the actions implemented during this period, and only positive comments were received.

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

Community group	Young people, educators and other school staff from the schools benefited[152]
Specific Stakeholder	EMEIF Flor do Cupuaçu School
Impact	The expected impacts are: I. Increased awareness of environmental education topics

[152] This community group can be identified as “interested stakeholders”

	II. Development of professional skills III. Access to better quality teaching infrastructures
Type of benefit/cost/risk	**Benefits**: access to educational content and improvement of school infrastructure **Costs:** all costs will be covered by the project, so the school will not bear any costs. **Risks:** so far no risks have been identified. As the project progresses, feedback, questions and possible suggestions will be monitored.
Change in well-being	Students and teachers from the Flor do Cupuaçu school participated in the "Arbor Day" activity, organized by the Rio Madeira project. The activity had an educational purpose, including a lecture about the local fauna, planting of native seedlings and a presentation about the project. The school's electrical system was also renovated to accommodate electronic equipment and reduce the risk of electrical circuits, providing a safer and better-equipped school environment.

Community group	Small farmers[153]
Specific Stakeholders	Morrinhos Ressetlement and Santa Rita Ressetlement
Impact	The expected impacts are: i. Adoption of better agricultural and livestock practices. ii. Increased productivity over time. iii. Income diversification.
Type of benefit/cost/risk	The impacts are predicted and direct and will be beneficial to small producers. Regarding costs, all training and technical assistance costs will be financed by the Rio Madeira project. Incentives for the initial acquisition of inputs and agricultural products may occur during the project implementation phase, but it is expected that small producers will eventually have financial autonomy to continue with their own resources. Regarding risks, no risks were identified in relation to the participation of producers in training and technical qualification activities.
Change in well-being	As described in section 4.1.1 of the PD CCB, the small farmers from the resettlements close to the Project have difficulties in agricultural production for various reasons, so it is expected that through technical training, some of these problems can be solved. In addition,

[153] This community group can be identified as “interested stakeholders”

	professional training on other topics will be proposed aiming at income diversification. During this monitoring period, no activities were implemented with small farmers, so there were no results in changes in the well-being of this group.

Community group	Morrinhos Resettlement[154]
Specific Stakeholder	Students from "Warriors of Nature" Karate School
Impact	Promote community spaces so that young people and adults have access to sports practices
Type of benefit/cost/risk	**Benefits:** promote the social development of children, young people and adults through sports. **Costs:** all costs will be covered by the project, so the karate school will not bear any costs. **Risks:** so far, no risks have been identified. As the project progresses, feedback, questions and possible suggestions will be monitored.
Change in well-being	The Rio Madeira project sponsored the purchase of equipment for practicing karate, such as mats and uniforms. In addition, it also sponsored the registration of students in regional championships. In this way, the "Nature Warriors" project, which is a community project offered free of charge to the community, was able to maintain and expand throughout 2024, attracting more students.

4.3 Community Impact Monitoring

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

The monitoring plan for the Rio Madeira Grouped REDD+ Project communities is based on the programs established by the Theory of Change, described in section 2.1.8 of the CCB PD.

Each Program has specific indicators, which allow the aggregation of the results of the various planned and implemented activities, reducing the complexity of establishing indicators *per activity* and facilitating the communication of results.

Program	**Quality Infrastructure**

[154] This community group can be identified as "interested stakeholders"

Communities	**Communities that will benefit from the program over the project lifetime:** All communities specified in sections 4.1.1 and 4.2.1 **Communities' groups benefited during the monitoring period:** I. Young people, educators and other school staff from Flor do Cupuaçu School. II. Students from "Warriors of Nature" Karate School (Morrinhos Ressetlement)
Desired Impact	Implemented adequate infrastructure that promotes satisfactory well-being and economic development.
Measurement Type	Quantification of services and contracts provided to carry out infrastructure improvements.
Frequency	Annual.
Reporting	Evidence Types: Field records, photographs, monitoring reports, and other pertinent records. Reporting Methods: Monitoring reports, project communication channels, and supporting materials (graphic materials, audiovisual materials, etc.)
Indicators	1. Satisfaction rate of beneficiaries 2. Number of improvements and repairs carried out per year.
Monitored value	1. Satisfaction was assessed through questionnaires applied to the management of Flor do Cupuaçu Shcool considering aspects such as the stability of the electrical network, the quality of the internet, and the impact on school activities. The results were categorized into satisfaction levels, with most responses indicating high satisfaction. 2. Three (3) improvements: improvement in the electricity grid at the Flor do Cupuaçu school carried out in June 2024 and the donation of a vegetable garden for educational purposes. The renovation of the karate dojo of the "Nature Warriors" project was also sponsored by the project.

Program	**Continuous Engagement**

Communities	**Communities that will benefit/engage from the program over the project lifetime:** All communities specified in sections 4.1.1 and 4.2.1 **Communities' groups benefited/engaged during the monitoring period:** Multiple stakeholders (see Figure 25, Figure 27 and Table 59)
Desired Impact	Stakeholders engaged through access to information and participation in project activities.
Measurement Type	Quantification of records of contacts made or received through communication channels: email, phone, WhatsApp, and postal address. Records of communications and reports during field visits.
Frequency	Annual.
Reporting	Evidence types: Field records, photographs, monitoring reports, emails, WhatsApp contacts, letters, and other pertinent records. Reporting methods: monitoring reports, project communication channels, and supporting materials (graphic materials, audiovisuals, etc).
Indicator	1.Number of communications made per year and per type for stakeholders;
Monitored value	During the monitored period, communication occurred via official channels (email, WhatsApp and form), in-person meetings and remote meetings, totalling 20 communication events. From this total, **17** communications occurred via the project's communication channels (email, WhatsApp and form). As shown in the figure below, 65% (11) of the communications were of a "Request" nature, that is, community members sent requests for support for some activity. All requests were analysed and responded to. The other two communication categories were: "Doubt" and " "Proactive Engagement", each category had 3 records. The three "Doubts" communications were questions about the status of project activities and a request to send material with project information. All were answered. The three communications classified as "Proactive Engagement" had as their main content the request for information from stakeholders so that the FC team could plan the implementation of activities, as well as to formalize minutes of virtual meetings.

Graphic 1. Interactions via communication channels

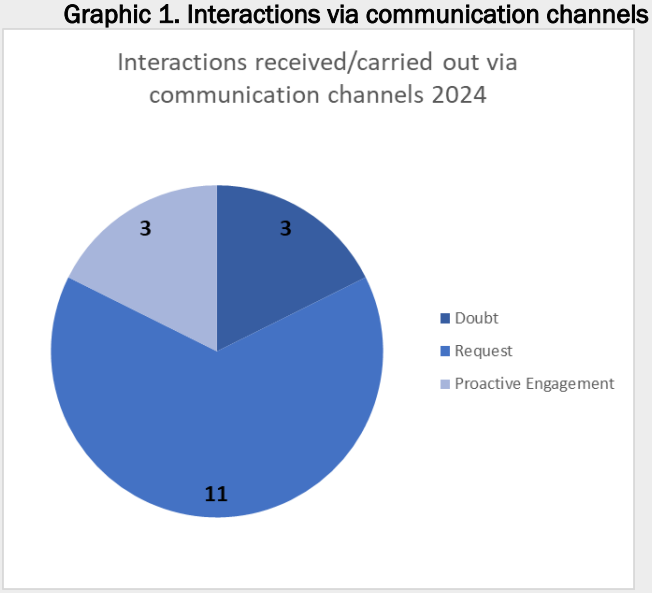


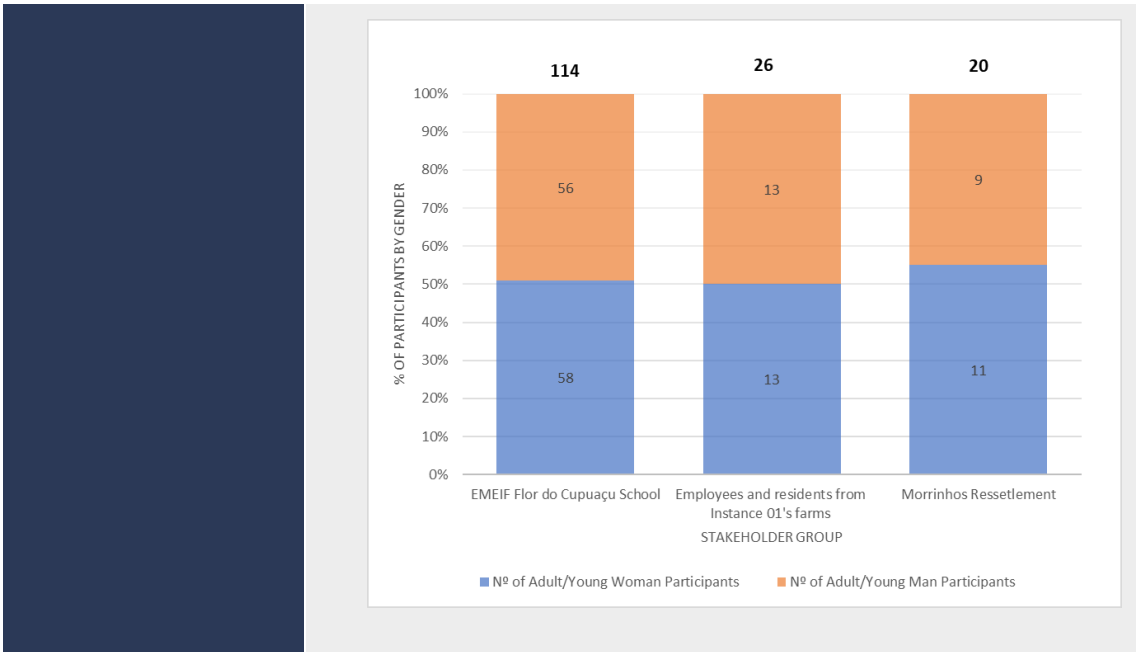
Table 59. Number of communications per stakeholder

Stakeholder	Communication Category	Quantity
ASDAMOR	Request	2
Marechal Rondon School (Abunã District)	Proactive	1
Flor do Cupuaçu School	Doubt	2
	Request	4
FIMCA	Proactive	1
Not identified	Doubt	1
Morrinhos	Request	1
RECA	Proactive	1
UBS - Santa Rita	Request	4
Total		**17**

Additionally, there were two (**2**) in-person communications carried out by the FC team, one visit being in April and the other in November 2024 (see section 2.3.9). During both visits, informational materials about the project were distributed to the stakeholders visited. There was also one (**1**) remote communication with institutional stakeholders in February 2024, as described in the section 2.3.4.

Program	**Quality Training and Education**
Communities	**Communities that will benefit from the program over the project lifetime:** All communities specified in sections 4.1.1 and 4.2.1

	Communities' groups benefited during the monitoring period: I. Young people, educators and other school staff from Flor do Cupuaçu School II. Employees and their families who live on the farms (Instance 01) Students from "Warriors of Nature" Karate School (Morrinhos Ressetlement)
Desired Impact	Ensuring access to inclusive, quality, and equitable education, and promoting learning opportunities.
Measurement Type	Application of questionnaires or satisfaction interviews before and after the completion of activities; Report of the activities carried out, as well as other registration documents, such as certificates, attendance lists, and photos.
Frequency	Annual.
Reporting	Evidence types: Field records, photographs, monitoring reports, and other pertinent records Methods of reporting: monitoring reports, project communication channels, and supporting materials (graphic materials, audiovisual materials, etc.)
Indicator	I. Number of education or training activities conducted by theme per year; I. Total number of people trained per year, per gender
Monitored value	I. 2 education activities related to "Arbor Day" II. 160 people from communities impacted by the trainings/ 82 women from communities impacted by the trainings, as detailed below:



During the monitoring period, significant progress was made in engaging communities and stakeholders involved in the Rio Madeira project. The activities focused on expanding capacity-building programs, strengthening communication, and improving infrastructure, ensuring the well-being and active participation of local groups.

Continuous Communication and Engagement

In 2024, the Rio Madeira project maintained an active dialogue with the communities through meetings, workshops, and consultations. This process created spaces for collaboration, strengthened relationships, and allowed for better mapping of local needs. A total of 156 participants were engaged, including women, youth, and representatives from educational institutions and resettlement groups.

Capacity strengthening and educational practices

1. **Technical Cooperation Agreement with EMBRAPA.**

In 2024, the project took a remarkable step by signing a Technical Cooperation Agreement with Embrapa, a national reference in agricultural research. This partnership, was celebrated during an event held on November 22, brought together our team, Embrapa representatives, and local Brazil nut extractors in a moment of dialogue and learning.

The event introduced the work plan, which includes technical workshops to improve the processing and storage of Brazil nuts, as well as training focused on sustainable management practices. Embrapa committed to providing technical and scientific support, ensuring product quality and market recognition.

