GROUPED PROJECT ARR SERRA VIVA

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1 PROJECT DETAILS

1.1 Summary Description of the Project

The Grouped Project ARR Serra Viva is crucial for the reforestation of the Brazilian Atlantic Forest, a biome largely devastated by human activities, where less than 10% of its original cover remains. This biome, one of the most important biodiversity hotspots in the world, faces severe threats of habitat fragmentation and degradation due to agricultural expansion, extensive cattle ranching, and accelerated urbanization (IBGE, 2014; Rezende et al., 2018; Safar et al., 2020). The project starts in the municipality of Olaria, Minas Gerais, near the Serra Negra da Mantiqueira State Park. This location enhances habitat connectivity and offers the potential to create ecological corridors, facilitating the movement and survival of wildlife within this fragmented landscape. By linking isolated patches of forest, the project not only supports biodiversity conservation but also strengthens the resilience of ecosystems against the impacts of climate change.

The Grouped Project ARR Serra Viva responds to the growing impoverishment of small producers and environmental degradation in the Atlantic Forest. Started in 2023, it aims to recover deforested areas, promoting biodiversity and economic and social benefits for rural communities. Through ecological restoration and innovative technologies, the project seeks not only to optimize carbon capture, but also to reverse the trend of rural impoverishment, providing new employment opportunities and sustainable income.

In addition to contributing to rural economic recovery, the project plays a crucial role in protecting the native species of the Atlantic Forest, expanding the habitat area, increasing genetic diversity and, in this way, facing the threats of extinction. The social programs developed are based on detailed social diagnoses, mapping the specific needs of local communities. Such initiatives, which include improvements in health, education, and community empowerment, are essential to ensure that the project achieves its sustainability and quality of life improvement goals in an effective manner that is adapted to local realities.

Grouped Project ARR Serra Viva has a longevity of 100 years, covers the Atlantic Forest domain in the Southeast and Northeast of Brazil, aims to remove an estimated 24,792,869 tCO2e and reforest 48,000 hectares of native forest. These goals reflect the commitment of the project to climate change mitigation and the promotion of long-term environmental and social sustainability. The project will involve direct and indirect activities such as direct planting of native species and actions that permit or facilitate natural regeneration, all designed to restore and enhance the resilience of this critical biome.

1.2 Audit History

Audit type	Period	Program	Validation/verification body name	Number of years
Validation/ verification	Project under development	VCS	Not applicable	Not applicable

1.3 Sectoral Scope and Project Type

Sectoral scope	14: Agriculture, forestry, and other land use
AFOLU project category[1]	A1.1: Afforestation, Reforestation and Revegetation (ARR)
Project activity type	Direct and indirect activities (e.g., manual planting, broadcast seeding, activities that permit or facilitate natural regeneration)

1.4 Project Eligibility

1.4.1 General eligibility

The Grouped Project ARR Serra Viva aligns with the VCS standard, meeting the technical requirements of Scope 14: Agriculture, Forestry, and Other Land Use (AFOLU). Its activities focus on increasing carbon sequestration by restoring vegetative cover through planting and human-assisted natural regeneration of woody vegetation. The project's eligibility is confirmed as it is not excluded under Table 1, item 2.1.3 of the VCS Standard v4.7.

The applied methodologies are listed in item 3.1 “Title and Reference of Methodology” and are all eligible under the VCS Program. The project adheres to the scale and capacity limits defined by VCS Standard v4.7 and the applied methodologies.

1.4.2 AFOLU project eligibility

The project is classified under the Afforestation, Reforestation, and Revegetation (ARR) category within the Agriculture, Forestry, and Other Land Use (AFOLU) as described above. The appropriateness of the ARR category for this project is demonstrated by the following:

- **Project Activities**: The core activities of the Serra Viva project involve transforming degraded lands into productive forest ecosystems. This directly aligns with the objectives of ARR projects defined in the “Appendix 1” of the VCS Standard v4.7.

[1] *See Appendix 1 of the* VCS Standard

- **Methodology Compliance**: The project applies the VM0047 methodology, which is specifically designed for ARR activities under the VCS Program. The methodology applicability is detailed in section 3.2.
- **Non-conversion of Native Ecosystems***:* VCS Standard requires evidence that native ecosystems have not been converted, cleared, drained, or degraded to generate GHG credits. Instances are only included in the Grouped Project ARR Serra Viva if no clearing or conversion took place within 10 years of the start of project activity on the specific project area instance.

1.4.3 Transfer project eligibility

Not applicable. The Grouped Project ARR Serra Viva is not registered in another GHG program.

1.5 Project Design

☐ Single location or installation

☐ Multiple locations or project activity instances (but not a grouped project)

☒ Grouped project

1.5.1 Grouped project design

To include new instances of the project area (PAI), they will need to strictly comply with the VCS framework requirements. Each new instance, as well as the respective stakeholders, need to be in sync with the objectives and guidelines of the Grouped Project ARR Serra Viva and comply with the criteria defined below:

1. Activities and Technologies: The new instances must adopt and implement the specified activities, technologies and/or measures. This includes reforestation practices, eligibility criteria for grouped projects, conservation, and sustainable land management.

2. Conditions of Applicability of the Methodology: The instances must strictly comply with the conditions of applicability established in the VCS Standard. In addition, the new instance must conform to the methodology applied in the project, VM0047.

3. Crediting period: The crediting period is 40 years from the start of project activities.

4. Community and Biodiversity: The new instances must be within the domain of the Atlantic Forest and must not have a history of deforestation in the 10 years prior to the beginning of the activities.

5. Additionality: New instances shall comply with the regulatory surplus established by VM0047.

6. Stakeholders: New instances should be subject to the same stakeholder engagement processes described in section 2.1.

Scalability Limits for Grouped Projects

The expansion of the Grouped Project ARR Serra Viva is strictly limited to the zones within the scope of the Atlantic Forest Biome, within the phytophysiognomies described in section 1.14, specifically covering the states located in the Southeast and Northeast regions of Brazil. New instances must meet all criteria mentioned in the previous section. The capacity for expansion is mainly conditional on the availability of land through partner landowners and the financing of the initial project activities by investors. Another limiting factor for expansion is the availability of skilled rural labor for reforestation work.

Risk Mitigation Approach for Grouped Projects

To minimize the risks associated with project expansion, active prospecting for new areas is conducted by contacting owners and employing remote sensing technology to detect new areas that align with the project's baseline and additionality scenarios. In addition, a robust network of partners was established, including the participation of the project in the "Pacto pela Restauração da Mata Atlântica", a national movement established in April 2009 that strategically articulates and integrates public and private institutions, governments, businesses, the scientific community, and landowners. This network aims to induce large-scale restoration actions and results, providing environmental, social, and economic benefits across the 17 states of the Atlantic Forest biome. By sharing technical knowledge and experiences, this network will act as a showcase and support system for the project, facilitating access to expansion and funding opportunities.

Risks related to land availability are mitigated by collaborating with landowners who act as anchors, serving as models of sustainable management, encouraging the participation of other landowners in the region, and ensuring the expansion of the project. The Grouped Project ARR Serra Viva implements training to develop the skills of the local rural workforce, focusing on reforestation techniques, sustainable land management, and biodiversity monitoring. This not only improves the quality of project implementation but also contributes to local job creation by increasing community support for the project and ensuring its long-term sustainability.

1.6 Project Proponent

Organization name	Reflora Initiative Brasil Gestão Ambiental LTDA
Contact person	Emilia Licha
Title	Carbon Project Specialist
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Telephone	21 99460-9086
Email	contato@reflorainitiative.com

1.7 Other Entities Involved in the Project

Organization name	Federal University of Viçosa (UFV)

Role in the project	Scientific Technical Partner in Carbon Stocks
Contact person	Laércio Antônio Gonçalves Jacovine
Title	Doctor in Forestry Science - Professor at the Federal University of Viçosa
Address	Federal University of Viçosa, DEF, Department of Forestry Engineering. University Campus s/n 36571-000 – Viçosa, MG – Brazil
Telephone	+55 (31) 38991191
Email	jacovine@ufv.br

1.8 Ownership

Within the framework of the Grouped Project ARR Serra Viva, the company Reflora Initiative acts as an aggregator, working in partnership with the landowners who have agreed to grant the carbon rights and economic values generated by the project to Reflora Initiative's management. In return, Reflora Initiative commits to obtaining the necessary funding and providing the technical expertise required to implement the activities. These terms are formalized through specific contracts with each involved landowner. Under this agreement, Reflora Initiative is granted explicit rights to implement the greenhouse gas removal activities on the participants' properties, following a clear revenue-sharing model. The landowners, in turn, commit to maintaining the reforested areas as forest reserves by registering the project in the property's registry during the contract period. Prior to signing contracts with partner landowners, Reflora Initiative conducts legal due diligence to ensure ownership of partner properties and proper environmental compliance.

1.9 Project Start Date

Project start date	21-11-2023
Justification	The date marking the start of planting for PAI-001 was designated as the project's starting point. Therefore, the ARR Serra Viva Group Project officially commenced on November 21, 2023.