More than formal agreement, this partnership symbolizes a collective effort to enhance the value of extractivist communities and preserve the forest. Each Brazil nut collected now carries the promise of a more sustainable and prosperous future for everyone involved.

2. Arbor Day

The activity Arbor Day was conducted by the project in partnership with Rovema Group on two different days. The first event took place at Flor do Cupuaçu School on September 27, 2024, and the second event was held at Porto Velho Natural Park on September 29,2024. The participants of the second event included Morrinhos Resettlement residents and employees of the farms from Instance 1. However, the event was open to the general public, attended by 324 residents of the Porto Velho region.

- Arbor Day at Flor do Cupuaçu School

The Arbor Day at Flor do Cupuaçu School began with a workshop by a biologist, in which he addressed the following topics with the students: biodiversity and the link between environmental and human health, using taxidermy animals to engage participants, what umbrella species are, the main species of the Amazon region, endemic species of Rondônia, feeding habits, behaviors and curiosities, and an explanation about all the stuffed animals that were on display. Finally, the students were able to look at, touch, and analyze the displayed animal species.

Figure 42. Environmental education talk held on arbor day



After the workshop with the biologist, the children planted native tree seedlings in the area around the school, with the help of staff and teachers present. On this day, the structure of the pedagogical garden was also handed over to the school.

Figure 43. Arbor day native tree seedlings



Figure 44. Pedagogical garden structure



- Arbor Day at Porto Velho Natural Park

The Arbor Day at the Natural Park started with a biology workshop focused on venomous animals, offering safety tips and showcasing live snakes and scorpions. As well, the workshop explored the role of natural parks in preserving biodiversity and cooling urban areas, with a live boa constrictor demonstration.

Interactive booths allowed participants to engage in practical learning, such as creating seed bombs for urban reforestation with University of Rondônia (UNIR), making eco-friendly soap from used oil, and crafting clay pots in a ceramics workshop.

The event concluded with a guided trail through a natural park, where participants identified key Amazonian tree species and witnessed the release of a boa constrictor into its habitat. The event fostered a sense of community engagement, reinforcing the importance of preserving biodiversity.

Two community groups, benefited by the project, were engaged in the activities conducted during this monitoring period: families from the Resettlement Morrinhos, employees and women from the Rio Madeira Farm, totaling 46 individuals directly engaged.

In addition, the activities reached approximately 324 people from the general public who had the opportunity to learn more about the importance of nature conservation, sustainable practices, and to become familiar with the Rio Madeira Project.

Even though these additional participants are not part of the project's primary target audience, these activities contributed to enhancing environmental awareness, and fostering a culture of sustainability aligned with the objectives of the project, as well as strengthening the participation of the community served by the project.

Figure 45. Arbor Day - Porto Velho Natural Park



Infrastructure Improvements

1. Flor do Cupuaçu School

In 2024, the infrastructure improvement program at Flor do Cupuaçu School had a significant impact on the school community. The installation of the Starlink internet antenna, carried out in the previous year, was highly appreciated by users. The satisfaction survey, made with the School director, revealed that connectivity improved administrative and educational activities by 100%, with the internet being essential for training, online meetings, and content preparation. The director expressed high satisfaction with the network, highlighting the effectiveness of technical support in resolving any signal issues.

Additionally, the renovation of the school's electrical wiring was another key milestone in 2024. The improvement brought stability and regular functioning of the equipment, contributing to a safer and more efficient environment for school activities. The school's representative rated the renovation with a perfect score, emphasizing the significant progress in daily activities and expressing gratitude for the service provided.

Figure 46. Specialized technician performing the renovation of the school's electrical wiring



These actions underline the program's commitment to enhancing educational conditions, ensuring that Flor do Cupuaçu School has the necessary infrastructure to provide quality education tailored to contemporary needs.

2. Karatê team "Nature Warriors"

The project was a standout in 2024, demonstrating remarkable growth and impact. Starting with nine participants in 2023, it expanded to 23 students, showcasing the program's effectiveness in engaging the community. A key milestone was the setup of a dojo, creating a safe space for practicing martial arts, which fostered discipline, teamwork, and self-confidence among participants. The program provided uniforms for the students, enabling them to compete in prestigious regional tournaments, including the 8th Rondônia Karate Cup and the V Fenix Karate Cup.

Figure 47. Dojô and equipment donation



The highlight of the year was the crowning of the Mirim State Champion, which inspired pride and motivated the community. Another notable moment was the visit of Shihan Sidi Gobi, son of the first Shotokan black belt in Brazil, who shared valuable insights and further inspired the students. These initiatives, combined with exams and graduations in karate, reinforced the participants' commitment to discipline and personal growth. The project continues to thrive, driven by strong partnerships and a shared vision for community development and environmental awareness .

Figure 48.State Championships





4.3.2 Monitoring Plan Dissemination (CCB, CM4.3)

The Monitoring Plan, as well as the results obtained by monitoring the REDD+ Rio Madeira Project, were made available through Verra Registry website (https://registry.verra.org/app/projectDetail/VCS/2878). The summary documents related to the monitoring plan, its results and other relevant information were made available to communities and other interested parties through meetings, lectures and by physical (printed) means during the monitoring period.

4.4 Optional Criterion: Exceptional Community Benefits

4.4.1 Short-term and Long-term Community Benefits (CCB, GL2.2)

Not applicable. The Rio Madeira Project is not seeking to achieve Gold Level for exceptional community benefits.

4.4.2 Marginalized and/or Vulnerable Community Groups (CCB, GL2.4)

Not applicable. The Rio Madeira Project is not seeking to achieve the Gold Level for exceptional community benefits in this monitoring period.

4.4.3 Net Impacts on Women (CCB, GL2.5)

Not applicable. The Rio Madeira Project is not seeking to achieve Gold Level for exceptional community benefits.

4.4.4 Benefit Sharing Mechanisms (CCB, GL2.6)

Not applicable. The Rio Madeira Project is not seeking to achieve Gold Level for exceptional community benefits.

4.4.5 Governance and Implementation Structures (CCB, GL2.8)

Not applicable. The Rio Madeira Project is not seeking to achieve Gold Level for exceptional community benefits.

4.4.6 Smallholders/Community Members Capacity Development (CCB, GL2.9)

Not applicable. The Rio Madeira Project is not seeking to achieve Gold Level for exceptional community benefits.

5 BIODIVERSITY

5.1 Net Positive Biodiversity Impacts

5.1.1 Biodiversity Changes (VCS, 3.19; CCB, B2.1)

Change in Biodiversity	HCV 1
Monitored Change	Conservation of threatened species through habitat protection, compared to without-project scenario (for more information see the CCBPD) – Actual, positive and indirect change
Justification of Change	The preservation of forest areas under the Rio Madeira REDD+ project has been instrumental in protecting the habitats of threatened species, indirectly contributing to their conservation. This positive impact becomes evident when compared to the alternative scenario of continued forest loss and biodiversity decline in the absence of the project. This assessment relies on a qualitative approach, focusing on the presence and observations of species within the project area. The first fauna inventory, conducted at the onset of the project, serves as a baseline for understanding the biodiversity present before project implementation. In addition to this baseline, farm employees voluntarily shared spontaneous observations of wildlife. These records were made at their own initiative and were not initially part of any structured project activity. Sightings of new threatened species not documented in the initial inventory were recorded. Recognizing the value of these contributions, a participatory monitoring activity is now being developed to encourage, support, and systematize such records. The Rio Madeira REDD+ Project plans to implement this initiative in a future phase, using iNaturalist to facilitate data collection and species identification. iNaturalist is a globally recognized citizen science platform that allows users to record and share biodiversity observations, integrating artificial intelligence and expert validation to improve species identification. Its widespread use and scientific credibility make it a valuable tool for biodiversity monitoring, fostering engagement while generating data for conservation efforts. It is important to highlight that the records included in

this report were not collected through iNaturalist, they were gathered prior to the implementation of this participatory monitoring activity.

Among the reported sightings was the giant armadillo (*Priodontes maximus*), listed as Vulnerable on both the IUCN Red List of Threatened Species and the Brazilian Red List. The sighting occurred at Nova Fronteira Farm (Instance 3). The same employee who reported the giant armadillo also observed the bush dog (*Speothos venaticus*), classified as Near Threatened by the IUCN and Vulnerable by the Brazilian National List, and the "pacarana," or "paca-de-rabo" (*Dinomys branickii*), which is currently classified as Least Concern by the IUCN (2017 assessment) but was previously considered Vulnerable, indicating potential conservation importance. However, photographic evidence of the bush dog and the pacarana is not yet available, though these species may be documented in future fauna monitoring activities.

These sightings serve as evidence that the habitat of these threatened species is being effectively protected.

Figure 49. Giant Armadillo spotted at the Nova Fronteira Farm (Instance 3).



Comparatively, it is possible to evaluate the observed biodiversity under the with-project scenario against the likely outcomes in a without-project scenario, where forest degradation and habitat loss would have led to significant declines in species populations. While formal wildlife monitoring activities were not conducted during this monitoring period, the combination of historical inventory data and spontaneous

reports enables a defensible assessment of the project's positive, indirect impact on biodiversity conservation.

Furthermore, in November 2024, a mapping exercise was conducted to identify areas of significant use by wildlife within the project area, including key sites such as salt licks. This activity was carried out in collaboration with farm employees, leveraging their local knowledge to pinpoint areas of frequent wildlife presence. The resulting map will serve as a foundation for the strategic placement of camera traps as part of the biodiversity monitoring program.

This method will aim to track medium- and large-sized mammals, given their critical ecological roles and reliance on extensive forested habitats. These species serve as important indicators of ecosystem health and are integral to maintaining the area's biodiversity.

This initiative aligns with the precautionary principle by fostering a proactive approach to biodiversity monitoring and management. The planning and implementation of monitoring activities contributes to identifying potential negative impacts while providing valuable insights into opportunities for enhancing High Conservation Value (HCV) attributes. By systematically observing wildlife dynamics, this effort ensures informed decision-making to mitigate risks and promote the conservation of biodiversity within the project area.

Figure 50. Salt licks and Igarapé on the project area.



Figure 51. A herd of peccaries (*Tayassu pecari*) vulnerable species[155]) with offspring near salt licks on the Santa Carmem farm.

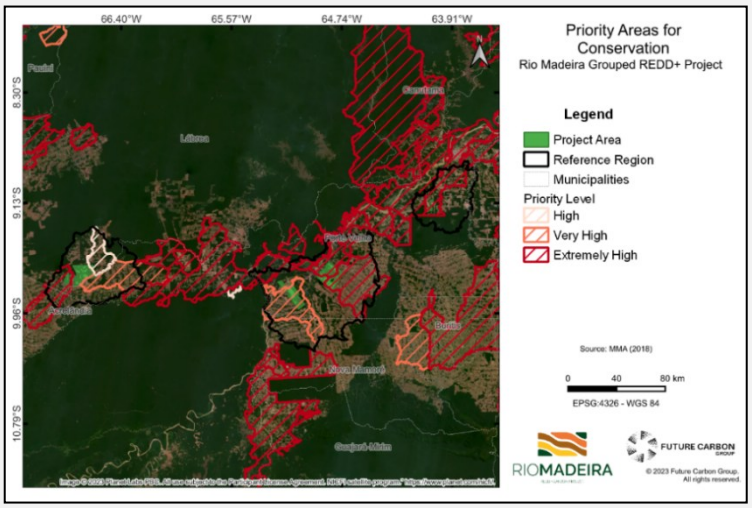


Change in Biodiversity	Priority Areas for Biodiversity Conservation (MMA)
Monitored Change	Protection of priority areas for conservation (MMA, 2025)[156], compared to without-project scenario (for more information see the project PDD) – actual, positive and direct change

[155] IUCN classification: Tayassu pecari (White-lipped Peccary)
[156] MMA, 2024. Áreas Prioritárias para a Conservação, Utilização Sustentável e Repartição dos Benefícios da Biodiversidade Brasileira. Available at: <https://www.gov.br/mma/pt-br/assuntos/ecossistemas/conservacao-1/areas-prioritarias>.

Justification of Change	The properties that compose the Project Area (PA) overlap with the Priority Areas for the Conservation, Sustainable Use, and Benefit Sharing of Biodiversity designated by the Brazilian Ministry of the Environment (MMA). It constitutes a unique conservation strategy that encompasses the diversity of landscapes, ecosystems, and biodiversity across all major biomes, including the Coastal and Marine Zone.

Figure 52. Priority Areas for Conservation according to MMA.



The rules for identifying such Priority Areas and Actions were formally established by Decree No. 5092 on May 21, 2004, within the scope of MMA's responsibilities[157].

The conservation of the project area plays a strategic role in safeguarding the biodiversity of the Amazon Biome by preventing land-use changes. A key contribution of the Rio Madeira project to this effort is the preservation of protected areas within the project boundaries. These actions are particularly crucial given that only 28% of the Amazon Biome falls under any formal conservation category *(MMA, 2023)*[158].

The protection involved monitoring forest integrity to prevent unplanned deforestation in the project area, such as invasions and any form of degradation. Overall, protecting the project area helps mitigate threats to biodiversity arising from land-use dynamics, which are currently the primary drivers of

[157] BRASIL, 2004. Available at: <https://www.planalto.gov.br/ccivil_03/_Ato2004-2006/2004/Decreto/D5092.htm>.
[158] MMA, 2023. Painel Unidades de Conservação Brasileiras. Available at: <https://cnuc.mma.gov.br/powerbi>.

deforestation in the Brazilian Amazon Forest (Aldrich et al., 2006[159]; Ometto, J. P., Aguiar, A. P. D., & Martinelli, L. A., 2011)[160].

During the monitored period, the Rio Madeira REDD+ Project avoided the deforestation of 1,568.71 hectares of unavoidable and unplanned deforestation in the project area, when measured against predicted in the baseline scenario.

The deforestation assessment of the Rio Madeira Project is based on remote satellite imagery over a specific timeframe as a method for monitoring and reporting changes in forest coverage and other activities influenced by the implemented measures. The combination of deforestation mitigation measures and monitoring through remote sensing technologies supports the quantification and documentation of the positive changes.

Besides forest protection and biodiversity conservation within the project area boundaries, some activities during this monitoring period promote sustainability through Priority Areas for Biodiversity Conservation. It is important to note that the educational nature of these activities means their impact is not locally limited and may potentially generate benefits across all priority areas in the region. The activities are as follows:

Enhancement of habitat and forest cover at the Natural Park of Porto Velho and Flor do Cupuaçu School (both located in Priority Areas)

The Rio Madeira REDD+ Project supported the “Dia da Árvore” (Arbor Day) event held at the Municipal Natural Park of Porto Velho and Flor do Cupuaçu School. In addition to environmental education activities, the event featured a sapling planting initiative, during which 305 trees of native and frugivorous species were planted in the park and 60 were provided for the school.

This planting initiative plays a vital role in restoring native vegetation cover within the region of Porto Velho. Over time, as

[159] Aldrich, Stephen P., et al. "Land-cover and land-use change in the Brazilian Amazon: Smallholders, ranchers, and frontier stratification." Economic Geography 82.3 (2006): 265-288. Available at: <https://doi.org/10.1111/j.1944-8287.2006.tb00311.x>.
[160] Ometto, J. P., Aguiar, A. P. D., & Martinelli, L. A. (2011). Amazon deforestation in Brazil: effects, drivers and challenges. Carbon Management, 2 (5), 575-585. Available at: < https://doi.org/10.4155/cmt.11.48>.

the trees mature, the benefits will gradually become evident, enhancing ecosystem services such as carbon sequestration, soil stabilization, microclimate regulation, habitat provision for local fauna, and cultural services for the local community. These cultural services will include opportunities for recreation, education, and fostering a deeper connection between the people and their natural environment.

Educational initiatives during the "Dia da Árvore" (Arbor Day) event at the Natural Park of Porto Velho and at the Escola Flor do Cupuaçu

This activity's impact on the priority areas for biodiversity conservation arises from the assumption that fostering awareness and respect for the environment at a young age will lead to long-term changes in how these individuals interact with their surroundings. In the absence of the project and these educational initiatives, there would likely be less awareness and engagement, and, consequently, a missed opportunity for developing a new generation of potential conservationists. This indirect contribution to biodiversity conservation is based on the premise that well-informed, environmentally conscious communities will be more inclined to support actions that protect and sustain local biodiversity, ultimately leading to more sustainable land-use practices and reduced threats to the environment.

The "Dia da Árvore" event at the Natural Park and Flor do Cupuaçu School held a series of environmental education activities for children and local communities. These included lectures by biologists on biodiversity, endemic species, venomous animals, and the importance of nature conservation. Participants interacted with taxidermized animals. Practical workshops, such as tree planting, seed bomb making and the production of homemade soap from recycled oil, engaged children in hands-on sustainability activities.

Figure 53. Activities at Flor do Cupuaçu School.





Figure 54. Activities at the Natural Park of Porto Velho.







5.1.2 Mitigation Actions (VCS, 3.19; CCB, B2.3)

As stated in the CCB Project Description (PD), the project activities are centered around forest preservation and conservation, so they had no negative impacts on biodiversity. However, adhering to the precautionary principle, some measures were taken aiming to identify and minimize potentially non-identified negative impacts. The following describes the action undertaken during this monitoring period to support maintenance or enhancement of the HCV attributes and mitigate negative impacts.

Actions implemented to mitigate the negative impacts on biodiversity	Description
Diagnostic of risks and threats for biodiversity	To mitigate negative impacts on biodiversity and enhance High Conservation Value (HCV) attributes, a risk and threat assessment was conducted in November 2024. This process involved field evaluations and discussions with farm employees to identify potential adverse effects on local biodiversity. The threat assessment process was conducted informally during field visits by the project team, based on direct observations and conversations with farm staff. Although the approach was not yet structured or accompanied by systematic data collection, it provided valuable initial insights into key threats to biodiversity within the project area. This survey aimed to build a general understanding of the local context to inform future mitigation planning. As such, no formal evidence was recorded during this phase. The assessment process highlighted key concerns, as wildlife roadkill, hunting, presence of invasive species (including the excessive presence of domestic animals such as dogs and cats in the project area), ecosystem services, and environmental awareness. No relevant immediate threats to biodiversity were identified during this process. While the situational analysis requires further refinement, standardization, and integration into regular monitoring activities, the field team's sensitivity during this assessment was sufficient to discard some imminent risks. No invasive species have been identified to date. On the internal roads of the farms and adjacent areas, no frequent occurrences of wildlife roadkill were reported. Hunting does not occur within the

	project area but remains a common practice in the region and is deeply tied to local cultural traditions. This highlights the importance of implementing environmental education initiatives to address this threat and mitigate potential unnoticed impacts. However, regarding domestic animals, the excessive presence of cats was diagnosed as a negative impact for biodiversity, which were found in large numbers on one of the farms. While their populations are not yet out of control or feral, there is potential for their numbers to increase across other farms. The presence of domestic animals in natural areas negatively impacts biodiversity as they prey on small wildlife and may also transmit zoonotic diseases to wild fauna and, occasionally, to humans, posing a potential public health risk. The Nova Fronteira farm presented the most complex scenario regarding the presence of domestic dogs and cats. These animals are concentrated in two main areas: near the headquarters, around the employees' barracks where they are fed, and in the vicinity of the corral. A total of 5 dogs and 12 cats were recorded near the headquarters, while 13 dogs and 18 cats were observed around the corral. The cat population appeared uncontrolled, with a litter of 4 kittens found in the barracks area. In general, the animals do not have specific owners but are cared for by the farm workers and remain on-site. During the stay at the farm, an occurrence of predation on wildlife by cats was observed, involving a mother cat and her kittens hunting lizards around the headquarters area.

Figure 55. Kittens at Nova Fronteira Farm.



Figure 56. Kitten feeding on predated lizard.



Addressing this issue aligns with the precautionary principle by proactively identifying and mitigating risks to biodiversity before further harm occurs. Proposed measures include raising awareness among employees and local stakeholders

	about the impacts of free-ranging domestic animals, implementing responsible pet ownership practices, and developing strategies to control and manage domestic animal populations near critical habitats. Such actions aim to safeguard HCV attributes by reducing direct and indirect pressures on native species, promoting ecosystem resilience, and ensuring the long-term viability of biodiversity in the project area. The adoption of these measures reflects a commitment to precaution and adaptive management, allowing for continuous improvement and refinement of conservation practices.
Forest cover remote sensing monitoring and ground patrols	Satellite monitoring has been adopted as a strategic tool to detect and address habitat loss events, such as deforestation and fires, as described in the project CCB PDD. This technology enables continuous tracking of land-use changes within the project area, allowing for the identification of threats and the implementation of corrective actions, minimizing potential impacts on biodiversity. The project's ground patrol team was established in November 2024; however, farm employees contributed to monitoring the properties before this while in their own work routines, reinforcing the control of illegal activities in the project area. Signposts are displayed through the project's properties as an additional measure, providing clear communication and reinforcing explicit prohibitions against hunting.

5.1.3 Net Positive Biodiversity Impacts (VCS, 3.19; CCB, B2.2, GL1.4)

The project's implementation has demonstrated net positive impacts on biodiversity in the project zone when compared with the conditions under the without-project land use scenario. Prior to the project's establishment, the area faced challenges such as scarcity of resources to monitor, manage, and protect the forest and its biodiversity.

The existence of the Rio Madeira Grouped REDD+ Project enabled the continued monitoring of forest cover, inhibiting deforestation, habitat degradation, hunting, poaching, and other illegal activities. Therefore, safeguarding biodiversity and its High Conservation Values. Environmental education actions, such as lectures about local fauna and reforestation activities, contribute to a more conservation-inclined community (as described in 5.1.1 Biodiversity Changes). As funding for biodiversity conservation continues to grow, more robust and active conservation actions will become viable, ensuring that long-term goals are achieved.

In the without-project land use scenario, the project area would potentially experience an increasing rate of deforestation and habitat loss, primarily due to cattle raising, illegal timber harvesting, and unsustainable land-use practices, all of which are economically attractive activities in the region (as illustrated in the CCB PD 2.2 section).

During this monitoring period, it was projected that a total of 1,590.24 hectares of land would have been lost to deforestation within the project area and 694.63 hectares in the leakage belt in 2024 if the project had not been implemented. This deforestation would have significantly impacted the populations of fauna species recorded in the project area, affecting not only the deforested area but also the entire project zone.

The activities undertaken during this period have contributed to improved conditions for biodiversity, particularly by conserving endemic and threatened species and maintaining ecosystem services. Any reduction in deforestation inherently benefits the biodiversity of the area. The project activities did not adversely affect habitats for rare, threatened or endangered species, nor areas needed for habitat connectivity, as described in the table below.

Species and habitat[161],[162]	Ten species listed as threatened occur within the project areas and their surroundings, according to the national list of threatened species and the IUCN Red List. These species are: **Endangered (EN)** • *Ateles chamek* – IUCN **Vulnerable (VU)** • *Hypocnemis ochrogyna* – IUCN • *Mico rondoni* – IUCN • *Plecturocebus brunneus* – IUCN • *Panthera onca* – **Nationally (MMA)**

[161] IUCN 2024. The IUCN Red List of Threatened Species. Version 2024-1. ISSN 2307-8235.
[162] National List P_mma_148_2022_altera_anexos_P_mma_443_444_445_2014_atualiza_especies_ameacadas_extincao.pdf

	• *Tapirus terrestris* – IUCN • *Tayassu pecari* – IUCN • *Primolius couloni* – IUCN • *Pionites leucogaster* – IUCN **Near Threatened (NT)** • *Pteroglossus bitorquatus* – *IUCN*[163] • *Panthera onca* – IUCN Among these, ***Ateles chamek*** **(black-faced spider monkey)** stands out as the most threatened species, classified as **Endangered (EN)** by the IUCN. This primate is highly dependent on continuous forest habitat, making its conservation within the project area particularly relevant[164]. All threatened species identified in and around the project area rely on forest ecosystems. As previously described, forest habitats were preserved rather than deforested in comparison to the without-project scenario. Consequently, habitats for rare, threatened, or endangered species were not adversely affected by project activities.
Areas needed for habitat connectivity	During the monitoring period, the project effectively preserved a large continuum of forested areas, ensuring that habitat connectivity remained intact. The forest cover protection prevented fragmentation and maintained the ecological functions of the landscape, supporting biodiversity and the natural movement of species across the project zone.

5.1.4 High Conservation Values Protected (CCB, B2.4)

The main objective of the Rio Madeira Grouped REDD+ Project is to secure forest cover and critical habitats for Amazonian biodiversity. By preserving large areas of native forest, HCV 1 species (as listed in the section above and detailed in the CCB PDD) are provided with the conditions necessary to thrive.

[163] Although Pteroglossus bitorquatus is classified as Near Threatened in the most recent assessment, in 2016 it was classified as Endangered, and therefore it is relevant to mention this species as a potential threatened species.
[164] CPB ICMBio – *Ateles chamek*

As a conservation initiative, the project's activities during this monitoring period were fully aligned with this objective. These activities included the monitoring, surveillance, and protection of forest cover; the mitigation of deforestation and fires; the sustainable development of local communities; and the preservation of biodiversity through habitat conservation and the promotion of environmental awareness (see sections 3.1, 4.1, and 5.1.1). Consequently, no harmful activities were undertaken by the Rio Madeira Grouped REDD+ Project.