1.10 Project Crediting Period

Crediting period	☐ Seven years, twice renewable ☐ Ten years, fixed

	☒ Other: 40 years, renewable. According to the VCS Standard 4.7 (3.9.3), the initial project crediting period shall be a minimum of 20 years, which may be renewed at most four times, with a total project crediting period not to exceed 100 years.
Start and end date of first or fixed crediting period	21-Novembro-2023 a 21-Novembro-2063

1.11 Project Scale and Estimated GHG Emission Reductions or Removals

Indicate the estimated annual GHG emission reductions/removals (ERRs) of the project:

☐ < 300,000 tCO2e/year (project)

☒ ≥ 300,000 tCO2e/year (large project)

Calendar year of crediting period	Estimated GHG emission reductions or removals (tCO_2e)
21-November-2023 to 31-December-2023	0
01-January-2024 to 31-December-2024	36
01-January-2025 to 31-December-2025	365
01-January-2026 to 31-December-2026	2,389
01-January-2027 to 31-December-2027	4,549
01-January-2028 to 31-December-2028	7,674
01-January-2029 to 31-December-2029	11,128
01-January-2030 to 31-December-2030	15,81
01-January-2031 to 31-December-2031	25,236
01-January-2032 to 31-December-2032	37,446
01-January-2033 to 31-December-2033	54,621
01-January-2034 to 31-December-2034	75,034
01-January-2035 to 31-December-2035	103,24
01-January-2036 to 31-December-2036	146,54

01-January-2037 to 31-December-2037	203,97
01-January-2038 to 31-December-2038	282,98
01-January-2039 to 31-December-2039	367,38
01-January-2040 to 31-December-2040	471,9
01-January-2041 to 31-December-2041	603,44
01-January-2042 to 31-December-2042	756,75
01-January-2043 to 31-December-2043	929,66
01-January-2044 to 31-December-2044	1,110,189
01-January-2045 to 31-December-2045	1,299,974
01-January-2046 to 31-December-2046	1,473,224
01-January-2047 to 31-December-2047	1,641,344
01-January-2048 to 31-December-2048	1,788,324
01-January-2049 to 31-December-2049	1,866,977
01-January-2050 to 31-December-2050	1,885,364
01-January-2051 to 31-December-2051	1,828,628
01-January-2052 to 31-December-2052	1,695,805
01-January-2053 to 31-December-2053	1,491,141
01-January-2054 to 31-December-2054	1,245,045
01-January-2055 to 31-December-2055	988,49
01-January-2056 to 31-December-2056	749,32
01-January-2057 to 31-December-2057	545,75
01-January-2058 to 31-December-2058	383,47
01-January-2059 to 31-December-2059	264,81
01-January-2060 to 31-December-2060	179,97
01-January-2061 to 31-December-2061	120,75
01-January-2062 to 31-December-2062	80,531

01-January-2063 to 31-December-2063	53,642
Total estimated ERRs during the first or fixed crediting period	24,792,869
Total number of years	40
Average annual ERRs	619,82

1.12 Description of the Project Activity

The Grouped Project ARR Serra Viva is dedicated to ecological restoration, employing indirect activities such as natural regeneration and direct activities like native species planting. Beyond ecological restoration efforts, the project focuses on empowering local communities through job-oriented training, beginning with skills related to the restoration chain. Thus, ecological restoration serves as a powerful tool not only for combating the climate crisis but also for fostering sustainable socio-economic development and biodiversity conservation. This integrated approach underscores its significance as a solution that benefits both the planet and people, as highlighted in the Decade of Restoration program reports, which emphasize key points such as:

Fighting the Climate Crisis

GHG Removal: Ecological restoration is one of the most effective nature-based solutions for carbon sequestration, helping to mitigate climate change by absorbing CO2 from the atmosphere. This is essential to achieve the goals of the Paris Agreement and reduce global warming.

Resilience and Adaptation: By restoring ecosystems, we increase the resilience of communities to the impacts of climate change, such as extreme weather events, while improving the adaptive capacity of ecosystems and human societies.

Positive Social Impacts

Employment and Income Generation: Ecological restoration promotes the generation of jobs and income, especially in rural communities. To achieve the national targets set by 2030, the restoration production chain in Brazil can create up to 0.42 jobs per restored hectare, contributing significantly to the local economy and poverty reduction (Brancalion et al. 2021).

Health and Well-being: Healthy ecosystems provide essential services, such as clean water and clean air, which are critical to the health and well-being of communities. Restoration can also reduce the risk of new diseases emerging.

Social Inclusion: Restoration provides opportunities for the economic inclusion of vulnerable groups and promotes gender equity by involving indigenous and other communities in restoration activities.

Benefits for Biodiversity

Habitat for Species: Ecological restoration creates and restores habitats that are essential for the survival of animal and plant species, helping to combat biodiversity loss (Holl 2023).

Ecosystem Connectivity: Restoration helps connect habitat fragments, essential for species migration and the maintenance of genetic diversity (Holl 2023).

Restoration of Ecosystem Services: Restored ecosystems provide valuable services, such as pollination, erosion control, and regulation of the water cycle, which are vital for maintaining biodiversity (Holl 2023).

The project is also committed to research, development, and innovation in its activities, based on an understanding of the region and an appreciation of local skills, characteristics, and knowledge.

Table 1: Project Reforestation Models

Project activity type	Acronym	Name	Planting spacing	Applied methodology
Indirect activities	NR	Natural Regeneration	-	Areas with high resilience: Promote the regeneration of 1,200 native plants per hectare, including trees and shrubs. For this, the only activity planned will be fencing to stop the impacting activity according to the specific needs of each territory.
	ANR	Assisted Natural Regeneration	-	Areas with medium resilience: Promote the regeneration of 1,200 native plants, including trees and shrubs per hectare. For this purpose, the activities may include fencing, soil correction, fertilization, ant control, litter transposition, initial planting of green manure, control of exotic species, installation of perches and maintenance according to the specific needs of each territory.
Direct activities	EN	Enrichment with natives	5x5	Areas with low resilience: Promote the regeneration vegetation cover, including trees, per hectare. To achieve this, an initial planting of 400 seedlings per hectare will be carried out, using at least 10 native species

				confirmed to occur in the region, supplemented by enrichment species. The operation will employ minimum cultivation techniques, including activities such as fencing, soil correction, fertilization, irrigation, crowning, ant control, digging holes, planting, and maintaining native species seedlings according to the specific needs of each area.
	NP	Native planting	3x2	Plant a total of 1667 seedlings/hectare using at least 10 native species of confirmed occurrence for the region distributed in filling and diversity lines. The operation will take place using minimum cultivation techniques with the following activities: Fencing, soil correction, fertilization, irrigation, crowning, ant control, digging holes, planting and maintaining seedlings of native species according to the specific needs of each territory.
	FPI	Forest-Pasture integration	5x5	The operation will take place according to the following activities: Fencing, pasture rotation, soil correction, fertilization, irrigation, crowning, ant control, digging pits, planting of native species and maintenance of seedlings according to the specific needs of the operation and each territory.

For the operational planting activities, the Grouped Project ARR Serra Viva conducted bibliographic surveys, remote and field research involving technical and operational teams of renowned players in the Brazilian environmental market. An essential collaboration has been established with the company Symbiosis, based in the south of Bahia. With more than two decades of experience in reforestation and sustainable practices, Symbiosis is considered a national leader in forest improvement. The company has a robust track record in developing spacing techniques, genetic improvement, adaptation to

environmental variables, and pest management, specifically tuned for different species. In addition, he has a deep knowledge of operational planning schedules and supplier management. The operational planning model adopted by the Serra Viva Project was developed in partnership with Symbiosis, integrating experiences to optimize the project's activities, positioning it as a reference model in sustainable reforestation practices.

This multidisciplinary approach reflects the commitment of the Grouped Project ARR Serra Viva to ecological and economic transformation in the project zone, while promoting the generation of Verified Carbon Credits, the protection of the biodiversity of the Atlantic Forest and the development of sustainable income alternatives for local communities. The project represents a pioneering effort, located in the heart of the Atlantic Forest, focused not only on environmental preservation, but also on social inclusion and sustainable economic development in the region.

1.13 Project Location

The Grouped Project ARR Serra Viva is located entirely within the Atlantic Forest biome, encompassing degraded areas predominantly used for pasture in the Southeast and Northeast regions of Brazil. The project zone spans the following coordinates: Latitude 25° 50' S to -5° 50' S and Longitude 35° 10' W to 53° 05' W. In the Southeast region, the project covers the states of São Paulo, Minas Gerais, Espírito Santo, and Rio de Janeiro. In the Northeast, the project's operational area includes six states: Bahia, Sergipe, Alagoas, Pernambuco, Paraíba, and Rio Grande do Norte. These ten states, where the biome is most degraded, cover 85% of its degraded areas. Additionally, the primary factor contributing to this degradation is land use for pasture (MapBiomas 2021).

The project includes an initial instance, PAI-001, located in the municipality of Olaria-MG, covering a total area of 42.67 hectares. The expansion plan targets rural properties with extensive areas where pasture is the primary land use. The map of PAI-001 is available in Section 3.3, 'Project Boundary',