5.1.5 Species Used (VCS, 3.19; CCB, B2.5, 2.6)

The Rio Madeira Grouped REDD+ Project is not currently introducing any species in any of its programs. However, in this monitoring period, a seedling planting activity took place at the Porto Velho Natural Park and the Flor do Cupuaçu School, as detailed in section 5.1.1.

The seedling planting initiative was not directly planned or conducted by the project but received sponsorship and support from it, with the project's team involvement ensuring the prioritization of native species over invasive ones. The seedlings were provided by the municipal nursery of Porto Velho, with species selected based on their ornamental, cultural, and ecological value. This effort aligns with the ecological restoration goals of the municipal park, promoting ecosystem services such as aesthetic and recreational values for park visitors, fruit provision for both people and wildlife, climate regulation, and soil protection.

The municipal nursery primarily identifies species using common names, which makes precise taxonomic identification challenging. Among the introduced species, those with uncertain classification, such as "Cerejeira" and "Graviola," may include exotic species, such as Annona muricata (soursop). However, these species are already widely cultivated across Brazil and are not considered invasive. They are valued for their fruiting properties and their cultural appreciation, contributing to ecosystem functionality without posing ecological risks.

All selected species were chosen for their ecological and cultural benefits, ensuring that no adverse effects would arise from their introduction. Consequently, no mitigation measures are required, as the planted seedlings enhance ecosystem services while preserving the integrity and resilience of the local environment.

Species introduced	Classification[165]	Justification for use	Adverse effects and mitigation
Açaí-de-touceira (*Euterpe oleracea*)	Native	Native and fruiting species; cultural and ecological value.	No adverse effects identified, no need of mitigation

[165] Based REFLORA Program data (Reflora). Species classified as 'uncertain' are those with ambiguous common names, as both native and exotic species share the same designation.

Buriti (*Mauritia flexuosa*)	Native	Native and fruiting species; key role in wetland ecosystems, cultural and ecological value.	No adverse effects identified, no need of mitigation
Cajá (*Spondias mombin*)	Native	Native and fruiting species; cultural and ecological value.	No adverse effects identified, no need of mitigation
Caju (*Anacardium occidentale*)	Native	Native and fruiting species; cultural and ecological value.	No adverse effects identified, no need of mitigation
Cerejeira	Uncertain	Fruiting species; cultural and ecological value	No adverse effects identified, no need of mitigation
Cojoba (*Cojoba* sp.)	Uncertain	Uncertain identification; cultural and ecological value.	No adverse effects identified, no need of mitigation
Copaíba (*Copaifera langsdorffii*)	Native	Native species; cultural and ecological value.	No adverse effects identified, no need of mitigation
Cupuaçu (*Theobroma grandiflorum*)	Native	Native and fruiting species; cultural and ecological value.	No adverse effects identified, no need of mitigation
Goiaba (*Psidium* sp.)	Native	Native and fruiting species; cultural and ecological value.	No adverse effects identified, no need of mitigation
Graviola (*Annona* sp.)	Uncertain	Fruiting species; cultural and ecological value.	No adverse effects identified, no need of mitigation
Ipê-amarelo (*Handroanthus serratifolius)*	Native	Native species; cultural and ecological value.	No adverse effects identified, no need of mitigation
Ipê-branco (*Tabebuia roseoalba*)	Native	Native species; cultural and ecological value.	No adverse effects identified, no need of mitigation

Ipê-roxo (*Handroanthus impetiginosus*)	Native	Native species; cultural and ecological value.	No adverse effects identified, no need of mitigation
Ingá-xixica (*Inga* sp.)	Native	Native species; cultural and ecological value.	No adverse effects identified, no need of mitigation
Ingá-de-metro (*Inga* sp.)	Native	Native species; cultural and ecological value.	No adverse effects identified, no need of mitigation
Itauba (*Mezilaurus itauba*)	Native	Native species; cultural and ecological value.	No adverse effects identified, no need of mitigation
Jacarandá-mimoso (*Jacaranda* sp)	Native	Native species; cultural and ecological value.	No adverse effects identified, no need of mitigation
Jatobá (*Hymenaea* sp.)	Native	Native species; cultural and ecological value.	No adverse effects identified, no need of mitigation
Lanterneira-da-Amazônial (*Lophanthera lactescens*)	Native	Native species; cultural and ecological value.	No adverse effects identified, no need of mitigation
Mogno	Uncertain	Uncertain identification; cultural and ecological value.	No adverse effects identified, no need of mitigation
Pau-pretinho (*Cenostigma tocantinum*)	Native	Native species; cultural and ecological value.	No adverse effects identified, no need of mitigation
Seringa (*Hevea brasiliensis)*	Native	Native species; cultural and ecological value.	No adverse effects identified, no need of mitigation

5.1.6 Invasive Species (VCS, 3.19; CCB, B2.5)

As described in the third monitoring report of this project, the presence of pets such as cats and dogs on the project's properties was perceived as a potential risk for local wildlife and, therefore, required attention. During this monitoring period (2024) the project team acted to better understand these risks. To date, neither feral cats nor dogs have been identified in the project area, though, not considered invasive species in the project area. However, even the presence of these species as domestic animals can adversely affect wildlife to some degree and will be treated as potential invaders who need to be managed. It is worth reinforcing that the project did not detect, introduce or plan to use any invasive species in project activities. The table below presents measures to prevent potential impacts of cats and dogs near the project area.

Existing invasive species	Mitigation measures to prevent the spread or continued existence of invasive species
Domestic cat (*Felis catus*) Domestic dog (*Canis familiaris*)	No individuals of these species were recorded within the project areas. Nonetheless, adhering to the precautionary principle, the following actions have been planned: A domestic animal control program will be implemented to mitigate potential impacts on biodiversity and prevent their establishment as invasive species. As an initial step, a baseline survey was conducted to quantify the population of cats and dogs on farms and evaluate their potential risks to wildlife. The survey was conducted by the project team through active searches and counts, combined with interviews with farm employees whenever possible. The reported numbers are estimates due to the difficulty of accurately counting animals, especially cats. This difficulty was further compounded by the similarity in appearance among cats and their tendency to hide in hard-to-see locations, such as rooftops. Most of the cats present on the farms do not have formal owners but are cared for by employees and residents. Additionally, the proximity of Santa Carmem and Nova Fronteira farms to the highway facilitates the entry of more animals into these areas. Despite these challenges, the survey successfully identified which farms require more attention. A more precise baseline is expected to be established during future neutering and vaccination interventions. The results were as follows:

Serra Verde Farm

The census recorded a total of 6 dogs (3 males and 3 females). Due to the farm's proximity to the highway, some animals arrive from there. Castration is not planned as the dogs assist with cattle herding. The animals, medium-sized, are mostly found near the accommodation, headquarters, and dining area. No cats were registered, and the situation is not considered a concern regarding negative impacts on wildlife.

Rio Madeira Farm

Animals were identified only near the headquarters. Their presence poses no significant risk to wildlife, as most are small, and the forested areas are far from human dwellings. Few animals were recorded, and they live indoors, with minimal interaction between domestic and wild fauna.

Santa Carmem Farm

Four cats (3 males and 1 female) were identified near the headquarters. One cat belongs to a worker, while the others are cared for by the farm staff. Cats are more numerous near the headquarters and require monitoring. Staff frequently mentioned the utility of cats for controlling rats and expressed concerns that castration would reduce this usefulness.

Near the boarding house and workers' homes, 4 male dogs (2 neutered), 1 female dog, and 1 neutered cat were recorded. Residents occasionally adopt animals, and a pregnant dog was observed during fieldwork. Educational workshops on responsible pet ownership, vaccination, and castration are recommendable. However, the scenario was not considered of risk.

Nova Fronteira Farm

Nova Fronteira presented the most complex scenario regarding the presence of dogs and cats, concentrated in two areas: near the headquarters in the workers' shed, where animals are fed, and around the corral.

	A total of 5 dogs and 12 cats were recorded near the headquarters, and 13 dogs and 18 cats near the corral. The number of cats is unregulated, including a litter of four kittens near the workers' shed. Most cats are cared for by the staff but do not have specific owners. During the stay, two incidents of wildlife predation by cats were observed, including a mother cat with kittens hunting lizards near the headquarters. Some male cats, especially near the corral, have been neutered. Staff value the presence of animals for rodent control and are keen to keep them. Although a neutering program could be accepted, awareness-raising among the staff about the importance of controlling animal populations is recommendable. Collective solutions to balance the number of animals, rodent issues, and environmental impacts should be explored. All evidence will be made available to audit. The program will prioritize periodic neutering and vaccination of the animals mainly at the Nova Fronteira Farm, alongside environmental education initiatives to encourage responsible pet ownership. If deemed necessary and feasible, these measures may also be extended to other areas in future monitoring periods. Where the assessment did not indicate significant risks associated with the presence of domestic animals to wildlife, only environmental education activities will be carried out. The risk can be reassessed periodically, as needed, and specific interventions may be planned if new threats are identified.

5.1.7 GMO Exclusion (CCB, B2.7)

As stated in the CCB PD, no GMOs were used in the project activities. This item is not applicable.

5.1.8 Inputs Justification (VCS, 3.19; CCB, B2.8)

No input activities are planned for this project.

The project proponent wants to disclose that although not being part of the project and happening outside of the project area, there is agriculture and cattle ranching taking place in some of the properties that contain the project area. They occur either encompassed within some of the polygons or right next to them. In this sense, some products for these activities may be present (e.g., fertilizers, cattle food) and their use follows Brazilian Federal regulations. Nevertheless, for not being part of the project itself, these are not considered in the template table.

It is important to highlight that the three instances that are part of the project use high-precision agricultural technologies, reducing the risk of environmental impacts. Furthermore, to minimize any potential adverse impacts on the environment and communities, mitigation measures have been implemented. These measures include the following:

Safe Handling and Storage Protocols: Specialized professionals are responsible for ensuring that safe handling and storage protocols for pesticides and biological control agents are followed, ensuring that these inputs are managed with care and in accordance with industry standards. The professionals who handle these products are properly trained.

Precision Application Equipment: High-precision application equipment is utilized by trained personnel in the rural properties surrounding the project area. This technology helps to reduce the risk of contamination and ensures that inputs are applied only in the intended areas, minimizing drift or runoff into the project area.

Technical Responsibility Documentation (ART 165): For all activities related to the use of fertilizers, chemical pesticides, biological control agents, and other inputs in the areas adjacent to the project, an "Anotação de Responsabilidade Técnica" (ART) will be provided. This legal document identifies the responsible technical professionals, such as agricultural technicians, who oversee the safe and precise application of these substances.

Planning: All applications are planned before all inputs are purchased. Furthermore, applications are scheduled, respecting the application interval of each product as well as the recommended dose for each active ingredient.

Application Method: None of the 3 instances carry out aerial spraying of any agricultural pesticide. The 3 instances use self-propelled sprayers, whose main characteristics are high operational capacity, operator safety and comfort, high technology in electronic controllers and machine automation, thus ensuring control and precision in spraying.

These mitigation measures are essential to ensure that any potential negative effects from external inputs, originating from neighboring agricultural or ranching activities, are controlled and minimized. By adhering to strict safety protocols and involving qualified professionals, the project remains committed to safeguarding both the environment and local communities.

5.2 Offsite Biodiversity Impacts

5.2.1 Negative Offsite Biodiversity Impacts (CCB, B3.1) and Mitigation Actions (CCB, B3.2)

Rio Madeira Grouped REDD+ Project focuses on reducing deforestation to ensure that environmental ecosystem services continue over time, and the emission of greenhouse gases from deforestation and degradation is avoided. Additionally, the project aims to improve the biodiversity conditions of the species within and surrounding the project area. As stated in the CBB PD, the main project objective is forest conservation. Until the reporting monitoring period, there are no negative offsite biodiversity impacts caused by project activities implemented. On the contrary, the protection and prevention of forest cover loss through monitoring forest integrity of the project area to ensure connectivity in the landscape between the surrounding areas have a positive effect on both in-site and offsite biodiversity. As indicated in section 5.1, the activities in this monitoring period have focused on habitat preservation, mapping points for monitoring (monitoring plan), environmental education, and remote forest cover monitoring inside the project area and in the project zone. Restauration of small areas with native species of the amazonian flora was also conducted. None of these activities pose any risk or create any negative impact on offsite biodiversity; therefore, no mitigation measures are required, and none were implemented during this period. In the worst-case scenario, one potentially negative impact that would result in changed conditions for biodiversity would be leakage. However, the results of the monitoring show that no leakage occurred during this monitoring period. The main activities to be implemented to prevent leakage in the LMA focus primarily on land-use stabilization through technical training and rural assistance, enabling communities and farmers to apply good management practices and increase productivity per area, reducing the pressure for new agricultural areas. Environmental activities will keep being carried out to raise awareness among communities about climate change and the relationship between human beings and nature. Both efforts benefit biodiversity outside of the project zone, which, in turn, benefits the local communities.

5.2.2 Net Offsite Biodiversity Benefits (VCS, 3.19; CCB, B3.3)

As outlined in the preceding sections, no negative unmitigated impacts on biodiversity outside the project zone are anticipated, as detailed in section 5.1.1, section 5.1.2 and section 5.1.3. The project activities have solely resulted in positive impacts on biodiversity within the project zone, which is the greatest benefit inside the project area. Throughout the project activities conducted in this monitoring period it is expected that these efforts might generate positive impacts outside the project zone as well, through the maintenance of local and regional ecosystem services. The net positive impacts of the project on biodiversity are further discussed in section 5.1.1 and section 5.1.3.

5.3 Biodiversity Impact Monitoring

5.3.1 Biodiversity Monitoring Plan (CCB, B4.1, B4.2, GL1.4, GL3.4)

The complete Biodiversity Monitoring Plan for this project is detailed in section 5.4.1 of the CCB PD. Since validation, no alterations have been made to the monitoring plan. The plan encompasses four core biodiversity variables to be periodically monitored, along with three additional variables requiring more frequent monitoring, all within the boundaries of the three property instances. These variables are designed to assess landscape, biological community, and property-level dynamics. During this monitoring period, the only variable monitored—according to the frequency and starting year outlined in the monitoring plan of the CCB PD—was forest cover. The other two planned variables, protection patrols and the identification of illegal events, were only implemented later in 2024 and, therefore, are not included in the monitoring results.

The table below presents the results, which have been adapted from the original CCB PD table to ensure clarity and formatting consistency. For further details, reference can be made to CCB PD section 5.4

Table 60. Biodiversity Monitoring Plan.

Nr	Biodiversity Variable	Measurement Type Sampling Method	Frequency	Indicator	Potential start*	Potential start met	Measured Results (01-Jan-2024 to 31-Dec-2024)	Evidence
Basic variables to be monitored								
1	Forest Cover	Remote sensing	Annually (according to MR period)	Area (ha) undisturbed out of the total PA, disaggregated by property. Absolute and Relative	2023	Yes	Instance 1: 20,095.32 ha Instance 2: 13,080.63 ha Instance 3: 18,760.23 ha Total PA undisturbed: 51,936.18 ha (around 99.35%)	4th MR Calculation Spreadsheet
2	Protection Patrols	Local patrols	Monthly	Nr of patrols Km patrolled. Inside the PAs and at the boundaries.	2024	Yes	Nr of patrols: 22 Km patrolled. Inside the PAs and at the boundaries: 4417km	Patrol records
3	Illegal Events identified (cut fences, evidence of burning, fresh stumps)	Local patrols	Monthly	Nr of illegal events disaggregated by type	2024	Yes	0 illegal events, disaggregated by type	Patrol records
4	Wildlife Species	Camera-trap campaigns	Semi-annual (minimum 30 camera-days)	Total species photographed/registered IUCN (HCV) species out of total	2024	Yes (anticipated to 2023)	0 species photographed by camera traps[166]	N/A

[166] During this period, the project acquired monitoring equipment but conducted no campaigns.

Scientific variables to be monitored at a maximum every 5 years								
5	Birds, mammals and herpetofauna diversity, includes HCV wildlife	- Wildlife surveys -McKinnon lists, -Transect counts, -Active search	5 years, twice in each year	Nr of wildlife species Nr of mammals Nr of birds Nr of amphibians and reptiles Nr HCV 1 species present compared to baseline	2025	Yes (anticipated to 2023)	N/A	N/A
6	Tree diversity (includes HCV trees) Ecosystem (forest type) diversity	-Forest inventories; -Sample plots	5 years, twice in each year	Total number of tree species # HCV 1 species present compared to baseline	2025	N/A	N/A	N/A

5.3.2 Biodiversity Monitoring Plan Dissemination (CCB, B4.3)

The Monitoring Plan, as well as the results obtained by monitoring the REDD+ Rio Madeira Project, were made available through Verra Registry website (https://registry.verra.org/app/projectDetail/VCS/2878). The summary documents related to the monitoring plan, its results and other relevant information were made available to communities and other interested parties through meetings, lectures and by physical (printed) means during the monitoring period.

Figure 45. Rio Madeira Grouped REDD+ Project folder.



5.4 Optional Criterion: Exceptional Biodiversity Benefits

Not applicable. The Rio Madeira Grouped REDD+ Project is not validated at the Gold Level for exceptional biodiversity benefits

5.4.1 Trigger Species Population Trends (CCB, GL3.2, GL3.3)

Not applicable. The Rio Madeira Grouped REDD+ Project is not validated at the Gold Level for exceptional biodiversity benefits.

APPENDIX 1: NEW PROJECT AREAS AND STAKEHOLDERS

Stakeholder	Rights, interest, and overall relevance to the project	Demonstrate how they meet/do not meet the eligibility criteria (G1.14)	Demonstrate how their inclusion/exclusion does not violate the scalability limits (G1.15)
RECA Association	The RECA (Economic Agroforestry Reforestation Consortium) is an association that has been in existence for over 20 years in the district of Vila Nova California – RO. The institution's focus is to support the local economy and promote sustainability through the marketi'g of non-timber forest products and agricultural goods, respecting the socio-biodiversity of the Amazon region. Today, the association is a reference in the region and is known throughout the national territory, including international partnerships. For the Rio Madeira Project it is a group that has shown interest, or is known to be interested, in the project's activities but will not be materially affected by these activities. However, it could be an important partner for strengthening and engaging partnerships with	Although this group has been identified, it will not be considered a priority group in this initial phase and will not experience material impacts. These communities do not rely on resources from the project area, so their inclusion was initially done with the strategy of containing leakage and generating additional co-benefits. During this period, no formal or verbal agreements were established regarding the implementation of activities with these groups. Only preliminary discussions to introduce the project and an initial socioeconomic diagnosis were conducted, solely aimed at understanding and further analyzing the local context, without the intention of creating expectations of support or inclusion from the project. Thus, the primary impact of this change lies in institutional relationships rather than directly affecting the communities involved.	The change in the LMA did not impact the planned co-benefit activities mentioned in Appendix 2 from the PD CCB167, so that there was no change in the expected benefits for the community, biodiversity or climate. This stakeholder may be included in future project activities if expectations align with the project's objectives.

[167] Available at: https://registry.verra.org/app/projectDetail/VCS/2878

	educational institutions in the future, if applicable.		
USF Santa Rita	The Santa Rita Family Health Unit was consulted during a visit by the Future Carbon team in June 2023 at Santa Júlia School, where this group was also present. The Health Unit plays a crucial role in the community as it is the only healthcare facility available. Despite its importance, it will not be considered a priority group in this initial phase and will not experience material impacts. The project remains open to dialogue and potential partnerships in the future, should their objectives align with those of the project.	Although this group has been identified, it will not be considered a priority group in this initial phase and will not experience material impacts. These communities do not rely on resources from the project area, so their inclusion was initially done with the strategy of containing leakage and generating additional co-benefits. During this period, no formal or verbal agreements were established regarding the implementation of activities with these groups. Only preliminary discussions to introduce the project and an initial socioeconomic diagnosis were conducted, solely aimed at understanding and further analyzing the local context, without the intention of creating expectations of support or inclusion from the project. Thus, the primary impact of this change lies in institutional relationships rather than directly affecting the communities involved.	The change in the LMA did not impact the planned co-benefit activities mentioned in Appendix 2 from the PD CCB168, so that there was no change in the expected benefits for the community, biodiversity or climate. This stakeholder may be included in future project activities if expectations align with the project's objectives.
União Bandeirantes District	Although the district is close to the project area, it is reasonably well-developed and will not be materially affected by the project's activities. Given the limited scope and resources, the local consultation process prioritized stakeholders directly located within the project area, who will be the most impacted	Although this group has been identified, it will not be considered a priority group in this initial phase and will not experience material impacts. These communities do not rely on resources from the project area, so their inclusion was initially done with the strategy of containing leakage and generating additional co-benefits. During this period, no formal or verbal agreements were established regarding the implementation of	The change in the LMA did not impact the planned co-benefit activities mentioned in Appendix 2 from the PD CCB169, so that there was no change in the expected benefits for the community, biodiversity or climate. This stakeholder may be included in future project activities if

[168] Available at: https://registry.verra.org/app/projectDetail/VCS/2878

[169] Available at: https://registry.verra.org/app/projectDetail/VCS/2878

	by the activities. The districts in the reference region, while relevant, were not considered a priority in this initial phase.	activities with these groups. Only preliminary discussions to introduce the project and an initial socioeconomic diagnosis were conducted, solely aimed at understanding and further analyzing the local context, without the intention of creating expectations of support or inclusion from the project. Thus, the primary impact of this change lies in institutional relationships rather than directly affecting the communities involved..	expectations align with the project's objectives.
FIMCA Farm School	Provides technical agricultural education, attracting students from nearby areas. Important for possible future partnerships, could be an important partner to strengthen and engage partnerships with educational institutions in the future, if applicable.	Although this group has been identified, it will not be considered a priority group in this initial phase and will not experience material impacts. These communities do not rely on resources from the project area, so their inclusion was initially done with the strategy of containing leakage and generating additional co-benefits. During this period, no formal or verbal agreements were established regarding the implementation of activities with these groups. Only preliminary discussions to introduce the project and an initial socioeconomic diagnosis were conducted, solely aimed at understanding and further analyzing the local context, without the intention of creating expectations of support or inclusion from the project. Thus, the primary impact of this change lies in institutional relationships rather than directly affecting the communities involved..	The change in the LMA did not impact the planned co-benefit activities mentioned in Appendix 2 from the PD CCB170, so that there was no change in the expected benefits for the community, biodiversity or climate. This stakeholder may be included in future project activities if expectations align with the project's objectives.

[170] Available at: https://registry.verra.org/app/projectDetail/VCS/2878

APPENDIX 2: PROJECT RISKS TABLE

	Identified risk(s)	Potential impact of risk on stakeholders, ecosystem health, and biodiversity	Mitigation or preventative measure(s) taken
Natural and human induced risks to stakeholders' wellbeing	No risk identified.	No risk identified.	No natural or human risks to the well-being of stakeholders were identified during this monitoring period, therefore, it was not necessary to implement a mitigation measure.
Risks to stakeholder participation	**Short term risk** Lack of stakeholder's engagement.	Risk of insufficient stakeholder engagement, leading to reduced participation, resistance to activities, or damaged relationships that could undermine project outcomes and long-term sustainability	During this monitoring period, continuous communication mechanisms were established and carried out with the stakeholders in order to inform them of the progress and objective of the project. The method used involved 2 on-site consultations and 1 remote consultation carried out by the Future Carbon team. These visits are detailed in sections 2.3.4 and 2.3.9 of this document. In addition to the visits, the project's official communication channels were widely disseminated to stakeholders during in-person visits through the delivery of printed materials (see section 2.3.3).
Working conditions	Forest Surveillance Monitoring	Falls, getting lost in isolated areas, exposure to venomous animals such as snakes and spiders, conflicts with deforestation agents etc.	Safety management will establish safety practices, including risk assessment, training, and proper use of PPEs. During this monitoring period, no training was carried out on these aspects, with training scheduled for 2025.
	Biodiversity Monitoring		
	Fire Fighting	Burns, dehydration, asphyxiation, exposure to extreme heat, firebreaks.	As detailed in section 2.5.2, the Project Proponent is in compliance with the mandatory applicable occupational health and safety laws and regulations established by the federal and state governments, and appropriate evidence was provided to the VVB during the verification.