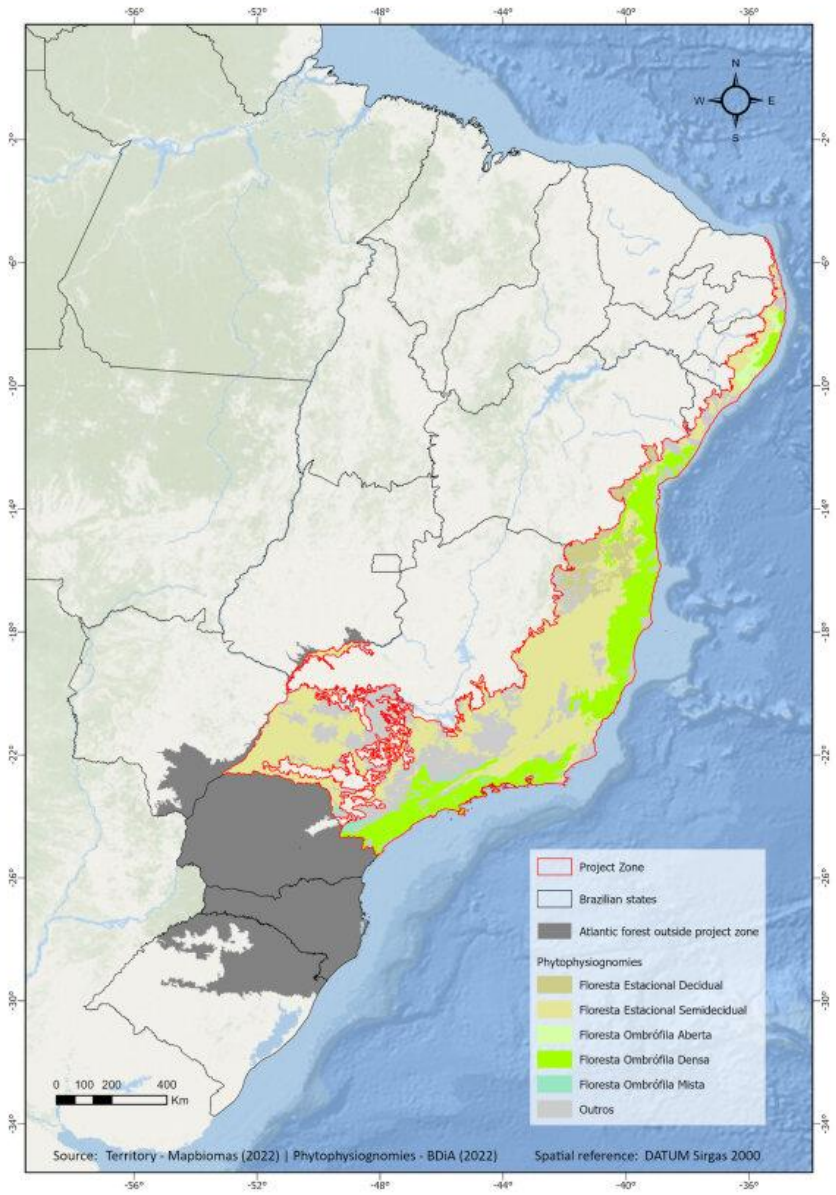


Figure 1: Map of the project zone.

1.14 Conditions Prior to Project Initiation

Ecosystem Type:

The Serra Viva ARR Grouped Project is located in the Brazilian Atlantic Forest, a biodiversity hotspot known for its rich variety of ecosystems and species, many of which are endemic. This biome is recognized as one of the richest and most threatened tropical forests globally (Safar et al., 2020) and is a priority for conservation initiatives. The initial Project Area Instance is situated in a critical zone within the Zona da Mata region of Minas Gerais, near Serra Negra da Mantiqueira State Park, which is essential for supporting wildlife migration and genetic diversity.

Current and Historical Land-Use:

Historically, the project area has been subjected to extensive deforestation and land degradation due to logging, agriculture, and cattle ranching. Currently, the land is predominantly degraded, with significant areas covered by grasslands and secondary vegetation.

Historically, the project area has suffered from extensive deforestation and land degradation due to logging, agriculture, and cattle ranching. Currently, the land is predominantly degraded, with significant areas covered pasture. In particular, unsustainable cattle ranching has played a significant role in this degradation. This unsustainable land use not only compromises soil quality but also contributes to habitat loss and greenhouse gas emissions.

Topography

The Atlantic Forest presents an extremely diversified relief, extending from the tertiary tablelands of the Northeast to the great basaltic escarpments of the Serra Geral in Santa Catarina and Rio Grande do Sul, with the most exuberant region located in the mountains of the Southeast Region and Paraná (Pereira 2009). The relief underlying the Atlantic Forest is characterized by rounded shapes, with convex and polyconvex slopes, a phenomenon known as "seas of hills" (Pereira 2009). This rounding of mountains, hills, hills, and terraces is the result of morphoclimatic processes subordinated to humid tropical climates, including chemical decomposition and reptation of rocks and soils, occasionally complemented by avalanches of debris on escarpments and steep slopes (Pereira 2009). These processes formed the common colluvium in humid tropical forests and, when saturated by rainfall, move slowly under the force of gravity, creating the typical rounded relief (Pereira 2009). In addition to the "seas of hills", the Atlantic Forest has other distinct landforms, such as exfoliation domes and "pontoons" or "sugar loaves", especially in areas such as Rio de Janeiro and Espírito Santo (Pereira 2009).

Soil

Soils such as yellow oxisols (oxysols) and yellowish-red podzolic soils (ultisols), which rest on thick regoliths, predominate. These soils are the result of an intense process of chemical weathering and continuous leaching, followed by an active pedogenesis under the forest cover. On hills, hills, and terraces, layers of overlapping soils can be observed, such as eluvium, colluvium, and stone lines, which reflect different paleoclimatic phases of the Quaternary, evidencing climatic oscillations that influenced the advances and retreats of the Atlantic rainforest in the Brazilian Plateau (Pereira 2009).

Climate

The climate in the Atlantic Forest region presents a complex variability along the Brazilian coast, significantly influenced by longitudinal variations and the heterogeneity of the relief. Within the project's coverage area, multiple climatic regimes are identified, including the climatic types in the koppen classification: Af (Humid or super-humid tropical climate, without dry season), Am (Tropical monsoon climate), Aw (Tropical with dry winter), As (Tropical with dry summer), Cfa (Oceanic Subtropical without dry season and with rainy summer), Cfb (Oceanic Subtropical without dry season and with mild summer), Cwa (Subtropical with dry winter and hot summer) and Cwb (Subtropical with dry winter and mild summer)

(Alvarez et al. 2013). Each of these climates is characterized by different rainfall and average temperatures, directly reflecting on the local ecosystems and biodiversity of the region, with direct implications for the management and environmental conservation of the project.

Table 2: Percentage of occurrence of each climate within the Brazilian states covered by the Serra Viva ARR Grouped Project. Adapted from Alvares et al. (2013).

	Af	Am	Aw	O	BSh **	Cfa	Cfb	Cwa	Cwb	Cwc **	Csa **	Csb **
São Paulo	1.9	0.5	30.8	-	-	33.4	12.6	17.4	3.4	*	-	-
Minas Gerais	-	*	34.9	12.3	-	0.5	0.7	25.5	26.0	*	-	-
Rio de Janeiro	2.1	5.3	44.1	-	-	14.3	9.4	17.9	6.9	*	-	-
Espírito Santo	2.9	14.3	53.3	-	-	14.9	10.4	0.8	3.3	*	-	-
Bahia	-	-	*	38.8	61.2	-	-	-	-	-	-	-
Sergipe	-	12.8	-	73.7	13.5	-	-	-	-	-	-	-
Alagoas	0.4	11.7	1.8	71.2	14.9	-	-	-	-	-	*	-
Pernambuco	-	4.9	0.1	32.7	61.4	*	-	0.3	0.3	-	0.3	*
Paraíba	-	1.2	0.8	57.1	40.7	-	-	*	0.1	-	-	-
Rio Grande do Norte	-	-	*	38.8	61.2	-	-	-	-	-	-	-

* Percentage less than 0.01%. ** Does not occur in Atlantic Forest areas.

Hydrography

The Atlantic Forest has several river basins within its domain, including seven of the nine largest river basins in Brazil. These basins are crucial for the water supply of a large portion of the Brazilian population. The Paraíba do Sul River basin is important for the states of São Paulo, Rio de Janeiro and Minas Gerais, especially for the water supply of large metropolises, such as the city of Rio de Janeiro. The Doce River basin covers the states of Minas Gerais and Espírito Santo, being one of the most important basins in the eastern region of Brazil. Although the São Francisco River basin has a large part of its extension outside the Atlantic Forest, some areas of its hydrographic basin touch the biome, especially in its upper part, in the state of Minas Gerais. The São Francisco River is crucial for biodiversity, agriculture, and

hydroelectricity in the region. The Paraná River basin is one of the largest river basins in South America and its southern portion crosses areas of the Atlantic Forest, especially in the states of São Paulo and Paraná. The Paraguaçu River Basin: Located in Bahia, it is an important basin within the Atlantic Forest biome, playing a crucial role in supplying water to the region, including the capital Salvador.

Vegetation:

The Atlantic Forest Law, Federal Law No. 11,428, of December 22, 2006, establishes the phytophysiognomies recognized for the biome. For the purposes of the law, forest formations (e.g., ombrophilous and seasonal forests) and associated ecosystems (e.g., mangroves and sandbanks) are considered to be part of the biome. The Grouped Project ARR Serra Viva does not foresee activities in associated ecosystems, only in forest formations, shown in figure 1 and described below:

- **Dense Ombrophilous Forest:** Characterized by a tall, continuous tree cover, with evergreen foliage, found mainly in areas of high rainfall along the coast and in some inland regions.
- **Mixed Ombrophilous Forest:** Includes forests with the presence of araucaria trees (*Araucaria angustifolia*) mixed with other species typical of the biome, in regions of medium to high altitude, mainly in southern Brazil.
- **Open Ombrophilous Forest:** With less dense and more spaced vegetation, this phytophysiognomy occurs in areas with a slightly different rainfall regime, allowing greater light penetration and a diversified understory.
- **Semideciduous Seasonal Forest:** It is characterized by the presence of trees that lose their leaves in a defined dry season, occurring mainly in the interior regions, where climatic seasonality is more pronounced.
- **Deciduous Seasonal Forest:** With a significant portion of trees that lose all their leaves during the dry season, found in regions with a well-defined dry season.

1.15 Compliance with Laws, Statutes and Other Regulatory Frameworks

1.15.1 Brief Introduction to Brazilian Law

In order to clarify the form of application of the legislation on the project in question, it is necessary to point out, initially, the functioning of the Brazilian legal system, in order to enable the understanding of the adequacy of the project in relation to the Brazilian legal norms.