			During the monitoring period, no specific and exclusive training was provided for the teams and employees involved in patrol and monitoring activities.
Safety of women and girls	No risk identified	No risk identified	All project activities comply with national and local laws (see Section 2.5.1). As detailed in the section 2.4.5, Future Carbon Group has a common Code of Conduct that is used by the entire Economic Group to which it belongs, the Code is based on strict ethical principles and respect for the laws, which ensure the rights and safety of women and girls. Moreover, the legal team conducts an annual analysis of business partners' conduct by reviewing labor and judicial certificates.
Safety of minority and marginalized groups, including children	No risk identified	No risk identified	All project activities comply with national and local laws (see Section 2.5.1). As detailed in section 2.4.5, Future Carbon Group has a common Code of Conduct that is used by the entire Economic Group to which it belongs, the Code is based on strict ethical principles and respect for the laws, which ensure the rights and safety of minority and marginalized groups. Moreover, the legal team conducts an annual analysis of business partners' conduct by reviewing labor and judicial certificates.
Pollutants (air, noise, discharges to water, generation of waste, and release of hazardous materials and chemical pesticides and fertilizers)	Risks of occupational farming activities.	Occupational risks and accidents.	The main tool to manage occupational risks for the project are the Risk Management Programs, which can be named Rural Work Risk Management Program (PGRTR[171]), Risk Management Program (PGR[172]), Preliminary Risk Analysis (PRA[173]).
Discrimination	No risk identified	No risk identified	All project activities comply with national and local laws (see Section 2.5.1). As detailed in section 2.4.5, Future Carbon Group has a common Code of Conduct that is used by the entire Economic Group to which it

171 In Portuguese: Programa de Gerenciamento de Riscos de Trabalhadores Rurais (PGRTR)
172 In Portuguese: Programa de Gerenciamento de Riscos (PGR)
173 In Portuguese: Análise Preliminar de Risco (APR)

			belongs, the Code is based on strict ethical principles and respect for the laws, which reject any form of discrimination.
Sexual harassment	No risk identified	No risk identified	All project activities comply with national and local laws (see Section 2.5.1). As detailed in section 2.4.5, Future Carbon Group has a common Code of Conduct that is used by the entire Economic Group to which it belongs, the Code is based on strict ethical principles and respect for the laws, which reject any criminal activity, including sexual harassment.
Equal pay for equal work	No risk identified.	No risk identified.	All project activities comply with national and local laws (see Section 2.5.1). As detailed in the section 2.4.5, Future Carbon Group has a common Code of Conduct that is used by the entire Economic Group to which it belongs, the Code is based on strict ethical principles and respect for the laws, which reject any criminal activity, including Equal pay for equal work
Gender equity in labor and work	No risk identified.	No risk identified.	All project activities comply with national and local laws (see Section 2.5.1). As detailed in the section 2.4.5, Future Carbon Group has a common Code of Conduct that is used by the entire Economic Group to which it belongs, the Code is based on strict ethical principles and respect for the laws, which reject any criminal activity, including Gender equity in labor and work
Forced labor[174]	No risk identified.	No risk identified.	All project activities comply with national and local laws (see Section 2.5.1). As detailed in the section 2.4.5, Future Carbon Group has a common Code of Conduct that is used by the entire Economic Group to which it belongs, the Code is based on strict ethical principles and respect for the laws, which reject any criminal activity, including forced labor
Child labor	No risk identified.	No risk identified.	All project activities comply with national and local laws (see Section 2.5.1). As detailed in section 2.4.5, Future Carbon Group has a common

[174] The identified risks and commensurate mitigation or preventative measure(s) for forced labor, child labor, and human trafficking, must be inclusive of staff and contracted workers employed by third parties.

			Code of Conduct that is used by the entire Economic Group to which it belongs. The Code is based on strict ethical principles and respect for the laws, which reject any criminal activity, including child labor.
Human trafficking	No risk identified.	No risk identified.	All project activities comply with national and local laws (see Section 2.5.1). As detailed in the section 2.4.5, Future Carbon Group has a common Code of Conduct that is used by the entire Economic Group to which it belongs, the Code is based on strict ethical principles and respect for the laws, which reject any criminal activity, including human trafficking.
Recognition of, respect of, and promotion of the rights to IPs, LCs and customary rights holders	No risk identified.	No risk identified.	All project activities comply with national and local laws (see Section 2.5.1). As detailed in section 2.4.5, Future Carbon Group has a common Code of Conduct that is used by the entire Economic Group to which it belongs, the Code is based on strict ethical principles and respect for the laws, which reject any criminal activity, including Recognition of, respect of, and promotion of the rights to IPs, LCs and customary rights holders
Preserving and protecting cultural heritage	No risk identified.	No risk identified.	All project activities comply with national and local laws (see Section 2.5.1). As detailed in section 2.4.5, Future Carbon Group has a common Code of Conduct that is used by the entire Economic Group to which it belongs. The Code is based on strict ethical principles and respect for the laws, which reject any criminal activity, including Preserving and protecting cultural heritage.
Protecting and preserving property rights, customary rights, or protecting legal or customary tenure/access rights to territories, property, and resources, including collective and/or conflicting rights	No risk identified.	No risk identified.	All project activities comply with national and local laws (see Section 2.5.1). As detailed in the section 2.4.5, Future Carbon Group has a common Code of Conduct that is used by the entire Economic Group to which it belongs, the Code is based on strict ethical principles and respect for the laws, which reject any criminal activity, including Protecting and preserving property rights, customary rights, or protecting legal or customary tenure/access rights to territories, property, and resources, including collective and/or conflicting rights.

Impacts on biodiversity and ecosystems	**Medium/Long-term risk** Reduction of available Brazil nut trees.	Without an effective system for monitoring and controlling deforestation, the area occupied by Brazil nut trees is at risk of diminution.	Implementing comprehensive monitoring and mitigation strategies is essential to safeguard the Brazil nut trees against both anthropogenic and natural challenges. As explained previously, during this period, monitoring of the project areas has been conducted by the project proponent and outsourced to a third party with sufficient capacity to carry out the monitoring tasks. The plan for monitoring and combating deforestation and forest fires includes the following activities: • Satellite Monitoring System: Satellite monitoring already takes place monthly in instance 2. In addition, during this monitoring period, the project area started to be monitored using weekly Planet[175] images by the Future team. • Ground Patrol: Led by teams hired by the Instances. • Rural Patrol: All instances joined Rural Patrol since 2023 (2nd Monitoring Report), whose main objective is public safety in the state's rural of private properties areas. • Fire brigade: Training will be carried out with farm employees on techniques for fighting and preventing forest fires.
Soil degradation and soil erosion	No risk identified.	No risk identified.	The project activities do not include actions that could cause or aggravate soil erosion and degradation processes.
Water consumption and stress	No risk identified.	No risk identified.	Project activities are not associated with actions that may cause or aggravate water stress or water consumption.

[175] Available at: https://www.planet.com

Habitats (and areas needed for habitat connectivity) for rare, threatened, and endangered species	**Medium/Long-term risk** Loss of forest habitats.	Deforestation and degradation of forest habitat may adversely impact rare, threatened and endangered species.	As described in the project description, during the fauna inventory carried out in 2023, some endemic and endangered species were identified in the project area. Therefore, illegal deforestation within the project area may impact on the availability and quality of habitat for these species. Therefore, the mitigation plan for this risk is the plan to combat and prevent illegal deforestation mentioned in Appendix 2 of the PD: Rio Madeira Grouped REDD+ Project Action Plan. During the monitored period, the Rio Madeira REDD+ Project avoided the deforestation of 1,568.71 hectares of unavoidable and unplanned deforestation in the project area, when measured against predicted in the baseline scenario, which fall in Priority Areas for Biodiversity Conservation (see section 5.1.1 for more details).
Areas needed for habitat connectivity	No risk identified.	No risk identified.	No areas necessary for habitat connectivity have been identified so far.
Invasive species	**Long-term risk** Presence of domestic cats and dogs adjacent to project areas.	Free-ranging domestic cats may adversely impact wildlife by predation.	During this monitoring period, this potential threat to biodiversity of the project area was assessed to identify the number of free-ranging animals in the project properties. In general, a low threat scenario was perceived, though, at Nova Fronteira Farm the free-ranging cats population needs attention. The first step for addressing this risk will be conducting lectures about the potential impacts of pets on wildlife, responsible ownership and demystifying neutering. Then, with acceptance of farm residents, a population control program will be implemented by neutering and vaccination of domestic animals in the farms.
	Short-term risk Little acceptance among employees and residents of the project farms to carry out castrations of domestic animals.	This refers to the possible resistance and non-acceptance of dog and cat owners to neuter their animals, as they have misconceptions about the impacts of neutering on their animals. This resistance can harm the population control of these animals, and	Before neutering and vaccinating domestic animals, baseline assessment and educational campaigns will be carried out on the importance of neutering, and the positive and negative impacts of this process on animals, the environment and human health. It is expected that educational campaigns will raise awareness among animal owners and increase the participation rate in neutering and vaccination campaigns. During this monitoring period, a survey on domestic animals was conducted in the farms by project team, including owner acceptance of

		consequently, increase the risks of zoonosis and predation of wild animals.	sterilization and vaccination. The survey pointed out farm Nova Fronteira as the most delicate scenario, with partially uncontrolled domestic cat population (see Section 5.1.2 for more details). No feral animals have been detected so far. Awareness-raising actions on this topic have not yet been implemented.
Ecosystem conversion	No risk identified.	No risk identified.	No risks of ecosystem conversion have been identified to the moment.
Conflicts with new Stakeholders	**Short-term risk** Inclusion of new Brazil nut extractivists as partners	The inclusion of new nut extractivists as partners of Instance 03 may generate conflicts with current extractivists, as well as generate dissatisfaction among extractivists who want to participate in the partnership.	It's crucial to emphasize that the Rio Madeira Grouped REDD+ Project operates as a private initiative, with the farms in Instance 03 (Tupá) being privately owned properties. Consequently, the partnership contracts established with the 10 Brazil nut collector groups residing in the region were formed on a voluntary basis. This agreement allows the collectors to harvest the Brazil nut trees on the farms, as long as they follow good management practices and report any signs of deforestation, fires or invasions of the forest The project aims to include new extractivists in the partnership over time, therefore, the following mitigation measures were adopted to avoid possible conflicts: 1.Responsible Inclusion: New extractivists will be gradually included based on expressed interest and the sustainable capacity of the forest. 2.Suitability Assessment: Before inclusion, a regional assessment is conducted Tupá Group to verify the suitability of candidates, ensuring alignment with the project's values. The process of verifying individuals interested in joining the nut collector partnership involves a qualitative community assessment. There are no rigid criteria or standardized questions, nor is there a document review. The main goal of this assessment is to assess whether the candidate has good relations within the community. Farm staff, who are also residents of the district, use their understanding of local social dynamics to provide an assessment based on their perceptions and experiences with the candidate, ensuring that new participants are well-regarded in the region. 3.Adherence to Best Practices: All extractivists, current and potential, are required to adhere to the terms of good management practices, ensuring

			the sustainability of collection activities and the conservation of the forest. During this monitoring period, no new extractivists were included in the partnership.
Natural Risks - Adaptability	**Medium/Long-term risk** Risk of low adaptive capacity of small producers.	Socioeconomic limitations of small producers (access to credit, technology, information) may restrict their ability to implement more costly adaptive measures. This risk may lead to partial adoption or abandonment of practices promoted by the project in the face of new climate pressures, impacting the permanence of the desired social benefits.	During this monitoring period, no training was provided for small producers, meaning that no new agricultural practices or techniques were introduced.
Biodiversity - Permanence	**Long-term risk** Lack of continuous monitoring of the population of endangered and endemic species of local fauna.	Risk that monitoring studies are not carried out continuously, compromising the conservation of threatened and endemic species.	As described in section 5.1.1, while no formal biodiversity monitoring surveys were conducted in this monitoring period, new sightings of threatened species were incorporated to the project species list, such as the *Priodontes maximus*. Those sightings are a significant contribution of spontaneous records made by farm residents and workers and are now being encouraged. During this monitoring period, the project team made effort to refine monitoring process and map key areas for monitoring, especially with camera traps. See section 5.1.1 for more details.

APPENDIX 3: COMMERCIALLY SENSITIVE INFORMATION

For the Rio Madeira Grouped REDD+ Project, some relevant information required by the VCS and/or co-benefit Standards is considered commercially sensitive information and cannot be made public by the project proponent. This information can be accessed by the third-party audit team during the validation process, attached to this MR document, but is not included in the public version. Below is a list of commercially sensitive documents that was made available to the VVB team:

- Financial Performance Worksheet (budget) and other related documents;
- Agreements and contracts signed between the parties involved;
- Legal status and property right documents; and
- VCUs trade agreement.

APPENDIX 4: EVIDENCE OF THE PROJECT'S SD CONTRIBUTIONS

This table refers to topic 2.1.12 - sustainable development contributions of the project, providing evidence of the SDG targets included in table 4. Evidence containing sensitive information, such as attendance lists, invoices, and other documents, will not be made publicly available to protect participant data, as they contain private information. Additionally, some documents are very extensive and would not fit into this table. However, these documents were made available to the vvb during the verification process.

Row number	SDG target	SDG indicator	Current project contributions
1)	3	3.4 Promote the physical and mental health and well-being of the communities involved in the project by implementing activities and infrastructure that encourage healthy lifestyles.	Support the acquisition of equipment for the dojo and uniforms for the "Warriors of Nature" team from the Morrinhos resettlement.

Evidences:

1. **Dojô donation photo:**





2. **Invoice Dojô Equipment** *(Made available to the VVB)*
3. **Dojô Donation Sponsorhsip Agreement** *(Made available to the VVB)*
4. **Invoice uniforms donation** *(Made available to the VVB)*
5. **Uniforms Donation Sponsorship Agreement** *(Made available to the VVB)*

2)	**4.a**	4.a.1 Proportion of schools offering basic services, by type of service	Electricity grid of the Flor do Cupuaçu School renovated.

1. **Electrical Renovation Donation Agreement.** *(Made available to the VVB)*
2. **Invoice Electrical Systems Equipment** *(Made available to the VVB)*

3)	**13.0**	Tonnes of greenhouse gas emissions avoided or removed	Avoided 882,357 tonnes of CO2 emissions by conserving 52,010.80 hectares of Amazon rainforest during the monitoring period.

Evidence:

1. **ER Calculation spreadsheet** *(Made available to the VVB)*

The conserved forest area can be obtained through the ratio between the original project area at the time of the PSD and the deforestation that occurs each year. In the case of the Rio Madeira Project, at the time of the PSD (23-10-2019), the forest area was 52,274.05 hectares. By subtracting the deforestation that has occurred since then, we arrive at the value of 52,010.80 hectares conserved. The calculation details can be verified in the 'Table 8 PA ex post' tab of the calculation spreadsheet. As for emissions, the values of avoided emissions can be consulted in the calculation spreadsheet in the 'Summary net GHG ERs' tab, or in the topic 3.2.4 of this document.

4)	13	13.3 Improve education, awareness-raising and human and institutional capacity on climate change mitigation, adaptation, impact reduction and early warning	Development of activities in celebration of Arbor Day: planting seedlings, lectures on biodiversity, soap and seed bomb making, presentation of the Rio Madeira project, and delivery of the educational garden to Flor do Cupuaçu School.
Evidences: **3. Presence List** *(Made available to the VVB)* **4. Donation Agreement for the Pedagogical Garden to Flor do Cupuaçu School.** *(Made available to the VVB)* **5. List of planted seedlings.** *(Made available to the VVB)* **6. Television Report About "Arbor Day"** *(Made available to the VVB)*			
5)	**15.2**	15.2.1 Progress towards sustainable forest management	Forest Cover Satellite Monitoring
Evidence: Instance 1 **1. Proof of income of the person in charge of the patrol** *(Made available to the VVB)* **2. Contract for the provision of services and invoices for payment to the third-party company responsible for the patrol** *(Made available to the VVB)* Instance 2 **3. Proof of income of the person in charge of the patrol** *(Made available to the VVB)* **4. Payment invoices to the person responsible for satellite monitoring** *(Made available to the VVB)* **5. Satellite monitoring maps** *(Made available to the VVB)* Instance 3 **6. Proof of income of those in charge of the patrol** *(Made available to the VVB)* For all instances: **7. GIS files related to the monitored period - 2024 (shapefiles, raster files and raw data)** *(Made available to the VVB)*			

6)	15.5	15.5.1 Red List Index	Protected the habitat of 227 species of fauna, including 24 mammals, 182 birds, and 21 amphibians/reptiles, with 1 classified as endangered and other 8 threatened species per the IUCN Red List Index, and 1 in the National List.

Evidence:

1. **2024 Species List** *(Made available to the VVB)*
2. **Rio Madeira Biodiversity Survey 2023** *(Made available to the VVB)*
3. **Birdwatching Report 2024 Nova Fronteira** *(Made available to the VVB)*
4. **2024 records – Fauna** *(Made available to the VVB)*

APPENDIX 5: STAKEHOLDER IDENTIFICATION TABLE

Stakeholder[176]	Type	Stakeholder Category	Rights, Interest and Overall Relevance to the Project	Distance to the PA (km)	Consulted in 2024	Stakeholders that may be involved in the project	Justification
PESCADORES DE ABUNÃ Association Members	Community Association	Interested Stakeholders	The Abunã Fishermen's Association was consulted during a visit by the Future Carbon team in June 2023 at the Marechal Rondon School, where this group also participated. The association plays an important role in the community, considering that fishing is one of Abunã's main economic activities. Despite its relevance, the association will not be considered a priority group in this initial phase and will not experience material impacts.	16.37	No	Not Included	4. Misalignment with Project Objectives
Santa Rita Resettlement Community	Resettlement	Other Stakeholders	The Resettlement is composed of 147 lots, covering an area of approximately 2,400 hectares, according to data from the Movement of People Affected by Dams. The primary productive activity is family agriculture.	11.99	Yes	Included	Included

[176] No new stakeholders have been identified since the project's third monitoring period.

			Livestock is considered incipient, and fishing production is primarily for subsistence/consumption or trade among residents. The main agricultural crops include cassava, oranges, lemons, peach palm, bananas, coconuts, açaí, and coffee. The Resettlement also houses the Flor do Cupuaçu Municipal Elementary School, which offers complete elementary education. Santa Rita has a large number of small farmers and rural producers, who can be assisted by the project's activities.				
Morrinhos Resettlement Community	Resettlement	Other Stakeholders	The Morrinhos Resettlement, despite being located outside the Reference Region of this study, has a close community relationship with the Santa Rita Resettlement. Morrinhos has a close community relationship with the Santa Rita Resettlement. A 60 km from Porto Velho, accessed by a dirt track, from the BR-364 highway, the Morrinhos Resettlement was formed by the transfer of families from the left bank of the Madeira River to the right bank. Today, 54 families live in the Morrinhos Resettlement, settled on 10 ha plots. Morrinhos has a large number of small farmers and rural	12.49	Yes	Included	

			producers, who can be assisted by the project's activities.				
EMBRAPA Acre Members[177]	Organization	Interested Stakeholders	Embrapa is a public company linked to the Ministry of Agriculture, Livestock, and Supply (MAPA), dedicated to research and development of technologies for agriculture and livestock. Its work includes promoting sustainable technologies, developing production systems adapted to local conditions, and conserving natural resources. It also aims to support the economic and social development of the region by collaborating with farmers, research institutions, and other organizations to address specific challenges of the Amazon region. The consultation was held in Oct. 2023 at Fazenda Nova Fronteira. This stakeholder is a partner of the Rio Madeira project for the development of best practices in nut management with extractivists who harvest nuts on Fazenda Nova Fronteira. The partnership contract between the project and EMBRAPA was signed in July 2024.	101.18	Yes	Included	

[177] Embrapa Acre is a stakeholder considered an implementing partner of the project's actions, specifically in activities focused on extractivists.

Secretaria de Estado do Desenvolvimento Ambiental – SEDAM/RO	State Administration Body	Interested Stakeholders	The SEDAM of Rondônia is the government agency of the state of Rondônia, Brazil, responsible for formulating and implementing public policies aimed at sustainable development, environmental conservation, natural resource management, and environmental oversight and licensing in the state. For the Rio Madeira project, discussions and invitations were extended for the project's Remote LSC held in Sept. 2022 and Feb. 2024. This stakeholder will not be materially affected by the291rojectt's activities but will be informed and invited to the consultations carried out by the project.	42.40	No	Not Included	5. No Planned Activities
Sec. Municipal de Meio Ambiente e Desenvolvimento Sustentável – SEMA	Municipal Administration Body	Interested Stakeholders	The SEMA, including the formulation and implementation of policies for the preservation, conservation, and restoration of the environment in various states and municipalities of Brazil. For the Rio Madeira project, discussions and invitations were extended for the project's Remote LSC held in September 2022 and February 2024. This stakeholder will not be materially affected by the project's activities but will be informed and invited to the consultations carried out by the project.	40.98	No	Not Included	5. No Planned Activities

RECA Association Members	Community Association	Interested Stakeholders	The RECA (Economic Agroforestry Reforestation Consortium) is an association that has been in existence for over 20 years in the district of Vila Nova California – RO. The institution's focus is to support the local economy and promote sustainability through the marketi'g of non-timber forest products and agricultural goods, respecting the socio-biodiversity of the Amazon region. Today, the association is a reference in the region and is known throughout the national territory, including international partnerships. For the Rio Madeira Project it is a group that has shown interest, or is known to be interested, in the project's activities but will not be materially affected by these activities. However, it could be an important partner for strengthening and engaging partnerships with educational institutions in the future, if applicable.	7.05	Yes	Not Included	7. Potential for Future Engagement
Marechal Rondon Municipal School Community	Public Educational Institution	Other Stakeholders	The Marechal Rondon Municipal School provides both cycles of elementary education to more than 143 students, catering to children aged six to fourteen. The school environment holds great importance for the Abunã District Community, where the educational unit is located, as well as for the	16.35	Yes	Included	Included

			surrounding communities. Therefore, it is crucial for the effective dissemination and communication of the project. The school environment is used for local leadership meetings, regional celebrations, social gatherings, and other collective activities. Within the project scope, the school has been a connecting and bridging actor, linking the project with stakeholders and also being one of the groups the project aims to serve to generate positive impacts for the identified stakeholders.				
Flor do Cupuaçu School Community	Public Educational Institution	Other Stakeholders	The Flor do Cupuaçu School provides complete elementary education for children in the region and surrounding areas, with over 120 currently enrolled students. The school environment holds great importance for the Santa Rita Resettlement Community, where the educational unit is located, as well as for the surrounding communities. Therefore, it is crucial for the effective dissemination and communication of the project. The school environment is used for local leadership meetings, regional celebrations, social gatherings, and other collective activities. Within the project scope, the school has been a connecting and bridging actor, linking the project with	10.09	Yes	Included	Included

			stakeholders and also being one of the groups the project aims to serve to generate positive impacts for the identified stakeholders.				
Nova Fronteira Farm Workers	Community Group	Community Groups	The group of employees is considered in the context of the Rio Madeira Project as a community group. Due to their proximity to the project area, they are essential actors, both for social impacts and as agents/protectors of the forest.	0.85	Yes	Included	Included
Olympia Salvatore School Community	Public Educational Institution	Interested Stakeholders	Olympia Salvatore School serves students up to 5 years old, with over 40 students currently enrolled. The school environment is of great importance to the Vila do Jirau community, where the educational unit is located, as well as to neighboring communities. Despite its importance and proximity to the project area, it will not be considered a priority group in this initial phase and will not experience any material impacts. The project remains open to dialogue and potential partnerships with this community in the future, should the objectives align with those of the project.	22.32	No	Not Included	7. Potential for Future Engagement
Santa Julia School Community	Public Educational Institution	Interested Stakeholders	Santa Júlia School offers complete elementary education for children in the region and surrounding areas, providing public elementary	13.58	No	Not Included	7. Potential for Future Engagement

			education for over 100 students currently enrolled. The school environment is of great importance to the Vila da Penha community, where the educational unit is located, as well as to neighboring communities. Despite its importance and proximity to the project area, it will not be considered a priority group in this initial phase and will not experience any material impacts. The project remains open to dialogue and potential partnerships with this community in the future, should the objectives align with those of the project.				
Brazil Nut Extractivists Collectors from Instance 3	Community Group	Community Groups	The Brazil nut and açaí extraction area is constantly frequented by extractivists who are residents of the Vila Nova Califórnia District (RO). These extractivists have a good relationship with Instance 3 (Tupá Group). There is a voluntary cooperation agreement between the gatherers and the Tupá Group, allowing 10 gatherers to use the Tupá Group's farms to sustainably explore non-timber forest products, ensuring an alternative source of income. Furthermore, the agreement promotes forest protection, as the gatherers inform the farm manager if they identify any signs of invasion or illegal	0.12	Yes	Included	Included

			activities. Due to their movement throughout the territory, the gatherers serve as guardians of the forest. The standing and preserved forest is of interest and intense importance for the financial health of these groups.				
Santa Carmem Farm Workers	Community Group	Community Groups	The group of employees is considered in the context of the Rio Madeira Project as a community group. Due to their proximity to the project area, they are essential actors both for social impacts and as agents/protectors of the forest.	0.93	Yes	Included	Included
Família Agrícola Jean Pierre Mingan School Community	Public Educational Institution	Interested Stakeholders	The Jean Pierre School serves high school students between the ages of 15 and 18. The school curriculum includes specific technical knowledge for the agricultural sector and related areas. This school is a major highlight in the region and attracts young people from other states due to its quality and opportunities for growth and professional development. Most of the students attending this school are residents of the communities near the project areas and neighbouring states. The school shares similar premises with the project (access to quality education, socioeconomic development, etc.) and is currently considered an "Interested	10.96	No	Not Included	7. Potential for Future Engagement