The Brazilian legal system is based on Roman-Germanic law, or civil law, in which legislative production is the basis of the legal system, differing from the common law system or Anglo-Saxon law, which is based on judicial precedents.

In Brazil, it is the laws that are the basis of judicial decisions and not precedents created by judicial decisions, which makes the system dependent on the Legislative Branch for the evolution and adaptation of the law to society.

In this context, it is the responsibility of political legislators, represented in Brazil by councilors, deputies, and senators, to anticipate legal issues in order to draft regulations and laws that guide judicial decisions and actions. Thus, judges cease to be tasked with shaping laws and instead solely fulfill the role of interpreting and applying them in their rulings.

From this understanding, the formation of the Brazilian legal system can be understood in a set of legal texts, which generate the basis for the ordering of society and the application of justice.

The Brazilian legal system, which is based on the written text of the Law, establishes its functioning in a division of competences between organs, in which the center of the legal system is located in the text of the Constitution of the Federative Republic of Brazil of 1988, a norm of maximum hierarchy, which serves as a support, or foundation of validity of the other norms that are located at a lower level.

Hierarchically below the Constitution there are laws, which can be federal, with normative force over the entire Brazilian territory; state, which apply to each member state, within the limits of its territory, and finally, to the municipal states.

The Brazilian Federation has the Municipality as a federative entity, distancing itself in many points from the federative form adopted in the United States.

The Legislative Branch is responsible for producing the laws, following a rite of consideration and voting on the bills, which can be forwarded by its own members or by the head of the executive branch for consideration by the plenary.

The laws produced by the Brazilian legislature can be complementary or ordinary, without the preponderance of one over the other.

Below the laws, from a hierarchical perspective to facilitate understanding, there are administrative acts aimed at the "faithful execution" of the Law, as provided for in Article 84, IV of the Federal Constitution, instruments that serve to regulate the application of the Law, complementing and detailing its application, however, without being able to go beyond the subject delimited by the Law. Among these, decrees stand out, which are acts issued by the heads of the federal, state, and municipal executive power with the necessary rules so that the law can be executed.

Depending on the subject dealt with by the Law, or even the need for flexibility in the application of the rule, the legal system uses regulations, which dictate the practical way in which the laws should be applied. In instances where the law, by its form, requires regulation—bringing in its text general rules without descending to particularities—the regulatory act becomes necessary. It addresses the special aspects necessary for its practical application, delving into the minutiae.

The Legislative Branch formulates generic norms, containing general guidelines and limits of application, and delegates to the Executive Branch the responsibility of making them feasible.

Such regulations are made by the Executive Branch, through decrees, called "regulatory decrees", whose validity does not require a referendum by the Legislative Branch.

Decrees, on the other hand, are not laws in the technical sense, since they cannot "innovate" the legal order, "create" duties or obligations. In fact, they cannot exceed the limits set by the legal norm that they specify or whose execution they are intended for.

1.15.2 The application of international law in Brazil

In order to understand Brazil's relationship with international law, based on the Brazilian civil law system, which has the Federal Constitution as the center of operation and validity of the entire system; With regard to international law, Brazil adopts a theory called by jurists as moderate dualist, insofar as international law and domestic law are different legal systems, and for the application of foreign law to occur in Brazil, a process of internalization of the treaty to national law is necessary.

In general, international treaties, after the due process of internalization, are placed at the same hierarchical level as infra-constitutional norms, and therefore have the force of law. There is the exception of those that deal with human rights, which have higher degrees depending on the form and time in which they were internalized.

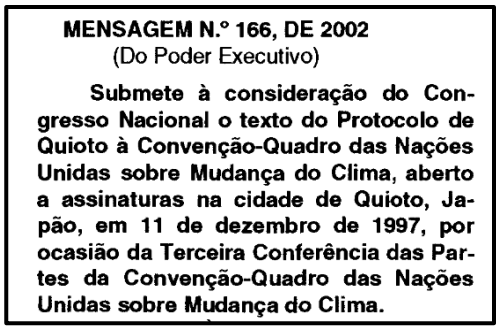
The process of internalization of international treaties begins after the signature and submission to the National Congress, which approves them by means of a legislative decree, forwards it to the President of the Republic to sanction and issue a decree in which it discloses the full text of the pact and the rules for its entry into force in Brazilian law.

Therefore, in order for international treaties to have cogent application, that is, to have the force of law and to have their provisions required in Brazil, it is necessary to decree their promulgation.

The other instruments of international law, such as declarations, agreements that have been ratified but not yet internalized, can be seen as soft law, which, although without binding application, have guiding and principled force in law.

The process of internalization of the decrees, as described, is formed by several stages, which will be demonstrated in more detail with the process of internalization and application of the Kyoto protocol, let's see:

The Kyoto Protocol was submitted to the Brazilian Legislature for analysis on March 13, 2002, through Message No. 166 of 2002, in which the President of Brazil forwarded to the President of the Brazilian Congress the text signed in the United Nations Framework Convention on Climate Change, opened for signatures on December 11, 1997



MENSAGEM N.º 166, DE 2002
(Do Poder Executivo)

Submete à consideração do Congresso Nacional o texto do Protocolo de Quioto à Convenção-Quadro das Nações Unidas sobre Mudança do Clima, aberto a assinaturas na cidade de Quioto, Japão, em 11 de dezembro de 1997, por ocasião da Terceira Conferência das Partes da Convenção-Quadro das Nações Unidas sobre Mudança do Clima.

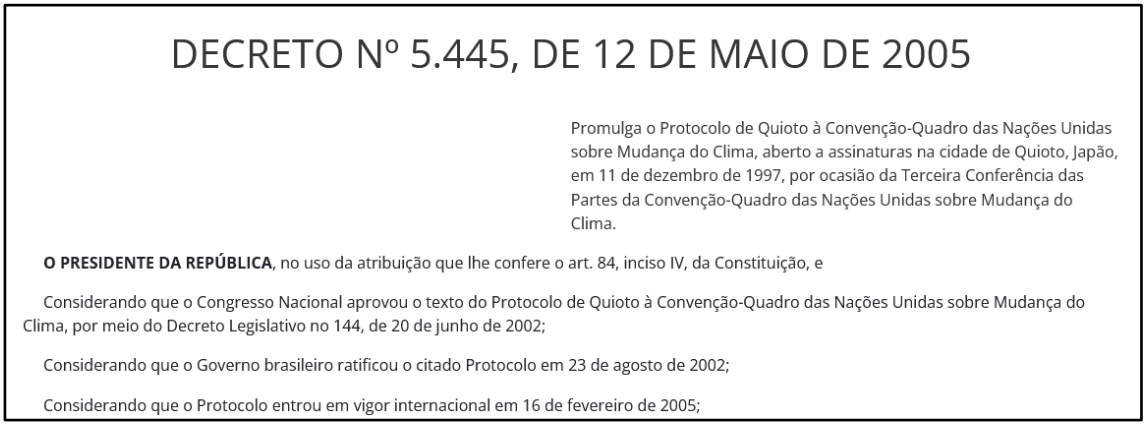
The document (message no. 1664 of 2002), in turn, was approved by the Brazilian congress and became a legislative decree, as shown:



PROJETO DE DECRETO LEGISLATIVO
Nº 1.664, DE 2002
(Da CREDN)
MSC 166/2002

Aprova o texto do Protocolo de Quioto à Convenção-Quadro das Nações Unidas sobre Mudança do Clima, aberto a assinaturas na cidade de Quioto, Japão, em 14 de dezembro de 1997, por ocasião da Terceira Conferencia das Partes da Convenção-Quadro das Nações Unidas sobre Mudança do Clima.

Finally, the legislative decree is forwarded again to the President of Brazil for promulgation, which in the case of the Kyoto Protocol occurred with Decree No. 5,445 of May 12, 2005.



DECRETO Nº 5.445, DE 12 DE MAIO DE 2005

Promulga o Protocolo de Quioto à Convenção-Quadro das Nações Unidas sobre Mudança do Clima, aberto a assinaturas na cidade de Quioto, Japão, em 11 de dezembro de 1997, por ocasião da Terceira Conferência das Partes da Convenção-Quadro das Nações Unidas sobre Mudança do Clima.

O PRESIDENTE DA REPÚBLICA, no uso da atribuição que lhe confere o art. 84, inciso IV, da Constituição, e

Considerando que o Congresso Nacional aprovou o texto do Protocolo de Quioto à Convenção-Quadro das Nações Unidas sobre Mudança do Clima, por meio do Decreto Legislativo no 144, de 20 de junho de 2002;

Considerando que o Governo brasileiro ratificou o citado Protocolo em 23 de agosto de 2002;

Considerando que o Protocolo entrou em vigor internacional em 16 de fevereiro de 2005;

International treaties and agreements that have application in Brazilian law related to the project in question:

- DECREE 58.054, OF MARCH 23, 1966. Convention for the Protection of the Flora, Fauna and Natural Scenic Beauties of the Countries of the Americas.

The States Parties have concluded the Convention for the Protection of the Flora, Fauna and Natural Scenic Beauties of the Countries of the Americas with the aim of protecting and conserving in their natural environment specimens of all species and genera of indigenous flora and fauna, including migratory birds, in sufficient numbers and in places sufficiently extensive to be avoided. by all human means, its extinction. In addition, the States Parties have aimed to protect and conserve landscapes of great beauty, extraordinary geological formations, regions and natural objects of aesthetic interest or historical or scientific value, and places characterized by primitive conditions within the cases to which this Convention refers.

- DECREE NO. 99.280, OF JUNE 6, 1990, Vienna Convention for the Protection of the Ozone Layer.

The Vienna Convention for the Protection of the Ozone Layer and the Montreal Protocol on Substances that Deplete the Ozone Layer were ratified by 28 countries in March 1985. The convention contained pledges to cooperate in research and monitoring, to share information on CFC production and emissions, and to approve control protocols if and when necessary, while the protocol brought concrete obligations to reduce greenhouse gas emissions.