			Stakeholders " within the project. This means it is a group that has shown interest, or is known to be interested, in the project's activities but will not be materially affected by these activities. However, it could be an important partner for strengthening and engaging partnerships with educational institutions in the future, if applicable.				
Rio Madeira Farm Workers	Community Group	Community Groups	The group of employees is considered in the context of the Rio Madeira Project as a community group. Due to their proximity to the project area, they are essential actors, both for social impacts and as agents/protectors of the forest.	0.49	Yes	Included	Included
ASDAMOR Association Members	Community Association	Interested Stakeholders	Association of Agricultural and Environmental Development of Rural Producers in the Morrinhos Valley and Surroundings" is an important stakeholder for supporting the activities to be developed in the resettlements around the project area. Moreover, it stands out for the possibility of mediating relations with the communities, given its legitimacy. Partnerships can be developed to: • Promote job creation, expand activities; • Enhance the strength and growth of small farmers and rural	9.10	Yes	Included	Included

			producers; • Spread awareness and environmental education actions in communities through the association.				
UBS Santa Rita Workers	Public Health Institution	Interested Stakeholders	The Santa Rita Family Health Unit was consulted during a visit by the Future Carbon team in June 2023 at Santa Júlia School, where this group was also present. The Health Unit plays a crucial role in the community as it is the only available healthcare facility. Despite its importance, it will not be considered a priority group in this initial phase and will not experience material impacts. The project remains open to dialogue and potential partnerships in the future, should their objectives align with those of the project.	41.5	No	Not Included	5. No Planned Activities
Mutum Paraná District Community	District	Interested Stakeholders	Although the district is close to the project area, it is reasonably well-developed and will not be materially affected by the project's activities. Given the limited scope and resources, the local consultation process prioritized stakeholders directly located within the project area, who will be the most impacted by the activities. The districts in the reference region, while relevant, were not considered a priority in this initial phase.	41.51	No	Not Included	1. Distance from the Project Area

Abunã District Community	District	Interested Stakeholders	The Abunã District Community is considered an interested stakeholder, since it is home to important stakeholders and community groups that will be positively affected by the project, such as the Marechal Rondon Municipal School.	15.81	No	Not Included	5. No Planned Activities
Nova Califórnia District Community	District	Interested Stakeholders	Although the district is close to the project area, it is reasonably well-developed and will not be materially affected by the project's activities. Given the limited scope and resources, the local consultation process prioritized stakeholders directly located within the project area, who will be the most impacted by the activities. The districts in the reference region, while relevant, were not considered a priority in this initial phase.	7.08	No	Not Included	5. No Planned Activities
PA Igarapé Das Araras Community	Settlement	Interested Stakeholders	Rural settlement initially identified within the project's reference region but not included in the consultation process. The exclusion is justified by: its location outside the project area, the absence of material impacts, the possibility of future participation, and its current non-priority status in the local stakeholder consultation scope. The project remains open to dialogue and partnerships with this community in the future, should	11.64	No	Not Included	6. Not Affected by the Project

			their objectives align with those of the project.				
PA Califórnia Community	Settlement	Interested Stakeholders	Rural settlement initially identified within the project's reference region but not included in the consultation process. The exclusion is justified by: its location outside the project area, the absence of material impacts, the possibility of future participation, and its current non-priority status in the local stakeholder consultation scope. The project remains open to dialogue and partnerships with this community in the future, should their objectives align with those of the project.	17.23	No	Not Included	6. Not Affected by the Project
PA São João Do Balanceio Community	Settlement	Interested Stakeholders	Rural settlement initially identified within the project's reference region but not included in the consultation process. The exclusion is justified by: its location outside the project area, the absence of material impacts, the possibility of future participation, and its current non-priority status in the local stakeholder consultation scope. The project remains open to dialogue and partnerships with this community in the future, should their objectives align with those of the project.	16.04	No	Not Included	6. Not Affected by the Project

PAE Porto Dias Community	Settlement	Interested Stakeholders	As an interested stakeholder, PAE Porto Dias is located near the project area, but its residents will not be materially affected by the project's activities.	21.50	No	Not Included	1. Distance from the Project Area
PA Pau Darco Community	Settlement	Interested Stakeholders	Rural settlement initially identified within the project's reference region but not included in the consultation process. The exclusion is justified by: its location outside the project area, the absence of material impacts, the possibility of future participation, and its current non-priority status in the local stakeholder consultation scope. The project remains open to dialogue and partnerships with this community in the future, should their objectives align with those of the project.	5.56	No	Not Included	6. Not Affected by the Project
PDS Gedeão Community	Settlement	Interested Stakeholders	Rural settlement initially identified within the project's reference region but not included in the consultation process. The exclusion is justified by: its location outside the project area, the absence of material impacts, the possibility of future participation, and its current non-priority status in the local stakeholder consultation scope. The project remains open to dialogue and partnerships with this community in the future, should	18.40	No	Not Included	6. Not Affected by the Project

			their objectives align with those of the project.				
PA Pau Brasil Community	Settlement	Interested Stakeholders	Rural settlement initially identified within the project's reference region but not included in the consultation process. The exclusion is justified by: its location outside the project area, the absence of material impacts, the possibility of future participation, and its current non-priority status in the local stakeholder consultation scope. The project remains open to dialogue and partnerships with this community in the future, should their objectives align with those of the project.	18.53	No	Not Included	6. Not Affected by the Project
PA Rosana Lecy Community	Settlement	Interested Stakeholders	Rural settlement initially identified within the project's reference region but not included in the consultation process. The exclusion is justified by: its location outside the project area, the absence of material impacts, the possibility of future participation, and its current non-priority status in the local stakeholder consultation scope. The project remains open to dialogue and partnerships with this community in the future, should their objectives align with those of the project.	16.92	No	Not Included	6. Not Affected by the Project

PA Igarape Taquara Community	Settlement	Interested Stakeholders	Rural settlement initially identified within the project's reference region but not included in the consultation process. The exclusion is justified by: its location outside the project area, the absence of material impacts, the possibility of future participation, and its current non-priority status in the local stakeholder consultation scope. The project remains open to dialogue and partnerships with this community in the future, should their objectives align with those of the project.	10.85	No	Not Included	6. Not Affected by the Project
PA Ivo Inacio Community	Settlement	Interested Stakeholders	Rural settlement initially identified within the project's reference region but not included in the consultation process. The exclusion is justified by: its location outside the project area, the absence of material impacts, the possibility of future participation, and its current non-priority status in the local stakeholder consultation scope. The project remains open to dialogue and partnerships with this community in the future, should their objectives align with those of the project.	22.79	No	Not Included	6. Not Affected by the Project
PA São Francisco Community	Settlement	Interested Stakeholders	Rural settlement initially identified within the project's reference region but not included in the consultation process. The exclusion	2.93	No	Not Included	6. Not Affected by the Project

			is justified by: its location outside the project area, the absence of material impacts, the possibility of future participation, and its current non-priority status in the local stakeholder consultation scope. The project remains open to dialogue and partnerships with this community in the future, should their objectives align with those of the project.				
PA Joana D'Arc I Community	Settlement	Interested Stakeholders	Rural settlement initially identified within the project's reference region but not included in the consultation process. The exclusion is justified by: its location outside the project area, the absence of material impacts, the possibility of future participation, and its current non-priority status in the local stakeholder consultation scope. The project remains open to dialogue and partnerships with this community in the future, should their objectives align with those of the project.	26.79	No	Not Included	1. Distance from the Project Area
PA Igarapé Azul Community	Settlement	Interested Stakeholders	Rural settlement initially identified within the project's reference region but not included in the consultation process. The exclusion is justified by: its location outside the project area, the absence of material impacts, the possibility of future participation, and its current	27.10	No	Not Included	1. Distance from the Project Area

			non-priority status in the local stakeholder consultation scope. The project remains open to dialogue and partnerships with this community in the future, should their objectives align with those of the project.				
PA Marechal Rondon Community	Settlement	Interested Stakeholders	Rural settlement initially identified within the project's reference region but not included in the consultation process. The exclusion is justified by: its location outside the project area, the absence of material impacts, the possibility of future participation, and its current non-priority status in the local stakeholder consultation scope. The project remains open to dialogue and partnerships with this community in the future, should their objectives align with those of the project.	21.57	No	Not Included	1. Distance from the Project Area
PA Cumaru Community	Settlement	Interested Stakeholders	Rural settlement initially identified within the project's reference region but not included in the consultation process. The exclusion is justified by: its location outside the project area, the absence of material impacts, the possibility of future participation, and its current non-priority status in the local stakeholder consultation scope. The project remains open to dialogue and partnerships with this	17.71	No	Not Included	5. No Planned Activities

			community in the future, should their objectives align with those of the project.				
Aldeia Beijarana Community	Indigenous Village	Interested Stakeholders	The Beijarana Village is aligned with the project's objectives and activities, focusing on biodiversity conservation and the promotion of sustainable practices. However, the village's population will not be impacted by the project's activities.	16.56	No	Not Included	5. No Planned Activities
Aldeia Bom Samaritano Community	Indigenous Village	Interested Stakeholders	The Bom Samaritano Village is aligned with the project's objectives and activities, focusing on biodiversity conservation and the promotion of sustainable practices. However, the village's population will not be impacted by the project's activities.	14.77	No	Not Included	5. No Planned Activities
Aldeia Central (Karitiana Indigenous Land)	Indigenous Village	Interested Stakeholders	The Central Village is aligned with the project's objectives and activities, focusing on biodiversity conservation and the promotion of sustainable practices. However, the village's population will not be impacted by the project's activities.	13.19	No	Not Included	5. No Planned Activities
Aldeia Juari Community (Karitiana Indigenous Land)	Indigenous Village	Interested Stakeholders	The Juari Village is aligned with the project's objectives and activities, focusing on biodiversity conservation and the promotion of sustainable practices. However, the village's population will not be impacted by the project's activities.	6.24	No	Not Included	5. No Planned Activities

Vila Jirau Community	Village	Interested Stakeholders	The Vila do Jirau community was consulted during a visit by the Future Carbon team in June 2023 at Olympia Salvatore School. Despite its importance and proximity to the project area, it will not be considered a priority group in this initial phase and will not experience material impacts. The project remains open to dialogue and potential partnerships with this community in the future, should their objectives align with those of the project.	23.36	No	Not Included	5. No Planned Activities
Vila da Penha Community	Village	Interested Stakeholders	The Vila da Penha community was consulted during a visit by the Future Carbon team in June 2023 at Santa Júlia School. Despite its importance and proximity to the project area, it will not be considered a priority group in this initial phase and will not experience material impacts. The project remains open to dialogue and potential partnerships with this community in the future, should their objectives align with those of the project.	12.87	No	Not Included	5. No Planned Activities
Igarapé Ribeirão Indigenous Land Community	Indigenous Land	Interested Stakeholders	The Igarapé Ribeirão Indigenous Land is aligned with the project's objectives and activities, focusing on biodiversity conservation and the promotion of sustainable practices. However, the village's	37.79	No	Not Included	1. Distance from the Project Area

			population will not be impacted by the project's activities.				
Karipuna Indigenous Land Community	Indigenous Land	Interested Stakeholders	The Karipuna Indigenous Land is aligned with the project's objectives and activities, focusing on biodiversity conservation and the promotion of sustainable practices. However, the village's population will not be impacted by the project's activities.	42.65	No	Not Included	1. Distance from the Project Area
Extrema District Community	District	Interested Stakeholders	Although the district is close to the project area, it is reasonably well-developed and will not be materially affected by the project's activities. Given the limited scope and resources, the local consultation process prioritized stakeholders directly located within the project area, who will be the most impacted by the activities. The districts in the reference region, while relevant, were not considered a priority in this initial phase.	28.70	No	Not Included	1. Distance from the Project Area
União Bandeirantes District Community	District	Interested Stakeholders	Although the district is close to the project area, it is reasonably well-developed and will not be materially affected by the project's activities. Given the limited scope and resources, the local consultation process prioritized stakeholders directly located within the project area, who will be the most impacted by the activities. The districts in the	23.41	No	Not Included	1. Distance from the Project Area

			reference region, while relevant, were not considered a priority in this initial phase.				
Kaxarari Indigenous Land Community	Indigenous Land	Interested Stakeholders	The Kaxarari Indigenous Land is aligned with the project's objectives and activities, focusing on biodiversity conservation and the promotion of sustainable practices. However, the village's population will not be impacted by the project's activities.	41.61	No	Not Included	1. Distance from the Project Area
FIMCA Farm School Community	Private Educational Institution	Interested Stakeholders	Provides technical agricultural education, attracting students from nearby areas. Important for potential future partnerships, aligning with project's educational and socioeconomic objectives.	18.00	No	Not Included	7. Potential for Future Engagement

APPENDIX 6: CAUSES AND EFFECTS FLOWCHART

Figure 57. Simplified Flowchart of Causes and Effects of Deforestation, Land Grabbing and Illegal Fires in The Brazilian Amazon