- DECREE NO. 2,652, OF JULY 1, 1998. Promulgates the United Nations Framework Convention on Climate Change, signed in New York on May 9, 1992

The UNFCCC deals with the subject that is perhaps the most debated today in the context of international environmental protection, which is the increase of greenhouse gases in the atmosphere, causing the so-called global warming. While the Montreal convention deals specifically with CFCs (chlorofluorocarbons), the UNFCC deals with other gases that are causing an increase in the greenhouse effect.

The objective of the UNFCCC and its protocols is to reduce the level of greenhouse gases in the atmosphere, in such a concentration that they cannot cause dangerous interference in the climate system, remaining, after its reduction, at a stable level, and it also intends that such stabilization occurs in a sufficient period so that ecosystems can adapt naturally to climate change, without harming food production and so that development continues in a sustainable way.

- DECREE NO. 2,519, OF MARCH 16, 1998, Convention on Biological Diversity.

The Convention on Biological Diversity, signed in Rio de Janeiro in 1992, is of great importance for the conservation and proper management of the planet's biological diversity. Its main objectives are the conservation of biological diversity, the sustainable use of its components and the fair and equitable sharing of the benefits derived from the use of genetic resources derived from this biological diversity.

Preaching the sovereignty of the parties to use their genetic resources, the CBD provides for measures for the conservation and sustainable use of biological diversity, its identification and monitoring, its in-situ and ex-situ conservation, the sustainable use of its components, provisions on research, training, education and public awareness, impact assessment and minimization of negative impacts, access to genetic resources, access to technology and technology transfer, technical and scientific cooperation, biotechnology management and financial mechanisms for its implementation.

- DECREE NO. 2,652, OF JULY 1, 1998, United Nations Framework Convention on Climate Change.

- DECREE NO. 5208 OF SEPTEMBER 17, 2004 Promulgates the Mercosur Framework Agreement on the Environment.

The Framework Agreement on the Environment in Mercosur was signed in 2001 in Asunción by Brazil, Argentina, Paraguay and Uruguay. In our view, this is an initial attempt to establish a common agenda in the economic bloc with regard to the environment and sustainable development. It is an international act that is, in our view, a declaration of intent, since there are practically no concrete obligations established in its text.

- DECREE NO. 5,445, OF MAY 12, 2005 Kyoto Protocol to the United Nations Framework Convention on Climate Change.

The Kyoto Protocol to the UNFCCC was a strong demonstration by the international community that it was concerned about global warming and its consequences for the sustainable development of the planet. It is an instrument that extends the objectives set out in the UNFCCC, since this is an "umbrella" convention, which allows several specific topics to be addressed based on its provisions and objectives.

In this case, the Kyoto Protocol deals with concrete obligations assumed by certain countries in order to reduce the emission of greenhouse gases not controlled by the Montreal Protocol, as well as the conservation and increase of their reservoirs and sinks, a reduction that is established in its annexes.

Initially, it is important to clarify that, in line with what is already recommended by the UNFCCC, the Kyoto Protocol also makes it clear that developed countries should have the obligation to reduce greenhouse gas emissions, either because they are the largest emitters, or because developing countries do not have the financial conditions to bear this responsibility. at least not in the current period provided for by the Protocol. The Protocol went even further, providing that developed countries must prevent any of the measures taken by them to achieve the objectives to which they have committed themselves in the text of the treaty from harming developing countries, whether in terms of the environment, trade or from an economic and social point of view. The logic, well recognized in our view, is that the developed countries have already profited a lot from the emission of greenhouse gases, and that it is up to them to solve the problem, without harming the poorer countries.

The period considered as the commitment period in which greenhouse gas reductions should occur is between 2008 and 2012, and the parties listed in Annex I to the Protocol should have made significant progress by 2005 to achieve the objectives of the Protocol. The name "first period" gives the idea, already consolidated in the international community, that there must be a new post-2012 commitment to guarantee the objectives set out in the UNFCCC and the Kyoto Protocol.

When it comes to the application of international law in the domestic sphere, although treaties have applicability and validity in the same status as laws, the Brazilian legal system has the habit of producing its own legislation after incorporation, in order to make the application of the treaty more comprehensive and adequate to the functioning of the country.

For example, Law No. 5,197, of January 3, 1967, which provides for the protection of fauna and provides other measures, approved after the enactment of the treaty, through Decree No. 58,054 of 1966 and

Law No. 12,187, of December 29, 2009, which institutes the National Policy on Climate Change, adopted after the incorporation of the Kyoto Protocol.

Therefore, we will deal specifically with the legislation produced by the Brazilian Legislature and its correlation with the project, always remembering that treaties have their effectiveness in the domestic sphere often reproduced in laws approved later.

In relation to the project, in a larger perspective, it is possible to include all the international agreements and treaties to which Brazil is a signatory that deal with the environment. However, for a more accurate analysis, only the treaties that deal with the scope of the VCS Program.

1.15.3 Federal Legislation

Federal Constitution

Art. 23. It is the common competence of the Union, the States, the Federal District and the Municipalities:

VI – protect the environment and combat pollution in any of its forms;

Art. 24. It is incumbent upon the Union, the States and the Federal District to legislate concurrently on:

VI - forests, hunting, fishing, fauna, nature conservation, defense of soil and natural resources, protection of the environment and pollution control;

VIII - liability for damages to the environment, to the consumer, to goods and rights of artistic, aesthetic, historical, touristic and landscape value;

Art. 170. The economic order, founded on the valorization of human work and free initiative, aims to ensure dignified existences for all, in accordance with the dictates of social justice, observing the following principles:

VI - protection of the environment, including through differentiated treatment according to the environmental impact of products and services and their elaboration and provision processes;

Art. 186. The social function is fulfilled when the rural property simultaneously meets, according to criteria and degrees of demand established by law, the following requirements:

II - adequate use of available natural resources and preservation of the environment;

CHAPTER VI

THE ENVIRONMENT

Art. 225. Everyone has the right to an ecologically balanced environment, a good for the common use of the people and essential to a healthy quality of life, imposing on the Government and the community the duty to defend and preserve it for present and future generations.

§ 1 To ensure the effectiveness of this right, it is incumbent upon the Government:

I - preserve and restore essential ecological processes and provide for the ecological management of species and ecosystems;

II - preserve the diversity and integrity of the country's genetic heritage and supervise the entities dedicated to the research and manipulation of genetic material.

III - to define, in all units of the Federation, territorial spaces and their components to be specially protected, with alteration and suppression being allowed only by law, and any use that compromises the integrity of the attributes that justify their protection is prohibited;

IV - require, in accordance with the law, for the installation of a work or activity potentially causing significant degradation of the environment, a prior environmental impact study, which will be publicized;

V - to control the production, commercialization and use of techniques, methods and substances that pose a risk to life, quality of life and the environment);

VI - promote environmental education at all levels of education and public awareness for the preservation of the environment;

VII – to protect fauna and flora, prohibiting, in accordance with the law, practices that endanger their ecological function, cause the extinction of species or subject animals to cruelty.

VIII - maintain a favored tax regime for biofuels intended for final consumption, in the form of a complementary law, in order to ensure them lower taxation than that levied on fossil fuels, capable of guaranteeing a competitive differential in relation to them, especially in relation to the contributions referred to in subparagraph "b" of item I and item IV of the caput of article 195 and article 239 and to the tax referred to in item II of the caput of article 155 of this Constitution (Included by Constitutional Amendment No. 123 of 2022).

§ 2 Whoever exploits mineral resources is obliged to recover the degraded environment, in accordance with the technical solution required by the competent public body, in accordance with the law.

§ 3 Conducts and activities considered harmful to the environment shall subject the offenders, individuals or legal entities, to criminal and administrative sanctions, regardless of the obligation to repair the damage caused.

§ 4 The Brazilian Amazon Forest, the Atlantic Forest, the Serra do Mar, the Pantanal of Mato Grosso and the Coastal Zone are national heritage, and their use shall be made, in accordance with the law, under conditions that ensure the preservation of the environment, including the use of natural resources. (Regulation).

§ 5 Vacant lands or lands collected by the States, due to discriminatory actions, necessary for the protection of natural ecosystems, are unavailable.

§ 6 Plants that operate with nuclear reactors must have their location defined by federal law, without which they cannot be installed.

§ 7 For the purposes of the provisions of the final part of item VII of § 1 of this article, sports practices that use animals are not considered cruel, provided that they are cultural manifestations, according to § 1 of article 215 of this Federal Constitution, registered as an intangible asset that is part of the Brazilian cultural heritage, and must be regulated by a specific law that ensures the well-being of the animals involved.

1.16 Double Counting and Participation under Other GHG Programs

1.16.1 No Double Issuance

Is the project receiving or seeking credit for reductions and removals from a project activity under another GHG program?

☐ Yes ☒ No

1.16.2 Registration in Other GHG Programs

Has the project registered under any other GHG programs?

☐ Yes ☒ No

Is the project active under the other program?

☐ Yes ☒ No

1.16.3 Projects Rejected by Other GHG Programs

Has the project been rejected by any other GHG programs?

☐ Yes ☒ No

1.17 Double Claiming, Other Forms of Credit, and Scope 3 Emissions

1.17.1 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

1.17.2 No Double Claiming with Other Forms of Environmental Credit

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

☒ Yes ☒ No

1.17.3 Supply Chain (Scope 3) Emissions

Do the project activities specified in Section 1.12 affect the emissions footprint of any product(s) (goods or services) that are part of a supply chain?

☐ Yes ☒ No

1.18 Sustainable Development Contributions

Goal	Target	Action
	1.1 By 2030, end extreme poverty for all people everywhere, currently measured as people living on less than US$1.90 a day. 1.5 By 2030, build the resilience of the poor and those in vulnerable situations, and reduce their exposure and vulnerability to climate-related extreme events and other economic, social and environmental shocks and disasters	- With the focus on job training, jobs created and the inclusion of small producers in the project, all people directly impacted by the project will be above the per capita income target, greater than US$ 1.90 per day. - Reforestation activities guarantee the immobilization of land, which mitigates one of the biggest risks to vulnerable communities in Brazil, linked to intense rains.
	2.3 By 2030, double the agricultural productivity and income of small food producers, particularly women, indigenous peoples, family farmers, pastoralists and fishermen, including through secure and equal access to land, other productive resources and inputs, knowledge, financial services, markets and opportunities for value addition and non-agricultural employment 2.5 By 2020, maintain the genetic diversity of seeds, cultivated plants, farmed and domesticated animals and their respective wild species, including through diversified and	- The project aims to increase income by integrating small producers, offering assistance and professional training. In addition to generating new sources of income, reforestation activities contribute to improving soil quality and moderating the local microclimate, resulting in better conditions for the practice of agriculture. - The project adopts as a priority policy the acquisition of seedlings from nurseries managed by women. - By planting species at risk of extinction, we will increase the

	well-managed seed and plant banks at national, regional and international levels, and ensure access and the fair and equitable sharing of benefits arising from the use of genetic resources and associated traditional knowledge, as internationally agreed	Brazilian germplasm bank of Native Atlantic Forest biodiversity, acting directly on the conservation of these species. Furthermore, as the project grows, the demand for seeds will drive the structuring of seed collection networks due to demand.
	4.4 By 2030, substantially increase the number of young people and adults who have relevant skills, including technical and professional skills, for employment, decent work and entrepreneurship 4.7 By 2030, ensure that all students acquire the knowledge and skills necessary to promote sustainable development, including, among others, through education for sustainable development and sustainable lifestyles, human rights, gender equality, promotion of a culture of peace and non-violence, global citizenship and appreciation of cultural diversity and the contribution of culture to sustainable development	- As an internal policy, all employees involved in planting activities will undergo training in Rural Work Safety and Firefighting, thereby qualifying the local workforce. - The project will include plantings and educational activities aimed at promoting environmental education and sustainability for children and adolescents (Moleque no Viveiro – IEF).
	5.5 Ensure the full and effective participation of women and equal opportunities for leadership at all levels of decision-making in political, economic and public life	- The project applies non-discrimination policies against women in all spheres linked to it. Furthermore, the project developer includes women in its leadership team, ensuring that women actively participate in decision-making in the project. - One of the selection criteria for purchasing seedlings is priority supply by female nurserymen. In this way, the project encourages the

		increase of women entrepreneurs in this sector. - As a social impact action, the project includes organizing meetings with women in the community to listen to their specific needs, stimulate the community and empower the group.
	6.6 By 2020, protect and restore water-related ecosystems, including mountains, forests, wetlands, rivers, aquifers and lakes.	- The project's main objective is to restore Atlantic Forest forests. Reforestation actions protect springs, rivers and other bodies of water, improving the quality of water distribution in communities and protecting associated ecosystems.
	10.2 By 2030, empower and promote the social, economic and political inclusion of all, regardless of age, gender, disability, race, ethnicity, origin, religion, economic or other condition 10.3 Ensure equal opportunities and reduce inequalities in outcomes, including through the elimination of discriminatory laws, policies and practices and the promotion of appropriate legislation, policies and actions in this regard	- The project creates policies for the development and inclusion of minority groups in the project area: Small Rural Producers and Women. - The project is committed to the constant evolution of social agendas, seeking new solutions from the board to promote equal opportunities for minority groups.
	11.4 Strengthen efforts to protect and safeguard the world's cultural and natural heritage.	- Restoring ecosystems through reforestation helps prevent soil erosion and manage stormwater, reducing the risk of natural disasters such as floods and landslides. - The project's activities help restore the Atlantic Forest, considered a National Heritage Site and a global hotspot for biodiversity conservation. This biome provides a

		series of ecosystem services that improve people's lives and help mitigate the effects of climate change in cities.
	13.1 Strengthen resilience and adaptive capacity to climate-related risks and natural disasters in all countries.	- Restoring tropical forests increases the resilience of these environments by increasing and connecting forest fragments. To enhance this activity, we will also promote environmental training by promoting safe forest management practices, forest fire prevention and forest fire monitoring.
	15.1 By 2020, ensure the conservation, recovery and sustainable use of terrestrial and inland freshwater ecosystems and their services, in particular forests, wetlands, mountains and drylands, in accordance with obligations arising from international agreements. 15.2 By 2020, promote the implementation of sustainable management of all types of forests, halt deforestation, restore degraded forests and substantially increase afforestation and reforestation globally 15.3 By 2030, combat desertification, restore degraded land and soil, including land affected by desertification, drought and floods, and strive to achieve a land degradation-neutral world. 15.5 Take urgent and significant measures to reduce the degradation of natural habitats, halt the loss of biodiversity and, by 2020, protect	- The project's reforestation policies and practices are aligned with the best international practices in protecting life on earth. - The Project promotes the protection of native species through the establishment of biodiverse forests, which incorporate species threatened with extinction. This strategy aims not only to enrich genetic diversity, but also to substantially expand the habitat areas available for wildlife. In addition to strengthening ecological resilience, these actions are fundamental to conserving the biodiversity of the Atlantic Forest, contributing significantly to the balance and sustainability of one of the most threatened biomes in the world.

	and prevent the extinction of threatened species. 15.6 Ensure a fair and equitable sharing of benefits derived from the use of genetic resources and promote adequate access to genetic resources. 15.8 By 2020, implement measures to prevent the introduction and significantly reduce the impact of invasive alien species on terrestrial and aquatic ecosystems, and control or eradicate priority species. 15.b mobilize significant resources from all sources and at all levels to finance sustainable forest management and provide appropriate incentives to developing countries to promote sustainable forest management, including for conservation and reforestation	
	17.16 Strengthen the global partnership for sustainable development, complemented by multi-sectoral partnerships that mobilize and share knowledge, expertise, technology and financial resources, to support the achievement of sustainable development goals in all countries, particularly developing countries. 17.17 Encourage and promote effective public, public-private and civil society partnerships, based on the experience of resource mobilization strategies in these partnerships.	- The project's business model is entirely supported by the promotion of partnerships between Rural Owners (large or small), Research Institutions such as the Federal University of Viçosa (UFV), Investors, partner companies (both technical partners, such as Symbiosis, as financiers) and state executive bodies as in the case of the State Forestry Institute (IEF). -Formalized the monitoring of the aforementioned partner entities, we will use a project management system with the capacity to simultaneously manage three simultaneous boards (business executive board, social executive

		board, scientific technical committee).

1.19 Additional Information Relevant to the Project

1.19.1 Leakage Management

Project under development. The section was omitted from the draft and will be available in future versions following the guidelines of the Verra V4.4 Registration and Issuance Process.

1.19.2 Commercially Sensitive Information

Project under development. The section was omitted from the draft and will be available in future versions following the guidelines of the Verra V4.4 Registration and Issuance Process.

1.19.3 Further Information

No additions required.

2 SAFEGUARDS AND STAKEHOLDER ENGAGEMENT

2.1 Stakeholder Engagement and Consultation

2.1.1 Stakeholder Identification

Project under development. The section was omitted from the draft and will be available in future versions following the guidelines of the Verra V4.4 Registration and Issuance Process.

2.1.2 Stakeholder Consultation and Ongoing Communication

Project under development. The section was omitted from the draft and will be available in future versions following the guidelines of the Verra V4.4 Registration and Issuance Process.

2.1.3 Free Prior and Informed Consent

Project under development. The section was omitted from the draft and will be available in future versions following the guidelines of the Verra V4.4 Registration and Issuance Process.

2.1.4 Grievance Redress Procedure

Project under development. The section was omitted from the draft and will be available in future versions following the guidelines of the Verra V4.4 Registration and Issuance Process.

2.1.5 Public Comments

After the public comment period, the table will be updated with the received comments and the relevant changes to the project design.

Table 3: Public consultation summary.

Comments received	Actions taken
Non applicable	Non applicable

2.2 Risks to Stakeholders and the Environment

2.2.1 Management Experience

The management team assigned to the project consists of developers responsible for overseeing the ecosystem of partnerships cultivated by the Grouped Project ARR Serra Viva. These professionals include:

Antonio Leitão - Executive Director

Antonio Leitão is a highly experienced professional with a background in project management and community development. He has extensive experience in operations, logistics and supply chain management, standing out for his work in planning shipping materials for export and post-war support, as part of Operation Peace in Angola.

In several communities, Antonio dedicated himself to teaching voluntarily, contributing to the training of more than 100 local people in welding and masonry. He participated in the creation of leadership courses for the Odebrecht Group, training more than 1,000 foremen and technicians, as well as 500 engineers for civil construction in Brazil, Venezuela, Portugal and Angola.

In the interior of Bahia, he worked directly with communities, developing cooperatives and reinforcing the importance of Family Homes through the Alternating Cycle Methodology. He also led the HR and Social areas in the Minha Casa Minha Vida project, in contexts of removal and relocation of families in areas affected by tragedies, such as Blumenau and Friburgo-RJ. He was an advisor to the Olympic Park and collaborated with the IOC and Rio 2016, organizing unions, and promoting a change in the 6,000-member mental model.

Alexandre Schroder - Operations Manager

Alexandre Schroder holds a degree in Agronomic Engineering from the Universidade Federal de Viçosa (UFV), where he developed a passion for Agroforestry Systems and the design of productive landscapes, actively participating in university extension projects. He expanded his knowledge with a specialization in Environmental Management and Sustainable Development from the International University Center (UNINTER), as well as courses focused on ESG. He has significant experience as a Project Analyst at

FINATEC, working on the Conexão Mata Atlântica project of GEF/IDB, assigned to the Instituto Estadual de Florestas (IEF) of Minas Gerais, dedicated to the recovery of climate and biodiversity services in the Brazilian Atlantic Forest, managing 500 hectares of forest restoration and conservation. Schroder is also a certified organic farmer, involved in cooperatives and associations of farmers, with experience in children's environmental education, author of a pedagogical book, and teacher of courses on Agroforestry Systems.

Emilia Licha - General Manager

Emilia Licha is a biologist, trained with an emphasis on the environment and environmental education in the Atlantic Forest. She has experience in Forest Restoration, Corporate Sustainability and GIS Tools for soil analysis, biomass increase, land regularization and land management. As an AFOLU Project Analyst, she launched Reflora's RIQA project analysis tool, analyzing more than 40 projects and independently auditing partner projects in Brazil. Since 2023, she has been the Creator and Manager of the Grouped Project ARR Serra Viva (AFOLU VCS CCB), developing institutional partnerships to advance the qualification of social technologies applied to carbon projects and responsible for the development of the forest technology for choosing species used to increase the increase of biomass in the project's Atlantic Forest forests.

Rafael Albuquerque – Carbon Specialist

Rafael Albuquerque is a biodiversity expert with extensive experience in teaching and research. With a bachelor's degree in Biological Sciences (UFF), Master's and PhD in Tropical Botany (ENBT - JBRJ), he has contributed to international journals in the areas of plant growth, wood anatomy and Dendrochronology. He actively participates in the PPBio Mata Atlântica Biodiversity Research Network, in addition to having experience in rescuing wild and domestic animals, caring for oiled fauna, and monitoring fauna and flora.

2.2.2 Risk Assessment

Project under development. The section was omitted from the draft and will be available in future versions following the guidelines of the Verra V4.4 Registration and Issuance Process.

2.3 Respect for Human Rights and Equity

2.3.1 Labor and Work

Project under development. The section was omitted from the draft and will be available in future versions following the guidelines of the Verra V4.4 Registration and Issuance Process.

2.3.2 Human Rights

Project under development. The section was omitted from the draft and will be available in future versions following the guidelines of the Verra V4.4 Registration and Issuance Process.

2.3.3 Indigenous Peoples and Cultural Heritage

Risks identified	Mitigation(s) or preventative measure taken
No risks identified	No indigenous people were identified in the proximity of any project area instances.

2.3.4 Property Rights

Project under development. The section was omitted from the draft and will be available in future versions following the guidelines of the Verra V4.4 Registration and Issuance Process.

2.3.5 Benefit Sharing

Project under development. The section was omitted from the draft and will be available in future versions following the guidelines of the Verra V4.4 Registration and Issuance Process.

2.4 Ecosystem Health

	Risks identified	Mitigation or preventative measure(s) taken
Impacts on biodiversity and ecosystems	Management of inputs	The project inputs are designed to support ecological restoration by addressing challenges and minimizing harm. Pesticides control pests and invasive species, while fertilizers correct soil nutrient deficiencies to promote native plant growth. These inputs are used only when necessary and always in a responsible manner, adhering strictly to environmental regulations. The Grouped Project ARR Serra Viva emphasizes adherence to manufacturer recommendations, proper dosages, and correct procedures for storage,

		transport, and disposal, thereby mitigating potential risks.
Soil degradation and soil erosion	No risks identified	The project does not anticipate any risks to the soil. On the contrary, reforestation activities are designed to enhance soil quality over time. By restoring native vegetation, the project will improve soil structure, stability, increase nutrient content, and promote overall soil health.
Water consumption and stress	No risks identified	There are no risks related to water consumption and stress in the project area because the project involves reforestation activities that do not require irrigation, the local climate provides sufficient rainfall to sustain the species being planted, and there is no significant competition for water resources from nearby agricultural or industrial activities.

2.4.1 Rare, Threatened, and Endangered Species

Is the project located in or adjacent to habitats for rare, threatened, or endangered species?

☒ Yes ☐ No

Species and habitat	The Atlantic Forest is a global hotspot for biodiversity conservation and is home to a large number of endemic and endangered species of both fauna and flora. Recent studies highlight the urgency of protecting the plant species of the Atlantic Forest. The latest surveys show that among all tree species found in the biome, 62% are under some level of threat, and when looking only at endemic species, this number increases to 82% (de Lima et al. 2024).
Areas needed for habitat connectivity	The project will not adversely impact areas needed for habitat connectivity. Moreover, the implementation of reforestation techniques within the project significantly contributes to expansion of forest cover and connectivity in the project area, thereby mitigating habitat fragmentation.

	This revegetation process also includes increasing the population density of endangered species such as cedro-rosa (*Cedrela fissilis*), jacarandá-da-bahia (*Dalbergia nigra*), and ipê amarelo (*Handroanthus serratifolius*).

Table 4: Risks identified for biodiversity on the project area.

	Risks identified	Mitigation or preventative measure(s) taken
Habitats for rare, threatened, and endangered species	No risk identified	Continuous monitoring and formal agreements with landowners to ensure the protection and preservation of the Atlantic Forest.
Areas for habitat connectivity	No risk identified	Establishment of ecological corridors and restoration of native vegetation to promote connectivity between fragmented habitats, thereby enhancing biodiversity and ecosystem resilience.

2.4.2 Introduction of Species

No invasive species will be introduced into any of the reforestation areas outlined by the project. In addition, when invasive species are identified during activities, the field team will be responsible for their removal. The educational activities promoted by the project includes exotic fruit species among the listed species for planting. However, all introduced species are verified to have no history of invasive behavior.

Species introduced	Classification	Justification for use	Adverse effects and mitigation
Manga - *Mangifera indica*	Non-native	Educational planting	No risks identified
Ameixa - *Prunus domestica*	Non-native	Educational planting	No risks identified
Cereja - *Prunus avium*	Non-native	Educational planting	No risks identified
Limão-taiti - *Citrus × latifolia*	Non-native	Educational planting	No risks identified

Table 5: List of identified invasive species on project area.

Existing invasive species	Mitigation measures to prevent the spread or continued existence of invasive species
Capim-braquiária (*Urochloa decumbens*)	Vegetation removal using mechanical and chemical weeding, along with ongoing maintenance.

Table 6: List of risks related to invasive species on project area.

	Risks identified	Mitigation or preventative measure(s) taken
Invasive species	Seedling suppression by pasture	The continuous monitoring and removal help mitigate the risks associated with *U. decumbens* by preventing its overgrowth and reducing its competitive dominance during the first years of project activity.

2.4.3 Ecosystem Conversion

Project under development. The section was omitted from the draft and will be available in future versions following the guidelines of the Verra V4.4 Registration and Issuance Process.

3 APPLICATION OF METHODOLOGY

3.1 Title and Reference of Methodology

Type (methodology, tool or module).	Reference ID, if applicable	Title	Version
Methodology	VM0047	Methodology for Afforestation. Reforestation and Revegetation	1.0
Module	VMD0054	VMD0054 Module for Estimating Leakage from ARR Activities	1.0
Tool		AFOLU Non-Permanence Risk Tool	4.2

3.2 Applicability of Methodology

Methodology ID	Applicability condition	Justification of compliance
VM0047	The project activity qualifies as reforestation, afforestation or revegetation.	The activities proposed by the project qualifies as reforestation.
VM0047	This methodology is applicable under the following conditions: 1. Project activities increase vegetative cover; and 2. Area based, census based, or a combination of the two quantification approaches may be used provided approach-specific applicability conditions are met.	1) Project activities increase vegetative cover. 2) The area-based approach will be used for quantifications since project instances met the specific applicability conditions.
VM0047	The methodology is not applicable under the following conditions: 1. Project activities involve mechanical removal offsite or burning of significant stocks of preexisting dead wood. 2. Project activities take place in tidal wetlands (e.g., mangroves, salt marshes). 3. Project activities that occur on organic soils or in wetlands and result in a manipulation of the water table.	Project activities do not meet any of the conditions.

VM0047	Area-based quantification approach: 1. Project activities produce continuous tree and/or shrub cover on any contiguous area exceeding one hectare. 2. Projects may include direct (e.g., manual planting, broadcast seeding) and indirect activities (e.g., activities that permit or facilitate natural regeneration, like herbivory exclosures).	Project activities involve reforestation of continuous areas with native tree species, exceeding one hectare. Direct and indirect activities are described in section 1.12.
VMD0054	This module applies to estimating leakage emissions from ARR activities.	Project meet all applicability conditions of the methodology *VM0047 Afforestation, Reforestation and Revegetation.*
AFOLU Non-Permanence Risk Tool	Non-permanence risk analysis shall only be applied to GHG removals or avoided emissions through carbon sinks.	All project offsetting is related to GHG removals.

3.3 Project Boundary

As shown in section 1.13, the Grouped Project ARR Serra Viva has as its coverage area the states of the southeast and northeast of Brazil that have areas of Atlantic Forest. The project has one instance that represents the project's start zone in the state of Minas Gerais, is Southeast Brazil. The PAI-001 instance covers 21 hectares of reforestation through direct planting, with one hectare designated for an educational project.

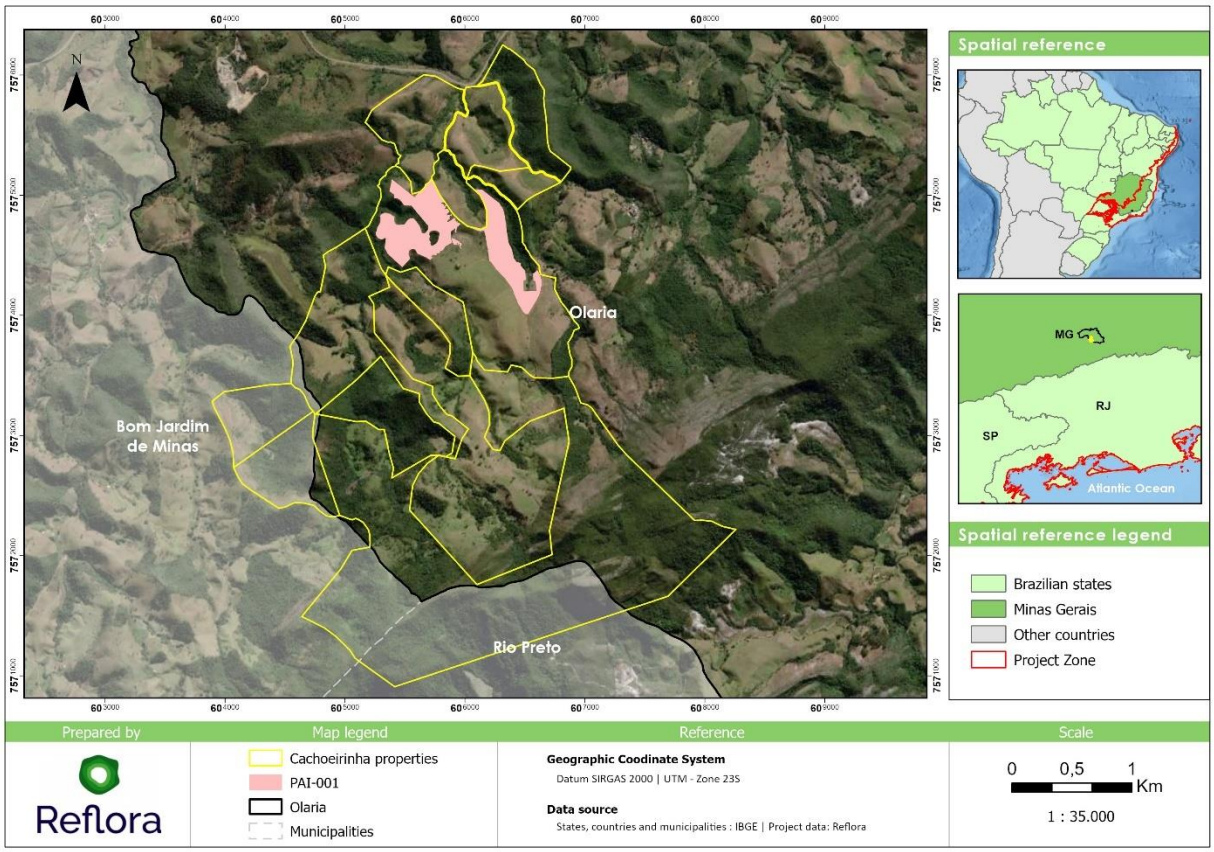


Figure 2: Map of the project start zone - Instance PAI-001.

Table 7: GHG sources relevant to the Grouped Project ARR Serra Viva.

Source		Gas	Included?	Justification/Explanation
Baseline	Aboveground woody biomass	CO_2	Yes	A performance benchmark will be used to set the crediting baseline.
		CH_4	No	Not applicable.
		N_2O	No	Not applicable.
		Other	No	Not applicable.
	Aboveground non-woody biomass	CO_2	No	Expected to be *de minimis*.
		CH_4	No	Not applicable.
		N_2O	No	Not applicable.
		Other	No	Not applicable.

Source		Gas	Included?	Justification/Explanation
	Belowground woody biomass	CO_2	Yes	A performance benchmark will be used to set the crediting baseline.
		CH_4	No	Not applicable.
		N_2O	No	Not applicable.
		Other	No	Not applicable.
	Belowground non-woody biomass	CO_2	No	Expected to be *de minimis*.
		CH_4	No	Not applicable.
		N_2O	No	Not applicable.
		Other	No	Not applicable.
	Dead Wood	CO_2	No	Expected to be *de minimis*.
		CH_4	No	Not applicable.
		N_2O	No	Not applicable.
		Other	No	Not applicable.
	Litter	CO_2	No	Expected to be *de minimis*.
		CH_4	No	Not applicable.
		N_2O	No	Not applicable.
		Other	No	Not applicable.
	Soil organic carbon	CO_2	No	Not included since project activity does not promove:

Source		Gas	Included?	Justification/Explanation
	(SOC)			1) Soil disturbance more than once during the project crediting period (i.e., at site preparation); 2) Soil inversion to a depth exceeding 25 cm (e.g., that would result from a moldboard plow).
		CH_4	No	Not applicable
		N_2O	No	Not applicable
		Other	No	Not applicable
Project	Aboveground woody biomass	CO_2	Yes	Major carbon pool
		CH_4	No	Not applicable
		N_2O	No	Not applicable
		Other	No	Not applicable
	Aboveground non-woody biomass	CO_2	Optional	Included when project activity significantly reduces the carbon pool as per Appendix 2 of VM0047.
		CH_4	No	Not applicable
		N_2O	No	Not applicable
		Other	No	Not applicable
	Belowground woody biomass	CO_2	Yes	Major carbon pool.
		CH_4	No	Not applicable
		N_2O	No	Not applicable
		Other	No	Not applicable
	Belowground non-woody biomass	CO_2	No	Expected to be *de minimis*.
		CH_4	No	Not applicable.
		N_2O	No	Not applicable.
		Other	No	Not applicable.

Source		Gas	Included?	Justification/Explanation
	Dead Wood	CO_2	Optional	Included when project activity significantly reduces the carbon pool as per Appendix 2 of VM0047.
		CH_4	No	Not applicable.
		N_2O	No	Not applicable.
		Other	No	Not applicable.
	Litter	CO_2	Optional	Included when project activity significantly reduces the carbon pool as per Appendix 2 of VM0047.
		CH_4	No	Not applicable.
		N_2O	No	Not applicable.
		Other	No	Not applicable.
	Soil organic carbon (SOC)	CO_2	No	Not included since project activity does not promove: 1) Soil disturbance more than once during the project crediting period (i.e., at site preparation); 2) Soil inversion to a depth exceeding 25 cm (e.g., that would result from a moldboard plow).
		CH_4	No	Not applicable.
		N_2O	No	Not applicable.
		Other	No	Not applicable.

3.4 Baseline Scenario

The VM0047 methodology defines the baseline scenario through a "Performance Benchmark". This benchmark is a dynamic tool that uses remote sensing to monitor and compare changes in vegetation cover and above-ground biomass between plots within the project area and external control plots. This process is repeated at each verification to incorporate the typical changes of a "Business-as-usual" scenario into the baseline and calculate carbon removals dynamically.

Since the project is under development, details on the control plots and the performance benchmark will be presented in further versions of the project description for validation/verification.

3.5 Additionality

3.5.1 Regulatory Surplus

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

☐ Annex 1 country ☒ Non-Annex 1 country

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

☒ Yes ☐ No

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

☐ Yes ☒ No

Future instances of the Serra Viva Grouped Project may include reforestation activities in areas designated as Legal Reserves (RLs) and Permanent Preservation Areas (APPs), as mandated by the Brazilian Forest Code (Law No. 12,651/2012). However, this law is not systematically enforced throughout the Atlantic Forest biome, including in the State of Minas Gerais, where the Serra Viva Project is located. According to the "Thermometer of the Forest Code"[2] an initiative that monitors the implementation of the law across different Brazilian biomes, rural properties in the Atlantic Forest Biome face a deficit of over 3 million hectares. This deficit can be attributed to social and economic barriers related to ecological restoration, as well as a lack of enforcement capacity to ensure compliance with the law. Consequently, reforestation projects in these areas may be considered additional, thereby justifying the regulatory surplus required by the methodology. Moreover, the use of a dynamic baseline and the performance benchmark within the VM0047 methodology ensures the additionality of the project, confirming that the carbon removals are above and beyond what would have occurred under typical regulatory conditions.

3.5.2 Additionality Methods

Project under development. The section was omitted from the draft and will be available in future versions following the guidelines of the Verra V4.4 Registration and Issuance Process.

3.6 Methodology Deviations

[2] https://termometroflorestal.org.br

No methodological deviations were made.

4 QUANTIFICATION OF ESTIMATED GHG EMISSION REDUCTIONS AND REMOVALS

4.1 Baseline Emissions

Project under development. The section was omitted from the draft and will be available in future versions following the guidelines of the Verra V4.4 Registration and Issuance Process.

4.2 Project Emissions

Project under development. The section was omitted from the draft and will be available in future versions following the guidelines of the Verra V4.4 Registration and Issuance Process.

4.3 Leakage Emissions

Project under development. The section was omitted from the draft and will be available in future versions following the guidelines of the Verra V4.4 Registration and Issuance Process.

4.4 Estimated GHG Emission Reductions and Carbon Dioxide Removals

Project under development. The section was omitted from the draft and will be available in future versions following the guidelines of the Verra V4.4 Registration and Issuance Process.

5 MONITORING

5.1 Data and Parameters Available at Validation

Project under development. The section was omitted from the draft and will be available in future versions following the guidelines of the Verra V4.4 Registration and Issuance Process.

5.2 Data and Parameters Monitored

Project under development. The section was omitted from the draft and will be available in future versions following the guidelines of the Verra V4.4 Registration and Issuance Process.

5.3 Monitoring Plan

Project under development. The section was omitted from the draft and will be available in future versions following the guidelines of the Verra V4.4 Registration and Issuance Process.

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